APPENDIX G

PARSONS

Drainage and Stormwater Management Report

Adelaide Street North Municipal Class Environmental Assessment Study

Final Report

Submitted to:

City of London

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1. Introduction

1.1 PROJECT DESCRIPTION

Parsons was retained by the City of London to undertake an Environmental Assessment (EA) Study for the proposed widening of Adelaide Street North from Fanshawe Park Road East to Sunningdale Road East under jurisdiction of the City of London.

As part of the EA Study, this Drainage and Stormwater Management (SWM) Report documents the existing drainage patterns and floodplain conditions and assesses the hydraulic performance of the culvert crossing in the study limit. This report also addresses the SWM strategy to reduce the runoff impacts resulting from the proposed road widening.

The study area for this EA consists of Adelaide Street North from Fanshawe Park Road East to 350m north of Sunningdale Road East, and Sunningdale Road East from Blackwater Road west of Adelaide Street North to Stoney Creek Community Centre Entrance east of Adelaide Street North. **Figure 1-1** shows the study limit of this project. The existing Adelaide Street North roadway consists of a two-lane paved road and the proposed improvements include widening the road to a four-lane cross-section.

As shown in **Figure 1-1**, the Powell Drain discharges the north-west segment tributary areas of the Stoney Creek watershed along the creek and crosses Adelaide Street North through a culvert. The Powell Drain wetland is located upstream of the culvert and an orifice-weir structure is installed immediately upstream of the culvert inlet headwall. The orifice-weir structure is designed and installed to provide a low flow regime in the creek and enhance the ecology of the wetland.

It should be noted that the study area falls in the jurisdiction of the Upper Thames River Conservation Authority (UTRCA).

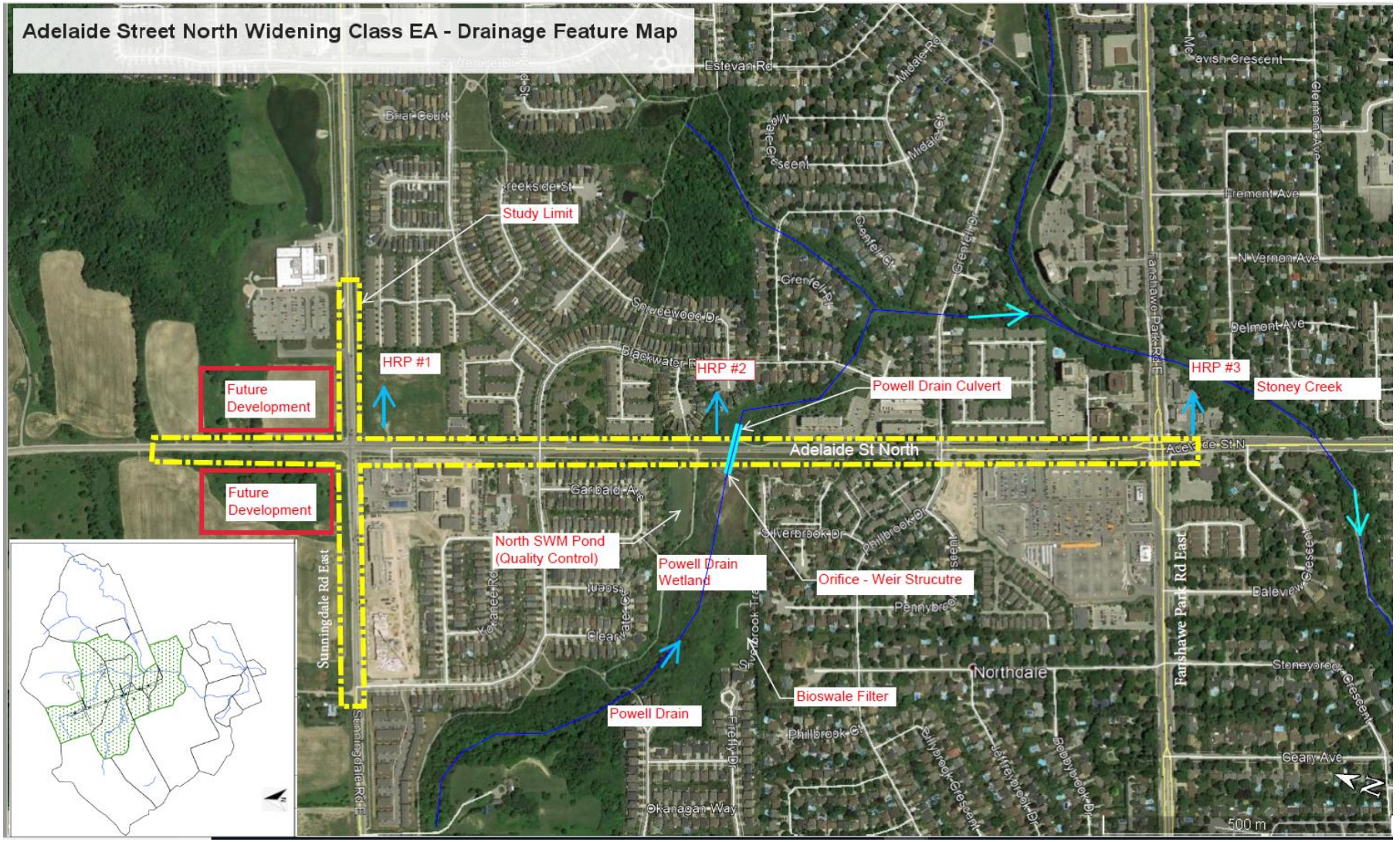


Figure 1-1: Study Area

1.2 SCOPE AND OBJECTIVES

This report illustrates how the proposed works within the study area will impact the drainage system and identifies potential mitigation measures needed to meet SWM criteria outlined by the City. The Powell Drain crosses Adelaide Street North at 700 m north of Fanshawe Park Road East. A hydrology study has been undertaken for the north-western segment of the Stoney Creek watershed and the hydraulic performance of the existing culvert crossing at Adelaide Street North was assessed.

The objectives of this study are as follows:

- Undertake a hydrologic and hydraulic analysis of the proposed widening of Adelaide Street North;
- Develop a drainage and stormwater management plan for the proposed Adelaide Street North configuration that minimizes impact on the existing watercourse and drainage system;
- Manage post-development runoff from road drainage within the right of way (ROW);
- Provide safe drainage conveyance to reduce potential flood risks, and prevent damage to private and public properties;
- Provide quality control to post-development runoff prior to discharge to the outlets;
- Provide mitigation measures where necessary; and
- Undertake an investigation of reported road overtopping issues at Adelaide Street North culvert crossing.

The scope of work of the subject tasks includes:

- Review of background information such as the development studies in the watershed and Stoney Creek Subwatershed Study along with servicing information and existing flooding complaints;
- Discussions about the status of the existing Powell Drain wetland at the west of the water crossing of Adelaide Street North;
- Hydrologic and hydraulic assessment of existing drainage features along the Powell Drain particularly for the culvert crossing of Adelaide Street to determine the drainage issues;
- Design the proposed drainage features along the proposed road to confirm hydrologic, hydraulic and SWM criteria are met and identify any issues which may arise; and
- Provide possible solutions to overcome the issues identified through the assessment/design.

2 Background Data

2.1 BACKGROUND DATA

This Drainage and SWM Report builds upon the findings and recommendations of the following reports:

- Stoney Creek Subwatershed Study (Paragon Engineering Limited, 1996).
- Functional Stormwater Management Report, Ardshell Uplands Development Phase 1 (Development Engineering Limited, May 2002).
- Uplands North Subdivision Functional SWM Servicing Report (AECOM, May 2011).
- Powell Drain Remediation Design (Delcan, 2014)
- Functional Stormwater Management Design Report of Stoney Creek SWMF No. 2 (MTE, June 2017)

The Stoney Creek Subwatershed Study provides a detailed hydrologic study of the Stoney Creek Subwatershed, including hydrologic characteristics, design storms and modeling details. The hydrologic characteristics and design storms outlined in this study have been updated to reflect the latest developments which have an impact on the runoff for the current study. The detailed design of the SWMF located upstream of the Powell Drain culvert crossing of Adelaide Street North is reported in the Functional Stormwater Management Report of Ardshell Uplands Development Phase 1. The SWMF includes orifice and weir structures to provide adequate quantity control and low flow to enhance the ecology of the Powell Drain Wetland. The Uplands North Subdivision Functional SWM Servicing Report presents a functional SWM servicing strategy and SWM facility design for the Uplands North subdivision, which is located north of Sunningdale Road. This subdivision is a part of the Stony Creek watershed. In 2014, Delcan provided a remediation design study for the Powell Drain upstream of the Powell Drain Wetland. The current IDF parameters are used for proposed conditions following the City of London's Design Specifications and Requirements Manual, 2019.

2.2 SITE VISIT

Parsons conducted two site visits, separately on June 27th, 2018 and October 16th, 2018. In both site visits, it was observed that the orifice-weir structure immediately upstream of the culvert crossing at Adelaide Street North is clogged with vegetation and debris. This clogging will have an impact on the discharge coefficient of the structure and reduce the discharge performance, which will eventually increase the water level in the wetland, particularly at storm events. The pictures of this structure from site visits are shown in **Appendix A.**

3 Drainage Design Criteria

3.1 RAINFALL DATA

The 3-hour AES Chicago distribution was selected for application in the Stoney Creek watershed, according to the Stoney Creek Subwatershed Study (Paragon Engineering Limited 1996). The same, AES – Chicago Storm distribution parameters are imported in the model as rainfall data, including 2-yr, 5-yr, 25-yr, 100-yr and 250-yr as regulatory storm. The IDF parameters obtained from the City's Design Specifications and Requirements Manual, 2019, have been considered for the existing and proposed conditions. Design storm input data can be found in **Table B.3a** and **Table B.3b** in **Appendix B**.

3.2 ALLOWABLE FLOW RATE

The post development flow rates shall approximate the existing flow rates for all storm events from 2-year to the 250-year (Environmental Planning Policy Manual for the Upper Thames River Conservation Authority, 2006). This criterion provides quantity control for any developments proposed in the UTRCA jurisdiction.

3.3 HYDRAULIC DESIGN CRITERIA

The following criteria obtained from the Design Specifications and Requirements Manual by the City of London are utilized in the assessment of the existing and proposed drainage design:

- 2-year design storm for minor flows based on the City of London Rainfall Intensity Curve
- Runoff coefficients (C value):
    - 0.5 for single family/semi detached
    - 0.7 for commercial/medium density
    - 0.9 for road right of way
- Time of concentration (T_c) at upstream end:
    - 19.0 minutes for single family/semi-detached
    - 10.5 minutes for commercial and road right of way
- Any new culvert or culverts that are being redesigned, replaced or impacted by road works or road widening must be designed to meet the hydraulic requirements established by Ministry of Transportation Ontario (MTO).
- Minimum 50-year storm event must be conveyed by the culvert.
- According to MTO HDDS, 2008, WC-2 and WC-7, the head water depth over culvert rise ratio for the culverts with a rise less than 3 m shall be less than 1.5 and the freeboard shall be over 0.3 m

4 Hydrologic Analysis

4.1 EXISTING CONDITIONS

The study area lies within the Stoney Creek Subwatershed regulated by the Upper Thames River Conservation Authority (UTRCA). The existing subwatershed boundaries, water crossing and the existing drainage patterns with delineated road drainage sub-areas for Adelaide Street North in the study area are presented in Existing Drainage Area Map (**Figure B-1).**

The existing drainage patterns of Adelaide Street North from Fanshawe Park Road East to Sunningdale Road East mainly cross high-density residential areas. The Stoney Creek Subwatershed is being crossed by Adelaide Street North within the study limit at approximately 700m north of Fanshawe Park Road. As shown in **Figure B-1**, three hydrologic reference points (HRPs) have been identified for the overland drainage patterns and the existing outlets within the study limit:

- HRP1 represents major overland flow as well as minor system from the most north boundary of the study limit to Sunningdale Road East which are being conveyed towards southerly to the Creek.
- HRP2 represents the road drainage to the water crossing at the Adelaide Street North where the culvert is located.
- HRP3 is at the south study limit close to Fanshawe Park Road East.

4.1.1 Methodology

There was no hydrologic model available from UTRCA for this study. A new model was therefore developed to represent the hydrologic conditions for the study area using Visual OTTHYMO (VO) version 5. Two sets of hydrologic modeling have been developed in this study as the Adelaide Street North sub-areas and Stoney Creek Watershed.

In the case of Adelaide Street North road drainage, the overland drainage areas within the ROW were delineated based on the location of high points and low points and HRP locations along the road profile. The hydrologic parameters are defined based on the input parameters for the larger sub-watershed where they are extracted from. Due to the urban nature of the watershed, all these areas are defined as STANDHYDs in the hydrologic model. The imperviousness is adjusted based on the distribution of pervious and impervious areas within the road ROW.

For the Stoney Creek subwatershed study, the modeling parameters of each catchment area that transverses the Adelaide Street North have been extracted from the Stoney Creek Subwatershed Study (Paragon Engineering Limited, 1996). The catchment information of the Stoney Creek Subwatershed Study, labeled as ID 152, ID 142, ID 142.1, ID 108, ID 105 are used to cover the study area. As noted in the Stoney Creek Subwatershed Study (1996), these sub-catchments used to be rural areas, while they are currently developed to urban and residential areas as shown in the **Figure 1-1** and discussed in Uplands North Subdivision Functional SWM Servicing Report (AECOM, May 2011). The VO5 modeling parameters are modified to represent this development.

Tables B.1 to B.2 in **Appendix B** show the original and modified input parameters used for each sub-catchment.

4.1.2 Adelaide Street North Sub-Areas

As described in **Section 4.1**, existing peak flows from the road catchments are determined at each HRP using VO5. **Table 4-1** summarizes the existing peak flows at all HRPs considering the current IDF parameters as per the City of London's Design Specifications and Requirements Manual, 2019. **Visual OTTHYMO Modelling Schematic-1 Road Drainage - Existing Condition** in **Appendix B** illustrates the existing condition of the road catchments. Detailed hydrologic modeling output files are included in **Appendix B**.

Table 4-1: Hydrologic Analysis - Existing Condition Peak Flows at HRPs (m^3/s)

	HRP #	HRP # 1	HRP # 2	HRP # 3
Return Period (3hr Chicago)	*VO ID*	*10*	*20*	*30*
	A (ha)	*5.42*	*17.73*	*1.58*
	2-yr	0.544	2.620	0.278
	5-yr	0.556	2.677	0.284
	10-yr	0.686	3.304	0.346
	25-yr	0.903	4.099	0.444
	50-yr	1.038	4.684	0.506
	100-yr	1.179	5.295	0.583
	250-yr	1.414	6.657	0.687

4.1.3 Stoney Creek Watershed

Powell Drain is part of the Stoney Creek sub-watershed which discharges the north sub-watersheds and runs between Sunningdale Road East and Adelaide Street North. A VO5 modeling is provided to determine the hydrologic analysis of the drainage areas upstream of the culvert crossing at Adelaide Street North, as discussed in **Section 4.4.1**. Upstream drainage areas are delineated for the water crossing (Refer to **Figure B.1**). The watercourse transverses from northwest to southeast through sub-catchments of IDs 143 and 142 to Powell Drain Creek and it crosses both Sunningdale Road and Adelaide Street through the culverts.

The Uplands North Subdivision Functional SWM Servicing Report (AECOM, May 2011) assessed the SWM servicing strategy for the Uplands North Subdivision. The SWMFs at this subdivision are expected to provide adequate quantity and quality controls for agricultural and residential areas discharging to Powell Drain. A 900 mm CSP culvert and a 150 mm tile drainpipe downstream of these SWMFs crosses the Sunningdale Road and discharges the major storm flows to Powell Drain. **Table B.4** in **Appendix B** shows the storage – discharge curve for Uplands North Subdivision SWMFs and is used in the hydrologic modeling.

The Powell Drain discharges to the Powell Drain wetland. The outflow of which is controlled by an orifice-weir structure. This structure is installed immediately upstream of the culvert crossing at Adelaide Street North and provides a low flow

discharge to the downstream receivers and allows fish passage from Powell Drain and wetland along the creek. The stage – discharge curve for the orifice-weir structure is adopted form Functional Stormwater Management Report Ardshell Uplands Development (Development Engineering Limited, May 2002) and presented in **Table B.5** in **Appendix B**.

Two scenarios as uncontrolled and controlled conditions are considered in the VO5 hydrologic analysis by applying the current IDF curves. The uncontrolled condition does not include any storage volumes as a result of the SWMFs and the Powell Drain wetland. This condition is used for calibrating the subwatershed characteristics with the results in Stoney Creek Subwatershed Study (Paragon Engineering Limited, 1996). The uncontrolled peak flows for the subwatersheds are summarized in **Table 4-2.** The controlled condition includes the storage volumes in the model and routs the hydrograph generated by the subwatersheds. This condition presents a real situation for assessing the discharge at the culvert crossing. **Table 4-3** shows the discharge comparison between the VO5 controlled condition results and the previous study at Sunningdale Road culvert crossing. The comparison indicates that the VO5 modeling results agree well with the Uplands North Subdivision Functional SWM Servicing Report (AECOM, May 2011).

Table 4-4 presents the flow discharging from the orifice-weir structure at Adelaide Street North. The results indicate that the maximum runoff for the 100-year storm event does not exceed 3.5 m^3/s and the regulatory flow is less than 4.5 m^3/s. It should be noted that this analysis is performed with the assumption of no clogging for the orifice-weir structure. VO5 modeling output files are presented in **Appendix B.**

Table 4-2: Uncontrolled Upstream Catchment Peak Flows

Uncontrolled Upstream Peak Flows (m^3/s)		
Return Period	Catchment: ID 142, ID 143 (With Total Area of 182.25 ha)	
	Discharge Based on 1996 -IDF	Discharge Based on 2019 -IDF
2-yr	16.03	16.62
5-yr	23.40	17.00
10-yr	-	21.16
25-yr	35.82	26.72
50-yr	-	30.72
100-yr	45.31	34.90
Regulatory 250-yr	51.52	41.56

Table 4-3: Comparison of Controlled Upstream Catchment Peak Flows with Previous Study at Sunningdale Road

Flow from Previous Study* (m^3/s)		Flow from VO5 Model (m^3/s)
Return Period	**Uplands North Sub** (116 ha)	**ID 143** (127.59 ha)
	Discharge Based on 1996 -IDF	Discharge Based on 1996 -IDF
2-yr	0.16	0.18
5-yr	0.20	0.26
25-yr	0.32	0.35
100-yr	0.35	0.37
Regulatory 250-yr	0.38	0.39

***** Uplands North Subdivision Functional SWM Servicing Report (AECOM, May 2011)

Table 4-4: Controlled Peak Flows Discharging from Orifice-Weir Structure at Adelaide Street

Return Period	Controlled Flow Rate Based on 2019 -IDF (m^3/s)	Head Water Elevation* (m)
2-yr	0.62	250.81
5-yr	0.64	250.82
10-yr	0.78	250.88
25-yr	1.26	251.06
50-yr	1.70	251.21
100-yr	3.21	251.65
Regulatory 250-yr	4.06	251.96

*- Head Water Elevation are based on the HECRAS modelling results discussed in **Section 5**

4.2 PROPOSED CONDITIONS

4.2.1 Adelaide Street North Sub-Areas

Visual OTTHYMO Modelling Schematic-2 – Road Drainage - Proposed Condition in **Appendix B** shows the proposed condition scenario used for the hydrologic modeling for the Adelaide Street North sub-area. The existing subwatershed boundaries, water crossing and the proposed drainage patterns with delineated road drainage sub-areas for Adelaide Street North in the study area are presented as Drainage Area Map Proposed Condition in **Figure B.2** in **Appendix B.**

The peak flow rates generated from the proposed road catchments are determined at each HRP. **Table 4-5** summarizes the proposed peak flows at all HRPs for different storm events. The increase in the peak flows occurs for all storm events at the HRPs. This rise (max 19.7 %) is due to the increase in the imperviousness of the proposed road catchment areas. Detailed output results for this condition are furnished in **Appendix B**.

Table 4-5: Hydrologic Analysis - Proposed Condition Peak Flows at HRPs (m^3/s)

HRP #	HRP #1		HRP #2		HRP #3	
VO ID	*10*		*20*		*30*	
A (ha)	*5.42*		*17.73*		*1.58*	
Return Period (3hr-Chicago)	*Flow (m^3/s)*	Increase %	*Flow (m^3/s)*	Increase %	*Flow (m^3/s)*	Increase %
2-yr	0.583	7.2%	2.682	2.4%	0.317	14.0%
5-yr	0.595	7.0%	2.739	2.3%	0.323	13.7%
10-yr	0.731	6.6%	3.393	2.7%	0.414	19.7%
25-yr	0.955	5.8%	4.186	2.1%	0.505	13.7%
50-yr	1.095	5.5%	4.780	2.0%	0.574	13.4%
100-yr	1.242	5.3%	5.400	2.0%	0.645	10.6%
250-yr	1.493	5.6%	6.774	1.8%	0.756	10.0%

5 Hydraulic Analysis

5.1 METHODOLOGY

Since there is no existing hydraulic model available for the Powell Drain from the previous studies, Parsons developed a hydraulic model using HEC-RAS software based on the following information:

- Culvert crossing structure information obtained from Adelaide Street North Reconstruction As-Built Drawings;
- The available topographical surveying information; and
- The results of hydrologic analysis

5.2 HYDRAULIC ANALYSIS

5.2.1 Culvert Crossing at Adelaide Street North

The Powell Drain Culvert structure at Adelaide Street North consists of two segments. The first segment is an 1800 mm CSP pipe which starts at the culvert inlet, immediately downstream of the orifice-weir structure, with a length of 22.5 m. The second segment has the same length and is an arch 1830 mm x 1140 mm CSP. The two segments are connected to each other through a 3000 mm Maintenance Hole. The proposed road curb elevation at the culvert crossing is 252.2 m.

Hydraulic analysis has been performed to assess the capacity of the existing crossing culvert. Different flow rates up to 5.5 m^3/s are analysed to determine the variation of headwater elevation and the full capacity of the culvert. The results show that the culvert under Adelaide Street North can convey the flows up to 4.5 m^3/s without any road overtopping. In other words, the culvert does not obstruct the flow up to 4.5 m^3/s and the orifice-weir structure will be the hydraulic control structure for the Powell Drain Creek. **Figure 5-1** shows the variation of headwater level at different flow rates at the culvert crossing. As shown, in **Figure 5-1** and **Appendix C,** the freeboard for the 100-yr storm is approximately 0.5m and the headwater/rise is 0.77 which meets the MTO requirement.

As noted in the Environmental Impact Study (EIS), A barrier to fish passage was noted in the downstream reach in the form of a perched steel grade control structure approximately 40 m downstream of the culvert outlet, east of Adelaide Street North. Field investigations observed that that water flowing over the sheet pile wall fell approximately 1 m before hitting gabion baskets in the channel below. Future channel or culvert rehabilitation projects could improve fish habitat in this section of drain by replacing the gabion baskets with round stone to prevent potential entrapment of aquatic animals. Additional future improvement projects should consider removing the sheet pile grade control wall and designing the channel to gradually raise the streambed such that fish may pass (i.e., via rocky ramp).

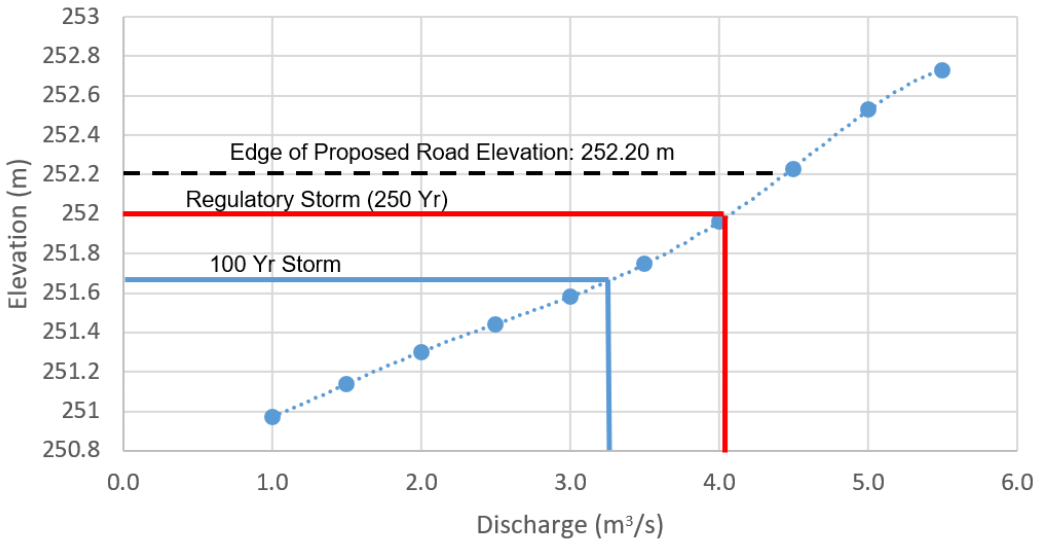


Figure 5-1: Variation of Headwater Level at Different Flow Rates

5.3 FLOODPLAIN MAPPING

Figure 5-2 shows the variation of available storage within the Powell Drain Wetland area at different contour levels. The storages used for 100-year and 250-year storm events are obtained from the hydrologic analysis results. The corresponding water levels at these storm events are considered to generate the floodplain mapping with the adjusted topography information. Again, it should be noted that the control hydraulic point for the Powell Drain Creek is the orifice- weir structure for the flows up to 250-year storm events.

The floodplain mapping is shown in **Figure C.1** in **Appendix C,** which includes the extent of the flood level at different storm events, contour lines and existing topographical information, the adjacent developed area and roads.

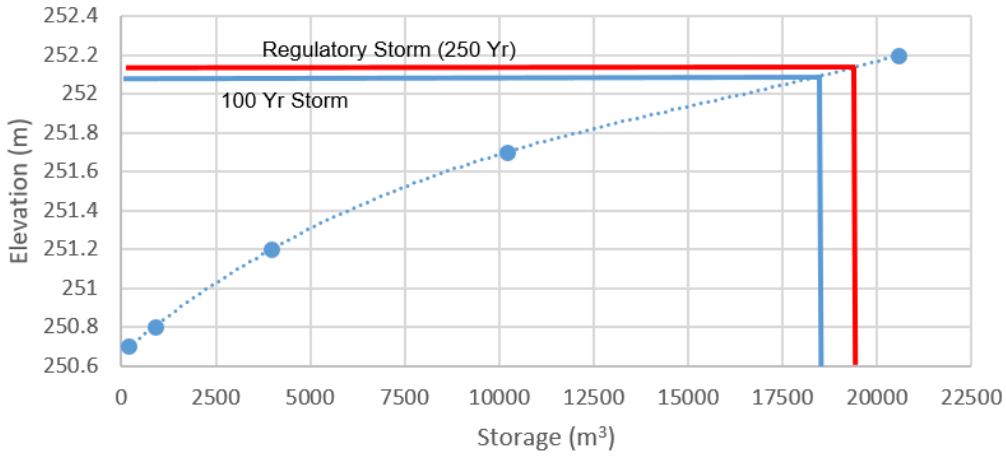


Figure 5-2: Variation of Storage Volume at Different Contour Elevations

5.4 STORM SEWER ANALYSIS

As part of this report, an evaluation of the existing minor storm flow collection system in the study area has been completed. This evaluation included an examination of existing as-built information (drainage area plans, design sheets and plan/profile drawings), SIMMS sheets and previous drainage reports (specifically, the Sunningdale Road Improvements ESR) to ascertain which drainage areas have already been examined and/or accounted for in the design of the existing system as well as to establish the criteria used in the original design.

This information was used to delineate proposed drainage areas for the entire study area (**Figure 1-1**) and establish design criteria appropriate for the recommended road improvement alternative. For the areas with existing storm sewers, the areas and criteria are compared to the original designs and an evaluation was completed for the capacity of the existing sewer outlets to accommodate the recommended road construction alternative using both the original and the current criteria. As part of the evaluation, the Time of Concentration (T_C) was calculated for each outlet. In areas where there is no existing storm sewer system, a proposed system to drain minor storm flows was conceptually designed. Detail information is presented in **Appendix D**.

5.4.1 Existing Condition

An examination of existing information shows that within the study area, Adelaide Street North is currently serviced by storm sewers from Sunningdale Road in the north to Fanshawe Park Road to the south. The lands adjacent to this portion of Adelaide Street North have either been fully developed or their development plans are in process with the proposed drainage plans. Currently, there are five (5) outlets available in the study area to service minor storm drainage which will be discharging to the three (3) HRPs, as discussed in **Section 4.1**:

Outlet 1 - An existing 1200mm diameter storm sewer that services Adelaide Street North from Philbrook Drive to Fanshawe Park Road (discharges to HRP3);

Outlet 2 - An existing 1050mm diameter storm sewer that services Adelaide Street North from Philbrook Drive to Powell Drain. This outlet drains directly to Powell Drain and services the Northbrook Subdivision on the west side of Adelaide Street North (discharges to HRP2);

Outlet 3 - An existing 525mm diameter storm sewer that services Adelaide Street North from Sunningdale Road East to Powell Drain. This sewer outlets directly to the culvert crossing Adelaide Street North for Powell Drain (discharges to HRP2);

Outlet 4 - An existing 1200mm diameter storm sewer that services different areas which discharge to SWM Pond 1N (discharges to HRP1) as:

- Sunningdale Road East from Blackwater Road to 150m east of Adelaide Street North;
- A part of Adelaide Street North from 580m north of Sunningdale Road East to Sunningdale Road intersection; and
- Future developments on both sides of Adelaide Street north of Sunningdale including the Applewood Estates Subdivision which discharges to future Stoney Creek 2 SWM pond. The Stoney Creek 2 SWMF drainage area map was not available during the study. This subdivision is located on the north east quadrant of the Sunningdale Road East and Adelaide Street North intersection. As noted in the Functional Stormwater Management Design Report of Stoney Creek SWMF No. 2 by MTE June 2017, the major and minor drainage system flow will be directed by roadside ditches towards the existing 900mm CSP culvert crossing Sunningdale Rd.

Outlet 5 - The existing roadside ditch on the south side of Sunningdale East and east of Adelaide Street North discharges the 2.05 ha drainage area on the northwest corner of the intersection of Sunningdale Road East and Adelaide Street North. Although the City's documentation shows that this area is included in the design of Outlet 4, the Sunningdale Road Improvements ESR and the drainage plan for Stoney Creek Subdivision on the southeast corner of the intersection indicate that this area was included in the design of SWM Pond 1W. Additionally, during the construction of the Stoney Creek Subdivision, this ditch was regraded and sized to accommodate this drainage area and direct flows to SWM Pond 1W (discharges to HRP1).

Currently, the existing storm sewers discharge to Outlets 1, 2 and 3, and roadside ditches convey the road drainage to Outlets 4 and 5. The transition from a rural drainage system to urban drainage at Outlets 4 and 5 will be discussed in **Section 5.4.2**.

Hydraulic capacity of the existing drainage system at outlets 1, 2 and 3 have been assessed as follows:

- **Outlet 1:** Existing documentation for the sewers on Adelaide Street North that are connected to this outlet is limited to some plan/profile drawings and a drainage area plan and design sheet for the sewers on Fanshawe Park Road. Since the flows on Fanshawe Park Road govern the design of the existing 1200mm sewer outlet, it was not possible to obtain the original T_c used to design the sewers on Adelaide Street North. Thus, this evaluation was limited to the original runoff coefficient (C=0.85) and the proposed criteria.
  Using the current criteria, the flow is 9% over the existing sewers full capacity. If the original runoff coefficient is used, this reduces the flow to approximately 3% over the capacity of the existing sewers. This indicates that the existing storm sewers on this portion of Adelaide Street North may need to be replaced with larger pipes. However, considering that the City based criteria for establishing the runoff coefficient is relatively conservative, preliminary calculations indicate that a runoff coefficient of 0.83 and lower for the lands associated with the existing sewers system would result enough discharge to be conveyed through the storm pipes. It is recommended to calculate a composite runoff coefficient during detailed design stage to better assess the existing sewer system capacity at this portion.

- **Outlet 2:** The City has provided the existing drainage plans and design sheets for all the existing storm sewers on this portion of Adelaide Street North. The existing information shows that an initial T_C of 13.50 minutes and a runoff coefficient of 0.85 was used to design the storm sewer system, which do not meet the current City standards. By applying the recommended criteria, the existing sewers still have adequate capacity to accommodate the design storm. It should be noted that the storm drainage for the Northbrook Subdivision is the governing flow and outlets to these sewers approximately halfway to the outlet at Powell Drain.
- **Outlet 3:** Based on the existing drainage plans and design sheets for all the existing storm sewers discharging to Outlet 3, an initial T_C of 13.50 minutes and an overall runoff coefficient of 0.8 were considered in the original design, which do not comply with the current City standards. Based on the original T_C and the proposed C value, the generated discharge from the catchments is 8% over the full sewer capacity. By applying the design criteria, the generated discharge will be 20% over the existing sewers capacity. Preliminary calculations indicate that a composite runoff coefficient of 0.76 or lower for the lands associated with the existing sewers would result adequate flow for the sewer system to avoid surcharging in this area. It is recommended to calculate a composite runoff coefficient during detailed design stage to assess the existing sewers capacity more accurately at this portion.

5.4.2 Proposed Condition

The road drainage discharging to Outlets 4 and 5 is currently a rural cross section and the minor and major drainage discharges to the roadside ditches. The Sunningdale Road Improvements ESR recommends converting Sunningdale Road to an urban cross section with curb and gutter, while the recommended design alternative for Adelaide Street North is to maintain the existing rural cross section north of Sunningdale. Since future developments are being proposed in this area, it is anticipated that the existing rural drainage pattern will change to urban cross section with a need of new storm sewer construction. A conceptual storm sewer design plan has been completed and shown in **Appendix D**.

Outlet 4

The Sunningdale Road Improvements ESR, the drainage area plans and design sheets of the sewers upstream of SWM Pond 1N and the Stoney Creek Subdivision study all have examined future drainage and provided design information for the ultimate storm sewer drainage in this portion of the study area. These studies indicate that all future development areas except the northwest corner area of the intersection of Sunningdale Road and Adelaide Street North would discharge to SWM Pond 1N, through a storm sewer trunk system. As part of the construction of SWM Pond 1N, the storm sewer trunk was constructed extending to the west past the entrance to the Stoney Creek YMCA/Stoney Creek Library facility and ending with a capped 1200mm diameter stub. The excluded area will be discharging to Outlet 5.

As part of the SWM pond design, a preliminary storm sewer design for future work that can provide drainage to the developments north of Sunningdale Road was completed by Development Engineering (London) Ltd. in 2009. A design review indicates that enough service area is provided on the north side of Sunningdale Road East to install the storm sewer pipe; however, no Sunningdale Road drainage consideration is noticed in the design drawings. The rationale for locating the sewer in an easement rather than under the road could be due to the constructability issue of storm sewer system crossing the existing 1200mm concrete trunk watermain on Sunningdale Road.

The recommended solution is to construct a local sewer to provide drainage only for Sunningdale Road and connect at the existing 1200mm stub. This would allow a smaller storm sewer to be constructed under Sunningdale Road. This plan would

also permit the Sunningdale Road sewer construction be separate from the development sewer system without any construction schedule interference until they connect at the existing stub.

Outlet 5

As shown in **Appendix D**, Areas Ex 1 and Ex 2 are located on the northwest corner of Adelaide Street North and Sunningdale Road. Currently, drainage is provided for these areas via a culvert crossing through the intersection to a roadside ditch on the southeast corner. As part of the development of the Stoney Creek Subdivision, this ditch was reconstructed such that it would continue to provide drainage for Area Ex 1 to SWM Pond 1W but drainage from Area Ex 2 were to be redirected to Outlet 4 or SWM Pond 1N. If the drainage discharges the flow to the southeast part, it requires the City to maintain the existing culvert diagonally across the intersection and cross the existing 1200mm and 600mm watermains at this intersection. Also, the City needs to maintain an open drainage ditch through an easement along Sunningdale Road East.

It is recommended to explore more in the detail design stage to redirect the drainage to SWM Pond 1N and overcome the above-mentioned issues.

6 Stormwater Management

6.1 STORMWATER MANAGEMENT CRITERIA

The study area falls under the jurisdiction of the Upper Thames River Conservation Authority (UTRCA) and so, the criteria outlined by UTRCA guidelines are considered to provide the stormwater management strategy. **Table 6-1** summarizes the criteria for both quantity and quality control based on the UTRCA manual.

Table 6-1: Stormwater Management Criteria

Quantity Control	Quantity control typically ensures that post-development flow rates approximate pre-development rates for all return period increments from the 2-year to the 250-year. Any modifications to pre-development hydrology must be justified on the basis that they enhance the pre-development condition and must consider factors such as flood severity, flood timing and in-stream erosion potential of the receiving *watercourse*.
Quality Control	Enhanced protection corresponds to the end-of-pipe storage volumes required for the long-term average removal of 80% of suspended solids (80% TSS removal) (Stormwater Management Planning and Design Manual, MOECC, 2003)

6.2 PROPOSED STORMWATER MANAGEMENT STRATEGY

As part of the background study, the geotechnical study report prepared by Golder Associates Ltd. (Feb.,2019) was reviewed and the key points regarding the soil characteristics and ground water level are outlined as follows:

- Generally, the first 5 meters in depth is silt, sand and sand-gravel materials which is the indication of a high permeable layer. Cohesive materials with low-permeability characteristics are reported at 2 m below the existing ground elevation at Phillbrook Drive/Grenfell Drive.
- The groundwater level is reported to vary between 1.3 m and 3.4 m below the ground surface along the project limit.

The findings indicate that generally the Project area has adequate geotechnical potential to build shallow SWMFs for quantity control, except at the Phillbrook Drive/Grenfell Drive and Adelaide Street North intersection. The findings are considered in the study of proposed quantity control alternatives.

6.2.1 Quantity Control

As discussed in **Section 4.1**, the three HRPs considered in the analysis show a subtle flow increase for the less frequent storm event (10-yr storm) with a maximum 19.7% compared to existing release rate for HRP #3. However, for infrequent events (e.g. 100-Year), less increase release rates can be observed for the proposed condition. The following discusses different options to match the pre-and post-development flow rates, which will be explored more in the detail design stage:

- Storage pipes and orifice control in the proposed storm sewer trunk system can attenuate the post-development flow rates to the pre-development values. This option is a popular and common practice in storm sewer systems. It can be constructed as part of a sewer trunk system. This option can be explored more in detailed design stage to determine the storage and orifice sizes.
- "Silva Cell" system is an effective Low Impact Development (LID) measure that can be utilized at different locations upstream of HRP outlets to reduce the post-development flow rates. The "Silva Cell" is a modular suspended pavement system that uses soil volumes to support large tree growth and provide powerful on-site stormwater management through absorption, evapotranspiration, and interception. The advantage of the system is that it doesn't require costly maintenance, however the system structure and construction are costly.
- Bio-Swales and Bio-Retentions are other popular, cost-effective and industry accepted LID measures that could be used to provide water quantity/quality measures. The proposed road cross sections show the road drainage is contained curb to curb and the only space available to construct Bio-Swale is in the boulevards on the sides of the sidewalks. To convey the runoff to the Bio-Swale several lead pipes can be extended from the catch-basins to discharge the flow to the Bio-Swales or the drainage flow can directly discharge from the storm sewers to the Bio-Swales. This option looks to be a feasible quantity control measure for this study as shown in **Appendix E**. The storm sewer profile and road profile indicate that there is a tight elevation difference between the storm sewer outlet and the Bio-Retention/Bio-Swale inlet. At the detailed design stage, it should be confirmed if sufficient boulevard space, elevation difference, ideal soil condition and utility locations would allow installation of this type of LID systems to store, treat and release roadway drainage.
- Perforated pipe system is another option to be considered as water quantity/ quality measures to alleviate roadway drainage. The perforated pipe would run parallel to the storm sewer system, outside of the roadway limit, under the sidewalk and ultimately discharging to the existing municipal system. Soil type, high ground water levels, utility

conflict, winter maintenance and salt particles could be the main prohibiting items in selecting this option. There is also the potential risk of clogging the perforations along the pipe that will cause backwater in the sewer system and may cause serious damage to the sewer network.

6.2.2 Quality control

Quality control is also provided throughout the study limit in the form of Oil Grit Separator (OGS). Stormceptor units are proposed at four locations upstream of the outlets to HRPs throughout the study limit.

Modeling for quality control units was undertaken using PCSWMM from the Imbrium website. Modeling output files as well as typical design details including drawings and specifications for all units are included in **Appendix E**. **Table 6-2** summarizes the quality control units required for the Project based on drainage area characteristics at each outlet. Modeling results show that the 80% TSS removal can be achieved by specific types of unit. It should be noted that Outlet 5 discharges the external drainage area to SWM Pond 1W through the ditch and culvert system as similar as existing conditions. Since the proposed works will not impact the drainage pattern no quality control measures are required for Outlet 5 discharging to HRP #1.

Table 6-2: Summary of Quality Control Units

Outlet @ HRP	Drainage Area (ha)	Average Impervious Proposed %	Type Required	%TSS Removal Achieved
Outlet 1 @ HRP #3	1.57	65	OSR 300	86
Outlet 2 @ HRP #2	1.17	64	OSR 300	89
Outlet 3 @ HRP #2	2.65	60	OSR 300	81
Outlet 4 @ HRP #1	3.90	50	OSR 750	88

7 Erosion and Sediment Control During Construction

The erosion and sediment control (ESC) practices to be developed during detailed design should follow the Ontario Provincial Standards Specifications (OPSS) for Roads and Public Works and the Erosion and Sediment Control Guidelines for Urban Construction (Greater Golden Horseshoe Area Conservation Authorities, Dec 2006).

Impacts on the surrounding environment related to roadway projects can be mitigated by proper erosion and sediment control measures. To minimize potential erosion and sedimentation during construction activities, the following practice need to be considered to mitigate erosion:

- Minimize disturbed areas;
- Limit soil exposure, i.e., implement construction phasing to limit the duration of soil exposure;
- Preserve existing vegetation where and as much possible;

- Stabilize exposed soil as soon as possible with vegetation, where possible, to reduce the amount of sediment that could be conveyed further downstream to existing watercourses;
- Limit slope grades and lengths;
- Encourage sheet flow to avoid concentrated flow paths;
- Reduce water velocities across the ground; and
- Use and maintain Best Management Practices (BMP) during construction until disturbed areas have stabilized.

8 Conclusions and Considerations

The drainage and stormwater management requirements as part of the environmental assessment for the improvement of Adelaide Street North from Fanshawe Park Road East to Sunningdale Road East in the City of London has been completed. The EA for the widening of Adelaide Street North from two-lanes to four-lanes also includes the assessment of the hydraulic capacity of the culvert crossing at Adelaide Street North. The impacts of the proposed works on the road drainage, water-crossing floodplain and the stormwater management strategy have been evaluated in this report.

The key results of the drainage and stormwater management study are as follows:

- The existing storm sewer drainage system along the Adelaide Street North corridor has adequate capacity to convey the proposed runoff due to the proposed works in most of the study area. New CBs and MHs shall be installed at some locations and the existing ones will need to be removed. To ensure that there is no need to upsize the storm sewers at the locations with less capacity, further exploration needs to be considered in the detailed design stage.
- The existing orifice-weir structure located immediately upstream of the Powell Drain Culvert controls the flow in the Powell Drain Creek. The site visits on June 27th, and October 16th, 2018 indicated that the structure is clogged with debris and vegetation. Clogging in the orifice-weir structure will reduce the discharge capacity of the Powell Drain Creek and will increase the water level elevation in the Powell Drain Wetland. This will increase the risk of road overtopping particularly at low-frequent storm events.
- Three options can be considered to improve the hydraulic performance of the orifice-weir structure as follows:
    - Provide a regular maintenance and cleanout of the orifice-weir structure from vegetation and debris to reduce the risk of clogging and any potential flooding. It is recommended to consider this option as the cost effective, feasible solution to alleviate the flooding due to the low hydraulic performance of the orifice-weir structure. An Operation and Maintenance Manual for the routine maintenance of this structure which will improve the fish migration from downstream to the Powell Drain wetland should be provided in the detail design stage.
    - Relocate the orifice-weir structure from the existing location to a new location approximately 2 m upstream of the culvert entrance. This relocation will decrease the flooding and road overtopping risk in case of clogging occurrence. The gap between the relocated orifice-weir structure and the culvert entrance will provide adequate space for the flow to overtop the structure and convey through the culvert without any adverse impact on the adjacent properties. A geotechnical study will be required in the detailed design stage to assess the creek condition at upstream of the Powell Drain Culvert if the orifice-weir structure relocation is selected.
    - The proposed wildlife culvert on the north side of the culvert crossing at Adelaide Street North can help mitigate the potential flooding at low-frequent storm events if needed. This wildlife culvert is proposed to enhance the animal passage across Adelaide Street North along the Powell Drain. The culvert's inlet is at higher elevation than the orifice-weir structure and can help mitigate the potential flooding at low-frequent storm events if needed.

- The results from HEC-RAS analysis indicate that the existing culvert crossing at Adelaide Street North has enough capacity to convey the controlled flow for different storm events. The existing culvert can convey the controlled flow at less frequent storms including 50-yr 100-yr and Regulatory (250-yr) storm events without any road overtopping.
- The proposed uncontrolled runoff from the storm sewer system at HRPs is larger than the existing condition. Different options are discussed in **Section 6.2.1** to mitigate the increased peak flows and provide quantity control prior discharging to HRPs. In addition to storage pipes and Orifice control option, bio-swale option is recommended as a popular, cost-effective and industry accepted practice to provide water quantity measures at the outlets. The preliminary locations and dimensions for bio-swale are presented in **Appendix E**. Further exploration will be required in detailed design stage to finalize the dimensions and locations of the quantity control measures.
- Four (4) Oil Grit Separator (OGS) units are recommended to be placed upstream of the outlets throughout the study limit to provide enhanced quality control. Stormceptor unit type OSR 300 is sized for the storm sewer system discharging to Outlet 1, Outlet 2 and Outlet 3 and type OSR 750 is sized for Outlet 4. No quality control measures are required for Outlet 5, as it just discharges the external drainage area.

Prepared by:	Reviewed by:
Mehdi Heidari, Ph.D., P.Eng.	Shahram Karimi, Ph.D., P.Eng.
Drainage Engineer	Engineering Manager -Water Resources

References

The following documents were used in preparation for this report:

1. Functional Stormwater Management Report, Ardshell Uplands Development Phase 1 (Development Engineering, May 2002).
2. Uplands North Subdivision Functional SWM Servicing Report (AECOM, May 2011).
3. Stoney Creek Subwatershed Study (Paragon Engineering Limited, 1996).
4. Powell Drain Remediation Design (Delcan, 2014)
5. Preliminary Geotechnical Assessment prepared by Golder Associates Ltd. (Feb.,2019)
6. Design Specifications and Requirements Manual by the City of London
7. MTO Highway Drainage Design Standards (Jan 2008)
8. Environmental Planning Policy Manual for the Upper Thames River Conservation Authority UTRCA (June 2006)

APPENDIX A

Background Study

APPENDIX A: Background Study

Site Visit Photos

- June 27th 2018
- October 16th 2018

Site Visit on June 27th 2018

Site Visit Dated June 27th 2018

Powell Drain Culvert Headwall

Powell Drain Culvert Orifice – Weir Structure

Powell Drain Culvert Orifice – Weir Structure

Powell Drain Wetland Area

Powell Drain Creek

Powell Drain Culvert Outlet

Site Visit on October 16th 2018

Site Visit Dated October 16th 2018

Powell Drain Culvert Orifice – Weir Structure

Powell Drain Culvert Outlet

Powell Drain Wetland Area

APPENDIX B

Hydrologic Analysis

APPENDIX B: Hydrologic Analysis

Figure B.1: Existing Drainage Area Map

Figure B.2: Proposed Drainage Area Map

Table B.1: Original VO Input Parameters - Stoney Creek Subwatershed Study 1996

Table B.2: Parsons Modified VO Input Parameters - NasHyd to StandHyd

Table B.3a: IDF Parameters for 3-hr AES Chicago Storm - Stoney Creek Subwatershed Study 1996

Table B.3b: IDF Parameters for AES Storm - Design Specifications & Requirements Manual 2019 (City of London)

Table B.4: Outlet Stage – Discharge Relationship for Sunningdale Road Crossing

Table B.5: Outlet Stage – Discharge Relationship for Adelaide Street Crossing

Visual OTTHYMO Modelling Schematic-1 - Existing Condition

VO Output File – Road Drainage - Existing Condition

Visual OTTHYMO Modelling Schematic-2 - Proposed Condition

VO Output File – Road Drainage - Proposed Condition

Visual OTTHYMO Modelling Schematic-3 - Upstream Drainage

VO Output File – Upstream Drainage of Adelaide Water Crossing

A-2
1.05 | 41%

A-3
1.06 | 52%

153
90.22 ha | 69

1N

Nothdale Tributary

EXT-1
2.05 | 50%

HRP-1

A-1
1.04 | 48%

SUNNINGDALE ROAD EAST

152
90.54 ha | 70

A-4
0.22 | 63%

LEGEND

19
525.8 ha | 65
SUBWATERSHED ID
CN NUMBER
SUBWATERSHED AREA (ha)

191
2.31 | 72%
ROADWAY DRAINAGE AREA ID
% OF IMPERVIOUSNESS
ROADWAY DRAINAGE AREA (ha)

EXISTING CULVERTS
EXISTING CREEK
OVERLAND FLOW DIRECTION
ROADWAY DRAINAGE AREA BOUNDARY
SUBWATERSHED BOUNDARY
STUDY AREA - SUBWATERSHED BOUNDARY

BLACKWATER ROAD

A-5
2.30 | 69%

HRP-2

Powell Drain

A-6
1.17 | 47%

151
19.25 ha | 68

EXT-2
14.26 | 50%

142.1
15.34 ha | 71

PHILLBROOK DRIVE

HRP-3

106
9.94 ha | 71

A-7
1.58 | 56%

FANSHAWE PARK ROAD EAST

NOTE: ROADWAY DRAINAGE AREA BOUNDARY FOLLOWS THE ROAD RIGHT OF WAY

SCALE 1: 2500

105
51.34 ha | 71

No.	DATE	REVISIONS	BY
1	May 2019		
2			

London CANADA

PARSONS
625 COCHRANE DR., SUITE 500, MARKHAM, ONT. L3R 9R9
TEL: 905-943-0500 FAX: 905-943-0400

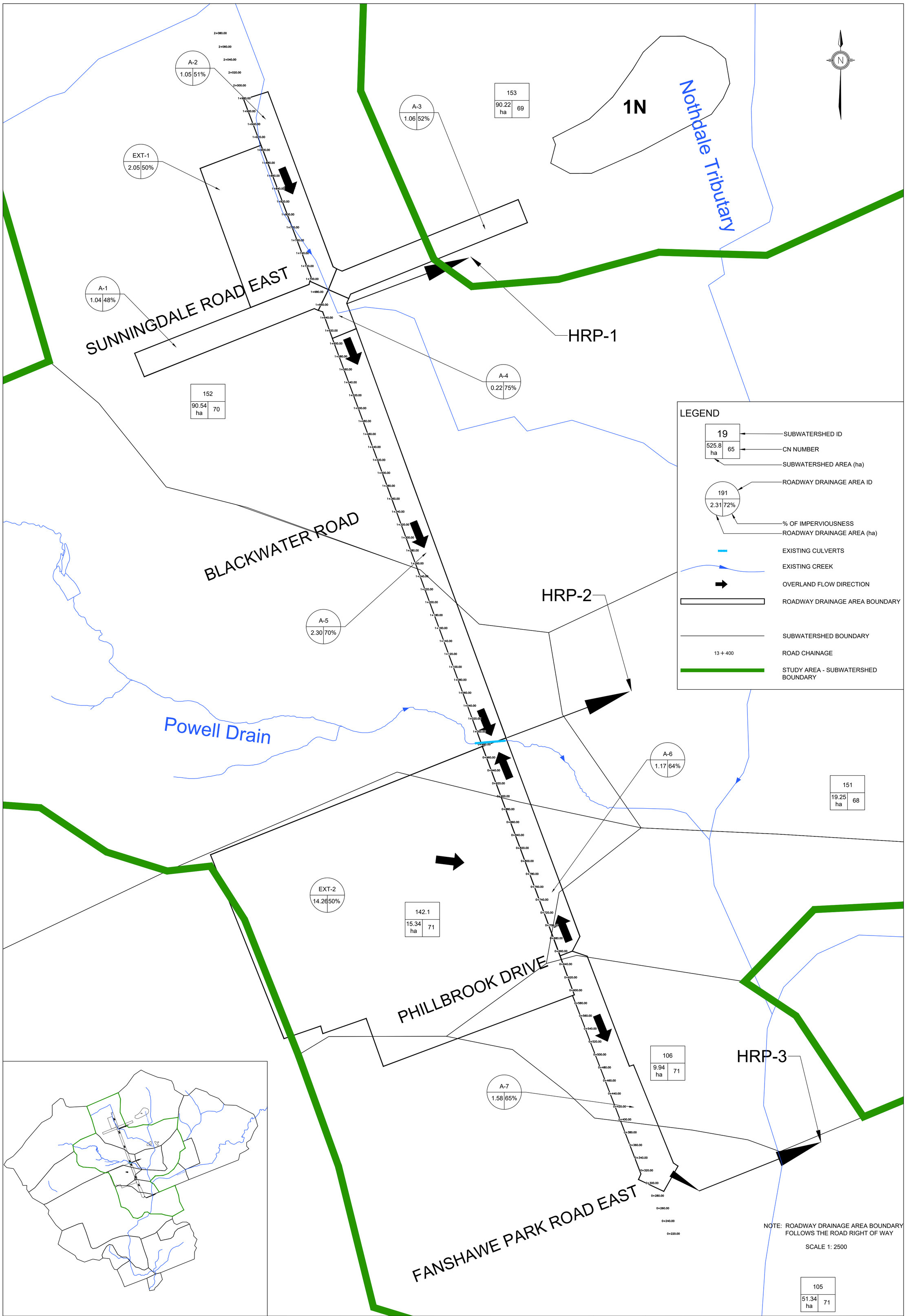
DESIGN M.H.
DRAWN M.H.
CHECKED

ADLAIDE STREET IMPROVEMENTS
FROM SUNNINGDALE Rd TO FANSHAWE PARK Rd

DRAINAGE AREA MAP EXISTING CONDITION

(HYDROLOGIC ANALYSIS)

DWG. NAME EX DA
CONT. NO. _
SHEET NO. Figure B.1



No.	DATE	REVISIONS	BY
1	May 2019		
2			

London CANADA

PARSONS
625 COCHRANE DR., SUITE 500, MARKHAM, ONT. L3R 9R9
TEL: 905-943-0500 FAX: 905-943-0400

DESIGN M.H.
DRAWN M.H.
CHECKED

ADLAIDE STREET IMPROVEMENTS
FROM SUNNINGDALE Rd TO FANSHAWE PARK Rd

DRAINAGE AREA MAP PROPOSED CONDITION

(HYDROLOGIC ANALYSIS)

DWG. NAME PROP DA
CONT. NO. _
SHEET NO. Figure B.2

Table B.1: Original VO Input Parameters - Stoney Creek Subwatershed Study 1996

Watershed	Catchment ID	Tributary Name	VO ID	Type	Area (hectares)	CN	IA	Impervious Area Flow Length(m)	TIMP	XIMP	Impervious Area Slope(%)	Impervious Area Mannings	IA(mm)	Pervious Area Slope(%)	Pervious Area Flow Length(m)	Pervious Area Mannings
Stoney Creek	142	Powell Drain	142	Rural Component	54.150	76	16.04									
Stoney Creek	142.1		1421	Urban Component	15.000	71	10.37	258.20	0.3	0.29	1	0.015	2	3.00	40.00	0.20
Stoney Creek	143	Powell Drain	143	Rural Component	119.240	77	15.17									
Stoney Creek	151	Nothdale Tributary	151	Rural Component	18.200	68	11.95									
Stoney Creek	152	Nothdale Tributary	152	Rural Component	90.600	70	21.77									
Stoney Creek	153	Nothdale Tributary	153	Rural Component	91.470	69	22.82									
Total Area	442.810															

Table B.2: Modified VO Input Parameters - NasHyd to StandHyd

Watershed	Catchment ID	Tributary Name	VO ID	Type	Area (hectares)	CN	IA per(mmm)	Impervious Area Flow Length(m)	TIMP	XIMP	Impervious Area Slope(%)	Impervious Area Mannings	IA imp(mm)	Pervious Area Slope(%)	Pervious Area Flow Length(m)	Pervious Area Mannings
Stoney Creek	143	Powell Drain	143	StandHyd	127.59	69	5	922.28*	0.61	0.49	1*	0.013*	2	2.00*	40.00*	0.25*
Stoney Creek	142	Powell Drain	142	StandHyd	54.150	76	5	600.83*	0.67	0.64	1*	0.013*	2	2.00*	40.00*	0.25*

S: 80.2105

* default number from VO, since no available parammeters.

Table B.3a: IDF Parameters for 3-hr AES Chicago Storm - Stoney Creek Subwatershed Study 1996

Design Storm Input Data					
Return Period(years)	Rainfall Parameters			3-hr Rainfall Amount(mm)	24-hr Rainfall-Snowmet
	a	b	c		
2	724.7	5.000	0.800	33.3	30
5	1330.3	7.938	0.855	45.4	40
25	1496.3	5.250	0.825	60.4	55
100	1499.5	3.298	0.794	71.6	67
250(Regulatory Storm)	1498.1	2.188	0.778	78.5	XX

Table B.3b: IDF Parameters for AES Storm - Design Specifications & Requirements Manual 2019 (City of London)

Parameter	25mm*	2yr**	5yr	10yr	25yr	50yr	100yr	250yr
A	538.85	1290.00	1183.74	1574.382	2019.372	2270.665	2619.363	3048.22
B	6.331	8.500	7.641	9.025	9.824	9.984	10.5	10.03
C	0.809	0.860	0.838	0.860	0.875	0.876	0.884	0.888

Table B.4: post-development flow rates and the post-development water ponding elevation by wetland and existing Sunningdale Road Crossing (AECOM, 2011)

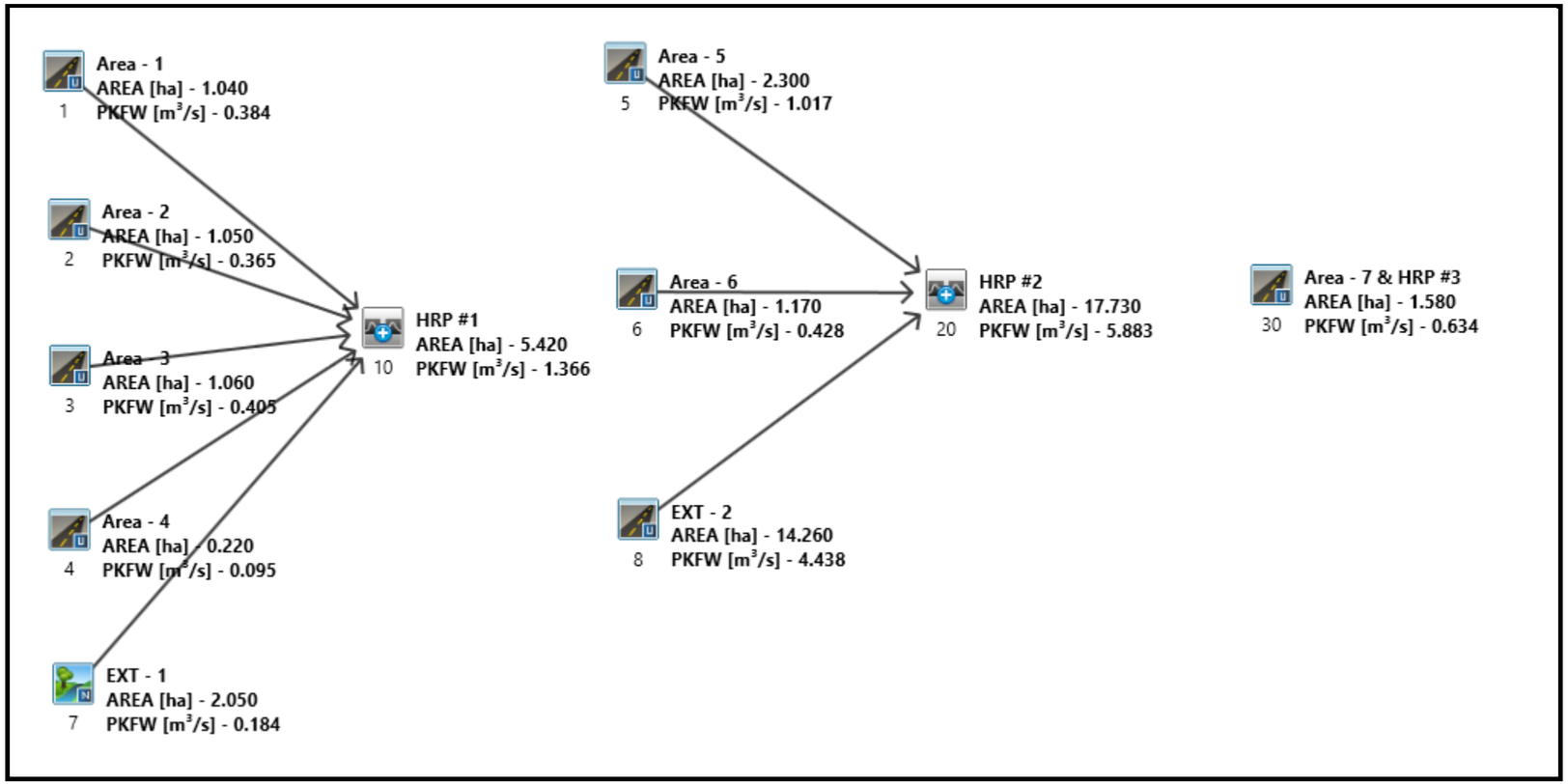
Storm Event (year)	Pre-Development Target Peak Outflow (m^3/s)	Post-Development Peak Inflow (m^3/s)	Post-Development Peak Outflow (m^3/s)	Post-Development Storage (m^3)	Post-Development Elevation (m)
2	0.18	5.9	0.16	17 840	271.2
5	0.24	8.9	0.20	27 010	271.4
10	0.29	11.1	0.26	32 740	271.6
25	0.34	13.5	0.32	38 870	271.7
50	0.40	18.1	0.34	43 720	271.8
100	0.47	20.6	0.35	48 710	271.9
250	0.67	21.8	0.38	62 160	272.2

* *Based on 3-hour Chicago Storm and SWMHYMO model: UpNPre3.dat and UpNPost8.dat*

Table B.5: Stage-storage for quantity storage Powell Drain Wetland Area (Development Engineering, 2002)

Storm Event	Peak Inflow (cms)	Peak Outflow (cms)	Max. Storage (m^3)	Stage (Elev. in metres)
2-Year	2.22	0.85	14450	252.47
5-Year	3.66	1.83	17990	252.67
10-Year	5.69	2.01	18050	252.67
25-Year	8.30	2.02	18070	252.67
50-Year	10.76	2.39	18110	252.67
100-Year	12.71	2.97	18200	252.67

Visual OTTHYMO Modelling Schematic-1 – Road Drainage Existing Condition



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         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 M  O   O
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DATE: 11/12/2019                          TIME: 11:30:10

USER:


COMMENTS: _____________________________________________________

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  ************************************************


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|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\c4dc5ad3
| Ptotal= 34.03 mm |    Comments: 2yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   61.25 |  0.75   32.67 |  1.08    4.08
                0.17    4.08 |  0.50  114.34 |  0.83   20.42 |
                0.25   12.25 |  0.58   61.25 |  0.92   12.25 |
                0.33   32.67 |  0.67   49.00 |  1.00    4.08 |

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

--------------------
| CALIB            |
| STANDHYD (  0030)|   Area    (ha)=   1.58
|ID= 1 DT= 5.0 min |   Total Imp(%)=  56.00   Dir. Conn.(%)=  56.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.88         0.70
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     102.63        40.00
     Mannings n           =      0.013        0.250

                                    Page 1
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     Max.Eff.Inten.(mm/hr)=     114.34        48.33
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       2.46 (ii)   11.90 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.30         0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.26         0.06      0.278 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.75       0.50
     RUNOFF VOLUME    (mm)=      33.03        17.03      25.98
     TOTAL RAINFALL   (mm)=      34.03        34.03      34.03
     RUNOFF COEFFICIENT   =       0.97         0.50       0.76

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
             THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\c4dc5ad3
| Ptotal= 34.03 mm |    Comments: 2yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   61.25 |  0.75   32.67 |  1.08    4.08
                0.17    4.08 |  0.50  114.34 |  0.83   20.42 |
                0.25   12.25 |  0.58   61.25 |  0.92   12.25 |
                0.33   32.67 |  0.67   49.00 |  1.00    4.08 |

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--------------------
| CALIB            |
| NASHYD   (  0007)|   Area    (ha)=   2.05   Curve Number    (CN)= 70.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=   0.391

     PEAK FLOW       (cms)=   0.062 (i)
     TIME TO PEAK    (hrs)=   0.833
     RUNOFF VOLUME    (mm)=   6.100
     TOTAL RAINFALL   (mm)=  34.030
     RUNOFF COEFFICIENT   =   0.179

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

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|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\c4dc5ad3
| Ptotal= 34.03 mm |    Comments: 2yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   61.25 |  0.75   32.67 |  1.08    4.08
                0.17    4.08 |  0.50  114.34 |  0.83   20.42 |
                0.25   12.25 |  0.58   61.25 |  0.92   12.25 |
                0.33   32.67 |  0.67   49.00 |  1.00    4.08 |

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--------------------
| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   1.04
|ID= 1 DT= 5.0 min |   Total Imp(%)=  48.00   Dir. Conn.(%)=  48.00
                                    Page 2
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--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.50         0.54
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      83.27        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     114.34        48.33
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       2.17 (ii)   11.61 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.31         0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.15         0.04      0.163 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.75       0.50
     RUNOFF VOLUME    (mm)=      33.03        17.03      24.70
     TOTAL RAINFALL   (mm)=      34.03        34.03      34.03
     RUNOFF COEFFICIENT   =       0.97         0.50       0.73

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
             THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\c4dc5ad3
| Ptotal= 34.03 mm |    Comments: 2yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   61.25 |  0.75   32.67 |  1.08    4.08
                0.17    4.08 |  0.50  114.34 |  0.83   20.42 |
                0.25   12.25 |  0.58   61.25 |  0.92   12.25 |
                0.33   32.67 |  0.67   49.00 |  1.00    4.08 |

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--------------------
| CALIB            |
| STANDHYD (  0002)|   Area    (ha)=   1.05
|ID= 1 DT= 5.0 min |   Total Imp(%)=  41.00   Dir. Conn.(%)=  41.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.43         0.62
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      83.67        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     114.34        48.33
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       2.18 (ii)   11.62 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.31         0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.13         0.05      0.144 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.75       0.50
     RUNOFF VOLUME    (mm)=      33.03        17.03      23.58
     TOTAL RAINFALL   (mm)=      34.03        34.03      34.03
     RUNOFF COEFFICIENT   =       0.97         0.50       0.69

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
                                    Page 3
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             THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\c4dc5ad3
| Ptotal= 34.03 mm |    Comments: 2yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   61.25 |  0.75   32.67 |  1.08    4.08
                0.17    4.08 |  0.50  114.34 |  0.83   20.42 |
                0.25   12.25 |  0.58   61.25 |  0.92   12.25 |
                0.33   32.67 |  0.67   49.00 |  1.00    4.08 |

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--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   1.06
|ID= 1 DT= 5.0 min |   Total Imp(%)=  52.00   Dir. Conn.(%)=  52.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55         0.51
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      84.06        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     114.34        48.33
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       2.18 (ii)   11.62 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.31         0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.17         0.04      0.178 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.75       0.50
     RUNOFF VOLUME    (mm)=      33.03        17.03      25.34
     TOTAL RAINFALL   (mm)=      34.03        34.03      34.03
     RUNOFF COEFFICIENT   =       0.97         0.50       0.74

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
             THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\c4dc5ad3
| Ptotal= 34.03 mm |    Comments: 2yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   61.25 |  0.75   32.67 |  1.08    4.08
                0.17    4.08 |  0.50  114.34 |  0.83   20.42 |
                0.25   12.25 |  0.58   61.25 |  0.92   12.25 |
                0.33   32.67 |  0.67   49.00 |  1.00    4.08 |

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--------------------
| CALIB            |
| STANDHYD (  0004)|   Area    (ha)=   0.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  63.00   Dir. Conn.(%)=  63.00
--------------------

                                    Page 4
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		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.14	0.08
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	38.30	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		114.34	48.33
over (min)		5.00	15.00
Storage Coeff. (min)=		1.36 (ii)	10.80 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.33	0.09

		TOTALS
PEAK FLOW	(cms)=	0.04	0.01	0.045 (iii)
TIME TO PEAK	(hrs)=	0.50	0.75	0.50
RUNOFF VOLUME	(mm)=	33.03	17.03	27.07
TOTAL RAINFALL	(mm)=	34.03	34.03	34.03
RUNOFF COEFFICIENT	=	0.97	0.50	0.80

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0010)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0001):	1.04	0.163	0.50	24.70
	+ ID2= 2 (0002):	1.05	0.144	0.50	23.58
	ID = 3 (0010):	2.09	0.307	0.50	24.14

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
	ID1= 3 (0010):	2.09	0.307	0.50	24.14
	+ ID2= 2 (0003):	1.06	0.178	0.50	25.34
	ID = 1 (0010):	3.15	0.485	0.50	24.54

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0010):	3.15	0.485	0.50	24.54
	+ ID2= 2 (0004):	0.22	0.045	0.50	27.07
	ID = 3 (0010):	3.37	0.530	0.50	24.71

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
	ID1= 3 (0010):	3.37	0.530	0.50	24.71
	+ ID2= 2 (0007):	2.05	0.062	0.83	6.10
	ID = 1 (0010):	5.42	0.544	0.50	17.67

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\c4dc5ad3
Ptotal= 34.03 mm	Comments: 2yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	61.25	0.75	32.67	1.08	4.08
0.17	4.08	0.50	114.34	0.83	20.42		
0.25	12.25	0.58	61.25	0.92	12.25		
0.33	32.67	0.67	49.00	1.00	4.08		

CALIB	
STANDHYD (0005)	Area (ha)= 2.30
ID= 1 DT= 5.0 min	Total Imp(%)= 69.00 Dir. Conn.(%)= 69.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.59	0.71
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	123.83	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		114.34	48.33
over (min)		5.00	10.00
Storage Coeff. (min)=		2.75 (ii)	7.61 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.28	0.13

		TOTALS
PEAK FLOW	(cms)=	0.46	0.07	0.497 (iii)
TIME TO PEAK	(hrs)=	0.50	0.67	0.50
RUNOFF VOLUME	(mm)=	33.03	17.03	28.07
TOTAL RAINFALL	(mm)=	34.03	34.03	34.03
RUNOFF COEFFICIENT	=	0.97	0.50	0.82

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\c4dc5ad3
Ptotal= 34.03 mm	Comments: 2yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	61.25	0.75	32.67	1.08	4.08
0.17	4.08	0.50	114.34	0.83	20.42		
0.25	12.25	0.58	61.25	0.92	12.25		
0.33	32.67	0.67	49.00	1.00	4.08		

CALIB	
STANDHYD (0006)	Area (ha)= 1.17
ID= 1 DT= 5.0 min	Total Imp(%)= 47.00 Dir. Conn.(%)= 47.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.55	0.62

Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	88.32	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		114.34	48.33
over (min)		5.00	15.00
Storage Coeff. (min)=		2.25 (ii)	11.69 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.30	0.09

		TOTALS
PEAK FLOW	(cms)=	0.17	0.05	0.179 (iii)
TIME TO PEAK	(hrs)=	0.50	0.75	0.50
RUNOFF VOLUME	(mm)=	33.03	17.03	24.54
TOTAL RAINFALL	(mm)=	34.03	34.03	34.03
RUNOFF COEFFICIENT	=	0.97	0.50	0.72

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\c4dc5ad3
Ptotal= 34.03 mm	Comments: 2yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	61.25	0.75	32.67	1.08	4.08
0.17	4.08	0.50	114.34	0.83	20.42		
0.25	12.25	0.58	61.25	0.92	12.25		
0.33	32.67	0.67	49.00	1.00	4.08		

CALIB	
STANDHYD (0008)	Area (ha)= 14.26
ID= 1 DT= 5.0 min	Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	7.13	7.13
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	308.33	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		114.34	48.33
over (min)		5.00	15.00
Storage Coeff. (min)=		4.76 (ii)	14.20 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.22	0.08

		TOTALS
PEAK FLOW	(cms)=	1.80	0.54	1.944 (iii)
TIME TO PEAK	(hrs)=	0.50	0.75	0.50
RUNOFF VOLUME	(mm)=	33.03	17.03	25.03
TOTAL RAINFALL	(mm)=	34.03	34.03	34.03
RUNOFF COEFFICIENT	=	0.97	0.50	0.74

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0020)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0005):	2.30	0.497	0.50	28.07
	+ ID2= 2 (0006):	1.17	0.179	0.50	24.54
	ID = 3 (0020):	3.47	0.676	0.50	26.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0020)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
	ID1= 3 (0020):	3.47	0.676	0.50	26.88
	+ ID2= 2 (0008):	14.26	1.944	0.50	25.03
	ID = 1 (0020):	17.73	2.620	0.50	25.39

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       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 M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\dffaf7
3f-e898-4198-a0a5-23ec6db716d7\sce
   Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\dffaf7
3f-e898-4198-a0a5-23ec6db716d7\sce

DATE: 11/12/2019                          TIME: 11:30:12

USER:


COMMENTS: _____
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  **********************************************
  ** SIMULATION : 02 AES 5-yr                  **
  **********************************************
```

READ STORM	Filename: C:\Users\p001279d\AppD

			ata\Local\Temp\								
			d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\51069ce4								
Ptotal= 34.64 mm	Comments: 5yr 1hr AES										
TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr				
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16				
0.17	4.16	0.50	116.39	0.83	20.78						
0.25	12.47	0.58	62.35	0.92	12.47						
0.33	33.25	0.67	49.88	1.00	4.16						

CALIB			
STANDHYD (0030)	Area (ha)= 1.58		
ID= 1 DT= 5.0 min	Total Imp(%)= 56.00	Dir. Conn.(%)= 56.00	
	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	0.88	0.70	
Dep. Storage (mm)=	1.00	2.00	
Average Slope (%)=	1.00	2.00	
Length (m)=	102.63	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	116.39	49.73	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.44 (ii)	11.78 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.30	0.09	
		TOTALS	
PEAK FLOW (cms)=	0.27	0.06	0.284 (iii)
TIME TO PEAK (hrs)=	0.50	0.75	0.50
RUNOFF VOLUME (mm)=	33.64	17.50	26.54
TOTAL RAINFALL (mm)=	34.64	34.64	34.64
RUNOFF COEFFICIENT =	0.97	0.51	0.77

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD										
	ata\Local\Temp\										
	d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\51069ce4										
Ptotal= 34.64 mm	Comments: 5yr 1hr AES										
TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr				
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16				
0.17	4.16	0.50	116.39	0.83	20.78						
0.25	12.47	0.58	62.35	0.92	12.47						
0.33	33.25	0.67	49.88	1.00	4.16						

CALIB			
NASHYD (0007)	Area (ha)= 2.05	Curve Number (CN)= 70.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

Unit Hyd Qpeak (cms)= 0.391

PEAK FLOW	(cms)=	0.064 (i)
TIME TO PEAK	(hrs)=	0.833
RUNOFF VOLUME	(mm)=	6.331
TOTAL RAINFALL	(mm)=	34.640

RUNOFF COEFFICIENT = 0.183

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

READ STORM	Filename: C:\Users\p001279d\AppD										
	ata\Local\Temp\										
	d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\51069ce4										
Ptotal= 34.64 mm	Comments: 5yr 1hr AES										
TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr				
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16				
0.17	4.16	0.50	116.39	0.83	20.78						
0.25	12.47	0.58	62.35	0.92	12.47						
0.33	33.25	0.67	49.88	1.00	4.16						

CALIB			
STANDHYD (0001)	Area (ha)= 1.04		
ID= 1 DT= 5.0 min	Total Imp(%)= 48.00	Dir. Conn.(%)= 48.00	
	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	0.50	0.54	
Dep. Storage (mm)=	1.00	2.00	
Average Slope (%)=	1.00	2.00	
Length (m)=	83.27	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	116.39	49.73	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.15 (ii)	11.49 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.31	0.09	
		TOTALS	
PEAK FLOW (cms)=	0.15	0.05	0.166 (iii)
TIME TO PEAK (hrs)=	0.50	0.75	0.50
RUNOFF VOLUME (mm)=	33.64	17.50	25.24
TOTAL RAINFALL (mm)=	34.64	34.64	34.64
RUNOFF COEFFICIENT =	0.97	0.51	0.73

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD										
	ata\Local\Temp\										
	d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\51069ce4										
Ptotal= 34.64 mm	Comments: 5yr 1hr AES										
TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr				
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16				
0.17	4.16	0.50	116.39	0.83	20.78						
0.25	12.47	0.58	62.35	0.92	12.47						
0.33	33.25	0.67	49.88	1.00	4.16						

CALIB			
STANDHYD (0002)	Area (ha)= 1.05		
ID= 1 DT= 5.0 min	Total Imp(%)= 41.00	Dir. Conn.(%)= 41.00	

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	0.43	0.62	
Dep. Storage (mm)=	1.00	2.00	
Average Slope (%)=	1.00	2.00	
Length (m)=	83.67	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	116.39	49.73	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.16 (ii)	11.49 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.31	0.09	
		TOTALS	
PEAK FLOW (cms)=	0.13	0.05	0.147 (iii)
TIME TO PEAK (hrs)=	0.50	0.75	0.50
RUNOFF VOLUME (mm)=	33.64	17.50	24.11
TOTAL RAINFALL (mm)=	34.64	34.64	34.64
RUNOFF COEFFICIENT =	0.97	0.51	0.70

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD										
	ata\Local\Temp\										
	d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\51069ce4										
Ptotal= 34.64 mm	Comments: 5yr 1hr AES										
TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr				
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16				
0.17	4.16	0.50	116.39	0.83	20.78						
0.25	12.47	0.58	62.35	0.92	12.47						
0.33	33.25	0.67	49.88	1.00	4.16						

CALIB			
STANDHYD (0003)	Area (ha)= 1.06		
ID= 1 DT= 5.0 min	Total Imp(%)= 52.00	Dir. Conn.(%)= 52.00	
	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	0.55	0.51	
Dep. Storage (mm)=	1.00	2.00	
Average Slope (%)=	1.00	2.00	
Length (m)=	84.06	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	116.39	49.73	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.17 (ii)	11.50 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.31	0.09	
		TOTALS	
PEAK FLOW (cms)=	0.17	0.04	0.181 (iii)
TIME TO PEAK (hrs)=	0.50	0.75	0.50
RUNOFF VOLUME (mm)=	33.64	17.50	25.89
TOTAL RAINFALL (mm)=	34.64	34.64	34.64
RUNOFF COEFFICIENT =	0.97	0.51	0.75

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD										
	ata\Local\Temp\										
	d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\51069ce4										
Ptotal= 34.64 mm	Comments: 5yr 1hr AES										
TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr				
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16				
0.17	4.16	0.50	116.39	0.83	20.78						
0.25	12.47	0.58	62.35	0.92	12.47						
0.33	33.25	0.67	49.88	1.00	4.16						

CALIB			
STANDHYD (0004)	Area (ha)= 0.22		
ID= 1 DT= 5.0 min	Total Imp(%)= 63.00	Dir. Conn.(%)= 63.00	
	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	0.14	0.08	
Dep. Storage (mm)=	1.00	2.00	
Average Slope (%)=	1.00	2.00	
Length (m)=	38.30	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	116.39	49.73	
over (min)	5.00	15.00	
Storage Coeff. (min)=	1.35 (ii)	10.69 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.33	0.09	
		TOTALS	
PEAK FLOW (cms)=	0.04	0.01	0.046 (iii)
TIME TO PEAK (hrs)=	0.50	0.75	0.50
RUNOFF VOLUME (mm)=	33.64	17.50	27.64
TOTAL RAINFALL (mm)=	34.64	34.64	34.64
RUNOFF COEFFICIENT =	0.97	0.51	0.80

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0010)					
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 1 (0001):	1.04	0.166	0.50	25.24	
+ ID2= 2 (0002):	1.05	0.147	0.50	24.11	
ID = 3 (0010):	2.09	0.313	0.50	24.68	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 3 (0010):	2.09	0.313	0.50	24.68	
+ ID2= 2 (0003):	1.06	0.181	0.50	25.89	
ID = 1 (0010):	3.15	0.495	0.50	25.08	

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

--------------------
| ADD HYD  (  0010)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
--------------------        (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0010):     3.15   0.495     0.50    25.08
     + ID2= 2 (  0004):     0.22   0.046     0.50    27.64
       ==========================================
       ID = 3 (  0010):     3.37   0.541     0.50    25.25

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

--------------------
| ADD HYD  (  0010)|
|   3 +  2 =  1    |        AREA    QPEAK    TPEAK     R.V.
--------------------        (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0010):     3.37   0.541     0.50    25.25
     + ID2= 2 (  0007):     2.05   0.064     0.83     6.33
       ==========================================
       ID = 1 (  0010):     5.42   0.556     0.50    18.09

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\51069ce4
| Ptotal= 34.64 mm |    Comments: 5yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   62.35 |  0.75   33.25 |  1.08    4.16
                0.17    4.16 |  0.50  116.39 |  0.83   20.78 |
                0.25   12.47 |  0.58   62.35 |  0.92   12.47 |
                0.33   33.25 |  0.67   49.88 |  1.00    4.16 |

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

--------------------
| CALIB            |
| STANDHYD (  0005)|   Area    (ha)=   2.30
|ID= 1 DT= 5.0 min |   Total Imp(%)=  69.00   Dir. Conn.(%)=  69.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.59         0.71
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     123.83        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     116.39        49.73
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.73 (ii)    7.56 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.29         0.13
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.47         0.07         0.507 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.67          0.50
     RUNOFF VOLUME    (mm)=      33.64        17.50         28.64
     TOTAL RAINFALL   (mm)=      34.64        34.64         34.64
     RUNOFF COEFFICIENT   =       0.97         0.51          0.83

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
             THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```



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--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\51069ce4
| Ptotal= 34.64 mm |    Comments: 5yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   62.35 |  0.75   33.25 |  1.08    4.16
                0.17    4.16 |  0.50  116.39 |  0.83   20.78 |
                0.25   12.47 |  0.58   62.35 |  0.92   12.47 |
                0.33   33.25 |  0.67   49.88 |  1.00    4.16 |

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

--------------------
| CALIB            |
| STANDHYD (  0006)|   Area    (ha)=   1.17
|ID= 1 DT= 5.0 min |   Total Imp(%)=  47.00   Dir. Conn.(%)=  47.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55         0.62
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      88.32        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     116.39        49.73
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       2.23 (ii)   11.56 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.30         0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.17         0.05         0.183 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.75          0.50
     RUNOFF VOLUME    (mm)=      33.64        17.50         25.08
     TOTAL RAINFALL   (mm)=      34.64        34.64         34.64
     RUNOFF COEFFICIENT   =       0.97         0.51          0.72

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    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.

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\51069ce4
| Ptotal= 34.64 mm |    Comments: 5yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   62.35 |  0.75   33.25 |  1.08    4.16
                0.17    4.16 |  0.50  116.39 |  0.83   20.78 |
                0.25   12.47 |  0.58   62.35 |  0.92   12.47 |
                0.33   33.25 |  0.67   49.88 |  1.00    4.16 |

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

--------------------
| CALIB            |
| STANDHYD (  0008)|   Area    (ha)=  14.26
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       7.13         7.13
```



```
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     308.33        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     116.39        49.73
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       4.72 (ii)   14.06 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.22         0.08
                                                      *TOTALS*
     PEAK FLOW       (cms)=       1.84         0.56         1.987 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.75          0.50
     RUNOFF VOLUME    (mm)=      33.64        17.50         25.57
     TOTAL RAINFALL   (mm)=      34.64        34.64         34.64
     RUNOFF COEFFICIENT   =       0.97         0.51          0.74

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    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  (  0020)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
--------------------        (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0005):     2.30   0.507     0.50    28.64
     + ID2= 2 (  0006):     1.17   0.183     0.50    25.08
       ==========================================
       ID = 3 (  0020):     3.47   0.690     0.50    27.44

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

--------------------
| ADD HYD  (  0020)|
|   3 +  2 =  1    |        AREA    QPEAK    TPEAK     R.V.
--------------------        (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0020):     3.47   0.690     0.50    27.44
     + ID2= 2 (  0008):    14.26   1.987     0.50    25.57
       ==========================================
       ID = 1 (  0020):    17.73   2.677     0.50    25.94

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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================================================================================
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       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
```



```
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\f3f76c
7f-04f9-471d-8a85-8c363b28dff4\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\f3f76c
7f-04f9-471d-8a85-8c363b28dff4\sce


DATE: 11/12/2019                          TIME: 11:30:13

USER:


COMMENTS: _____________________________________________________

-------------------------------------------------------------------------------
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  ************************************************
  ** SIMULATION : 03 AES 10-yr                  **
  ************************************************

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\f0961233
| Ptotal= 41.26 mm |    Comments: 10yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   74.27 |  0.75   39.61 |  1.08    4.95
                0.17    4.95 |  0.50  138.63 |  0.83   24.76 |
                0.25   14.85 |  0.58   74.27 |  0.92   14.85 |
                0.33   39.61 |  0.67   59.41 |  1.00    4.95 |

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

--------------------
| CALIB            |
| STANDHYD (  0030)|   Area    (ha)=   1.58
|ID= 1 DT= 5.0 min |   Total Imp(%)=  56.00   Dir. Conn.(%)=  56.00
--------------------
                           IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.88         0.70
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     102.63        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     138.63        65.27
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       2.28 (ii)   10.65 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.30         0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.32         0.08         0.346 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.75          0.50
     RUNOFF VOLUME    (mm)=      40.26        22.84         32.59
     TOTAL RAINFALL   (mm)=      41.26        41.26         41.26
     RUNOFF COEFFICIENT   =       0.98         0.55          0.79

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
             THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\p001279d\AppD
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		ata\Local\Temp\
		d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\f0961233
Ptotal= 41.26 mm	Comments: 10yr 1hr AES	

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB		
NASHYD (0007)	Area (ha)=	2.05 Curve Number (CN)= 70.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20

Unit Hyd Qpeak (cms)= 0.391

PEAK FLOW (cms)= 0.091 (i)
TIME TO PEAK (hrs)= 0.833
RUNOFF VOLUME (mm)= 9.043
TOTAL RAINFALL (mm)= 41.260
RUNOFF COEFFICIENT = 0.219

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

READ STORM	Filename: C:\Users\p001279d\AppD	
	ata\Local\Temp\	
	d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\f0961233	
Ptotal= 41.26 mm	Comments: 10yr 1hr AES	

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB		
STANDHYD (0001)	Area (ha)=	1.04
ID= 1 DT= 5.0 min	Total Imp(%)=	48.00 Dir. Conn.(%)= 48.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.50	0.54
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.27	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		138.63	65.27
over (min)		5.00	15.00
Storage Coeff. (min)=		2.01 (ii)	10.38 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.31	0.09

				TOTALS
PEAK FLOW	(cms)=	0.18	0.06	0.203 (iii)
TIME TO PEAK	(hrs)=	0.50	0.75	0.50
RUNOFF VOLUME	(mm)=	40.26	22.84	31.20
TOTAL RAINFALL	(mm)=	41.26	41.26	41.26
RUNOFF COEFFICIENT	=	0.98	0.55	0.76

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD	
	ata\Local\Temp\	
	d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\f0961233	
Ptotal= 41.26 mm	Comments: 10yr 1hr AES	

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB		
STANDHYD (0002)	Area (ha)=	1.05
ID= 1 DT= 5.0 min	Total Imp(%)=	41.00 Dir. Conn.(%)= 41.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.43	0.62
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.67	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		138.63	65.27
over (min)		5.00	15.00
Storage Coeff. (min)=		2.01 (ii)	10.39 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.31	0.09

				TOTALS
PEAK FLOW	(cms)=	0.16	0.07	0.180 (iii)
TIME TO PEAK	(hrs)=	0.50	0.75	0.50
RUNOFF VOLUME	(mm)=	40.26	22.84	29.98
TOTAL RAINFALL	(mm)=	41.26	41.26	41.26
RUNOFF COEFFICIENT	=	0.98	0.55	0.73

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD	
	ata\Local\Temp\	
	d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\f0961233	
Ptotal= 41.26 mm	Comments: 10yr 1hr AES	

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB		
STANDHYD (0003)	Area (ha)=	1.06
ID= 1 DT= 5.0 min	Total Imp(%)=	52.00 Dir. Conn.(%)= 52.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.55	0.51
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	84.06	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		138.63	65.27
over (min)		5.00	15.00
Storage Coeff. (min)=		2.02 (ii)	10.39 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.31	0.09

				TOTALS
PEAK FLOW	(cms)=	0.20	0.06	0.221 (iii)
TIME TO PEAK	(hrs)=	0.50	0.75	0.50
RUNOFF VOLUME	(mm)=	40.26	22.84	31.89
TOTAL RAINFALL	(mm)=	41.26	41.26	41.26
RUNOFF COEFFICIENT	=	0.98	0.55	0.77

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD	
	ata\Local\Temp\	
	d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\f0961233	
Ptotal= 41.26 mm	Comments: 10yr 1hr AES	

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB		
STANDHYD (0004)	Area (ha)=	0.22
ID= 1 DT= 5.0 min	Total Imp(%)=	63.00 Dir. Conn.(%)= 63.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.14	0.08
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	38.30	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		138.63	65.27
over (min)		5.00	10.00
Storage Coeff. (min)=		1.26 (ii)	9.63 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.33	0.11

				TOTALS
PEAK FLOW	(cms)=	0.05	0.01	0.058 (iii)
TIME TO PEAK	(hrs)=	0.50	0.67	0.50
RUNOFF VOLUME	(mm)=	40.26	22.84	33.79
TOTAL RAINFALL	(mm)=	41.26	41.26	41.26
RUNOFF COEFFICIENT	=	0.98	0.55	0.82

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0010)					
1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 1 (0001):	1.04	0.203	0.50	31.20
	+ ID2= 2 (0002):	1.05	0.180	0.50	29.98
	ID = 3 (0010):	2.09	0.384	0.50	30.58

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
3 + 2 = 1		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 3 (0010):	2.09	0.384	0.50	30.58
	+ ID2= 2 (0003):	1.06	0.221	0.50	31.89
	ID = 1 (0010):	3.15	0.605	0.50	31.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 1 (0010):	3.15	0.605	0.50	31.02
	+ ID2= 2 (0004):	0.22	0.058	0.50	33.79
	ID = 3 (0010):	3.37	0.663	0.50	31.20

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
3 + 2 = 1		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 3 (0010):	3.37	0.663	0.50	31.20
	+ ID2= 2 (0007):	2.05	0.091	0.83	9.04
	ID = 1 (0010):	5.42	0.686	0.50	22.82

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM	Filename: C:\Users\p001279d\AppD	
	ata\Local\Temp\	
	d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\f0961233	
Ptotal= 41.26 mm	Comments: 10yr 1hr AES	

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB		
STANDHYD (0005)	Area (ha)=	2.30
ID= 1 DT= 5.0 min	Total Imp(%)=	69.00 Dir. Conn.(%)= 69.00

		IMPERVIOUS	PERVIOUS (i)

Surface Area	(ha)=	1.59	0.71
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	123.83	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		138.63	65.27
over (min)		5.00	10.00
Storage Coeff. (min)=		2.55 (ii)	7.05 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.29	0.14
			TOTALS
PEAK FLOW	(cms)=	0.57	0.10 0.619 (iii)
TIME TO PEAK	(hrs)=	0.50	0.67 0.50
RUNOFF VOLUME	(mm)=	40.26	22.84 34.86
TOTAL RAINFALL	(mm)=	41.26	41.26 41.26
RUNOFF COEFFICIENT	=	0.98	0.55 0.84

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\f0961233
Ptotal= 41.26 mm	Comments: 10yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB	
STANDHYD (0006)	Area (ha)= 1.17
ID= 1 DT= 5.0 min	Total Imp(%)= 47.00 Dir. Conn.(%)= 47.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.55	0.62
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	88.32	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		138.63	65.27
over (min)		5.00	15.00
Storage Coeff. (min)=		2.08 (ii)	10.45 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.31	0.09
			TOTALS
PEAK FLOW	(cms)=	0.20	0.07 0.224 (iii)
TIME TO PEAK	(hrs)=	0.50	0.75 0.50
RUNOFF VOLUME	(mm)=	40.26	22.84 31.02
TOTAL RAINFALL	(mm)=	41.26	41.26 41.26
RUNOFF COEFFICIENT	=	0.98	0.55 0.75

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\f0961233
Ptotal= 41.26 mm	Comments: 10yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB	
STANDHYD (0008)	Area (ha)= 14.26
ID= 1 DT= 5.0 min	Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	7.13	7.13
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	308.33	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		138.63	65.27
over (min)		5.00	15.00
Storage Coeff. (min)=		4.41 (ii)	12.78 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.23	0.08
			TOTALS
PEAK FLOW	(cms)=	2.24	0.76 2.461 (iii)
TIME TO PEAK	(hrs)=	0.50	0.75 0.50
RUNOFF VOLUME	(mm)=	40.26	22.84 31.55
TOTAL RAINFALL	(mm)=	41.26	41.26 41.26
RUNOFF COEFFICIENT	=	0.98	0.55 0.76

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0020)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0005):	2.30	0.619	0.50	34.86
	+ ID2= 2 (0006):	1.17	0.224	0.50	31.02
	ID = 3 (0020):	3.47	0.843	0.50	33.56

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0020)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1	ID1= 3 (0020):	3.47	0.843	0.50	33.56
	+ ID2= 2 (0008):	14.26	2.461	0.50	31.55
	ID = 1 (0020):	17.73	3.304	0.50	31.94

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

FINISH

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       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
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67-f7e6-4a63-9227-05e1234bb68e\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\50f180
67-f7e6-4a63-9227-05e1234bb68e\sce


DATE: 11/12/2019                          TIME: 11:30:11

USER:


COMMENTS: _____________________________________________________________

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  ************************************************
  ** SIMULATION : 04 AES 25-yr                  **
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READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\7e735abf
Ptotal= 49.17 mm	Comments: 25yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	88.51	0.75	47.20	1.08	5.90
0.17	5.90	0.50	165.21	0.83	29.50		
0.25	17.70	0.58	88.51	0.92	17.70		
0.33	47.20	0.67	70.80	1.00	5.90		

CALIB	
STANDHYD (0030)	Area (ha)= 1.58
ID= 1 DT= 5.0 min	Total Imp(%)= 56.00 Dir. Conn.(%)= 56.00

IMPERVIOUS PERVIOUS (i)

Surface Area	(ha)=	0.88	0.70
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	102.63	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		165.21	84.67
over (min)		5.00	10.00
Storage Coeff. (min)=		2.12 (ii)	9.67 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.31	0.11
			TOTALS
PEAK FLOW	(cms)=	0.39	0.11 0.444 (iii)
TIME TO PEAK	(hrs)=	0.50	0.67 0.50
RUNOFF VOLUME	(mm)=	48.17	29.51 39.96
TOTAL RAINFALL	(mm)=	49.17	49.17 49.17
RUNOFF COEFFICIENT	=	0.98	0.60 0.81

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\7e735abf
Ptotal= 49.17 mm	Comments: 25yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	88.51	0.75	47.20	1.08	5.90
0.17	5.90	0.50	165.21	0.83	29.50		
0.25	17.70	0.58	88.51	0.92	17.70		
0.33	47.20	0.67	70.80	1.00	5.90		

CALIB	
NASHYD (0007)	Area (ha)= 2.05 Curve Number (CN)= 70.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20

Unit Hyd Qpeak (cms)= 0.391

PEAK FLOW	(cms)=	0.128 (i)
TIME TO PEAK	(hrs)=	0.750
RUNOFF VOLUME	(mm)=	12.725
TOTAL RAINFALL	(mm)=	49.170
RUNOFF COEFFICIENT	=	0.259

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

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\7e735abf
Ptotal= 49.17 mm	Comments: 25yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	88.51	0.75	47.20	1.08	5.90
0.17	5.90	0.50	165.21	0.83	29.50		
0.25	17.70	0.58	88.51	0.92	17.70		
0.33	47.20	0.67	70.80	1.00	5.90		

```
| CALIB
| STANDHYD (  0001)|   Area    (ha)=   1.04
|ID= 1 DT= 5.0 min |   Total Imp(%)=  48.00   Dir. Conn.(%)=  48.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.50         0.54
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      83.27        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     165.21        84.67
               over (min)        5.00        10.00
     Storage Coeff.  (min)=      1.87 (ii)    9.42 (ii)
     Unit Hyd. Tpeak (min)=      5.00        10.00
     Unit Hyd. peak  (cms)=      0.32         0.12
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.22         0.09       0.266 (iii)
     TIME TO PEAK    (hrs)=      0.50         0.67        0.50
     RUNOFF VOLUME    (mm)=     48.17        29.51       38.46
     TOTAL RAINFALL   (mm)=     49.17        49.17       49.17
     RUNOFF COEFFICIENT   =      0.98         0.60        0.78

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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.

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

-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\7e735abf
| Ptotal= 49.17 mm |    Comments: 25yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   88.51 |  0.75   47.20 |  1.08    5.90
                0.17    5.90 |  0.50  165.21 |  0.83   29.50 |
                0.25   17.70 |  0.58   88.51 |  0.92   17.70 |
                0.33   47.20 |  0.67   70.80 |  1.00    5.90 |

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

-------------------
| CALIB
| STANDHYD (  0002)|   Area    (ha)=   1.05
|ID= 1 DT= 5.0 min |   Total Imp(%)=  41.00   Dir. Conn.(%)=  41.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.43         0.62
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      83.67        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     165.21        84.67
               over (min)        5.00        10.00
     Storage Coeff.  (min)=      1.88 (ii)    9.42 (ii)
     Unit Hyd. Tpeak (min)=      5.00        10.00
     Unit Hyd. peak  (cms)=      0.32         0.12
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.19         0.10       0.242 (iii)
     TIME TO PEAK    (hrs)=      0.50         0.67        0.50
     RUNOFF VOLUME    (mm)=     48.17        29.51       37.16
     TOTAL RAINFALL   (mm)=     49.17        49.17       49.17
     RUNOFF COEFFICIENT   =      0.98         0.60        0.76
```



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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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.

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

-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\7e735abf
| Ptotal= 49.17 mm |    Comments: 25yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   88.51 |  0.75   47.20 |  1.08    5.90
                0.17    5.90 |  0.50  165.21 |  0.83   29.50 |
                0.25   17.70 |  0.58   88.51 |  0.92   17.70 |
                0.33   47.20 |  0.67   70.80 |  1.00    5.90 |

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

-------------------
| CALIB
| STANDHYD (  0003)|   Area    (ha)=   1.06
|ID= 1 DT= 5.0 min |   Total Imp(%)=  52.00   Dir. Conn.(%)=  52.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55         0.51
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      84.06        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     165.21        84.67
               over (min)        5.00        10.00
     Storage Coeff.  (min)=      1.88 (ii)    9.43 (ii)
     Unit Hyd. Tpeak (min)=      5.00        10.00
     Unit Hyd. peak  (cms)=      0.32         0.12
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.24         0.08       0.287 (iii)
     TIME TO PEAK    (hrs)=      0.50         0.67        0.50
     RUNOFF VOLUME    (mm)=     48.17        29.51       39.21
     TOTAL RAINFALL   (mm)=     49.17        49.17       49.17
     RUNOFF COEFFICIENT   =      0.98         0.60        0.80

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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.

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

-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\7e735abf
| Ptotal= 49.17 mm |    Comments: 25yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   88.51 |  0.75   47.20 |  1.08    5.90
                0.17    5.90 |  0.50  165.21 |  0.83   29.50 |
                0.25   17.70 |  0.58   88.51 |  0.92   17.70 |
                0.33   47.20 |  0.67   70.80 |  1.00    5.90 |
```



```
| CALIB
| STANDHYD (  0004)|   Area    (ha)=   0.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  63.00   Dir. Conn.(%)=  63.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.14         0.08
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      38.30        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     165.21        84.67
               over (min)        5.00        10.00
     Storage Coeff.  (min)=      1.18 (ii)    5.84 (ii)
     Unit Hyd. Tpeak (min)=      5.00        10.00
     Unit Hyd. peak  (cms)=      0.33         0.15
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.06         0.02       0.072 (iii)
     TIME TO PEAK    (hrs)=      0.50         0.58        0.50
     RUNOFF VOLUME    (mm)=     48.17        29.51       41.26
     TOTAL RAINFALL   (mm)=     49.17        49.17       49.17
     RUNOFF COEFFICIENT   =      0.98         0.60        0.84

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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  (  0010)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
      ID1= 1 (  0001):     1.04   0.266     0.50    38.46
    + ID2= 2 (  0002):     1.05   0.242     0.50    37.16
      ================================================
      ID = 3 (  0010):     2.09   0.509     0.50    37.81

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

-------------------
| ADD HYD  (  0010)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
      ID1= 3 (  0010):     2.09   0.509     0.50    37.81
    + ID2= 2 (  0003):     1.06   0.287     0.50    39.21
      ================================================
      ID = 1 (  0010):     3.15   0.795     0.50    38.28

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

-------------------
| ADD HYD  (  0010)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
      ID1= 1 (  0010):     3.15   0.795     0.50    38.28
    + ID2= 2 (  0004):     0.22   0.072     0.50    41.26
      ================================================
      ID = 3 (  0010):     3.37   0.867     0.50    38.47

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

-------------------
| ADD HYD  (  0010)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
```



```
-------------------           (ha)    (cms)    (hrs)     (mm)
      ID1= 3 (  0010):     3.37   0.867     0.50    38.47
    + ID2= 2 (  0007):     2.05   0.128     0.75    12.72
      ================================================
      ID = 1 (  0010):     5.42   0.903     0.50    28.73

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

-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\7e735abf
| Ptotal= 49.17 mm |    Comments: 25yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   88.51 |  0.75   47.20 |  1.08    5.90
                0.17    5.90 |  0.50  165.21 |  0.83   29.50 |
                0.25   17.70 |  0.58   88.51 |  0.92   17.70 |
                0.33   47.20 |  0.67   70.80 |  1.00    5.90 |

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

-------------------
| CALIB
| STANDHYD (  0005)|   Area    (ha)=   2.30
|ID= 1 DT= 5.0 min |   Total Imp(%)=  69.00   Dir. Conn.(%)=  69.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.59         0.71
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     123.83        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     165.21        84.67
               over (min)        5.00        10.00
     Storage Coeff.  (min)=      2.38 (ii)    6.57 (ii)
     Unit Hyd. Tpeak (min)=      5.00        10.00
     Unit Hyd. peak  (cms)=      0.30         0.14
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.68         0.13       0.757 (iii)
     TIME TO PEAK    (hrs)=      0.50         0.58        0.50
     RUNOFF VOLUME    (mm)=     49.17        29.51       42.38
     TOTAL RAINFALL   (mm)=     49.17        49.17       49.17
     RUNOFF COEFFICIENT   =      0.98         0.60        0.86

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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.

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

-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\7e735abf
| Ptotal= 49.17 mm |    Comments: 25yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   88.51 |  0.75   47.20 |  1.08    5.90
                0.17    5.90 |  0.50  165.21 |  0.83   29.50 |
                0.25   17.70 |  0.58   88.51 |  0.92   17.70 |
                0.33   47.20 |  0.67   70.80 |  1.00    5.90 |

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```
| CALIB              |
| STANDHYD (  0006)|   Area    (ha)=   1.17
|ID= 1 DT= 5.0 min |   Total Imp(%)=  47.00   Dir. Conn.(%)=  47.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55         0.62
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      88.32        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     165.21        84.67
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.94 (ii)    9.48 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.31         0.12
                                                    *TOTALS*
     PEAK FLOW       (cms)=       0.24         0.10          0.294 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.67          0.50
     RUNOFF VOLUME    (mm)=      48.17        29.51         38.28
     TOTAL RAINFALL   (mm)=      49.17        49.17         49.17
     RUNOFF COEFFICIENT   =       0.98         0.60          0.78

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    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.

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\7e735abf
| Ptotal= 49.17 mm |    Comments: 25yr 1hr AES
--------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42   88.51 |'  0.75   47.20 |  1.08    5.90
               0.17    5.90 |  0.50  165.21 |'  0.83   29.50 |
               0.25   17.70 |  0.58   88.51 |'  0.92   17.70 |
               0.33   47.20 |  0.67   70.80 |'  1.00    5.90 |

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

--------------------
| CALIB              |
| STANDHYD (  0008)|   Area    (ha)=  14.26
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       7.13         7.13
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     308.33        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     165.21        84.67
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       4.11 (ii)   11.65 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.24         0.09
                                                    *TOTALS*
     PEAK FLOW       (cms)=       2.73         1.02          3.048 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.75          0.50
     RUNOFF VOLUME    (mm)=      48.17        29.51         38.84
     TOTAL RAINFALL   (mm)=      49.17        49.17         49.17
     RUNOFF COEFFICIENT   =       0.98         0.60          0.79

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



```
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    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  (  0020)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
     ID1= 1 (  0005):     2.30   0.757     0.50    42.38
   + ID2= 2 (  0006):     1.17   0.294     0.50    38.28
     ==================================================
     ID = 3 (  0020):     3.47   1.051     0.50    41.00

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

--------------------
| ADD HYD  (  0020)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
     ID1= 3 (  0020):     3.47   1.051     0.50    41.00
   + ID2= 2 (  0008):    14.26   3.048     0.50    38.84
     ==================================================
     ID = 1 (  0020):    17.73   4.099     0.50    39.26

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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================================================================================
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       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       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 M  O   O
        OOO      T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\5067d5
da-8166-4a50-be11-6e96f9944fcf\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\5067d5
da-8166-4a50-be11-6e96f9944fcf\sce

DATE: 11/12/2019                          TIME: 11:30:11

USER:


COMMENTS: _____

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  ***********************************************
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```
  ** SIMULATION : 05 AES 50-yr              **
  ********************************************


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|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\ac308a9d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
--------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42   98.91 |'  0.75   52.75 |  1.08    6.59
               0.17    6.59 |  0.50  184.63 |'  0.83   32.97 |
               0.25   19.78 |  0.58   98.91 |'  0.92   19.78 |
               0.33   52.75 |  0.67   79.13 |'  1.00    6.59 |

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

--------------------
| CALIB              |
| STANDHYD (  0030)|   Area    (ha)=   1.58
|ID= 1 DT= 5.0 min |   Total Imp(%)=  56.00   Dir. Conn.(%)=  56.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.88         0.70
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     102.63        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     184.63        99.26
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.03 (ii)    9.11 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.31         0.12
                                                    *TOTALS*
     PEAK FLOW       (cms)=       0.43         0.13          0.506 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.67          0.50
     RUNOFF VOLUME    (mm)=      53.95        34.54         45.41
     TOTAL RAINFALL   (mm)=      54.95        54.95         54.95
     RUNOFF COEFFICIENT   =       0.98         0.63          0.83

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    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.

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\ac308a9d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
--------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42   98.91 |'  0.75   52.75 |  1.08    6.59
               0.17    6.59 |  0.50  184.63 |'  0.83   32.97 |
               0.25   19.78 |  0.58   98.91 |'  0.92   19.78 |
               0.33   52.75 |  0.67   79.13 |'  1.00    6.59 |

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

--------------------
| CALIB              |
| NASHYD   (  0007)|   Area    (ha)=   2.05   Curve Number   (CN)= 70.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20
```



```
     Unit Hyd Qpeak  (cms)=   0.391

     PEAK FLOW       (cms)=   0.158 (i)
     TIME TO PEAK    (hrs)=   0.750
     RUNOFF VOLUME    (mm)=  15.681
     TOTAL RAINFALL   (mm)=  54.950
     RUNOFF COEFFICIENT   =   0.285

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

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\ac308a9d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
--------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42   98.91 |'  0.75   52.75 |  1.08    6.59
               0.17    6.59 |  0.50  184.63 |'  0.83   32.97 |
               0.25   19.78 |  0.58   98.91 |'  0.92   19.78 |
               0.33   52.75 |  0.67   79.13 |'  1.00    6.59 |

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

--------------------
| CALIB              |
| STANDHYD (  0001)|   Area    (ha)=   1.04
|ID= 1 DT= 5.0 min |   Total Imp(%)=  48.00   Dir. Conn.(%)=  48.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.50         0.54
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      83.27        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     184.63        99.26
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.79 (ii)    8.87 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.12
                                                    *TOTALS*
     PEAK FLOW       (cms)=       0.25         0.10          0.305 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.67          0.50
     RUNOFF VOLUME    (mm)=      53.95        34.54         43.85
     TOTAL RAINFALL   (mm)=      54.95        54.95         54.95
     RUNOFF COEFFICIENT   =       0.98         0.63          0.80

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    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.

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\ac308a9d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
--------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42   98.91 |'  0.75   52.75 |  1.08    6.59
               0.17    6.59 |  0.50  184.63 |'  0.83   32.97 |
               0.25   19.78 |  0.58   98.91 |'  0.92   19.78 |
               0.33   52.75 |  0.67   79.13 |'  1.00    6.59 |
```

```
-------------------
| CALIB             |
| STANDHYD (  0002)|   Area    (ha)=   1.05
|ID= 1 DT= 5.0 min |   Total Imp(%)=  41.00   Dir. Conn.(%)=  41.00
-------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.43         0.62
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      83.67        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     184.63        99.26
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.80 (ii)    8.88 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.12
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.21         0.12          0.279 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.67          0.50
     RUNOFF VOLUME    (mm)=      53.95        34.54         42.49
     TOTAL RAINFALL   (mm)=      54.95        54.95         54.95
     RUNOFF COEFFICIENT   =       0.98         0.63          0.77

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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.

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

-------------------
|    READ STORM     |    Filename: C:\Users\p001279d\AppD
|                   |              ata\Local\Temp\
|                   |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\ac308a9d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   98.91 |  0.75   52.75 |  1.08    6.59
                0.17    6.59 |  0.50  184.63 |  0.83   32.97 |
                0.25   19.78 |  0.58   98.91 |  0.92   19.78 |
                0.33   52.75 |  0.67   79.13 |  1.00    6.59 |

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

-------------------
| CALIB             |
| STANDHYD (  0003)|   Area    (ha)=   1.06
|ID= 1 DT= 5.0 min |   Total Imp(%)=  52.00   Dir. Conn.(%)=  52.00
-------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55         0.51
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      84.06        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     184.63        99.26
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.80 (ii)    8.88 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.12
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.27         0.10          0.327 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.67          0.50
     RUNOFF VOLUME    (mm)=      53.95        34.54         44.63
     TOTAL RAINFALL   (mm)=      54.95        54.95         54.95
     RUNOFF COEFFICIENT   =       0.98         0.63          0.81
```



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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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  (  0010)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     1.04   0.305     0.50    43.85
     + ID2= 2 (  0002):     1.05   0.279     0.50    42.49
       ========================================================
       ID = 3 (  0010):     2.09   0.583     0.50    43.17

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

-------------------
| ADD HYD  (  0010)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0010):     2.09   0.583     0.50    43.17
     + ID2= 2 (  0003):     1.06   0.327     0.50    44.63
       ========================================================
       ID = 1 (  0010):     3.15   0.910     0.50    43.66

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

-------------------
| ADD HYD  (  0010)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0010):     3.15   0.910     0.50    43.66
     + ID2= 2 (  0004):     0.22   0.081     0.50    46.76
       ========================================================
       ID = 3 (  0010):     3.37   0.992     0.50    43.86

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

-------------------
| ADD HYD  (  0010)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
-------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0010):     3.37   0.992     0.50    43.86
     + ID2= 2 (  0007):     2.05   0.158     0.75    15.68
       ========================================================
       ID = 1 (  0010):     5.42   1.038     0.50    33.20

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

-------------------
|    READ STORM     |    Filename: C:\Users\p001279d\AppD
|                   |              ata\Local\Temp\
|                   |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\ac308a9d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   98.91 |  0.75   52.75 |  1.08    6.59
                0.17    6.59 |  0.50  184.63 |  0.83   32.97 |
                0.25   19.78 |  0.58   98.91 |  0.92   19.78 |
                0.33   52.75 |  0.67   79.13 |  1.00    6.59 |

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

-------------------
| CALIB             |
| STANDHYD (  0005)|   Area    (ha)=   2.30
|ID= 1 DT= 5.0 min |   Total Imp(%)=  69.00   Dir. Conn.(%)=  69.00
-------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.59         0.71
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     123.83        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     184.63        99.26
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.27 (ii)    6.28 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.30         0.15
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.77         0.15          0.858 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58          0.50
     RUNOFF VOLUME    (mm)=      53.95        34.54         47.93
     TOTAL RAINFALL   (mm)=      54.95        54.95         54.95
     RUNOFF COEFFICIENT   =       0.98         0.63          0.87

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



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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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.

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

-------------------
|    READ STORM     |    Filename: C:\Users\p001279d\AppD
|                   |              ata\Local\Temp\
|                   |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\ac308a9d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   98.91 |  0.75   52.75 |  1.08    6.59
                0.17    6.59 |  0.50  184.63 |  0.83   32.97 |
                0.25   19.78 |  0.58   98.91 |  0.92   19.78 |
                0.33   52.75 |  0.67   79.13 |  1.00    6.59 |

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-------------------
| CALIB             |
| STANDHYD (  0006)|   Area    (ha)=   1.17
|ID= 1 DT= 5.0 min |   Total Imp(%)=  47.00   Dir. Conn.(%)=  47.00
-------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55         0.62
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      88.32        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     184.63        99.26
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.86 (ii)    8.93 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.12
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.27         0.12          0.337 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.67          0.50
     RUNOFF VOLUME    (mm)=      53.95        34.54         43.66
     TOTAL RAINFALL   (mm)=      54.95        54.95         54.95
     RUNOFF COEFFICIENT   =       0.98         0.63          0.79

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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.

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

-------------------
|    READ STORM     |    Filename: C:\Users\p001279d\AppD
|                   |              ata\Local\Temp\
|                   |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\ac308a9d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   98.91 |  0.75   52.75 |  1.08    6.59
                0.17    6.59 |  0.50  184.63 |  0.83   32.97 |
                0.25   19.78 |  0.58   98.91 |  0.92   19.78 |
                0.33   52.75 |  0.67   79.13 |  1.00    6.59 |

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

-------------------
| ADD HYD  (  0010)|
```

CALIB			
STANDHYD (0008)	Area (ha)= 14.26		
ID= 1 DT= 5.0 min	Total Imp(%)= 50.00	Dir. Conn.(%)= 50.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	7.13	7.13
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	308.33	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	184.63	99.26
over (min)	5.00	15.00
Storage Coeff. (min)=	3.93 (ii)	11.01 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.24	0.09

		TOTALS
PEAK FLOW	(cms)=	3.09 1.22 3.489 (iii)
TIME TO PEAK	(hrs)=	0.50 0.75 0.50
RUNOFF VOLUME	(mm)=	53.95 34.54 44.24
TOTAL RAINFALL	(mm)=	54.95 54.95 54.95
RUNOFF COEFFICIENT	=	0.98 0.63 0.81

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0020)					
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 1 (0005):	2.30	0.858	0.50	47.93	
+ ID2= 2 (0006):	1.17	0.337	0.50	43.66	
ID = 3 (0020):	3.47	1.195	0.50	46.49	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0020)					
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 3 (0020):	3.47	1.195	0.50	46.49	
+ ID2= 2 (0008):	14.26	3.489	0.50	44.24	
ID = 1 (0020):	17.73	4.684	0.50	44.68	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
V    V   I    SS     U   U   A A   L
 V  V    I     SS    U   U  AAAAA  L
  V V    I      SS   U   U  A   A  L
   VV    I    SSSSS  UUUUU  A   A  LLLLL

  OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
 O   O    T      T    H   H   Y Y   MM MM  O   O
 O   O    T      T    H   H    Y    M   M  O   O
  OOO     T      T    H   H    Y    M   M   OOO
```

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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

Output filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\e3d6abe2-3cad-4473-a127-0eea7526c18c\sce
Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\e3d6abe2-3cad-4473-a127-0eea7526c18c\sce

DATE: 11/12/2019 TIME: 11:30:13

USER:

COMMENTS: _____

```
  ************************************************
  ** SIMULATION : 06 AES 100-yr                 **
  ************************************************
```

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\57b9b19e
Ptotal= 60.87 mm	Comments: 100yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	109.57	0.75	58.44	1.08	7.30
0.17	7.30	0.50	204.52	0.83	36.52		
0.25	21.91	0.58	109.57	0.92	21.91		
0.33	58.44	0.67	87.65	1.00	7.30		

CALIB			
STANDHYD (0030)	Area (ha)= 1.58		
ID= 1 DT= 5.0 min	Total Imp(%)= 56.00	Dir. Conn.(%)= 56.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.88	0.70
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	102.63	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	204.52	114.44
over (min)	5.00	10.00
Storage Coeff. (min)=	1.95 (ii)	6.76 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.31	0.14

		TOTALS
PEAK FLOW	(cms)=	0.48 0.17 0.583 (iii)
TIME TO PEAK	(hrs)=	0.50 0.58 0.50
RUNOFF VOLUME	(mm)=	59.87 39.79 51.03
TOTAL RAINFALL	(mm)=	60.87 60.87 60.87
RUNOFF COEFFICIENT	=	0.98 0.65 0.84

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\57b9b19e
Ptotal= 60.87 mm	Comments: 100yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	109.57	0.75	58.44	1.08	7.30
0.17	7.30	0.50	204.52	0.83	36.52		
0.25	21.91	0.58	109.57	0.92	21.91		
0.33	58.44	0.67	87.65	1.00	7.30		

CALIB			
NASHYD (0007)	Area (ha)= 2.05	Curve Number (CN)= 70.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

Unit Hyd Qpeak (cms)= 0.391

PEAK FLOW	(cms)=	0.191 (i)
TIME TO PEAK	(hrs)=	0.750
RUNOFF VOLUME	(mm)=	18.913
TOTAL RAINFALL	(mm)=	60.870
RUNOFF COEFFICIENT	=	0.311

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

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\57b9b19e
Ptotal= 60.87 mm	Comments: 100yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	109.57	0.75	58.44	1.08	7.30
0.17	7.30	0.50	204.52	0.83	36.52		
0.25	21.91	0.58	109.57	0.92	21.91		
0.33	58.44	0.67	87.65	1.00	7.30		

CALIB			
STANDHYD (0001)	Area (ha)= 1.04		
ID= 1 DT= 5.0 min	Total Imp(%)= 48.00	Dir. Conn.(%)= 48.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.50	0.54
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	83.27	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	204.52	114.44
over (min)	5.00	10.00
Storage Coeff. (min)=	1.72 (ii)	8.41 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.12

		TOTALS
PEAK FLOW	(cms)=	0.28 0.12 0.345 (iii)
TIME TO PEAK	(hrs)=	0.50 0.67 0.50
RUNOFF VOLUME	(mm)=	59.87 39.79 49.42
TOTAL RAINFALL	(mm)=	60.87 60.87 60.87

RUNOFF COEFFICIENT	=	0.98	0.65	0.81

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\57b9b19e
Ptotal= 60.87 mm	Comments: 100yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	109.57	0.75	58.44	1.08	7.30
0.17	7.30	0.50	204.52	0.83	36.52		
0.25	21.91	0.58	109.57	0.92	21.91		
0.33	58.44	0.67	87.65	1.00	7.30		

CALIB			
STANDHYD (0002)	Area (ha)= 1.05		
ID= 1 DT= 5.0 min	Total Imp(%)= 41.00	Dir. Conn.(%)= 41.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.43	0.62
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	83.67	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	204.52	114.44
over (min)	5.00	10.00
Storage Coeff. (min)=	1.72 (ii)	8.41 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.12

		TOTALS
PEAK FLOW	(cms)=	0.24 0.14 0.316 (iii)
TIME TO PEAK	(hrs)=	0.50 0.67 0.50
RUNOFF VOLUME	(mm)=	59.87 39.79 48.02
TOTAL RAINFALL	(mm)=	60.87 60.87 60.87
RUNOFF COEFFICIENT	=	0.98 0.65 0.79

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\57b9b19e
Ptotal= 60.87 mm	Comments: 100yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	109.57	0.75	58.44	1.08	7.30
0.17	7.30	0.50	204.52	0.83	36.52		
0.25	21.91	0.58	109.57	0.92	21.91		
0.33	58.44	0.67	87.65	1.00	7.30		

```
| CALIB                |
| STANDHYD (  0003)|   Area    (ha)=   1.06
|ID= 1 DT= 5.0 min |   Total Imp(%)=  52.00   Dir. Conn.(%)=  52.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55         0.51
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      84.06        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     204.52       114.44
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.73 (ii)    8.42 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.12
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.30         0.11          0.369 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.67          0.50
     RUNOFF VOLUME    (mm)=      59.87        39.79         50.23
     TOTAL RAINFALL   (mm)=      60.87        60.87         60.87
     RUNOFF COEFFICIENT   =       0.98         0.65          0.83

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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.

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\57b9b19e
| Ptotal= 60.87 mm |    Comments: 100yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42  109.57 |'  0.75   58.44 |  1.08    7.30
               0.17    7.30 |  0.50  204.52 |'  0.83   36.52 |
               0.25   21.91 |  0.58  109.57 |'  0.92   21.91 |
               0.33   58.44 |  0.67   87.65 |'  1.00    7.30 |

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

| CALIB                |
| STANDHYD (  0004)|   Area    (ha)=   0.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  63.00   Dir. Conn.(%)=  63.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.14         0.08
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      38.30        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     204.52       114.44
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.08 (ii)    5.36 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.34         0.16
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.08         0.02          0.091 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58          0.50
     RUNOFF VOLUME    (mm)=      59.87        39.79         52.43
     TOTAL RAINFALL   (mm)=      60.87        60.87         60.87
     RUNOFF COEFFICIENT   =       0.98         0.65          0.86
```



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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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  (  0010)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     1.04   0.345     0.50    49.42
     + ID2= 2 (  0002):     1.05   0.316     0.50    48.02
       ========================================================
       ID = 3 (  0010):     2.09   0.661     0.50    48.72

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

--------------------
| ADD HYD  (  0010)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0010):     2.09   0.661     0.50    48.72
     + ID2= 2 (  0003):     1.06   0.369     0.50    50.23
       ========================================================
       ID = 1 (  0010):     3.15   1.030     0.50    49.23

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

--------------------
| ADD HYD  (  0010)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0010):     3.15   1.030     0.50    49.23
     + ID2= 2 (  0004):     0.22   0.091     0.50    52.43
       ========================================================
       ID = 3 (  0010):     3.37   1.122     0.50    49.44

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

--------------------
| ADD HYD  (  0010)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0010):     3.37   1.122     0.50    49.44
     + ID2= 2 (  0007):     2.05   0.191     0.75    18.91
       ========================================================
       ID = 1 (  0010):     5.42   1.179     0.50    37.89

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\57b9b19e
| Ptotal= 60.87 mm |    Comments: 100yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42  109.57 |'  0.75   58.44 |  1.08    7.30
               0.17    7.30 |  0.50  204.52 |'  0.83   36.52 |
               0.25   21.91 |  0.58  109.57 |'  0.92   21.91 |
               0.33   58.44 |  0.67   87.65 |'  1.00    7.30 |

--------------------------------------------------------------------------------
```



```
| CALIB                |
| STANDHYD (  0005)|   Area    (ha)=   2.30
|ID= 1 DT= 5.0 min |   Total Imp(%)=  69.00   Dir. Conn.(%)=  69.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.59         0.71
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     123.83        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     204.52       114.44
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.18 (ii)    6.03 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.31         0.15
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.86         0.18          0.964 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58          0.50
     RUNOFF VOLUME    (mm)=      59.87        39.79         53.65
     TOTAL RAINFALL   (mm)=      60.87        60.87         60.87
     RUNOFF COEFFICIENT   =       0.98         0.65          0.88

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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.

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\57b9b19e
| Ptotal= 60.87 mm |    Comments: 100yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42  109.57 |'  0.75   58.44 |  1.08    7.30
               0.17    7.30 |  0.50  204.52 |'  0.83   36.52 |
               0.25   21.91 |  0.58  109.57 |'  0.92   21.91 |
               0.33   58.44 |  0.67   87.65 |'  1.00    7.30 |

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

| CALIB                |
| STANDHYD (  0006)|   Area    (ha)=   1.17
|ID= 1 DT= 5.0 min |   Total Imp(%)=  47.00   Dir. Conn.(%)=  47.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55         0.62
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      88.32        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     204.52       114.44
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.78 (ii)    8.47 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.12
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.30         0.14          0.381 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.67          0.50
     RUNOFF VOLUME    (mm)=      59.87        39.79         49.23
     TOTAL RAINFALL   (mm)=      60.87        60.87         60.87
     RUNOFF COEFFICIENT   =       0.98         0.65          0.81

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



```
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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.

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\57b9b19e
| Ptotal= 60.87 mm |    Comments: 100yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42  109.57 |'  0.75   58.44 |  1.08    7.30
               0.17    7.30 |  0.50  204.52 |'  0.83   36.52 |
               0.25   21.91 |  0.58  109.57 |'  0.92   21.91 |
               0.33   58.44 |  0.67   87.65 |'  1.00    7.30 |

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

| CALIB                |
| STANDHYD (  0008)|   Area    (ha)=  14.26
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       7.13         7.13
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     308.33        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     204.52       114.44
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       3.77 (ii)   10.46 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.25         0.09
                                                        *TOTALS*
     PEAK FLOW       (cms)=       3.46         1.43          3.950 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.75          0.50
     RUNOFF VOLUME    (mm)=      59.87        39.79         49.83
     TOTAL RAINFALL   (mm)=      60.87        60.87         60.87
     RUNOFF COEFFICIENT   =       0.98         0.65          0.82

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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  (  0020)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0005):     2.30   0.964     0.50    53.65
     + ID2= 2 (  0006):     1.17   0.381     0.50    49.23
       ========================================================
       ID = 3 (  0020):     3.47   1.346     0.50    52.15

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

--------------------
| ADD HYD  (  0020)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
```

```
   ID1= 3 (  0020):     3.47   1.346     0.50    52.15
 + ID2= 2 (  0008):    14.26   3.950     0.50    49.83
   ================================================
   ID = 1 (  0020):    17.73   5.295     0.50    50.29

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

```
   V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
   V    V   I    SS     U   U   A A   L
    V  V    I     SS    U   U  AAAAA  L
    V  V    I      SS   U   U  A   A  L
     VV     I    SSSSS  UUUUU  A   A  LLLLL

    OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
   O   O    T      T    H   H   Y Y   MM MM  O   O
   O   O    T      T    H   H    Y    M   M  O   O
    OOO     T      T    H   H    Y    M   M   OOO
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```

***** D E T A I L E D O U T P U T *****

```
  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\2956fc
b2-24ef-4092-8d54-465211437673\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\2956fc
b2-24ef-4092-8d54-465211437673\sce

DATE: 11/12/2019                          TIME: 11:30:10

USER:


COMMENTS: _____________________________________________________________

--------------------------------------------------------------------------------
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  ************************************************
  ** SIMULATION : 07 AES 250-yr                  **
  ************************************************


-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\d9c70000
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |

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

-------------------
| CALIB            |
| STANDHYD (  0030)|   Area    (ha)=   1.58
|ID= 1 DT= 5.0 min |   Total Imp(%)=  56.00   Dir. Conn.(%)=  56.00
-------------------
```



```
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        0.88         0.70
     Dep. Storage     (mm)=        1.00         2.00
     Average Slope     (%)=        1.00         2.00
     Length            (m)=      102.63        40.00
     Mannings n           =       0.013        0.250

     Max.Eff.Inten.(mm/hr)=      235.37       138.35
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.84 (ii)    6.39 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.15
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.56         0.21       0.687 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58        0.50
     RUNOFF VOLUME    (mm)=      69.05        48.10       59.83
     TOTAL RAINFALL   (mm)=      70.05        70.05       70.05
     RUNOFF COEFFICIENT   =       0.99         0.69        0.85

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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.

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

-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\d9c70000
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |

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

-------------------
| CALIB            |
| NASHYD   (  0007)|   Area    (ha)=   2.05   Curve Number   (CN)= 70.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=   0.391

     PEAK FLOW       (cms)=   0.245 (i)
     TIME TO PEAK    (hrs)=   0.750
     RUNOFF VOLUME    (mm)=  24.286
     TOTAL RAINFALL   (mm)=  70.050
     RUNOFF COEFFICIENT   =   0.347

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

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-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\d9c70000
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |
```



```
--------------------------------------------------------------------------------

-------------------
| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   1.04
|ID= 1 DT= 5.0 min |   Total Imp(%)=  48.00   Dir. Conn.(%)=  48.00
-------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        0.50         0.54
     Dep. Storage     (mm)=        1.00         2.00
     Average Slope     (%)=        1.00         2.00
     Length            (m)=       83.27        40.00
     Mannings n           =       0.013        0.250

     Max.Eff.Inten.(mm/hr)=      235.37       138.35
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.63 (ii)    7.82 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.13
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.32         0.15       0.408 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58        0.50
     RUNOFF VOLUME    (mm)=      69.05        48.10       58.15
     TOTAL RAINFALL   (mm)=      70.05        70.05       70.05
     RUNOFF COEFFICIENT   =       0.99         0.69        0.83

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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.

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

-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\d9c70000
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |

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

-------------------
| CALIB            |
| STANDHYD (  0002)|   Area    (ha)=   1.05
|ID= 1 DT= 5.0 min |   Total Imp(%)=  41.00   Dir. Conn.(%)=  41.00
-------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        0.43         0.62
     Dep. Storage     (mm)=        1.00         2.00
     Average Slope     (%)=        1.00         2.00
     Length            (m)=       83.67        40.00
     Mannings n           =       0.013        0.250

     Max.Eff.Inten.(mm/hr)=      235.37       138.35
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.63 (ii)    7.83 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.13
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.28         0.17       0.377 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58        0.50
     RUNOFF VOLUME    (mm)=      69.05        48.10       56.69
     TOTAL RAINFALL   (mm)=      70.05        70.05       70.05
```



```
     RUNOFF COEFFICIENT   =       0.99         0.69        0.81

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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.

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

-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\d9c70000
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |

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

-------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   1.06
|ID= 1 DT= 5.0 min |   Total Imp(%)=  52.00   Dir. Conn.(%)=  52.00
-------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        0.55         0.51
     Dep. Storage     (mm)=        1.00         2.00
     Average Slope     (%)=        1.00         2.00
     Length            (m)=       84.06        40.00
     Mannings n           =       0.013        0.250

     Max.Eff.Inten.(mm/hr)=      235.37       138.35
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.63 (ii)    6.49 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.14
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.35         0.15       0.444 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58        0.50
     RUNOFF VOLUME    (mm)=      69.05        48.10       58.99
     TOTAL RAINFALL   (mm)=      70.05        70.05       70.05
     RUNOFF COEFFICIENT   =       0.99         0.69        0.84

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\d9c70000
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |
```

```
--------------------
| CALIB            |
| STANDHYD (  0004)|   Area    (ha)=   0.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  63.00   Dir. Conn.(%)=  63.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.14         0.08
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      30.30        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     235.37       138.35
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.02 (ii)    5.07 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.34         0.16
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.09         0.03       0.107 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58        0.50
     RUNOFF VOLUME    (mm)=      69.05        48.10       61.29
     TOTAL RAINFALL   (mm)=      70.05        70.05       70.05
     RUNOFF COEFFICIENT   =       0.99         0.69        0.87

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  90.0     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  (  0010)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     1.04   0.408     0.50     58.15
     + ID2= 2 (  0002):     1.05   0.377     0.50     56.69
       ====================================================
       ID = 3 (  0010):     2.09   0.785     0.50     57.42

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

--------------------
| ADD HYD  (  0010)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0010):     2.09   0.785     0.50     57.42
     + ID2= 2 (  0003):     1.06   0.444     0.50     58.99
       ====================================================
       ID = 1 (  0010):     3.15   1.230     0.50     57.95

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

--------------------
| ADD HYD  (  0010)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0010):     3.15   1.230     0.50     57.95
     + ID2= 2 (  0004):     0.22   0.107     0.50     61.29
       ====================================================
       ID = 3 (  0010):     3.37   1.336     0.50     58.16

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0010)|
```



```
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0010):     3.37   1.336     0.50     58.16
     + ID2= 2 (  0007):     2.05   0.245     0.75     24.29
       ====================================================
       ID = 1 (  0010):     5.42   1.414     0.50     45.35

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\d9c70000
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |

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

--------------------
| CALIB            |
| STANDHYD (  0005)|   Area    (ha)=   2.30
|ID= 1 DT= 5.0 min |   Total Imp(%)=  69.00   Dir. Conn.(%)=  69.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.59         0.71
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     123.83        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     235.37       138.35
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.06 (ii)    5.70 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.31         0.15
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.99         0.23       1.130 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58        0.50
     RUNOFF VOLUME    (mm)=      69.05        48.10       62.55
     TOTAL RAINFALL   (mm)=      70.05        70.05       70.05
     RUNOFF COEFFICIENT   =       0.99         0.69        0.89

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  90.0     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.

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\d9c70000
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |

-------------------------------------------------------------------------------
```



```
--------------------
| CALIB            |
| STANDHYD (  0006)|   Area    (ha)=   1.17
|ID= 1 DT= 5.0 min |   Total Imp(%)=  47.00   Dir. Conn.(%)=  47.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55         0.62
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      88.32        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     235.37       138.35
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.68 (ii)    7.88 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.13
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.35         0.17       0.452 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58        0.50
     RUNOFF VOLUME    (mm)=      69.05        48.10       57.94
     TOTAL RAINFALL   (mm)=      70.05        70.05       70.05
     RUNOFF COEFFICIENT   =       0.99         0.69        0.83

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  90.0     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.

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              d63cf3c6-cf9e-46e4-a65f-5afb365f61f8\d9c70000
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |

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

--------------------
| CALIB            |
| STANDHYD (  0008)|   Area    (ha)=  14.26
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       7.13         7.13
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     308.33        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     235.37       138.35
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       3.56 (ii)    9.76 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.26         0.11
                                                      *TOTALS*
     PEAK FLOW       (cms)=       4.04         1.83       5.075 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.67        0.50
     RUNOFF VOLUME    (mm)=      69.05        48.10       58.58
     TOTAL RAINFALL   (mm)=      70.05        70.05       70.05
     RUNOFF COEFFICIENT   =       0.99         0.69        0.84

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



```
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  90.0     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  (  0020)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0005):     2.30   1.130     0.50     62.55
     + ID2= 2 (  0006):     1.17   0.452     0.50     57.94
       ====================================================
       ID = 3 (  0020):     3.47   1.582     0.50     61.00

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

--------------------
| ADD HYD  (  0020)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0020):     3.47   1.582     0.50     61.00
     + ID2= 2 (  0008):    14.26   5.075     0.50     58.58
       ====================================================
       ID = 1 (  0020):    17.73   6.657     0.50     59.05

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------------------------------------------------------------------
================================================================================
====================

       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       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 M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                    *****  D E T A I L E D   O U T P U T  *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\6e70f5
29-d8b8-40ca-836b-b20ced424a53\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\6e70f5
29-d8b8-40ca-836b-b20ced424a53\sce

DATE: 11/12/2019                          TIME: 11:30:07

USER:

COMMENTS: _____

-------------------------------------------------------------------------------
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```

```
  ************************************************
  ** SIMULATION : 08 Chicago 3hr 2-yr           **
  ************************************************

--------------------
| CHICAGO STORM    |     IDF curve parameters: A= 724.700
| Ptotal= 33.36 mm |                           B=   5.000
--------------------                           C=   0.800
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.17    2.99 |  1.00   83.04 |  1.83    5.29 |  2.67    2.86
                 0.33    3.69 |  1.17   24.13 |  2.00    4.49 |  2.83    2.63
                 0.50    4.88 |  1.33   12.47 |  2.17    3.91 |  3.00    2.44
                 0.67    7.49 |  1.50    8.49 |  2.33    3.47 |
                 0.83   18.29 |  1.67    6.50 |  2.50    3.13 |


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0030)|   Area    (ha)=   1.58
|ID= 1 DT= 5.0 min |   Total Imp(%)=  56.00   Dir. Conn.(%)=  56.00
--------------------

                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.88         0.70
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     102.63        40.00
     Mannings n           =      0.013        0.250

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


                        ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.99 | 0.833   18.29 | 1.583    6.50 |  2.33    3.47
                0.167    2.99 | 0.917   83.04 | 1.667    6.50 |  2.42    3.13
                0.250    3.69 | 1.000   83.04 | 1.750    5.29 |  2.50    3.13
                0.333    3.69 | 1.083   24.13 | 1.833    5.29 |  2.58    2.86
                0.417    4.88 | 1.167   24.13 | 1.917    4.49 |  2.67    2.86
                0.500    4.88 | 1.250   12.47 | 2.000    4.49 |  2.75    2.63
                0.583    7.49 | 1.333   12.47 | 2.083    3.91 |  2.83    2.63
                0.667    7.49 | 1.417    8.49 | 2.167    3.91 |  2.92    2.44
                0.750   18.29 | 1.500    8.49 | 2.250    3.47 |  3.00    2.44

     Max.Eff.Inten.(mm/hr)=      83.04        31.18
           over (min)        5.00        15.00
     Storage Coeff.  (min)=      2.80 (ii)   14.04 (ii)
     Unit Hyd. Tpeak (min)=      5.00        15.00
     Unit Hyd. peak  (cms)=      0.28         0.08
                                                    *TOTALS*
     PEAK FLOW       (cms)=      0.20         0.04          0.218 (iii)
     TIME TO PEAK    (hrs)=      1.00         1.17           1.00
     RUNOFF VOLUME    (mm)=     32.36        16.51          25.38
     TOTAL RAINFALL   (mm)=     33.36        33.36          33.36
     RUNOFF COEFFICIENT   =      0.97         0.49           0.76

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| CHICAGO STORM    |     IDF curve parameters: A= 724.700
| Ptotal= 33.36 mm |                           B=   5.000
--------------------                           C=   0.800
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.17    2.99 |  1.00   83.04 |  1.83    5.29 |  2.67    2.86
                 0.33    3.69 |  1.17   24.13 |  2.00    4.49 |  2.83    2.63
                 0.50    4.88 |  1.33   12.47 |  2.17    3.91 |  3.00    2.44
                 0.67    7.49 |  1.50    8.49 |  2.33    3.47 |
                 0.83   18.29 |  1.67    6.50 |  2.50    3.13 |


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| CALIB            |
| NASHYD   (  0007)|   Area    (ha)=   2.05   Curve Number   (CN)= 70.0
|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    2.99 | 0.833   18.29 | 1.583    6.50 |  2.33    3.47
                0.167    2.99 | 0.917   83.04 | 1.667    6.50 |  2.42    3.13
                0.250    3.69 | 1.000   83.04 | 1.750    5.29 |  2.50    3.13
                0.333    3.69 | 1.083   24.13 | 1.833    5.29 |  2.58    2.86
                0.417    4.88 | 1.167   24.13 | 1.917    4.49 |  2.67    2.86
                0.500    4.88 | 1.250   12.47 | 2.000    4.49 |  2.75    2.63
                0.583    7.49 | 1.333   12.47 | 2.083    3.91 |  2.83    2.63
                0.667    7.49 | 1.417    8.49 | 2.167    3.91 |  2.92    2.44
                0.750   18.29 | 1.500    8.49 | 2.250    3.47 |  3.00    2.44

     Unit Hyd Qpeak  (cms)=   0.391

     PEAK FLOW      (cms)=   0.037 (i)
     TIME TO PEAK   (hrs)=   1.167
     RUNOFF VOLUME   (mm)=   5.852
     TOTAL RAINFALL  (mm)=  33.364
     RUNOFF COEFFICIENT   =   0.175

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

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| CHICAGO STORM    |     IDF curve parameters: A= 724.700
| Ptotal= 33.36 mm |                           B=   5.000
--------------------                           C=   0.800
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.17    2.99 |  1.00   83.04 |  1.83    5.29 |  2.67    2.86
                 0.33    3.69 |  1.17   24.13 |  2.00    4.49 |  2.83    2.63
                 0.50    4.88 |  1.33   12.47 |  2.17    3.91 |  3.00    2.44
                 0.67    7.49 |  1.50    8.49 |  2.33    3.47 |
                 0.83   18.29 |  1.67    6.50 |  2.50    3.13 |


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| CALIB            |
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| STANDHYD (  0001)|   Area    (ha)=   1.04
|ID= 1 DT= 5.0 min |   Total Imp(%)=  48.00   Dir. Conn.(%)=  48.00
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                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.50         0.54
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      83.27        40.00
     Mannings n           =      0.013        0.250

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


                        ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.99 | 0.833   18.29 | 1.583    6.50 |  2.33    3.47
                0.167    2.99 | 0.917   83.04 | 1.667    6.50 |  2.42    3.13
                0.250    3.69 | 1.000   83.04 | 1.750    5.29 |  2.50    3.13
                0.333    3.69 | 1.083   24.13 | 1.833    5.29 |  2.58    2.86
                0.417    4.88 | 1.167   24.13 | 1.917    4.49 |  2.67    2.86
                0.500    4.88 | 1.250   12.47 | 2.000    4.49 |  2.75    2.63
                0.583    7.49 | 1.333   12.47 | 2.083    3.91 |  2.83    2.63
                0.667    7.49 | 1.417    8.49 | 2.167    3.91 |  2.92    2.44
                0.750   18.29 | 1.500    8.49 | 2.250    3.47 |  3.00    2.44

     Max.Eff.Inten.(mm/hr)=      83.04        31.18
           over (min)        5.00        15.00
     Storage Coeff.  (min)=      2.47 (ii)   13.72 (ii)
     Unit Hyd. Tpeak (min)=      5.00        15.00
     Unit Hyd. peak  (cms)=      0.30         0.08
                                                    *TOTALS*
     PEAK FLOW       (cms)=      0.11         0.03          0.128 (iii)
     TIME TO PEAK    (hrs)=      1.00         1.17           1.00
     RUNOFF VOLUME    (mm)=     32.36        16.51          24.11
     TOTAL RAINFALL   (mm)=     33.36        33.36          33.36
     RUNOFF COEFFICIENT   =      0.97         0.49           0.72

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| CHICAGO STORM    |     IDF curve parameters: A= 724.700
| Ptotal= 33.36 mm |                           B=   5.000
--------------------                           C=   0.800
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.17    2.99 |  1.00   83.04 |  1.83    5.29 |  2.67    2.86
                 0.33    3.69 |  1.17   24.13 |  2.00    4.49 |  2.83    2.63
                 0.50    4.88 |  1.33   12.47 |  2.17    3.91 |  3.00    2.44
                 0.67    7.49 |  1.50    8.49 |  2.33    3.47 |
                 0.83   18.29 |  1.67    6.50 |  2.50    3.13 |


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| CALIB            |
| STANDHYD (  0002)|   Area    (ha)=   1.05
|ID= 1 DT= 5.0 min |   Total Imp(%)=  41.00   Dir. Conn.(%)=  41.00
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                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.43         0.62
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     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      83.67        40.00
     Mannings n           =      0.013        0.250

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


                        ---- TRANSFORMED HYETOGRAPH ----
                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.083    2.99 | 0.833   18.29 | 1.583    6.50 |  2.33    3.47
                0.167    2.99 | 0.917   83.04 | 1.667    6.50 |  2.42    3.13
                0.250    3.69 | 1.000   83.04 | 1.750    5.29 |  2.50    3.13
                0.333    3.69 | 1.083   24.13 | 1.833    5.29 |  2.58    2.86
                0.417    4.88 | 1.167   24.13 | 1.917    4.49 |  2.67    2.86
                0.500    4.88 | 1.250   12.47 | 2.000    4.49 |  2.75    2.63
                0.583    7.49 | 1.333   12.47 | 2.083    3.91 |  2.83    2.63
                0.667    7.49 | 1.417    8.49 | 2.167    3.91 |  2.92    2.44
                0.750   18.29 | 1.500    8.49 | 2.250    3.47 |  3.00    2.44

     Max.Eff.Inten.(mm/hr)=      83.04        31.18
           over (min)        5.00        15.00
     Storage Coeff.  (min)=      2.47 (ii)   13.72 (ii)
     Unit Hyd. Tpeak (min)=      5.00        15.00
     Unit Hyd. peak  (cms)=      0.29         0.08
                                                    *TOTALS*
     PEAK FLOW       (cms)=      0.10         0.03          0.115 (iii)
     TIME TO PEAK    (hrs)=      1.00         1.17           1.00
     RUNOFF VOLUME    (mm)=     32.36        16.51          23.00
     TOTAL RAINFALL   (mm)=     33.36        33.36          33.36
     RUNOFF COEFFICIENT   =      0.97         0.49           0.69

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| CHICAGO STORM    |     IDF curve parameters: A= 724.700
| Ptotal= 33.36 mm |                           B=   5.000
--------------------                           C=   0.800
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.17    2.99 |  1.00   83.04 |  1.83    5.29 |  2.67    2.86
                 0.33    3.69 |  1.17   24.13 |  2.00    4.49 |  2.83    2.63
                 0.50    4.88 |  1.33   12.47 |  2.17    3.91 |  3.00    2.44
                 0.67    7.49 |  1.50    8.49 |  2.33    3.47 |
                 0.83   18.29 |  1.67    6.50 |  2.50    3.13 |


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| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   1.06
|ID= 1 DT= 5.0 min |   Total Imp(%)=  52.00   Dir. Conn.(%)=  52.00
--------------------

                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55         0.51
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      84.06        40.00
     Mannings n           =      0.013        0.250
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NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	0.833	18.29	1.583	6.50	2.33	3.47
0.167	2.99	0.917	83.04	1.667	6.50	2.42	3.13
0.250	3.69	1.000	83.04	1.750	5.29	2.50	3.13
0.333	3.69	1.083	24.13	1.833	5.29	2.58	2.86
0.417	4.88	1.167	24.13	1.917	4.49	2.67	2.86
0.500	4.88	1.250	12.47	2.000	4.49	2.75	2.63
0.583	7.49	1.333	12.47	2.083	3.91	2.83	2.63
0.667	7.49	1.417	8.49	2.167	3.91	2.92	2.44
0.750	18.29	1.500	8.49	2.250	3.47	3.00	2.44

			TOTALS
Max.Eff.Inten.(mm/hr)=	83.04	31.18	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.48 (ii)	13.73 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.29	0.08	
PEAK FLOW (cms)=	0.13	0.03	0.139 (iii)
TIME TO PEAK (hrs)=	1.00	1.17	1.00
RUNOFF VOLUME (mm)=	32.36	16.51	24.75
TOTAL RAINFALL (mm)=	33.36	33.36	33.36
RUNOFF COEFFICIENT =	0.97	0.49	0.74

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM
Ptotal= 33.36 mm

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

CALIB
STANDHYD (0004)
ID= 1 DT= 5.0 min

Area (ha)= 0.22
Total Imp(%)= 63.00 Dir. Conn.(%)= 63.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.14	0.08
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	38.30	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	2.99	0.833	18.29	1.583	6.50	2.33	3.47
0.167	2.99	0.917	83.04	1.667	6.50	2.42	3.13
0.250	3.69	1.000	83.04	1.750	5.29	2.50	3.13
0.333	3.69	1.083	24.13	1.833	5.29	2.58	2.86
0.417	4.88	1.167	24.13	1.917	4.49	2.67	2.86
0.500	4.88	1.250	12.47	2.000	4.49	2.75	2.63
0.583	7.49	1.333	12.47	2.083	3.91	2.83	2.63
0.667	7.49	1.417	8.49	2.167	3.91	2.92	2.44
0.750	18.29	1.500	8.49	2.250	3.47	3.00	2.44

			TOTALS
Max.Eff.Inten.(mm/hr)=	83.04	31.18	
over (min)	5.00	15.00	
Storage Coeff. (min)=	1.55 (ii)	12.80 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.33	0.08	
PEAK FLOW (cms)=	0.03	0.00	0.034 (iii)
TIME TO PEAK (hrs)=	1.00	1.17	1.00
RUNOFF VOLUME (mm)=	32.36	16.51	26.47
TOTAL RAINFALL (mm)=	33.36	33.36	33.36
RUNOFF COEFFICIENT =	0.97	0.49	0.79

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0010)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0001):	1.04	0.128	1.00	24.11
	+ ID2= 2 (0002):	1.05	0.115	1.00	23.00
	ID = 3 (0010):	2.09	0.243	1.00	23.55

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1	ID1= 3 (0010):	2.09	0.243	1.00	23.55
	+ ID2= 2 (0003):	1.06	0.139	1.00	24.75
	ID = 1 (0010):	3.15	0.382	1.00	23.96

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0010):	3.15	0.382	1.00	23.96
	+ ID2= 2 (0004):	0.22	0.034	1.00	26.47
	ID = 3 (0010):	3.37	0.417	1.00	24.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1	ID1= 3 (0010):	3.37	0.417	1.00	24.12

ID2= 2 (0007):	2.05	0.037	1.17	5.85
ID = 1 (0010):	5.42	0.436	1.00	17.21

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CHICAGO STORM
Ptotal= 33.36 mm

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

CALIB
STANDHYD (0005)
ID= 1 DT= 5.0 min

Area (ha)= 2.30
Total Imp(%)= 69.00 Dir. Conn.(%)= 69.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.59	0.71
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	123.83	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	0.833	18.29	1.583	6.50	2.33	3.47
0.167	2.99	0.917	83.04	1.667	6.50	2.42	3.13
0.250	3.69	1.000	83.04	1.750	5.29	2.50	3.13
0.333	3.69	1.083	24.13	1.833	5.29	2.58	2.86
0.417	4.88	1.167	24.13	1.917	4.49	2.67	2.86
0.500	4.88	1.250	12.47	2.000	4.49	2.75	2.63
0.583	7.49	1.333	12.47	2.083	3.91	2.83	2.63
0.667	7.49	1.417	8.49	2.167	3.91	2.92	2.44
0.750	18.29	1.500	8.49	2.250	3.47	3.00	2.44

			TOTALS
Max.Eff.Inten.(mm/hr)=	83.04	31.18	
over (min)	5.00	15.00	
Storage Coeff. (min)=	3.13 (ii)	14.38 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.27	0.08	
PEAK FLOW (cms)=	0.35	0.04	0.373 (iii)
TIME TO PEAK (hrs)=	1.00	1.17	1.00
RUNOFF VOLUME (mm)=	32.36	16.51	27.44
TOTAL RAINFALL (mm)=	33.36	33.36	33.36
RUNOFF COEFFICIENT =	0.97	0.49	0.82

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM
Ptotal= 33.36 mm

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

CALIB
STANDHYD (0006)
ID= 1 DT= 5.0 min

Area (ha)= 1.17
Total Imp(%)= 47.00 Dir. Conn.(%)= 47.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.55	0.62
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	88.32	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	0.833	18.29	1.583	6.50	2.33	3.47
0.167	2.99	0.917	83.04	1.667	6.50	2.42	3.13
0.250	3.69	1.000	83.04	1.750	5.29	2.50	3.13
0.333	3.69	1.083	24.13	1.833	5.29	2.58	2.86
0.417	4.88	1.167	24.13	1.917	4.49	2.67	2.86
0.500	4.88	1.250	12.47	2.000	4.49	2.75	2.63
0.583	7.49	1.333	12.47	2.083	3.91	2.83	2.63
0.667	7.49	1.417	8.49	2.167	3.91	2.92	2.44
0.750	18.29	1.500	8.49	2.250	3.47	3.00	2.44

			TOTALS
Max.Eff.Inten.(mm/hr)=	83.04	31.18	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.55 (ii)	13.80 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.29	0.08	
PEAK FLOW (cms)=	0.12	0.03	0.142 (iii)
TIME TO PEAK (hrs)=	1.00	1.17	1.00
RUNOFF VOLUME (mm)=	32.36	16.51	23.95
TOTAL RAINFALL (mm)=	33.36	33.36	33.36
RUNOFF COEFFICIENT =	0.97	0.49	0.72

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM
Ptotal= 33.36 mm

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

CALIB
STANDHYD (0008)
ID= 1 DT= 5.0 min

Area (ha)= 14.26
Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	7.13	7.13
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	308.33	40.00
Mannings n =	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	0.833	18.29	1.583	6.50	2.33	3.47
0.167	2.99	0.917	83.04	1.667	6.50	2.42	3.13
0.250	3.69	1.000	83.04	1.750	5.29	2.50	3.13
0.333	3.69	1.083	24.13	1.833	5.29	2.58	2.86
0.417	4.88	1.167	24.13	1.917	4.49	2.67	2.86
0.500	4.88	1.250	12.47	2.000	4.49	2.75	2.63
0.583	7.49	1.333	12.47	2.083	3.91	2.83	2.63
0.667	7.49	1.417	8.49	2.167	3.91	2.92	2.44
0.750	18.29	1.500	8.49	2.250	3.47	3.00	2.44

			TOTALS
Max.Eff.Inten.(mm/hr)=	83.04	31.18	
over (min)	5.00	20.00	
Storage Coeff. (min)=	5.41 (ii)	16.66 (ii)	
Unit Hyd. Tpeak (min)=	5.00	20.00	
Unit Hyd. peak (cms)=	0.21	0.06	
PEAK FLOW (cms)=	1.44	0.35	1.559 (iii)
TIME TO PEAK (hrs)=	1.00	1.25	1.00
RUNOFF VOLUME (mm)=	32.36	16.51	24.44
TOTAL RAINFALL (mm)=	33.36	33.36	33.36
RUNOFF COEFFICIENT =	0.97	0.49	0.73

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0020)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0005):	2.30	0.373	1.00	27.44
+ ID2= 2 (0006):	1.17	0.142	1.00	23.95
ID = 3 (0020):	3.47	0.515	1.00	26.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0020)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0020):	3.47	0.515	1.00	26.27
+ ID2= 2 (0008):	14.26	1.559	1.00	24.44
ID = 1 (0020):	17.73	2.073	1.00	24.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       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 M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****

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DATE: 11/12/2019                          TIME: 11:30:08

USER:


COMMENTS: _____
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  **********************************************
  ** SIMULATION : 09 Chicago 3hr 5-yr          **
  **********************************************
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CHICAGO STORM
Ptotal= 45.35 mm

IDF curve parameters: A=1330.300
B= 7.938
C= 0.855
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95

0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB
STANDHYD (0030)
ID= 1 DT= 5.0 min

Area (ha)= 1.58
Total Imp(%)= 56.00 Dir. Conn.(%)= 56.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.88	0.70
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	102.63	40.00
Mannings n =	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.43	0.833	27.27	1.583	8.50	2.33	4.08
0.167	3.43	0.917	112.71	1.667	8.50	2.42	3.61
0.250	4.38	1.000	112.71	1.750	6.69	2.50	3.61
0.333	4.38	1.083	36.59	1.833	6.69	2.58	3.25
0.417	6.09	1.167	36.59	1.917	5.51	2.67	3.25
0.500	6.09	1.250	17.98	2.000	5.51	2.75	2.95
0.583	10.04	1.333	17.98	2.083	4.69	2.83	2.95
0.667	10.04	1.417	11.61	2.167	4.69	2.92	2.70
0.750	27.27	1.500	11.61	2.250	4.08	3.00	2.70

			TOTALS
Max.Eff.Inten.(mm/hr)=	112.71	64.47	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.47 (ii)	10.89 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.29	0.09	
PEAK FLOW (cms)=	0.27	0.07	0.311 (iii)
TIME TO PEAK (hrs)=	1.00	1.17	1.00
RUNOFF VOLUME (mm)=	44.35	26.25	36.38
TOTAL RAINFALL (mm)=	45.35	45.35	45.35
RUNOFF COEFFICIENT =	0.98	0.58	0.80

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM
Ptotal= 45.35 mm

IDF curve parameters: A=1330.300
B= 7.938
C= 0.855
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB
NASHYD (0007)
ID= 1 DT= 5.0 min

Area (ha)= 2.05 Curve Number (CN)= 70.0
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 hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.43	0.833	27.27	1.583	8.50	2.33	4.08
0.167	3.43	0.917	112.71	1.667	8.50	2.42	3.61
0.250	4.38	1.000	112.71	1.750	6.69	2.50	3.61
0.333	4.38	1.083	36.59	1.833	6.69	2.58	3.25
0.417	6.09	1.167	36.59	1.917	5.51	2.67	3.25
0.500	6.09	1.250	17.98	2.000	5.51	2.75	2.95
0.583	10.04	1.333	17.98	2.083	4.69	2.83	2.95
0.667	10.04	1.417	11.61	2.167	4.69	2.92	2.70
0.750	27.27	1.500	11.61	2.250	4.08	3.00	2.70

Unit Hyd Qpeak (cms)= 0.391

PEAK FLOW (cms)= 0.075 (i)
TIME TO PEAK (hrs)= 1.167
RUNOFF VOLUME (mm)= 10.889
TOTAL RAINFALL (mm)= 45.346
RUNOFF COEFFICIENT = 0.240

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

CHICAGO STORM
Ptotal= 45.35 mm

IDF curve parameters: A=1330.300
B= 7.938
C= 0.855
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB
STANDHYD (0001)
ID= 1 DT= 5.0 min

Area (ha)= 1.04
Total Imp(%)= 48.00 Dir. Conn.(%)= 48.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.50	0.54
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	83.27	40.00
Mannings n =	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.43	0.833	27.27	1.583	8.50	2.33	4.08
0.167	3.43	0.917	112.71	1.667	8.50	2.42	3.61

0.250	4.38	1.000	112.71	1.750	6.69	2.50	3.61
0.333	4.38	1.083	36.59	1.833	6.69	2.58	3.25
0.417	6.09	1.167	36.59	1.917	5.51	2.67	3.25
0.500	6.09	1.250	17.98	2.000	5.51	2.75	2.95
0.583	10.04	1.333	17.98	2.083	4.69	2.83	2.95
0.667	10.04	1.417	11.61	2.167	4.69	2.92	2.70
0.750	27.27	1.500	11.61	2.250	4.08	3.00	2.70

Max.Eff.Inten.(mm/hr)=	112.71	64.47	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.18 (ii)	10.59 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.31	0.09	
		TOTALS	
PEAK FLOW (cms)=	0.16	0.06	0.185 (iii)
TIME TO PEAK (hrs)=	1.00	1.17	1.00
RUNOFF VOLUME (mm)=	44.35	26.25	34.93
TOTAL RAINFALL (mm)=	45.35	45.35	45.35
RUNOFF COEFFICIENT =	0.98	0.58	0.77

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	IDF curve parameters: A=1330.300
Ptotal= 45.35 mm	B= 7.938
	C= 0.855

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB	
STANDHYD (0002)	Area (ha)= 1.05
ID= 1 DT= 5.0 min	Total Imp(%)= 41.00 Dir. Conn.(%)= 41.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.43	0.62
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.67	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.43	0.833	27.27	1.583	8.50	2.33	4.08
0.167	3.43	0.917	112.71	1.667	8.50	2.42	3.61
0.250	4.38	1.000	112.71	1.750	6.69	2.50	3.61
0.333	4.38	1.083	36.59	1.833	6.69	2.58	3.25
0.417	6.09	1.167	36.59	1.917	5.51	2.67	3.25
0.500	6.09	1.250	17.98	2.000	5.51	2.75	2.95
0.583	10.04	1.333	17.98	2.083	4.69	2.83	2.95

0.667	10.04	1.417	11.61	2.167	4.69	2.92	2.70
0.750	27.27	1.500	11.61	2.250	4.08	3.00	2.70

Max.Eff.Inten.(mm/hr)=	112.71	64.47	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.19 (ii)	10.60 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.31	0.09	
		TOTALS	
PEAK FLOW (cms)=	0.13	0.07	0.168 (iii)
TIME TO PEAK (hrs)=	1.00	1.17	1.00
RUNOFF VOLUME (mm)=	44.35	26.25	33.67
TOTAL RAINFALL (mm)=	45.35	45.35	45.35
RUNOFF COEFFICIENT =	0.98	0.58	0.74

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0003)	Area (ha)= 1.06
ID= 1 DT= 5.0 min	Total Imp(%)= 52.00 Dir. Conn.(%)= 52.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.55	0.51
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	84.06	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.43	0.833	27.27	1.583	8.50	2.33	4.08
0.167	3.43	0.917	112.71	1.667	8.50	2.42	3.61
0.250	4.38	1.000	112.71	1.750	6.69	2.50	3.61
0.333	4.38	1.083	36.59	1.833	6.69	2.58	3.25
0.417	6.09	1.167	36.59	1.917	5.51	2.67	3.25
0.500	6.09	1.250	17.98	2.000	5.51	2.75	2.95
0.583	10.04	1.333	17.98	2.083	4.69	2.83	2.95
0.667	10.04	1.417	11.61	2.167	4.69	2.92	2.70
0.750	27.27	1.500	11.61	2.250	4.08	3.00	2.70

Max.Eff.Inten.(mm/hr)=	112.71	64.47	
over (min)	5.00	15.00	

Storage Coeff. (min)=	2.19 (ii)	10.61 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.31	0.09	
		TOTALS	
PEAK FLOW (cms)=	0.17	0.05	0.199 (iii)
TIME TO PEAK (hrs)=	1.00	1.17	1.00
RUNOFF VOLUME (mm)=	44.35	26.25	35.65
TOTAL RAINFALL (mm)=	45.35	45.35	45.35
RUNOFF COEFFICIENT =	0.98	0.58	0.79

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	IDF curve parameters: A=1330.300
Ptotal= 45.35 mm	B= 7.938
	C= 0.855

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB	
STANDHYD (0004)	Area (ha)= 0.22
ID= 1 DT= 5.0 min	Total Imp(%)= 63.00 Dir. Conn.(%)= 63.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.14	0.08
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	38.30	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.43	0.833	27.27	1.583	8.50	2.33	4.08
0.167	3.43	0.917	112.71	1.667	8.50	2.42	3.61
0.250	4.38	1.000	112.71	1.750	6.69	2.50	3.61
0.333	4.38	1.083	36.59	1.833	6.69	2.58	3.25
0.417	6.09	1.167	36.59	1.917	5.51	2.67	3.25
0.500	6.09	1.250	17.98	2.000	5.51	2.75	2.95
0.583	10.04	1.333	17.98	2.083	4.69	2.83	2.95
0.667	10.04	1.417	11.61	2.167	4.69	2.92	2.70
0.750	27.27	1.500	11.61	2.250	4.08	3.00	2.70

Max.Eff.Inten.(mm/hr)=	112.71	64.47	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.37 (ii)	9.78 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.33	0.11	
		TOTALS	
PEAK FLOW (cms)=	0.04	0.01	0.051 (iii)

TIME TO PEAK (hrs)=	1.00	1.00	1.00
RUNOFF VOLUME (mm)=	44.35	26.25	37.62
TOTAL RAINFALL (mm)=	45.35	45.35	45.35
RUNOFF COEFFICIENT =	0.98	0.58	0.83

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0010)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	1.04	0.185	1.00	34.93
+ ID2= 2 (0002):	1.05	0.168	1.00	33.67
ID = 3 (0010):	2.09	0.353	1.00	34.29

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0010):	2.09	0.353	1.00	34.29
+ ID2= 2 (0003):	1.06	0.199	1.00	35.65
ID = 1 (0010):	3.15	0.552	1.00	34.75

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):	3.15	0.552	1.00	34.75
+ ID2= 2 (0004):	0.22	0.051	1.00	37.62
ID = 3 (0010):	3.37	0.603	1.00	34.94

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0010):	3.37	0.603	1.00	34.94
+ ID2= 2 (0007):	2.05	0.075	1.17	10.89
ID = 1 (0010):	5.42	0.644	1.00	25.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CHICAGO STORM	IDF curve parameters: A=1330.300
Ptotal= 45.35 mm	B= 7.938
	C= 0.855

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr

0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB
STANDHYD (0005)
ID= 1 DT= 5.0 min

Area (ha)= 2.30
Total Imp(%)= 69.00 Dir. Conn.(%)= 69.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.59	0.71
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	123.83	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.43	0.833	27.27	1.583	8.50	2.33	4.08
0.167	3.43	0.917	112.71	1.667	8.50	2.42	3.61
0.250	4.38	1.000	112.71	1.750	6.69	2.50	3.61
0.333	4.38	1.083	36.59	1.833	6.69	2.58	3.25
0.417	6.09	1.167	36.59	1.917	5.51	2.67	3.25
0.500	6.09	1.250	17.98	2.000	5.51	2.75	2.95
0.583	10.04	1.333	17.98	2.083	4.69	2.83	2.95
0.667	10.04	1.417	11.61	2.167	4.69	2.92	2.70
0.750	27.27	1.500	11.61	2.250	4.08	3.00	2.70

			TOTALS
Max.Eff.Inten.(mm/hr)=		112.71	64.47
over (min)		5.00	10.00
Storage Coeff. (min)=		2.77 (ii)	7.65 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.28	0.13
PEAK FLOW	(cms)=	0.49	0.09 0.561 (iii)
TIME TO PEAK	(hrs)=	1.00	1.08 1.00
RUNOFF VOLUME	(mm)=	44.35	26.25 38.73
TOTAL RAINFALL	(mm)=	45.35	45.35 45.35
RUNOFF COEFFICIENT	=	0.98	0.58 0.85

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM
Ptotal= 45.35 mm

IDF curve parameters: A=1330.300
B= 7.938
C= 0.855
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB
STANDHYD (0006)
ID= 1 DT= 5.0 min

Area (ha)= 1.17
Total Imp(%)= 47.00 Dir. Conn.(%)= 47.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.55	0.62
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	88.32	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.43	0.833	27.27	1.583	8.50	2.33	4.08
0.167	3.43	0.917	112.71	1.667	8.50	2.42	3.61
0.250	4.38	1.000	112.71	1.750	6.69	2.50	3.61
0.333	4.38	1.083	36.59	1.833	6.69	2.58	3.25
0.417	6.09	1.167	36.59	1.917	5.51	2.67	3.25
0.500	6.09	1.250	17.98	2.000	5.51	2.75	2.95
0.583	10.04	1.333	17.98	2.083	4.69	2.83	2.95
0.667	10.04	1.417	11.61	2.167	4.69	2.92	2.70
0.750	27.27	1.500	11.61	2.250	4.08	3.00	2.70

			TOTALS
Max.Eff.Inten.(mm/hr)=		112.71	64.47
over (min)		5.00	15.00
Storage Coeff. (min)=		2.26 (ii)	10.67 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.30	0.09
PEAK FLOW	(cms)=	0.17	0.07 0.205 (iii)
TIME TO PEAK	(hrs)=	1.00	1.17 1.00
RUNOFF VOLUME	(mm)=	44.35	26.25 34.75
TOTAL RAINFALL	(mm)=	45.35	45.35 45.35
RUNOFF COEFFICIENT	=	0.98	0.58 0.77

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM
Ptotal= 45.35 mm

IDF curve parameters: A=1330.300
B= 7.938
C= 0.855
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB

STANDHYD (0008)	Area (ha)= 14.26
ID= 1 DT= 5.0 min	Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	7.13	7.13
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	308.33	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.43	0.833	27.27	1.583	8.50	2.33	4.08
0.167	3.43	0.917	112.71	1.667	8.50	2.42	3.61
0.250	4.38	1.000	112.71	1.750	6.69	2.50	3.61
0.333	4.38	1.083	36.59	1.833	6.69	2.58	3.25
0.417	6.09	1.167	36.59	1.917	5.51	2.67	3.25
0.500	6.09	1.250	17.98	2.000	5.51	2.75	2.95
0.583	10.04	1.333	17.98	2.083	4.69	2.83	2.95
0.667	10.04	1.417	11.61	2.167	4.69	2.92	2.70
0.750	27.27	1.500	11.61	2.250	4.08	3.00	2.70

			TOTALS
Max.Eff.Inten.(mm/hr)=		112.71	64.47
over (min)		5.00	15.00
Storage Coeff. (min)=		4.79 (ii)	13.20 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.22	0.08
PEAK FLOW	(cms)=	2.02	0.69 2.365 (iii)
TIME TO PEAK	(hrs)=	1.00	1.17 1.00
RUNOFF VOLUME	(mm)=	44.35	26.25 35.30
TOTAL RAINFALL	(mm)=	45.35	45.35 45.35
RUNOFF COEFFICIENT	=	0.98	0.58 0.78

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0020)
1 + 2 = 3

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0005):		2.30	0.561	1.00	38.73
+ ID2= 2 (0006):		1.17	0.205	1.00	34.75
ID = 3 (0020):		3.47	0.766	1.00	37.39

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0020)
3 + 2 = 1

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0020):		3.47	0.766	1.00	37.39
+ ID2= 2 (0008):		14.26	2.365	1.00	35.30
ID = 1 (0020):		17.73	3.131	1.00	35.71

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

V V I SSSSS U U A L (v 5.2.2003)
V V I SS U U A A L
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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

Output filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\992ff5c3-d7fd-4123-8842-19820aeb601a\sce
Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\992ff5c3-d7fd-4123-8842-19820aeb601a\sce

DATE: 11/12/2019 TIME: 11:30:08

USER:

COMMENTS: _____

****
** SIMULATION : 10 Chicago 3hr 25-yr **
****

CHICAGO STORM
Ptotal= 60.39 mm

IDF curve parameters: A=1496.300
B= 5.250
C= 0.825
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.89	1.00	158.06	1.83	8.94	2.67	4.66
0.33	6.10	1.17	44.35	2.00	7.51	2.83	4.27
0.50	8.21	1.33	22.12	2.17	6.49	3.00	3.95
0.67	12.90	1.50	14.74	2.33	5.73		
0.83	33.21	1.67	11.10	2.50	5.14		

CALIB
STANDHYD (0030)
ID= 1 DT= 5.0 min

Area (ha)= 1.58
Total Imp(%)= 56.00 Dir. Conn.(%)= 56.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.88	0.70
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	102.63	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.89	0.833	33.21	1.583	11.10	2.33	5.73
0.167	4.89	0.917	158.06	1.667	11.10	2.42	5.14
0.250	6.10	1.000	158.06	1.750	8.94	2.50	5.14
0.333	6.10	1.083	44.35	1.833	8.94	2.58	4.66
0.417	8.21	1.167	44.35	1.917	7.51	2.67	4.66
0.500	8.21	1.250	22.12	2.000	7.51	2.75	4.27
0.583	12.90	1.333	22.12	2.083	6.49	2.83	4.27
0.667	12.90	1.417	14.74	2.167	6.49	2.92	3.95
0.750	33.21	1.500	14.74	2.250	5.73	3.00	3.95

	over (min)		
Max.Eff.Inten.(mm/hr)=	158.06	104.59	
	5.00	10.00	
Storage Coeff. (min)=	2.16 (ii)	9.09 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.12	
			TOTALS
PEAK FLOW (cms)=	0.39	0.13	0.494 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	59.39	39.37	50.58
TOTAL RAINFALL (mm)=	60.39	60.39	60.39
RUNOFF COEFFICIENT =	0.98	0.65	0.84

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	IDF curve parameters: A=1496.300
Ptotal= 60.39 mm	B= 5.250
	C= 0.825

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.89	1.00	158.06	1.83	8.94	2.67	4.66
0.33	6.10	1.17	44.35	2.00	7.51	2.83	4.27
0.50	8.21	1.33	22.12	2.17	6.49	3.00	3.95
0.67	12.90	1.50	14.74	2.33	5.73		
0.83	33.21	1.67	11.10	2.50	5.14		

CALIB	
NASHYD (0007)	Area (ha)= 2.05 Curve Number (CN)= 70.0
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 hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.89	0.833	33.21	1.583	11.10	2.33	5.73
0.167	4.89	0.917	158.06	1.667	11.10	2.42	5.14
0.250	6.10	1.000	158.06	1.750	8.94	2.50	5.14
0.333	6.10	1.083	44.35	1.833	8.94	2.58	4.66

0.417	8.21	1.167	44.35	1.917	7.51	2.67	4.66
0.500	8.21	1.250	22.12	2.000	7.51	2.75	4.27
0.583	12.90	1.333	22.12	2.083	6.49	2.83	4.27
0.667	12.90	1.417	14.74	2.167	6.49	2.92	3.95
0.750	33.21	1.500	14.74	2.250	5.73	3.00	3.95

Unit Hyd Qpeak (cms)= 0.391

PEAK FLOW (cms)= 0.134 (i)
TIME TO PEAK (hrs)= 1.167
RUNOFF VOLUME (mm)= 18.646
TOTAL RAINFALL (mm)= 60.392
RUNOFF COEFFICIENT = 0.309

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

CHICAGO STORM	IDF curve parameters: A=1496.300
Ptotal= 60.39 mm	B= 5.250
	C= 0.825

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.89	1.00	158.06	1.83	8.94	2.67	4.66
0.33	6.10	1.17	44.35	2.00	7.51	2.83	4.27
0.50	8.21	1.33	22.12	2.17	6.49	3.00	3.95
0.67	12.90	1.50	14.74	2.33	5.73		
0.83	33.21	1.67	11.10	2.50	5.14		

CALIB	
STANDHYD (0001)	Area (ha)= 1.04
ID= 1 DT= 5.0 min	Total Imp(%)= 48.00 Dir. Conn.(%)= 48.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.50	0.54
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.27	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.89	0.833	33.21	1.583	11.10	2.33	5.73
0.167	4.89	0.917	158.06	1.667	11.10	2.42	5.14
0.250	6.10	1.000	158.06	1.750	8.94	2.50	5.14
0.333	6.10	1.083	44.35	1.833	8.94	2.58	4.66
0.417	8.21	1.167	44.35	1.917	7.51	2.67	4.66
0.500	8.21	1.250	22.12	2.000	7.51	2.75	4.27
0.583	12.90	1.333	22.12	2.083	6.49	2.83	4.27
0.667	12.90	1.417	14.74	2.167	6.49	2.92	3.95
0.750	33.21	1.500	14.74	2.250	5.73	3.00	3.95

	over (min)		
Max.Eff.Inten.(mm/hr)=	158.06	104.59	
	5.00	10.00	
Storage Coeff. (min)=	1.91 (ii)	8.84 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.12	
			TOTALS
PEAK FLOW (cms)=	0.22	0.10	0.304 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	59.39	39.37	48.97

TOTAL RAINFALL (mm)=	60.39	60.39	60.39
RUNOFF COEFFICIENT =	0.98	0.65	0.81

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	IDF curve parameters: A=1496.300
Ptotal= 60.39 mm	B= 5.250
	C= 0.825

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.89	1.00	158.06	1.83	8.94	2.67	4.66
0.33	6.10	1.17	44.35	2.00	7.51	2.83	4.27
0.50	8.21	1.33	22.12	2.17	6.49	3.00	3.95
0.67	12.90	1.50	14.74	2.33	5.73		
0.83	33.21	1.67	11.10	2.50	5.14		

CALIB	
STANDHYD (0002)	Area (ha)= 1.05
ID= 1 DT= 5.0 min	Total Imp(%)= 41.00 Dir. Conn.(%)= 41.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.43	0.62
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.67	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.89	0.833	33.21	1.583	11.10	2.33	5.73
0.167	4.89	0.917	158.06	1.667	11.10	2.42	5.14
0.250	6.10	1.000	158.06	1.750	8.94	2.50	5.14
0.333	6.10	1.083	44.35	1.833	8.94	2.58	4.66
0.417	8.21	1.167	44.35	1.917	7.51	2.67	4.66
0.500	8.21	1.250	22.12	2.000	7.51	2.75	4.27
0.583	12.90	1.333	22.12	2.083	6.49	2.83	4.27
0.667	12.90	1.417	14.74	2.167	6.49	2.92	3.95
0.750	33.21	1.500	14.74	2.250	5.73	3.00	3.95

	over (min)		
Max.Eff.Inten.(mm/hr)=	158.06	104.59	
	5.00	10.00	
Storage Coeff. (min)=	1.91 (ii)	8.84 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.12	
			TOTALS
PEAK FLOW (cms)=	0.19	0.12	0.286 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	59.39	39.37	47.57
TOTAL RAINFALL (mm)=	60.39	60.39	60.39
RUNOFF COEFFICIENT =	0.98	0.65	0.79

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	IDF curve parameters: A=1496.300
Ptotal= 60.39 mm	B= 5.250
	C= 0.825

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.89	1.00	158.06	1.83	8.94	2.67	4.66
0.33	6.10	1.17	44.35	2.00	7.51	2.83	4.27
0.50	8.21	1.33	22.12	2.17	6.49	3.00	3.95
0.67	12.90	1.50	14.74	2.33	5.73		
0.83	33.21	1.67	11.10	2.50	5.14		

CALIB	
STANDHYD (0003)	Area (ha)= 1.06
ID= 1 DT= 5.0 min	Total Imp(%)= 52.00 Dir. Conn.(%)= 52.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.55	0.51
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	84.06	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.89	0.833	33.21	1.583	11.10	2.33	5.73
0.167	4.89	0.917	158.06	1.667	11.10	2.42	5.14
0.250	6.10	1.000	158.06	1.750	8.94	2.50	5.14
0.333	6.10	1.083	44.35	1.833	8.94	2.58	4.66
0.417	8.21	1.167	44.35	1.917	7.51	2.67	4.66
0.500	8.21	1.250	22.12	2.000	7.51	2.75	4.27
0.583	12.90	1.333	22.12	2.083	6.49	2.83	4.27
0.667	12.90	1.417	14.74	2.167	6.49	2.92	3.95
0.750	33.21	1.500	14.74	2.250	5.73	3.00	3.95

	over (min)		
Max.Eff.Inten.(mm/hr)=	158.06	104.59	
	5.00	10.00	
Storage Coeff. (min)=	1.92 (ii)	8.85 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.12	
			TOTALS
PEAK FLOW (cms)=	0.24	0.10	0.321 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	59.39	39.37	49.78
TOTAL RAINFALL (mm)=	60.39	60.39	60.39
RUNOFF COEFFICIENT =	0.98	0.65	0.82

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| CHICAGO STORM    |    IDF curve parameters: A=1496.300
| Ptotal= 60.39 mm |                          B=   5.250
--------------------                          C=   0.825
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.17    4.89 |  1.00  158.06 |'  1.83    8.94 |  2.67    4.66
                  0.33    6.10 |  1.17   44.35 |'  2.00    7.51 |  2.83    4.27
                  0.50    8.21 |  1.33   22.12 |'  2.17    6.49 |  3.00    3.95
                  0.67   12.90 |  1.50   14.74 |'  2.33    5.73 |
                  0.83   33.21 |  1.67   11.10 |'  2.50    5.14 |


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--------------------
| CALIB            |
| STANDHYD (  0004)|   Area    (ha)=   0.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  63.00   Dir. Conn.(%)=  63.00
--------------------
                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.14         0.08
     Dep. Storage     (mm)=      1.00         2.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=     38.30        40.00
     Mannings n           =     0.013        0.250

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


                         ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    4.89 | 0.833   33.21 |'  1.583  11.10 |  2.33    5.73
                 0.167    4.89 | 0.917  158.06 |'  1.667  11.10 |  2.42    5.14
                 0.250    6.10 | 1.000  158.06 |'  1.750   8.94 |  2.50    5.14
                 0.333    6.10 | 1.083   44.35 |'  1.833   8.94 |  2.58    4.66
                 0.417    8.21 | 1.167   44.35 |'  1.917   7.51 |  2.67    4.66
                 0.500    8.21 | 1.250   22.12 |'  2.000   7.51 |  2.75    4.27
                 0.583   12.90 | 1.333   22.12 |'  2.083   6.49 |  2.83    4.27
                 0.667   12.90 | 1.417   14.74 |'  2.167   6.49 |  2.92    3.95
                 0.750   33.21 | 1.500   14.74 |'  2.250   5.73 |  3.00    3.95

     Max.Eff.Inten.(mm/hr)=    158.06       104.59
           over (min)          5.00        10.00
     Storage Coeff.  (min)=    1.20 (ii)    5.95 (ii)
     Unit Hyd. Tpeak (min)=    5.00        10.00
     Unit Hyd. peak  (cms)=    0.33         0.15
                                                    *TOTALS*
     PEAK FLOW       (cms)=    0.06         0.02      0.077 (iii)
     TIME TO PEAK    (hrs)=    1.00         1.08       1.00
     RUNOFF VOLUME    (mm)=   59.39        39.37      51.97
     TOTAL RAINFALL   (mm)=   60.39        60.39      60.39
     RUNOFF COEFFICIENT   =    0.98         0.65       0.86

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| ADD HYD  (  0010)|
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```
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     1.04   0.304     1.00    48.97
     + ID2= 2 (  0002):     1.05   0.286     1.00    47.57
       ==========================================================
       ID = 3 (  0010):     2.09   0.590     1.00    48.27

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| ADD HYD  (  0010)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0010):     2.09   0.590     1.00    48.27
     + ID2= 2 (  0003):     1.06   0.321     1.00    49.78
       ==========================================================
       ID = 1 (  0010):     3.15   0.912     1.00    48.78

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| ADD HYD  (  0010)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0010):     3.15   0.912     1.00    48.78
     + ID2= 2 (  0004):     0.22   0.077     1.00    51.97
       ==========================================================
       ID = 3 (  0010):     3.37   0.988     1.00    48.98

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| ADD HYD  (  0010)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0010):     3.37   0.988     1.00    48.98
     + ID2= 2 (  0007):     2.05   0.134     1.17    18.65
       ==========================================================
       ID = 1 (  0010):     5.42   1.069     1.00    37.51

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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| CHICAGO STORM    |    IDF curve parameters: A=1496.300
| Ptotal= 60.39 mm |                          B=   5.250
--------------------                          C=   0.825
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.17    4.89 |  1.00  158.06 |'  1.83    8.94 |  2.67    4.66
                  0.33    6.10 |  1.17   44.35 |'  2.00    7.51 |  2.83    4.27
                  0.50    8.21 |  1.33   22.12 |'  2.17    6.49 |  3.00    3.95
                  0.67   12.90 |  1.50   14.74 |'  2.33    5.73 |
                  0.83   33.21 |  1.67   11.10 |'  2.50    5.14 |


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| CALIB            |
| STANDHYD (  0005)|   Area    (ha)=   2.30
|ID= 1 DT= 5.0 min |   Total Imp(%)=  69.00   Dir. Conn.(%)=  69.00
--------------------
                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      1.59         0.71
     Dep. Storage     (mm)=      1.00         2.00
     Average Slope     (%)=      1.00         2.00
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     Length            (m)=    123.83        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    4.89 | 0.833   33.21 |'  1.583  11.10 |  2.33    5.73
                 0.167    4.89 | 0.917  158.06 |'  1.667  11.10 |  2.42    5.14
                 0.250    6.10 | 1.000  158.06 |'  1.750   8.94 |  2.50    5.14
                 0.333    6.10 | 1.083   44.35 |'  1.833   8.94 |  2.58    4.66
                 0.417    8.21 | 1.167   44.35 |'  1.917   7.51 |  2.67    4.66
                 0.500    8.21 | 1.250   22.12 |'  2.000   7.51 |  2.75    4.27
                 0.583   12.90 | 1.333   22.12 |'  2.083   6.49 |  2.83    4.27
                 0.667   12.90 | 1.417   14.74 |'  2.167   6.49 |  2.92    3.95
                 0.750   33.21 | 1.500   14.74 |'  2.250   5.73 |  3.00    3.95

     Max.Eff.Inten.(mm/hr)=    158.06       104.59
           over (min)          5.00        10.00
     Storage Coeff.  (min)=    2.42 (ii)    6.69 (ii)
     Unit Hyd. Tpeak (min)=    5.00        10.00
     Unit Hyd. peak  (cms)=    0.30         0.14
                                                    *TOTALS*
     PEAK FLOW       (cms)=    0.69         0.15      0.818 (iii)
     TIME TO PEAK    (hrs)=    1.00         1.08       1.00
     RUNOFF VOLUME    (mm)=   59.39        39.37      53.18
     TOTAL RAINFALL   (mm)=   60.39        60.39      60.39
     RUNOFF COEFFICIENT   =    0.98         0.65       0.88

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1496.300
| Ptotal= 60.39 mm |                          B=   5.250
--------------------                          C=   0.825
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.17    4.89 |  1.00  158.06 |'  1.83    8.94 |  2.67    4.66
                  0.33    6.10 |  1.17   44.35 |'  2.00    7.51 |  2.83    4.27
                  0.50    8.21 |  1.33   22.12 |'  2.17    6.49 |  3.00    3.95
                  0.67   12.90 |  1.50   14.74 |'  2.33    5.73 |
                  0.83   33.21 |  1.67   11.10 |'  2.50    5.14 |


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| CALIB            |
| STANDHYD (  0006)|   Area    (ha)=   1.17
|ID= 1 DT= 5.0 min |   Total Imp(%)=  47.00   Dir. Conn.(%)=  47.00
--------------------
                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.55         0.62
     Dep. Storage     (mm)=      1.00         2.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=     88.32        40.00
     Mannings n           =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   5.0 MIN. TIME STEP.
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                         ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    4.89 | 0.833   33.21 |'  1.583  11.10 |  2.33    5.73
                 0.167    4.89 | 0.917  158.06 |'  1.667  11.10 |  2.42    5.14
                 0.250    6.10 | 1.000  158.06 |'  1.750   8.94 |  2.50    5.14
                 0.333    6.10 | 1.083   44.35 |'  1.833   8.94 |  2.58    4.66
                 0.417    8.21 | 1.167   44.35 |'  1.917   7.51 |  2.67    4.66
                 0.500    8.21 | 1.250   22.12 |'  2.000   7.51 |  2.75    4.27
                 0.583   12.90 | 1.333   22.12 |'  2.083   6.49 |  2.83    4.27
                 0.667   12.90 | 1.417   14.74 |'  2.167   6.49 |  2.92    3.95
                 0.750   33.21 | 1.500   14.74 |'  2.250   5.73 |  3.00    3.95

     Max.Eff.Inten.(mm/hr)=    158.06       104.59
           over (min)          5.00        10.00
     Storage Coeff.  (min)=    1.97 (ii)    8.91 (ii)
     Unit Hyd. Tpeak (min)=    5.00        10.00
     Unit Hyd. peak  (cms)=    0.31         0.12
                                                    *TOTALS*
     PEAK FLOW       (cms)=    0.24         0.12      0.338 (iii)
     TIME TO PEAK    (hrs)=    1.00         1.08       1.00
     RUNOFF VOLUME    (mm)=   59.39        39.37      48.78
     TOTAL RAINFALL   (mm)=   60.39        60.39      60.39
     RUNOFF COEFFICIENT   =    0.98         0.65       0.81

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1496.300
| Ptotal= 60.39 mm |                          B=   5.250
--------------------                          C=   0.825
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                  0.17    4.89 |  1.00  158.06 |'  1.83    8.94 |  2.67    4.66
                  0.33    6.10 |  1.17   44.35 |'  2.00    7.51 |  2.83    4.27
                  0.50    8.21 |  1.33   22.12 |'  2.17    6.49 |  3.00    3.95
                  0.67   12.90 |  1.50   14.74 |'  2.33    5.73 |
                  0.83   33.21 |  1.67   11.10 |'  2.50    5.14 |


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| CALIB            |
| STANDHYD (  0008)|   Area    (ha)=  14.26
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------
                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      7.13         7.13
     Dep. Storage     (mm)=      1.00         2.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=    308.33        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    4.89 | 0.833   33.21 |'  1.583  11.10 |  2.33    5.73
```

0.167	4.89	0.917	158.06	1.667	11.10	2.42	5.14
0.250	6.10	1.000	158.06	1.750	8.94	2.50	5.14
0.333	6.10	1.083	44.35	1.833	8.94	2.58	4.66
0.417	8.21	1.167	44.35	1.917	7.51	2.67	4.66
0.500	8.21	1.250	22.12	2.000	7.51	2.75	4.27
0.583	12.90	1.333	22.12	2.083	6.49	2.83	4.27
0.667	12.90	1.417	14.74	2.167	6.49	2.92	3.95
0.750	33.21	1.500	14.74	2.250	5.73	3.00	3.95

Max.Eff.Inten.(mm/hr)=	158.06	104.59	
over (min)	5.00	15.00	
Storage Coeff. (min)=	4.18 (ii)	11.11 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.24	0.09	
			TOTALS
PEAK FLOW (cms)=	2.90	1.16	3.530 (iii)
TIME TO PEAK (hrs)=	1.00	1.17	1.00
RUNOFF VOLUME (mm)=	59.39	39.37	49.38
TOTAL RAINFALL (mm)=	60.39	60.39	60.39
RUNOFF COEFFICIENT =	0.98	0.65	0.82

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0020)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (0005):	2.30	0.818	1.00	53.18	
+ ID2= 2 (0006):	1.17	0.338	1.00	48.78	
ID = 3 (0020):	3.47	1.156	1.00	51.70	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0020)					
3 + 2 = 1	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 3 (0020):	3.47	1.156	1.00	51.70	
+ ID2= 2 (0008):	14.26	3.530	1.00	49.38	
ID = 1 (0020):	17.73	4.686	1.00	49.83	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
V    V   I    SS     U   U   A A   L
 V  V    I     SS    U   U  AAAAA  L
 V  V    I      SS   U   U  A   A  L
  VV     I    SSSSS  UUUUU  A   A  LLLLL

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

Output filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\243a2d47-5b71-4da3-ad80-a1428f053ce2\sce
Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\243a2d47-5b71-4da3-ad80-a1428f053ce2\sce

DATE: 11/12/2019 TIME: 11:30:09

USER:

COMMENTS: _____

```
**********************************************
** SIMULATION : 11 Chicago 3hr 100-yr          **
**********************************************
```

CHICAGO STORM	IDF curve parameters: A=1499.500
Ptotal= 71.76 mm	B= 3.298
	C= 0.794

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

CALIB					
STANDHYD (0030)	Area	(ha)=	1.58		
ID= 1 DT= 5.0 min	Total Imp(%)=	56.00	Dir. Conn.(%)=	56.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.88	0.70
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	102.63	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.35	0.833	36.28	1.583	13.33	2.33	7.33
0.167	6.35	0.917	192.16	1.667	13.33	2.42	6.64
0.250	7.76	1.000	192.16	1.750	10.97	2.50	6.64
0.333	7.76	1.083	47.74	1.833	10.97	2.58	6.07
0.417	10.16	1.167	47.74	1.917	9.37	2.67	6.07
0.500	10.16	1.250	24.88	2.000	9.37	2.75	5.61
0.583	15.26	1.333	24.88	2.083	8.21	2.83	5.61
0.667	15.26	1.417	17.22	2.167	8.21	2.92	5.22
0.750	36.28	1.500	17.22	2.250	7.33	3.00	5.22

Max.Eff.Inten.(mm/hr)=	192.16	136.59	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.00 (ii)	6.93 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.14	
			TOTALS
PEAK FLOW (cms)=	0.47	0.19	0.634 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	70.76	49.66	61.47
TOTAL RAINFALL (mm)=	71.76	71.76	71.76
RUNOFF COEFFICIENT =	0.99	0.69	0.86

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	IDF curve parameters: A=1499.500
Ptotal= 71.76 mm	B= 3.298
	C= 0.794

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

CALIB					
NASHYD (0007)	Area	(ha)=	2.05	Curve Number	(CN)= 70.0
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 hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.35	0.833	36.28	1.583	13.33	2.33	7.33
0.167	6.35	0.917	192.16	1.667	13.33	2.42	6.64
0.250	7.76	1.000	192.16	1.750	10.97	2.50	6.64
0.333	7.76	1.083	47.74	1.833	10.97	2.58	6.07
0.417	10.16	1.167	47.74	1.917	9.37	2.67	6.07
0.500	10.16	1.250	24.88	2.000	9.37	2.75	5.61
0.583	15.26	1.333	24.88	2.083	8.21	2.83	5.61
0.667	15.26	1.417	17.22	2.167	8.21	2.92	5.22
0.750	36.28	1.500	17.22	2.250	7.33	3.00	5.22

Unit Hyd Qpeak (cms)=	0.391	
PEAK FLOW (cms)=	0.184 (i)	
TIME TO PEAK (hrs)=	1.167	
RUNOFF VOLUME (mm)=	25.328	
TOTAL RAINFALL (mm)=	71.757	
RUNOFF COEFFICIENT =	0.353	

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

CHICAGO STORM	IDF curve parameters: A=1499.500
Ptotal= 71.76 mm	B= 3.298
	C= 0.794

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

CALIB					
STANDHYD (0001)	Area	(ha)=	1.04		
ID= 1 DT= 5.0 min	Total Imp(%)=	48.00	Dir. Conn.(%)=	48.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.50	0.54
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.27	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.35	0.833	36.28	1.583	13.33	2.33	7.33
0.167	6.35	0.917	192.16	1.667	13.33	2.42	6.64
0.250	7.76	1.000	192.16	1.750	10.97	2.50	6.64
0.333	7.76	1.083	47.74	1.833	10.97	2.58	6.07
0.417	10.16	1.167	47.74	1.917	9.37	2.67	6.07
0.500	10.16	1.250	24.88	2.000	9.37	2.75	5.61
0.583	15.26	1.333	24.88	2.083	8.21	2.83	5.61
0.667	15.26	1.417	17.22	2.167	8.21	2.92	5.22
0.750	36.28	1.500	17.22	2.250	7.33	3.00	5.22

Max.Eff.Inten.(mm/hr)=	192.16	136.59	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.76 (ii)	7.99 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.13	
			TOTALS
PEAK FLOW (cms)=	0.27	0.14	0.384 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	70.76	49.66	59.78
TOTAL RAINFALL (mm)=	71.76	71.76	71.76
RUNOFF COEFFICIENT =	0.99	0.69	0.83

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	IDF curve parameters: A=1499.500
Ptotal= 71.76 mm	B= 3.298
	C= 0.794

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

CALIB
STANDHYD (0002)
ID= 1 DT= 5.0 min

Area (ha)= 1.05
Total Imp(%)= 41.00 Dir. Conn.(%)= 41.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.43	0.62
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.67	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.35	0.833	36.28	1.583	13.33	2.33	7.33
0.167	6.35	0.917	192.16	1.667	13.33	2.42	6.64
0.250	7.76	1.000	192.16	1.750	10.97	2.50	6.64
0.333	7.76	1.083	47.74	1.833	10.97	2.58	6.07
0.417	10.16	1.167	47.74	1.917	9.37	2.67	6.07
0.500	10.16	1.250	24.88	2.000	9.37	2.75	5.61
0.583	15.26	1.333	24.88	2.083	8.21	2.83	5.61
0.667	15.26	1.417	17.22	2.167	8.21	2.92	5.22
0.750	36.28	1.500	17.22	2.250	7.33	3.00	5.22

Max.Eff.Inten.(mm/hr)=		192.16	136.59	
over (min)		5.00	10.00	
Storage Coeff. (min)=		1.77 (ii)	8.00 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.32	0.13	
				TOTALS
PEAK FLOW	(cms)=	0.23	0.16	0.365 (iii)
TIME TO PEAK	(hrs)=	1.00	1.08	1.00
RUNOFF VOLUME	(mm)=	70.76	49.66	58.31
TOTAL RAINFALL	(mm)=	71.76	71.76	71.76
RUNOFF COEFFICIENT	=	0.99	0.69	0.81

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM
Ptotal= 71.76 mm

IDF curve parameters: A=1499.500
B= 3.298
C= 0.794
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

CALIB
STANDHYD (0003)
ID= 1 DT= 5.0 min

Area (ha)= 1.06
Total Imp(%)= 52.00 Dir. Conn.(%)= 52.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.55	0.51
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	84.06	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.35	0.833	36.28	1.583	13.33	2.33	7.33
0.167	6.35	0.917	192.16	1.667	13.33	2.42	6.64
0.250	7.76	1.000	192.16	1.750	10.97	2.50	6.64
0.333	7.76	1.083	47.74	1.833	10.97	2.58	6.07
0.417	10.16	1.167	47.74	1.917	9.37	2.67	6.07
0.500	10.16	1.250	24.88	2.000	9.37	2.75	5.61
0.583	15.26	1.333	24.88	2.083	8.21	2.83	5.61
0.667	15.26	1.417	17.22	2.167	8.21	2.92	5.22
0.750	36.28	1.500	17.22	2.250	7.33	3.00	5.22

Max.Eff.Inten.(mm/hr)=		192.16	136.59	
over (min)		5.00	10.00	
Storage Coeff. (min)=		1.77 (ii)	8.00 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.32	0.13	
				TOTALS
PEAK FLOW	(cms)=	0.29	0.13	0.405 (iii)
TIME TO PEAK	(hrs)=	1.00	1.08	1.00
RUNOFF VOLUME	(mm)=	70.76	49.66	60.63
TOTAL RAINFALL	(mm)=	71.76	71.76	71.76
RUNOFF COEFFICIENT	=	0.99	0.69	0.84

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM
Ptotal= 71.76 mm

IDF curve parameters: A=1499.500
B= 3.298
C= 0.794
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

CALIB
STANDHYD (0004)
ID= 1 DT= 5.0 min

Area (ha)= 0.22
Total Imp(%)= 63.00 Dir. Conn.(%)= 63.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.14	0.08
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	38.30	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.35	0.833	36.28	1.583	13.33	2.33	7.33
0.167	6.35	0.917	192.16	1.667	13.33	2.42	6.64
0.250	7.76	1.000	192.16	1.750	10.97	2.50	6.64
0.333	7.76	1.083	47.74	1.833	10.97	2.58	6.07
0.417	10.16	1.167	47.74	1.917	9.37	2.67	6.07
0.500	10.16	1.250	24.88	2.000	9.37	2.75	5.61
0.583	15.26	1.333	24.88	2.083	8.21	2.83	5.61
0.667	15.26	1.417	17.22	2.167	8.21	2.92	5.22
0.750	36.28	1.500	17.22	2.250	7.33	3.00	5.22

Max.Eff.Inten.(mm/hr)=		192.16	136.59	
over (min)		5.00	10.00	
Storage Coeff. (min)=		1.11 (ii)	5.50 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.34	0.16	
				TOTALS
PEAK FLOW	(cms)=	0.07	0.02	0.095 (iii)
TIME TO PEAK	(hrs)=	1.00	1.08	1.00
RUNOFF VOLUME	(mm)=	70.76	49.66	62.94
TOTAL RAINFALL	(mm)=	71.76	71.76	71.76
RUNOFF COEFFICIENT	=	0.99	0.69	0.88

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0010)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	1.04	0.384	1.00	59.78
+ ID2= 2 (0002):	1.05	0.365	1.00	58.31
ID = 3 (0010):	2.09	0.749	1.00	59.04

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0010):	2.09	0.749	1.00	59.04
+ ID2= 2 (0003):	1.06	0.405	1.00	60.63

ID = 1 (0010):	3.15	1.154	1.00	59.58			

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):	3.15	1.154	1.00	59.58
+ ID2= 2 (0004):	0.22	0.095	1.00	62.94
ID = 3 (0010):	3.37	1.249	1.00	59.80

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0010):	3.37	1.249	1.00	59.80
+ ID2= 2 (0007):	2.05	0.184	1.17	25.33
ID = 1 (0010):	5.42	1.366	1.00	46.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CHICAGO STORM
Ptotal= 71.76 mm

IDF curve parameters: A=1499.500
B= 3.298
C= 0.794
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

CALIB
STANDHYD (0005)
ID= 1 DT= 5.0 min

Area (ha)= 2.30
Total Imp(%)= 69.00 Dir. Conn.(%)= 69.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.59	0.71
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	123.83	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.35	0.833	36.28	1.583	13.33	2.33	7.33
0.167	6.35	0.917	192.16	1.667	13.33	2.42	6.64
0.250	7.76	1.000	192.16	1.750	10.97	2.50	6.64
0.333	7.76	1.083	47.74	1.833	10.97	2.58	6.07
0.417	10.16	1.167	47.74	1.917	9.37	2.67	6.07
0.500	10.16	1.250	24.88	2.000	9.37	2.75	5.61
0.583	15.26	1.333	24.88	2.083	8.21	2.83	5.61
0.667	15.26	1.417	17.22	2.167	8.21	2.92	5.22

0.750	36.28	1.500	17.22	2.250	7.33	3.00	5.22		

Max.Eff.Inten.(mm/hr)=	192.16	136.59	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.24 (ii)	6.18 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.30	0.15	
			TOTALS
PEAK FLOW (cms)=	0.84	0.20	1.017 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	70.76	49.66	64.22
TOTAL RAINFALL (mm)=	71.76	71.76	71.76
RUNOFF COEFFICIENT =	0.99	0.69	0.89

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	IDF curve parameters: A=1499.500
Ptotal= 71.76 mm	B= 3.298
	C= 0.794

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

CALIB	
STANDHYD (0006)	Area (ha)= 1.17
ID= 1 DT= 5.0 min	Total Imp(%)= 47.00 Dir. Conn.(%)= 47.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.55	0.62
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	88.32	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.35	0.833	36.28	1.583	13.33	2.33	7.33
0.167	6.35	0.917	192.16	1.667	13.33	2.42	6.64
0.250	7.76	1.000	192.16	1.750	10.97	2.50	6.64
0.333	7.76	1.083	47.74	1.833	10.97	2.58	6.07
0.417	10.16	1.167	47.74	1.917	9.37	2.67	6.07
0.500	10.16	1.250	24.88	2.000	9.37	2.75	5.61
0.583	15.26	1.333	24.88	2.083	8.21	2.83	5.61
0.667	15.26	1.417	17.22	2.167	8.21	2.92	5.22
0.750	36.28	1.500	17.22	2.250	7.33	3.00	5.22

Max.Eff.Inten.(mm/hr)=	192.16	136.59	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.83 (ii)	8.06 (ii)	

Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.13	
			TOTALS
PEAK FLOW (cms)=	0.29	0.16	0.428 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	70.76	49.66	59.57
TOTAL RAINFALL (mm)=	71.76	71.76	71.76
RUNOFF COEFFICIENT =	0.99	0.69	0.83

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	IDF curve parameters: A=1499.500
Ptotal= 71.76 mm	B= 3.298
	C= 0.794

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

CALIB	
STANDHYD (0008)	Area (ha)= 14.26
ID= 1 DT= 5.0 min	Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	7.13	7.13
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	308.33	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.35	0.833	36.28	1.583	13.33	2.33	7.33
0.167	6.35	0.917	192.16	1.667	13.33	2.42	6.64
0.250	7.76	1.000	192.16	1.750	10.97	2.50	6.64
0.333	7.76	1.083	47.74	1.833	10.97	2.58	6.07
0.417	10.16	1.167	47.74	1.917	9.37	2.67	6.07
0.500	10.16	1.250	24.88	2.000	9.37	2.75	5.61
0.583	15.26	1.333	24.88	2.083	8.21	2.83	5.61
0.667	15.26	1.417	17.22	2.167	8.21	2.92	5.22
0.750	36.28	1.500	17.22	2.250	7.33	3.00	5.22

Max.Eff.Inten.(mm/hr)=	192.16	136.59	
over (min)	5.00	15.00	
Storage Coeff. (min)=	3.87 (ii)	10.10 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.25	0.10	
			TOTALS
PEAK FLOW (cms)=	3.57	1.54	4.438 (iii)
TIME TO PEAK (hrs)=	1.00	1.17	1.00

RUNOFF VOLUME (mm)=	70.76	49.66	60.21
TOTAL RAINFALL (mm)=	71.76	71.76	71.76
RUNOFF COEFFICIENT =	0.99	0.69	0.84

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0020)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0005):	2.30	1.017	1.00	64.22
+ ID2= 2 (0006):	1.17	0.428	1.00	59.57
ID = 3 (0020):	3.47	1.445	1.00	62.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0020)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0020):	3.47	1.445	1.00	62.65
+ ID2= 2 (0008):	14.26	4.438	1.00	60.21
ID = 1 (0020):	17.73	5.883	1.00	60.69

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       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 M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****

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DATE: 11/12/2019                          TIME: 11:30:09

USER:
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COMMENTS: _____

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  ************************************************
  ** SIMULATION : 12 Chicago 3hr 250-yr Regulat **
  ************************************************
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CHICAGO STORM	IDF curve parameters: A=1498.100
Ptotal= 78.29 mm	B= 2.188
	C= 0.778

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

CALIB	
STANDHYD (0030)	Area (ha)= 1.58
ID= 1 DT= 5.0 min	Total Imp(%)= 56.00 Dir. Conn.(%)= 56.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.88	0.70
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	102.63	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	7.21	0.833	37.27	1.583	14.57	2.33	8.28
0.167	7.21	0.917	214.13	1.667	14.57	2.42	7.53
0.250	8.74	1.000	214.13	1.750	12.13	2.50	7.53
0.333	8.74	1.083	48.43	1.833	12.13	2.58	6.92
0.417	11.28	1.167	48.43	1.917	10.45	2.67	6.92
0.500	11.28	1.250	26.15	2.000	10.45	2.75	6.41
0.583	16.53	1.333	26.15	2.083	9.22	2.83	6.41
0.667	16.53	1.417	18.53	2.167	9.22	2.92	5.98
0.750	37.27	1.500	18.53	2.250	8.28	3.00	5.98

Max.Eff.Inten.(mm/hr)=	214.13	157.21	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.91 (ii)	6.64 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.14	
			TOTALS
PEAK FLOW (cms)=	0.52	0.22	0.717 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	77.29	55.69	67.78
TOTAL RAINFALL (mm)=	78.29	78.29	78.29
RUNOFF COEFFICIENT =	0.99	0.71	0.87

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

| CHICAGO STORM | IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm | B= 2.188
C= 0.778
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

CALIB	
NASHYD (0007)	Area (ha)= 2.05 Curve Number (CN)= 70.0
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 hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	7.21	0.833	37.27	1.583	14.57	2.33	8.28
0.167	7.21	0.917	214.13	1.667	14.57	2.42	7.53
0.250	8.74	1.000	214.13	1.750	12.13	2.50	7.53
0.333	8.74	1.083	48.43	1.833	12.13	2.58	6.92
0.417	11.28	1.167	48.43	1.917	10.45	2.67	6.92
0.500	11.28	1.250	26.15	2.000	10.45	2.75	6.41
0.583	16.53	1.333	26.15	2.083	9.22	2.83	6.41
0.667	16.53	1.417	18.53	2.167	9.22	2.92	5.98
0.750	37.27	1.500	18.53	2.250	8.28	3.00	5.98

Unit Hyd Qpeak (cms)= 0.391

PEAK FLOW (cms)= 0.215 (i)
TIME TO PEAK (hrs)= 1.167
RUNOFF VOLUME (mm)= 29.435
TOTAL RAINFALL (mm)= 78.293
RUNOFF COEFFICIENT = 0.376

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

| CHICAGO STORM | IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm | B= 2.188
C= 0.778
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

CALIB	
STANDHYD (0001)	Area (ha)= 1.04
ID= 1 DT= 5.0 min	Total Imp(%)= 48.00 Dir. Conn.(%)= 48.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.50	0.54
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	83.27	40.00
Mannings n =	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	7.21	0.833	37.27	1.583	14.57	2.33	8.28
0.167	7.21	0.917	214.13	1.667	14.57	2.42	7.53
0.250	8.74	1.000	214.13	1.750	12.13	2.50	7.53
0.333	8.74	1.083	48.43	1.833	12.13	2.58	6.92
0.417	11.28	1.167	48.43	1.917	10.45	2.67	6.92
0.500	11.28	1.250	26.15	2.000	10.45	2.75	6.41
0.583	16.53	1.333	26.15	2.083	9.22	2.83	6.41
0.667	16.53	1.417	18.53	2.167	9.22	2.92	5.98
0.750	37.27	1.500	18.53	2.250	8.28	3.00	5.98

		over (min)		
Max.Eff.Inten.(mm/hr)=	214.13	5.00	157.21	10.00
Storage Coeff. (min)=	1.69 (ii)		7.58 (ii)	
Unit Hyd. Tpeak (min)=	5.00		10.00	
Unit Hyd. peak (cms)=	0.32		0.13	

		TOTALS
PEAK FLOW (cms)=	0.30	0.16	0.437 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	77.29	55.69	66.06
TOTAL RAINFALL (mm)=	78.29	78.29	78.29
RUNOFF COEFFICIENT =	0.99	0.71	0.84

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

| CHICAGO STORM | IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm | B= 2.188
C= 0.778
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

CALIB

| STANDHYD (0002) | Area (ha)= 1.05
| ID= 1 DT= 5.0 min | Total Imp(%)= 41.00 Dir. Conn.(%)= 41.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.43	0.62
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	83.67	40.00
Mannings n =	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	7.21	0.833	37.27	1.583	14.57	2.33	8.28
0.167	7.21	0.917	214.13	1.667	14.57	2.42	7.53
0.250	8.74	1.000	214.13	1.750	12.13	2.50	7.53
0.333	8.74	1.083	48.43	1.833	12.13	2.58	6.92
0.417	11.28	1.167	48.43	1.917	10.45	2.67	6.92
0.500	11.28	1.250	26.15	2.000	10.45	2.75	6.41
0.583	16.53	1.333	26.15	2.083	9.22	2.83	6.41
0.667	16.53	1.417	18.53	2.167	9.22	2.92	5.98
0.750	37.27	1.500	18.53	2.250	8.28	3.00	5.98

		over (min)		
Max.Eff.Inten.(mm/hr)=	214.13	5.00	157.21	10.00
Storage Coeff. (min)=	1.69 (ii)		7.58 (ii)	
Unit Hyd. Tpeak (min)=	5.00		10.00	
Unit Hyd. peak (cms)=	0.32		0.13	

		TOTALS
PEAK FLOW (cms)=	0.26	0.18	0.416 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	77.29	55.69	64.54
TOTAL RAINFALL (mm)=	78.29	78.29	78.29
RUNOFF COEFFICIENT =	0.99	0.71	0.82

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

| CHICAGO STORM | IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm | B= 2.188
C= 0.778
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

CALIB	
STANDHYD (0003)	Area (ha)= 1.06
ID= 1 DT= 5.0 min	Total Imp(%)= 52.00 Dir. Conn.(%)= 52.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.55	0.51

Dep. Storage	(mm)=	1.00 2.00
Average Slope	(%)=	1.00 2.00
Length	(m)=	84.06 40.00
Mannings n	=	0.013 0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	7.21	0.833	37.27	1.583	14.57	2.33	8.28
0.167	7.21	0.917	214.13	1.667	14.57	2.42	7.53
0.250	8.74	1.000	214.13	1.750	12.13	2.50	7.53
0.333	8.74	1.083	48.43	1.833	12.13	2.58	6.92
0.417	11.28	1.167	48.43	1.917	10.45	2.67	6.92
0.500	11.28	1.250	26.15	2.000	10.45	2.75	6.41
0.583	16.53	1.333	26.15	2.083	9.22	2.83	6.41
0.667	16.53	1.417	18.53	2.167	9.22	2.92	5.98
0.750	37.27	1.500	18.53	2.250	8.28	3.00	5.98

		over (min)		
Max.Eff.Inten.(mm/hr)=	214.13	5.00	157.21	10.00
Storage Coeff. (min)=	1.70 (ii)		7.59 (ii)	
Unit Hyd. Tpeak (min)=	5.00		10.00	
Unit Hyd. peak (cms)=	0.32		0.13	

		TOTALS
PEAK FLOW (cms)=	0.33	0.15	0.459 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	77.29	55.69	66.92
TOTAL RAINFALL (mm)=	78.29	78.29	78.29
RUNOFF COEFFICIENT =	0.99	0.71	0.85

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

| CHICAGO STORM | IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm | B= 2.188
C= 0.778
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

CALIB	
STANDHYD (0004)	Area (ha)= 0.22
ID= 1 DT= 5.0 min	Total Imp(%)= 63.00 Dir. Conn.(%)= 63.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.14	0.08
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	38.30	40.00
Mannings n =	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	7.21	0.833	37.27	1.583	14.57	2.33	8.28
0.167	7.21	0.917	214.13	1.667	14.57	2.42	7.53
0.250	8.74	1.000	214.13	1.750	12.13	2.50	7.53
0.333	8.74	1.083	48.43	1.833	12.13	2.58	6.92
0.417	11.28	1.167	48.43	1.917	10.45	2.67	6.92
0.500	11.28	1.250	26.15	2.000	10.45	2.75	6.41
0.583	16.53	1.333	26.15	2.083	9.22	2.83	6.41
0.667	16.53	1.417	18.53	2.167	9.22	2.92	5.98
0.750	37.27	1.500	18.53	2.250	8.28	3.00	5.98

Max.Eff.Inten.(mm/hr)=	214.13	157.21	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.06 (ii)	5.27 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.34	0.16	
			TOTALS
PEAK FLOW (cms)=	0.08	0.03	0.107 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	77.29	55.69	69.29
TOTAL RAINFALL (mm)=	78.29	78.29	78.29
RUNOFF COEFFICIENT =	0.99	0.71	0.88

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0010)					
1 + 2 = 3		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0001):		1.04	0.437	1.00	66.06
+ ID2= 2 (0002):		1.05	0.416	1.00	64.54
ID = 3 (0010):		2.09	0.853	1.00	65.30

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
3 + 2 = 1		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0010):		2.09	0.853	1.00	65.30
+ ID2= 2 (0003):		1.06	0.459	1.00	66.92
ID = 1 (0010):		3.15	1.312	1.00	65.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
1 + 2 = 3		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):		3.15	1.312	1.00	65.84
+ ID2= 2 (0004):		0.22	0.107	1.00	69.29
ID = 3 (0010):		3.37	1.419	1.00	66.07

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
3 + 2 = 1		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0010):		3.37	1.419	1.00	66.07
+ ID2= 2 (0007):		2.05	0.215	1.17	29.43
ID = 1 (0010):		5.42	1.560	1.00	52.21

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CHICAGO STORM	
Ptotal= 78.29 mm	

IDF curve parameters: A=1498.100
B= 2.188
C= 0.778
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

CALIB			
STANDHYD (0005)	Area	(ha)=	2.30
ID= 1 DT= 5.0 min	Total Imp(%)=		69.00 Dir. Conn.(%)= 69.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.59	0.71
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	123.83	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	7.21	0.833	37.27	1.583	14.57	2.33	8.28
0.167	7.21	0.917	214.13	1.667	14.57	2.42	7.53
0.250	8.74	1.000	214.13	1.750	12.13	2.50	7.53
0.333	8.74	1.083	48.43	1.833	12.13	2.58	6.92
0.417	11.28	1.167	48.43	1.917	10.45	2.67	6.92
0.500	11.28	1.250	26.15	2.000	10.45	2.75	6.41
0.583	16.53	1.333	26.15	2.083	9.22	2.83	6.41
0.667	16.53	1.417	18.53	2.167	9.22	2.92	5.98
0.750	37.27	1.500	18.53	2.250	8.28	3.00	5.98

Max.Eff.Inten.(mm/hr)=	214.13	157.21	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.14 (ii)	5.92 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.15	
			TOTALS
PEAK FLOW (cms)=	0.94	0.23	1.145 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	77.29	55.69	70.60
TOTAL RAINFALL (mm)=	78.29	78.29	78.29
RUNOFF COEFFICIENT =	0.99	0.71	0.90

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 90.0 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.

CHICAGO STORM	
Ptotal= 78.29 mm	

IDF curve parameters: A=1498.100
B= 2.188
C= 0.778
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

CALIB			
STANDHYD (0006)	Area	(ha)=	1.17
ID= 1 DT= 5.0 min	Total Imp(%)=		47.00 Dir. Conn.(%)= 47.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.55	0.62
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	88.32	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	7.21	0.833	37.27	1.583	14.57	2.33	8.28
0.167	7.21	0.917	214.13	1.667	14.57	2.42	7.53
0.250	8.74	1.000	214.13	1.750	12.13	2.50	7.53
0.333	8.74	1.083	48.43	1.833	12.13	2.58	6.92
0.417	11.28	1.167	48.43	1.917	10.45	2.67	6.92
0.500	11.28	1.250	26.15	2.000	10.45	2.75	6.41
0.583	16.53	1.333	26.15	2.083	9.22	2.83	6.41
0.667	16.53	1.417	18.53	2.167	9.22	2.92	5.98
0.750	37.27	1.500	18.53	2.250	8.28	3.00	5.98

Max.Eff.Inten.(mm/hr)=	214.13	157.21	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.75 (ii)	7.64 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.13	
			TOTALS
PEAK FLOW (cms)=	0.33	0.18	0.486 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	77.29	55.69	65.84
TOTAL RAINFALL (mm)=	78.29	78.29	78.29
RUNOFF COEFFICIENT =	0.99	0.71	0.84

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	
Ptotal= 78.29 mm	

IDF curve parameters: A=1498.100
B= 2.188
C= 0.778
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

CALIB			
STANDHYD (0008)	Area	(ha)=	14.26
ID= 1 DT= 5.0 min	Total Imp(%)=		50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	7.13	7.13
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	308.33	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	7.21	0.833	37.27	1.583	14.57	2.33	8.28
0.167	7.21	0.917	214.13	1.667	14.57	2.42	7.53
0.250	8.74	1.000	214.13	1.750	12.13	2.50	7.53
0.333	8.74	1.083	48.43	1.833	12.13	2.58	6.92
0.417	11.28	1.167	48.43	1.917	10.45	2.67	6.92
0.500	11.28	1.250	26.15	2.000	10.45	2.75	6.41
0.583	16.53	1.333	26.15	2.083	9.22	2.83	6.41
0.667	16.53	1.417	18.53	2.167	9.22	2.92	5.98
0.750	37.27	1.500	18.53	2.250	8.28	3.00	5.98

Max.Eff.Inten.(mm/hr)=	214.13	157.21	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.70 (ii)	9.59 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.25	0.11	
			TOTALS
PEAK FLOW (cms)=	4.00	1.93	5.630 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	77.29	55.69	66.49
TOTAL RAINFALL (mm)=	78.29	78.29	78.29
RUNOFF COEFFICIENT =	0.99	0.71	0.85

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0020)					
1 + 2 = 3		AREA	QPEAK	TPEAK	R.V.

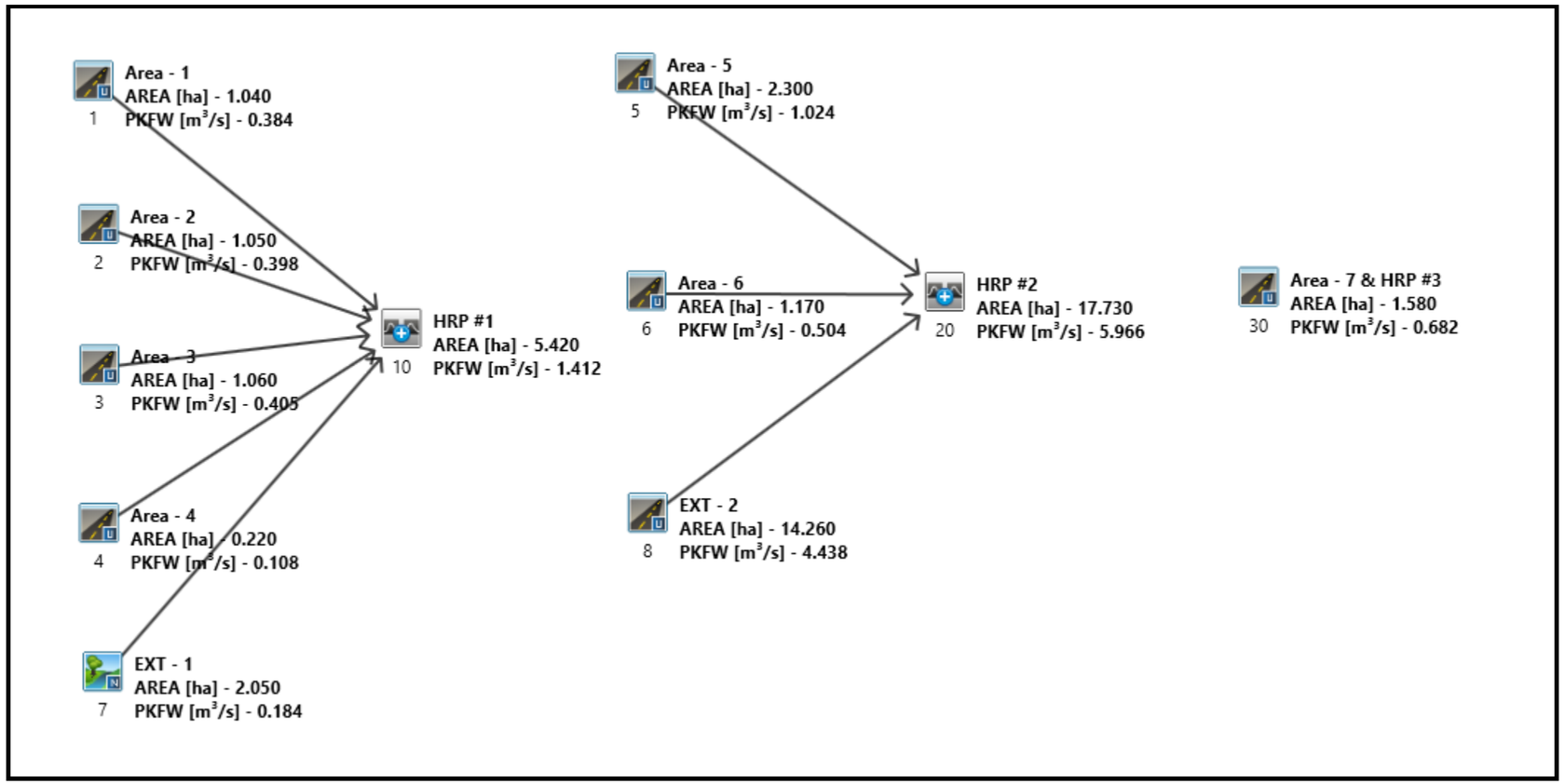
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0005):	2.30	1.145	1.00	70.60
+ ID2= 2 (0006):	1.17	0.486	1.00	65.84
ID = 3 (0020):	3.47	1.632	1.00	68.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0020)				
3 + 2 = 1	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0020):	3.47	1.632	1.00	68.99
+ ID2= 2 (0008):	14.26	5.630	1.00	66.49
ID = 1 (0020):	17.73	7.261	1.00	66.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

Visual OTTHYMO Modelling Schematic-2 – Road Drainage Proposed Condition



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


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DATE: 11/12/2019                          TIME: 11:34:06

USER:


COMMENTS: _____________________________________________________

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  ************************************************
  ** SIMULATION : 01 AES 2-yr                   **
  ************************************************


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| Ptotal= 34.03 mm |    Comments: 2yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   61.25 |  0.75   32.67 |  1.08    4.08
                0.17    4.08 |  0.50  114.34 |  0.83   20.42 |
                0.25   12.25 |  0.58   61.25 |  0.92   12.25 |
                0.33   32.67 |  0.67   49.00 |  1.00    4.08 |

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--------------------
| CALIB            |
| STANDHYD (  0030)|   Area    (ha)=   1.58
|ID= 1 DT= 5.0 min |   Total Imp(%)=  65.00   Dir. Conn.(%)=  65.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.03         0.55
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     102.63        40.00
     Mannings n           =      0.013        0.250

                                    Page 1
```



```
     Max.Eff.Inten.(mm/hr)=     114.34        48.33
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       2.46 (ii)   11.90 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.30         0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.30         0.05      0.317 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.75       0.50
     RUNOFF VOLUME    (mm)=      33.03        17.03      27.43
     TOTAL RAINFALL   (mm)=      34.03        34.03      34.03
     RUNOFF COEFFICIENT   =       0.97         0.50       0.81

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
             THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\c4dc5ad3
| Ptotal= 34.03 mm |    Comments: 2yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   61.25 |  0.75   32.67 |  1.08    4.08
                0.17    4.08 |  0.50  114.34 |  0.83   20.42 |
                0.25   12.25 |  0.58   61.25 |  0.92   12.25 |
                0.33   32.67 |  0.67   49.00 |  1.00    4.08 |

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--------------------
| CALIB            |
| NASHYD   (  0007)|   Area    (ha)=   2.05   Curve Number    (CN)= 70.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=   0.391

     PEAK FLOW       (cms)=   0.062 (i)
     TIME TO PEAK    (hrs)=   0.833
     RUNOFF VOLUME    (mm)=   6.100
     TOTAL RAINFALL   (mm)=  34.030
     RUNOFF COEFFICIENT   =   0.179

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

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|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\c4dc5ad3
| Ptotal= 34.03 mm |    Comments: 2yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   61.25 |  0.75   32.67 |  1.08    4.08
                0.17    4.08 |  0.50  114.34 |  0.83   20.42 |
                0.25   12.25 |  0.58   61.25 |  0.92   12.25 |
                0.33   32.67 |  0.67   49.00 |  1.00    4.08 |

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--------------------
| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   1.04
|ID= 1 DT= 5.0 min |   Total Imp(%)=  48.00   Dir. Conn.(%)=  48.00
--------------------

                                    Page 2
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--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.50         0.54
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      83.27        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     114.34        48.33
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       2.17 (ii)   11.61 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.31         0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.15         0.04      0.163 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.75       0.50
     RUNOFF VOLUME    (mm)=      33.03        17.03      24.70
     TOTAL RAINFALL   (mm)=      34.03        34.03      34.03
     RUNOFF COEFFICIENT   =       0.97         0.50       0.73

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
             THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\c4dc5ad3
| Ptotal= 34.03 mm |    Comments: 2yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   61.25 |  0.75   32.67 |  1.08    4.08
                0.17    4.08 |  0.50  114.34 |  0.83   20.42 |
                0.25   12.25 |  0.58   61.25 |  0.92   12.25 |
                0.33   32.67 |  0.67   49.00 |  1.00    4.08 |

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--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   1.06
|ID= 1 DT= 5.0 min |   Total Imp(%)=  52.00   Dir. Conn.(%)=  52.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55         0.51
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      84.06        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     114.34        48.33
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       2.18 (ii)   11.62 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.31         0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.17         0.04      0.178 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.75       0.50
     RUNOFF VOLUME    (mm)=      33.03        17.03      25.34
     TOTAL RAINFALL   (mm)=      34.03        34.03      34.03
     RUNOFF COEFFICIENT   =       0.97         0.50       0.74

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL

                                    Page 3
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             THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\c4dc5ad3
| Ptotal= 34.03 mm |    Comments: 2yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   61.25 |  0.75   32.67 |  1.08    4.08
                0.17    4.08 |  0.50  114.34 |  0.83   20.42 |
                0.25   12.25 |  0.58   61.25 |  0.92   12.25 |
                0.33   32.67 |  0.67   49.00 |  1.00    4.08 |

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--------------------
| CALIB            |
| STANDHYD (  0004)|   Area    (ha)=   0.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  75.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.17         0.05
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      38.30        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     114.34        48.33
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.36 (ii)    5.67 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.33         0.15
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.05         0.01      0.055 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58       0.50
     RUNOFF VOLUME    (mm)=      33.03        17.03      29.02
     TOTAL RAINFALL   (mm)=      34.03        34.03      34.03
     RUNOFF COEFFICIENT   =       0.97         0.50       0.85

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
             THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\c4dc5ad3
| Ptotal= 34.03 mm |    Comments: 2yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   61.25 |  0.75   32.67 |  1.08    4.08
                0.17    4.08 |  0.50  114.34 |  0.83   20.42 |
                0.25   12.25 |  0.58   61.25 |  0.92   12.25 |
                0.33   32.67 |  0.67   49.00 |  1.00    4.08 |

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--------------------
| CALIB            |
| STANDHYD (  0002)|   Area    (ha)=   1.05
|ID= 1 DT= 5.0 min |   Total Imp(%)=  51.00   Dir. Conn.(%)=  51.00
--------------------

                                    Page 4
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.54	0.51
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.67	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		114.34	48.33
over (min)		5.00	15.00
Storage Coeff. (min)=		2.18 (ii)	11.62 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.31	0.09

		TOTALS
PEAK FLOW	(cms)=	0.16	0.04	0.173 (iii)
TIME TO PEAK	(hrs)=	0.50	0.75	0.50
RUNOFF VOLUME	(mm)=	33.03	17.03	25.18
TOTAL RAINFALL	(mm)=	34.03	34.03	34.03
RUNOFF COEFFICIENT	=	0.97	0.50	0.74

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0010)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	1.04	0.163	0.50	24.70
+ ID2= 2 (0002):	1.05	0.173	0.50	25.18
ID = 3 (0010):	2.09	0.336	0.50	24.94

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0010):	2.09	0.336	0.50	24.94
+ ID2= 2 (0003):	1.06	0.178	0.50	25.34
ID = 1 (0010):	3.15	0.514	0.50	25.08

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):	3.15	0.514	0.50	25.08
+ ID2= 2 (0004):	0.22	0.055	0.50	29.02
ID = 3 (0010):	3.37	0.569	0.50	25.33

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0010):	3.37	0.569	0.50	25.33
+ ID2= 2 (0007):	2.05	0.062	0.83	6.10
ID = 1 (0010):	5.42	0.583	0.50	18.06

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM
Filename: C:\Users\p001279d\AppData\Local\Temp\11f23fa1-8a57-479d-b028-9b4fa00b599b\c4dc5ad3
Ptotal= 34.03 mm
Comments: 2yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	61.25	0.75	32.67	1.08	4.08
0.17	4.08	0.50	114.34	0.83	20.42		
0.25	12.25	0.58	61.25	0.92	12.25		
0.33	32.67	0.67	49.00	1.00	4.08		

CALIB
STANDHYD (0008)
ID= 1 DT= 5.0 min

Area (ha)= 14.26
Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	7.13	7.13
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	308.33	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		114.34	48.33
over (min)		5.00	15.00
Storage Coeff. (min)=		4.76 (ii)	14.20 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.22	0.08

		TOTALS
PEAK FLOW	(cms)=	1.80	0.54	1.944 (iii)
TIME TO PEAK	(hrs)=	0.50	0.75	0.50
RUNOFF VOLUME	(mm)=	33.03	17.03	25.03
TOTAL RAINFALL	(mm)=	34.03	34.03	34.03
RUNOFF COEFFICIENT	=	0.97	0.50	0.74

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM
Filename: C:\Users\p001279d\AppData\Local\Temp\11f23fa1-8a57-479d-b028-9b4fa00b599b\c4dc5ad3
Ptotal= 34.03 mm
Comments: 2yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	61.25	0.75	32.67	1.08	4.08
0.17	4.08	0.50	114.34	0.83	20.42		
0.25	12.25	0.58	61.25	0.92	12.25		
0.33	32.67	0.67	49.00	1.00	4.08		

CALIB
STANDHYD (0006)
ID= 1 DT= 5.0 min

Area (ha)= 1.17
Total Imp(%)= 64.00 Dir. Conn.(%)= 64.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.75	0.42

Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	88.32	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		114.34	48.33
over (min)		5.00	15.00
Storage Coeff. (min)=		2.25 (ii)	11.69 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.30	0.09

		TOTALS
PEAK FLOW	(cms)=	0.23	0.03	0.235 (iii)
TIME TO PEAK	(hrs)=	0.50	0.75	0.50
RUNOFF VOLUME	(mm)=	33.03	17.03	27.26
TOTAL RAINFALL	(mm)=	34.03	34.03	34.03
RUNOFF COEFFICIENT	=	0.97	0.50	0.80

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM
Filename: C:\Users\p001279d\AppData\Local\Temp\11f23fa1-8a57-479d-b028-9b4fa00b599b\c4dc5ad3
Ptotal= 34.03 mm
Comments: 2yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	61.25	0.75	32.67	1.08	4.08
0.17	4.08	0.50	114.34	0.83	20.42		
0.25	12.25	0.58	61.25	0.92	12.25		
0.33	32.67	0.67	49.00	1.00	4.08		

CALIB
STANDHYD (0005)
ID= 1 DT= 5.0 min

Area (ha)= 2.30
Total Imp(%)= 70.00 Dir. Conn.(%)= 70.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.61	0.69
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	123.83	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		114.34	48.33
over (min)		5.00	10.00
Storage Coeff. (min)=		2.75 (ii)	7.52 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.28	0.13

		TOTALS
PEAK FLOW	(cms)=	0.47	0.07	0.503 (iii)
TIME TO PEAK	(hrs)=	0.50	0.67	0.50
RUNOFF VOLUME	(mm)=	33.03	17.03	28.23
TOTAL RAINFALL	(mm)=	34.03	34.03	34.03
RUNOFF COEFFICIENT	=	0.97	0.50	0.83

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0020)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0005):	2.30	0.503	0.50	28.23
+ ID2= 2 (0006):	1.17	0.235	0.50	27.26
ID = 3 (0020):	3.47	0.737	0.50	27.90

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0020)
3 + 1 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0020):	3.47	0.737	0.50	27.90
+ ID2= 2 (0008):	14.26	1.944	0.50	25.03
ID = 1 (0020):	17.73	2.682	0.50	25.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
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 M  O   O
 OOO     T      T    H   H    Y    M   M   OOO
```

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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

Output filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\556b53b8-bc0e-4146-8cb3-444b6af8d943\sce
Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\556b53b8-bc0e-4146-8cb3-444b6af8d943\sce

DATE: 11/12/2019 TIME: 11:34:04

USER:

COMMENTS: _____

```
  ************************************************
  ** SIMULATION : 02 AES 5-yr                   **
  ************************************************
```

READ STORM
Filename: C:\Users\p001279d\AppD

			ata\Local\Temp\								
			11f23fa1-8a57-479d-b028-9b4fa00b599b\51069ce4								
Ptotal= 34.64 mm	Comments: 5yr 1hr AES										
TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr				
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16				
0.17	4.16	0.50	116.39	0.83	20.78						
0.25	12.47	0.58	62.35	0.92	12.47						
0.33	33.25	0.67	49.88	1.00	4.16						

CALIB			
STANDHYD (0030)	Area (ha)=	1.58	
ID= 1 DT= 5.0 min	Total Imp(%)=	65.00	Dir. Conn.(%)= 65.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.03	0.55
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	102.63	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	116.39	49.73
over (min)	5.00	15.00
Storage Coeff. (min)=	2.44 (ii)	11.78 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.30	0.09
		TOTALS
PEAK FLOW (cms)=	0.31	0.05 0.323 (iii)
TIME TO PEAK (hrs)=	0.50	0.75 0.50
RUNOFF VOLUME (mm)=	33.64	17.50 27.99
TOTAL RAINFALL (mm)=	34.64	34.64 34.64
RUNOFF COEFFICIENT =	0.97	0.51 0.81

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD		
	ata\Local\Temp\		
	11f23fa1-8a57-479d-b028-9b4fa00b599b\51069ce4		
Ptotal= 34.64 mm	Comments: 5yr 1hr AES		

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB					
NASHYD (0007)	Area (ha)=	2.05	Curve Number (CN)=	70.0	
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00	
	U.H. Tp(hrs)=	0.20			

Unit Hyd Qpeak (cms)= 0.391

PEAK FLOW	(cms)=	0.064 (i)
TIME TO PEAK	(hrs)=	0.833
RUNOFF VOLUME	(mm)=	6.331
TOTAL RAINFALL	(mm)=	34.640

RUNOFF COEFFICIENT = 0.183

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

READ STORM	Filename: C:\Users\p001279d\AppD		
	ata\Local\Temp\		
	11f23fa1-8a57-479d-b028-9b4fa00b599b\51069ce4		
Ptotal= 34.64 mm	Comments: 5yr 1hr AES		

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB			
STANDHYD (0001)	Area (ha)=	1.04	
ID= 1 DT= 5.0 min	Total Imp(%)=	48.00	Dir. Conn.(%)= 48.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.50	0.54
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	83.27	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	116.39	49.73
over (min)	5.00	15.00
Storage Coeff. (min)=	2.15 (ii)	11.49 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.31	0.09
		TOTALS
PEAK FLOW (cms)=	0.15	0.05 0.166 (iii)
TIME TO PEAK (hrs)=	0.50	0.75 0.50
RUNOFF VOLUME (mm)=	33.64	17.50 25.24
TOTAL RAINFALL (mm)=	34.64	34.64 34.64
RUNOFF COEFFICIENT =	0.97	0.51 0.73

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD		
	ata\Local\Temp\		
	11f23fa1-8a57-479d-b028-9b4fa00b599b\51069ce4		
Ptotal= 34.64 mm	Comments: 5yr 1hr AES		

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB			
STANDHYD (0003)	Area (ha)=	1.06	
ID= 1 DT= 5.0 min	Total Imp(%)=	52.00	Dir. Conn.(%)= 52.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.55	0.51
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	84.06	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	116.39	49.73
over (min)	5.00	15.00
Storage Coeff. (min)=	2.17 (ii)	11.50 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.31	0.09
		TOTALS
PEAK FLOW (cms)=	0.17	0.04 0.181 (iii)
TIME TO PEAK (hrs)=	0.50	0.75 0.50
RUNOFF VOLUME (mm)=	33.64	17.50 25.89
TOTAL RAINFALL (mm)=	34.64	34.64 34.64
RUNOFF COEFFICIENT =	0.97	0.51 0.75

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD		
	ata\Local\Temp\		
	11f23fa1-8a57-479d-b028-9b4fa00b599b\51069ce4		
Ptotal= 34.64 mm	Comments: 5yr 1hr AES		

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB			
STANDHYD (0004)	Area (ha)=	0.22	
ID= 1 DT= 5.0 min	Total Imp(%)=	75.00	Dir. Conn.(%)= 75.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.17	0.05
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	38.30	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	116.39	49.73
over (min)	5.00	10.00
Storage Coeff. (min)=	1.35 (ii)	5.63 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.33	0.15
		TOTALS
PEAK FLOW (cms)=	0.05	0.01 0.056 (iii)
TIME TO PEAK (hrs)=	0.50	0.58 0.50
RUNOFF VOLUME (mm)=	33.64	17.50 29.60
TOTAL RAINFALL (mm)=	34.64	34.64 34.64
RUNOFF COEFFICIENT =	0.97	0.51 0.85

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD		
	ata\Local\Temp\		
	11f23fa1-8a57-479d-b028-9b4fa00b599b\51069ce4		
Ptotal= 34.64 mm	Comments: 5yr 1hr AES		

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB			
STANDHYD (0002)	Area (ha)=	1.05	
ID= 1 DT= 5.0 min	Total Imp(%)=	51.00	Dir. Conn.(%)= 51.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.54	0.51
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	83.67	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	116.39	49.73
over (min)	5.00	15.00
Storage Coeff. (min)=	2.16 (ii)	11.49 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.31	0.09
		TOTALS
PEAK FLOW (cms)=	0.16	0.04 0.177 (iii)
TIME TO PEAK (hrs)=	0.50	0.75 0.50
RUNOFF VOLUME (mm)=	33.64	17.50 25.73
TOTAL RAINFALL (mm)=	34.64	34.64 34.64
RUNOFF COEFFICIENT =	0.97	0.51 0.74

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0010)					
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 1 (0001):	1.04	0.166	0.50	25.24	
+ ID2= 2 (0002):	1.05	0.177	0.50	25.73	
ID = 3 (0010):	2.09	0.343	0.50	25.49	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 3 (0010):	2.09	0.343	0.50	25.49	
+ ID2= 2 (0003):	1.06	0.181	0.50	25.89	
ID = 1 (0010):	3.15	0.525	0.50	25.62	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0010):	3.15	0.525	0.50	25.62
	+ ID2= 2 (0004):	0.22	0.056	0.50	29.60
	ID = 3 (0010):	3.37	0.580	0.50	25.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1	ID1= 3 (0010):	3.37	0.580	0.50	25.88
	+ ID2= 2 (0007):	2.05	0.064	0.83	6.33
	ID = 1 (0010):	5.42	0.595	0.50	18.49

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\11f23fa1-8a57-479d-b028-9b4fa00b599b\51069ce4
Ptotal= 34.64 mm	Comments: 5yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB			
STANDHYD (0008)	Area (ha)= 14.26		
ID= 1 DT= 5.0 min	Total Imp(%)= 50.00	Dir. Conn.(%)= 50.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	7.13	7.13
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	300.33	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		116.39	49.73
over (min)		5.00	15.00
Storage Coeff. (min)=		4.72 (ii)	14.06 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.22	0.08
			TOTALS
PEAK FLOW	(cms)=	1.84	0.56 1.987 (iii)
TIME TO PEAK	(hrs)=	0.50	0.75 0.50
RUNOFF VOLUME	(mm)=	34.64	17.50 25.57
TOTAL RAINFALL	(mm)=	34.64	34.64 34.64
RUNOFF COEFFICIENT	=	0.97	0.51 0.74

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\11f23fa1-8a57-479d-b028-9b4fa00b599b\51069ce4
Ptotal= 34.64 mm	Comments: 5yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB			
STANDHYD (0005)	Area (ha)= 2.30		
ID= 1 DT= 5.0 min	Total Imp(%)= 70.00	Dir. Conn.(%)= 70.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.61	0.69

Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	123.83	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		116.39	49.73
over (min)		5.00	10.00
Storage Coeff. (min)=		2.73 (ii)	7.47 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.29	0.13
			TOTALS
PEAK FLOW	(cms)=	0.48	0.07 0.513 (iii)
TIME TO PEAK	(hrs)=	0.50	0.67 0.50
RUNOFF VOLUME	(mm)=	33.64	17.50 28.80
TOTAL RAINFALL	(mm)=	34.64	34.64 34.64
RUNOFF COEFFICIENT	=	0.97	0.51 0.83

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0020)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0005):	2.30	0.513	0.50	28.80
	+ ID2= 2 (0006):	1.17	0.239	0.50	27.83
	ID = 3 (0020):	3.47	0.752	0.50	28.47

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0020)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1	ID1= 3 (0020):	3.47	0.752	0.50	28.47
	+ ID2= 2 (0008):	14.26	1.987	0.50	25.57
	ID = 1 (0020):	17.73	2.739	0.50	26.14

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
```


C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\1a282510-d6fc-4d86-a91c-03f2faac763f\sce
Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\1a282510-d6fc-4d86-a91c-03f2faac763f\sce

DATE: 11/12/2019 TIME: 11:34:04

USER:

COMMENTS: _____

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  **********************************************
  ** SIMULATION : 03 AES 10-yr                **
  **********************************************
```

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\11f23fa1-8a57-479d-b028-9b4fa00b599b\f0961233
Ptotal= 41.26 mm	Comments: 10yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB			
STANDHYD (0030)	Area (ha)= 1.58		
ID= 1 DT= 5.0 min	Total Imp(%)= 65.00	Dir. Conn.(%)= 65.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.03	0.55
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	102.63	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		138.63	65.27
over (min)		5.00	10.00
Storage Coeff. (min)=		2.28 (ii)	7.11 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.30	0.14
			TOTALS
PEAK FLOW	(cms)=	0.37	0.07 0.414 (iii)
TIME TO PEAK	(hrs)=	0.50	0.67 0.50
RUNOFF VOLUME	(mm)=	40.26	22.84 34.16
TOTAL RAINFALL	(mm)=	41.26	41.26 41.26
RUNOFF COEFFICIENT	=	0.98	0.55 0.83

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD

		ata\Local\Temp\
		11f23fa1-8a57-479d-b028-9b4fa00b599b\f0961233
Ptotal= 41.26 mm	Comments: 10yr 1hr AES	

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB			
NASHYD (0007)	Area	(ha)= 2.05	Curve Number (CN)= 70.0
ID= 1 DT= 5.0 min	Ia	(mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20		

Unit Hyd Qpeak (cms)= 0.391

PEAK FLOW (cms)= 0.091 (i)
TIME TO PEAK (hrs)= 0.833
RUNOFF VOLUME (mm)= 9.043
TOTAL RAINFALL (mm)= 41.260
RUNOFF COEFFICIENT = 0.219

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

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ 11f23fa1-8a57-479d-b028-9b4fa00b599b\f0961233
Ptotal= 41.26 mm	Comments: 10yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB			
STANDHYD (0001)	Area	(ha)= 1.04	
ID= 1 DT= 5.0 min	Total Imp(%)= 48.00		Dir. Conn.(%)= 48.00

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.50	0.54	
Dep. Storage	(mm)=	1.00	2.00	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	83.27	40.00	
Mannings n	=	0.013	0.250	
Max.Eff.Inten.(mm/hr)=		138.63	65.27	
over (min)		5.00	15.00	
Storage Coeff. (min)=		2.01 (ii)	10.38 (ii)	
Unit Hyd. Tpeak (min)=		5.00	15.00	
Unit Hyd. peak (cms)=		0.31	0.09	
				TOTALS
PEAK FLOW	(cms)=	0.18	0.06	0.203 (iii)
TIME TO PEAK	(hrs)=	0.50	0.75	0.50
RUNOFF VOLUME	(mm)=	40.26	22.84	31.20
TOTAL RAINFALL	(mm)=	41.26	41.26	41.26
RUNOFF COEFFICIENT	=	0.98	0.55	0.76

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ 11f23fa1-8a57-479d-b028-9b4fa00b599b\f0961233
Ptotal= 41.26 mm	Comments: 10yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB			
STANDHYD (0003)	Area	(ha)= 1.06	
ID= 1 DT= 5.0 min	Total Imp(%)= 52.00		Dir. Conn.(%)= 52.00

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.55	0.51	
Dep. Storage	(mm)=	1.00	2.00	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	84.06	40.00	
Mannings n	=	0.013	0.250	
Max.Eff.Inten.(mm/hr)=		138.63	65.27	
over (min)		5.00	15.00	
Storage Coeff. (min)=		2.02 (ii)	10.39 (ii)	
Unit Hyd. Tpeak (min)=		5.00	15.00	
Unit Hyd. peak (cms)=		0.31	0.09	
				TOTALS
PEAK FLOW	(cms)=	0.20	0.06	0.221 (iii)
TIME TO PEAK	(hrs)=	0.50	0.75	0.50
RUNOFF VOLUME	(mm)=	40.26	22.84	31.89
TOTAL RAINFALL	(mm)=	41.26	41.26	41.26
RUNOFF COEFFICIENT	=	0.98	0.55	0.77

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ 11f23fa1-8a57-479d-b028-9b4fa00b599b\f0961233
Ptotal= 41.26 mm	Comments: 10yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB			
STANDHYD (0004)	Area	(ha)= 0.22	
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00		Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.17	0.05	
Dep. Storage	(mm)=	1.00	2.00	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	38.30	40.00	
Mannings n	=	0.013	0.250	
Max.Eff.Inten.(mm/hr)=		138.63	65.27	
over (min)		5.00	10.00	
Storage Coeff. (min)=		1.26 (ii)	5.25 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.33	0.16	
				TOTALS
PEAK FLOW	(cms)=	0.06	0.01	0.068 (iii)
TIME TO PEAK	(hrs)=	0.50	0.58	0.50
RUNOFF VOLUME	(mm)=	40.26	22.84	35.90
TOTAL RAINFALL	(mm)=	41.26	41.26	41.26
RUNOFF COEFFICIENT	=	0.98	0.55	0.87

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ 11f23fa1-8a57-479d-b028-9b4fa00b599b\f0961233
Ptotal= 41.26 mm	Comments: 10yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB			
STANDHYD (0002)	Area	(ha)= 1.05	
ID= 1 DT= 5.0 min	Total Imp(%)= 51.00		Dir. Conn.(%)= 51.00

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.54	0.51	
Dep. Storage	(mm)=	1.00	2.00	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	83.67	40.00	
Mannings n	=	0.013	0.250	
Max.Eff.Inten.(mm/hr)=		138.63	65.27	
over (min)		5.00	15.00	
Storage Coeff. (min)=		2.01 (ii)	10.39 (ii)	
Unit Hyd. Tpeak (min)=		5.00	15.00	
Unit Hyd. peak (cms)=		0.31	0.09	
				TOTALS
PEAK FLOW	(cms)=	0.20	0.06	0.216 (iii)
TIME TO PEAK	(hrs)=	0.50	0.75	0.50
RUNOFF VOLUME	(mm)=	40.26	22.84	31.72
TOTAL RAINFALL	(mm)=	41.26	41.26	41.26
RUNOFF COEFFICIENT	=	0.98	0.55	0.77

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0010)					
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 1 (0001):	1.04	0.203	0.50	31.20	
+ ID2= 2 (0002):	1.05	0.216	0.50	31.72	
ID = 3 (0010):	2.09	0.419	0.50	31.46	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 3 (0010):	2.09	0.419	0.50	31.46	
+ ID2= 2 (0003):	1.06	0.221	0.50	31.89	
ID = 1 (0010):	3.15	0.640	0.50	31.60	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 1 (0001):	1.04	0.203	0.50	31.20	
+ ID2= 2 (0004):	0.22	0.068	0.50	35.90	
ID = 3 (0010):	3.37	0.708	0.50	31.88	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 3 (0010):	3.37	0.708	0.50	31.88	
+ ID2= 2 (0007):	2.05	0.091	0.83	9.04	
ID = 1 (0010):	5.42	0.731	0.50	23.25	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ 11f23fa1-8a57-479d-b028-9b4fa00b599b\f0961233
Ptotal= 41.26 mm	Comments: 10yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB			
STANDHYD (0008)	Area	(ha)= 14.26	
ID= 1 DT= 5.0 min	Total Imp(%)= 50.00		Dir. Conn.(%)= 50.00

	IMPERVIOUS	PERVIOUS (i)

Surface Area	(ha)=	7.13	7.13
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	308.33	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		138.63	65.27
over (min)		5.00	15.00
Storage Coeff. (min)=		4.41 (ii)	12.78 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.23	0.08
			TOTALS
PEAK FLOW	(cms)=	2.24	0.76 2.461 (iii)
TIME TO PEAK	(hrs)=	0.50	0.75 0.50
RUNOFF VOLUME	(mm)=	40.26	22.84 31.55
TOTAL RAINFALL	(mm)=	41.26	41.26 41.26
RUNOFF COEFFICIENT	=	0.98	0.55 0.76

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ 11f23fa1-8a57-479d-b028-9b4fa00b599b\f0961233
Ptotal= 41.26 mm	Comments: 10yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB	
STANDHYD (0006)	Area (ha)= 1.17
ID= 1 DT= 5.0 min	Total Imp(%)= 64.00 Dir. Conn.(%)= 64.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.75	0.42
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	88.32	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	138.63	65.27
over (min)	5.00	10.00
Storage Coeff. (min)=	2.08 (ii)	7.00 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.31	0.14
		TOTALS
PEAK FLOW (cms)=	0.28	0.06 0.306 (iii)
TIME TO PEAK (hrs)=	0.50	0.67 0.50
RUNOFF VOLUME (mm)=	40.26	22.84 33.99
TOTAL RAINFALL (mm)=	41.26	41.26 41.26
RUNOFF COEFFICIENT =	0.98	0.55 0.82

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ 11f23fa1-8a57-479d-b028-9b4fa00b599b\f0961233
Ptotal= 41.26 mm	Comments: 10yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB	
STANDHYD (0005)	Area (ha)= 2.30
ID= 1 DT= 5.0 min	Total Imp(%)= 70.00 Dir. Conn.(%)= 70.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.61	0.69
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	123.83	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	138.63	65.27
over (min)	5.00	10.00
Storage Coeff. (min)=	2.55 (ii)	6.96 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.29	0.14
		TOTALS
PEAK FLOW (cms)=	0.58	0.09 0.626 (iii)
TIME TO PEAK (hrs)=	0.50	0.67 0.50
RUNOFF VOLUME (mm)=	40.26	22.84 35.03
TOTAL RAINFALL (mm)=	41.26	41.26 41.26
RUNOFF COEFFICIENT =	0.98	0.55 0.85

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0020)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0005):	2.30	0.626	0.50	35.03
	+ ID2= 2 (0006):	1.17	0.306	0.50	33.99
	ID = 3 (0020):	3.47	0.932	0.50	34.68

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0020)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1	ID1= 3 (0020):	3.47	0.932	0.50	34.68
	+ ID2= 2 (0008):	14.26	2.461	0.50	31.55
	ID = 1 (0020):	17.73	3.393	0.50	32.16

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.


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       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
         V V    I      SS   U   U  A   A  L
          VV    I    SSSSS  UUUUU  A   A  LLLLL

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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
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0f-3816-42ef-a8d4-20d865c6929c\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\ecd821
0f-3816-42ef-a8d4-20d865c6929c\sce

DATE: 11/12/2019                          TIME: 11:34:07

USER:


COMMENTS: _____________________________________________________________
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  ************************************************
  ** SIMULATION : 04 AES 25-yr                  **
  ************************************************
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READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ 11f23fa1-8a57-479d-b028-9b4fa00b599b\7e735abf
Ptotal= 49.17 mm	Comments: 25yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	88.51	0.75	47.20	1.08	5.90
0.17	5.90	0.50	165.21	0.83	29.50		
0.25	17.70	0.58	88.51	0.92	17.70		
0.33	47.20	0.67	70.80	1.00	5.90		

CALIB	
STANDHYD (0030)	Area (ha)= 1.58
ID= 1 DT= 5.0 min	Total Imp(%)= 65.00 Dir. Conn.(%)= 65.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.03	0.55
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	102.63	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=		165.21	84.67
over (min)		5.00	10.00
Storage Coeff. (min)=		2.12 (ii)	6.63 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.31	0.14
			TOTALS
PEAK FLOW	(cms)=	0.45	0.10 0.505 (iii)
TIME TO PEAK	(hrs)=	0.50	0.58 0.50
RUNOFF VOLUME	(mm)=	48.17	29.51 41.64
TOTAL RAINFALL	(mm)=	49.17	49.17 49.17
RUNOFF COEFFICIENT	=	0.98	0.60 0.85

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ 11f23fa1-8a57-479d-b028-9b4fa00b599b\7e735abf
Ptotal= 49.17 mm	Comments: 25yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	88.51	0.75	47.20	1.08	5.90
0.17	5.90	0.50	165.21	0.83	29.50		
0.25	17.70	0.58	88.51	0.92	17.70		
0.33	47.20	0.67	70.80	1.00	5.90		

CALIB	
NASHYD (0007)	Area (ha)= 2.05 Curve Number (CN)= 70.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20

Unit Hyd Qpeak (cms)= 0.391

PEAK FLOW	(cms)=	0.128 (i)
TIME TO PEAK	(hrs)=	0.750
RUNOFF VOLUME	(mm)=	12.725
TOTAL RAINFALL	(mm)=	49.170
RUNOFF COEFFICIENT	=	0.259

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

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ 11f23fa1-8a57-479d-b028-9b4fa00b599b\7e735abf
Ptotal= 49.17 mm	Comments: 25yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	88.51	0.75	47.20	1.08	5.90
0.17	5.90	0.50	165.21	0.83	29.50		
0.25	17.70	0.58	88.51	0.92	17.70		
0.33	47.20	0.67	70.80	1.00	5.90		

CALIB	
STANDHYD (0001)	Area (ha)= 1.04

|ID= 1 DT= 5.0 min | Total Imp(%)= 48.00 Dir. Conn.(%)= 48.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.50	0.54
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	83.27	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	165.21	84.67
over (min)	5.00	10.00
Storage Coeff. (min)=	1.87 (ii)	9.42 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.12

		TOTALS
PEAK FLOW	(cms)=	0.22 0.09 0.266 (iii)
TIME TO PEAK	(hrs)=	0.50 0.67 0.50
RUNOFF VOLUME	(mm)=	48.17 29.51 38.46
TOTAL RAINFALL	(mm)=	49.17 49.17 49.17
RUNOFF COEFFICIENT	=	0.98 0.60 0.78

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\11f23fa1-8a57-479d-b028-9b4fa00b599b\7e735abf
Ptotal= 49.17 mm	Comments: 25yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	88.51	0.75	47.20	1.08	5.90
0.17	5.90	0.50	165.21	0.83	29.50		
0.25	17.70	0.58	88.51	0.92	17.70		
0.33	47.20	0.67	70.80	1.00	5.90		

CALIB STANDHYD (0003)	Area (ha)= 1.06
ID= 1 DT= 5.0 min	Total Imp(%)= 52.00 Dir. Conn.(%)= 52.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.55	0.51
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	84.06	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	165.21	84.67
over (min)	5.00	10.00
Storage Coeff. (min)=	1.88 (ii)	9.43 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.12

		TOTALS
PEAK FLOW	(cms)=	0.24 0.08 0.287 (iii)
TIME TO PEAK	(hrs)=	0.50 0.67 0.50
RUNOFF VOLUME	(mm)=	48.17 29.51 39.21
TOTAL RAINFALL	(mm)=	49.17 49.17 49.17
RUNOFF COEFFICIENT	=	0.98 0.60 0.80

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\11f23fa1-8a57-479d-b028-9b4fa00b599b\7e735abf
Ptotal= 49.17 mm	Comments: 25yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	88.51	0.75	47.20	1.08	5.90
0.17	5.90	0.50	165.21	0.83	29.50		
0.25	17.70	0.58	88.51	0.92	17.70		
0.33	47.20	0.67	70.80	1.00	5.90		

CALIB STANDHYD (0004)	Area (ha)= 0.22
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.17	0.05
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	38.30	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	165.21	84.67
over (min)	5.00	5.00
Storage Coeff. (min)=	1.18 (ii)	4.90 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.33	0.22

		TOTALS
PEAK FLOW	(cms)=	0.08 0.01 0.086 (iii)
TIME TO PEAK	(hrs)=	0.50 0.50 0.50
RUNOFF VOLUME	(mm)=	48.17 29.51 43.49
TOTAL RAINFALL	(mm)=	49.17 49.17 49.17
RUNOFF COEFFICIENT	=	0.98 0.60 0.88

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\11f23fa1-8a57-479d-b028-9b4fa00b599b\7e735abf
Ptotal= 49.17 mm	Comments: 25yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	88.51	0.75	47.20	1.08	5.90
0.17	5.90	0.50	165.21	0.83	29.50		
0.25	17.70	0.58	88.51	0.92	17.70		
0.33	47.20	0.67	70.80	1.00	5.90		

CALIB STANDHYD (0002)	Area (ha)= 1.05
ID= 1 DT= 5.0 min	Total Imp(%)= 51.00 Dir. Conn.(%)= 51.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.54	0.51
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	83.67	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	165.21	84.67
over (min)	5.00	10.00
Storage Coeff. (min)=	1.88 (ii)	9.42 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.12

		TOTALS
PEAK FLOW	(cms)=	0.24 0.08 0.280 (iii)
TIME TO PEAK	(hrs)=	0.50 0.67 0.50
RUNOFF VOLUME	(mm)=	48.17 29.51 39.02
TOTAL RAINFALL	(mm)=	49.17 49.17 49.17
RUNOFF COEFFICIENT	=	0.98 0.60 0.79

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0010) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	1.04	0.266	0.50	38.46
+ ID2= 2 (0002):	1.05	0.280	0.50	39.02
ID = 3 (0010):	2.09	0.547	0.50	38.74

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0010):	2.09	0.547	0.50	38.74
+ ID2= 2 (0003):	1.06	0.287	0.50	39.21
ID = 1 (0010):	3.15	0.833	0.50	38.90

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):	3.15	0.833	0.50	38.90
+ ID2= 2 (0004):	0.22	0.086	0.50	43.49
ID = 3 (0010):	3.37	0.920	0.50	39.20

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0010):	3.37	0.920	0.50	39.20
+ ID2= 2 (0007):	2.05	0.128	0.75	12.72
ID = 1 (0010):	5.42	0.955	0.50	29.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\11f23fa1-8a57-479d-b028-9b4fa00b599b\7e735abf
Ptotal= 49.17 mm	Comments: 25yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	88.51	0.75	47.20	1.08	5.90
0.17	5.90	0.50	165.21	0.83	29.50		
0.25	17.70	0.58	88.51	0.92	17.70		
0.33	47.20	0.67	70.80	1.00	5.90		

CALIB STANDHYD (0008)	Area (ha)= 14.26
ID= 1 DT= 5.0 min	Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	7.13	7.13
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	308.33	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	165.21	84.67
over (min)	5.00	15.00
Storage Coeff. (min)=	4.11 (ii)	11.65 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.24	0.09

		TOTALS
PEAK FLOW	(cms)=	2.73 1.02 3.048 (iii)
TIME TO PEAK	(hrs)=	0.50 0.75 0.50
RUNOFF VOLUME	(mm)=	48.17 29.51 38.84
TOTAL RAINFALL	(mm)=	49.17 49.17 49.17
RUNOFF COEFFICIENT	=	0.98 0.60 0.79

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\11f23fa1-8a57-479d-b028-9b4fa00b599b\7e735abf
Ptotal= 49.17 mm	Comments: 25yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	88.51	0.75	47.20	1.08	5.90
0.17	5.90	0.50	165.21	0.83	29.50		
0.25	17.70	0.58	88.51	0.92	17.70		
0.33	47.20	0.67	70.80	1.00	5.90		

CALIB STANDHYD (0006)	Area (ha)= 1.17
ID= 1 DT= 5.0 min	Total Imp(%)= 64.00 Dir. Conn.(%)= 64.00

	IMPERVIOUS	PERVIOUS (i)

Surface Area	(ha)=	0.75	0.42
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	88.32	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		165.21	84.67
over (min)		5.00	10.00
Storage Coeff. (min)=		1.94 (ii)	6.53 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.31	0.14
			TOTALS
PEAK FLOW	(cms)=	0.33	0.08 0.374 (iii)
TIME TO PEAK	(hrs)=	0.50	0.58 0.50
RUNOFF VOLUME	(mm)=	48.17	29.51 41.45
TOTAL RAINFALL	(mm)=	49.17	49.17 49.17
RUNOFF COEFFICIENT	=	0.98	0.60 0.84

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ 11f23fa1-8a57-479d-b028-9b4fa00b599b\7e735abf
Ptotal= 49.17 mm	Comments: 25yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	88.51	0.75	47.20	1.08	5.90
0.17	5.90	0.50	165.21	0.83	29.50		
0.25	17.70	0.58	88.51	0.92	17.70		
0.33	47.20	0.67	70.80	1.00	5.90		

CALIB	
STANDHYD (0005)	Area (ha)= 2.30
ID= 1 DT= 5.0 min	Total Imp(%)= 70.00 Dir. Conn.(%)= 70.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.61	0.69
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	123.83	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		165.21	84.67
over (min)		5.00	10.00
Storage Coeff. (min)=		2.38 (ii)	6.49 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.30	0.14
			TOTALS
PEAK FLOW	(cms)=	0.69	0.12 0.765 (iii)
TIME TO PEAK	(hrs)=	0.50	0.58 0.50
RUNOFF VOLUME	(mm)=	48.17	29.51 42.57
TOTAL RAINFALL	(mm)=	49.17	49.17 49.17
RUNOFF COEFFICIENT	=	0.98	0.60 0.87

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0020)					
1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 1 (0005):	2.30	0.765	0.50	42.57
+	ID2= 2 (0006):	1.17	0.374	0.50	41.45
	ID = 3 (0020):	3.47	1.138	0.50	42.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0020)					
3 + 2 = 1		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 3 (0020):	3.47	1.138	0.50	42.19
+	ID2= 2 (0008):	14.26	3.048	0.50	38.84
	ID = 1 (0020):	17.73	4.186	0.50	39.50

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

FINISH

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V V I SSSSS U U A L (v 5.2.2003)
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
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OOO TTTTT TTTTT H H Y Y M M OOO TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
OOO T T H H Y M M OOO
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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

Output filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\d38b0705-ba51-4ab1-8948-0127227f1712\sce
Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\d38b0705-ba51-4ab1-8948-0127227f1712\sce

DATE: 11/12/2019 TIME: 11:34:07

USER:

COMMENTS: _____

****

** SIMULATION : 05 AES 50-yr **
****

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ 11f23fa1-8a57-479d-b028-9b4fa00b599b\ac308a9d
Ptotal= 54.95 mm	Comments: 50yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	98.91	0.75	52.75	1.08	6.59
0.17	6.59	0.50	184.63	0.83	32.97		
0.25	19.78	0.58	98.91	0.92	19.78		
0.33	52.75	0.67	79.13	1.00	6.59		

CALIB	
STANDHYD (0030)	Area (ha)= 1.58
ID= 1 DT= 5.0 min	Total Imp(%)= 65.00 Dir. Conn.(%)= 65.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.03	0.55
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	102.63	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		184.63	99.26
over (min)		5.00	10.00
Storage Coeff. (min)=		2.03 (ii)	6.34 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.31	0.15
			TOTALS
PEAK FLOW	(cms)=	0.50	0.12 0.574 (iii)
TIME TO PEAK	(hrs)=	0.50	0.58 0.50
RUNOFF VOLUME	(mm)=	53.95	34.54 47.15
TOTAL RAINFALL	(mm)=	54.95	54.95 54.95
RUNOFF COEFFICIENT	=	0.98	0.63 0.86

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ 11f23fa1-8a57-479d-b028-9b4fa00b599b\ac308a9d
Ptotal= 54.95 mm	Comments: 50yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	98.91	0.75	52.75	1.08	6.59
0.17	6.59	0.50	184.63	0.83	32.97		
0.25	19.78	0.58	98.91	0.92	19.78		
0.33	52.75	0.67	79.13	1.00	6.59		

CALIB	
NASHYD (0007)	Area (ha)= 2.05 Curve Number (CN)= 70.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20

Unit Hyd Qpeak (cms)= 0.391

PEAK FLOW (cms)= 0.158 (i)
TIME TO PEAK (hrs)= 0.750
RUNOFF VOLUME (mm)= 15.681
TOTAL RAINFALL (mm)= 54.950
RUNOFF COEFFICIENT = 0.285

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

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ 11f23fa1-8a57-479d-b028-9b4fa00b599b\ac308a9d
Ptotal= 54.95 mm	Comments: 50yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	98.91	0.75	52.75	1.08	6.59
0.17	6.59	0.50	184.63	0.83	32.97		
0.25	19.78	0.58	98.91	0.92	19.78		
0.33	52.75	0.67	79.13	1.00	6.59		

CALIB	
STANDHYD (0001)	Area (ha)= 1.04
ID= 1 DT= 5.0 min	Total Imp(%)= 48.00 Dir. Conn.(%)= 48.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.50	0.54
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.27	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		184.63	99.26
over (min)		5.00	10.00
Storage Coeff. (min)=		1.79 (ii)	8.87 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.32	0.12
			TOTALS
PEAK FLOW	(cms)=	0.25	0.10 0.305 (iii)
TIME TO PEAK	(hrs)=	0.50	0.67 0.50
RUNOFF VOLUME	(mm)=	53.95	34.54 43.85
TOTAL RAINFALL	(mm)=	54.95	54.95 54.95
RUNOFF COEFFICIENT	=	0.98	0.63 0.80

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ 11f23fa1-8a57-479d-b028-9b4fa00b599b\ac308a9d
Ptotal= 54.95 mm	Comments: 50yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	98.91	0.75	52.75	1.08	6.59
0.17	6.59	0.50	184.63	0.83	32.97		
0.25	19.78	0.58	98.91	0.92	19.78		
0.33	52.75	0.67	79.13	1.00	6.59		

```
| CALIB                |
| STANDHYD (  0003)|   Area    (ha)=   1.06
|ID= 1 DT= 5.0 min |   Total Imp(%)=  52.00   Dir. Conn.(%)=  52.00
-------------------

                        IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55         0.51
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      84.06        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     184.63        99.26
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.80 (ii)    8.88 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.12
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.27         0.10          0.327 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.67          0.50
     RUNOFF VOLUME    (mm)=      53.95        34.54         44.63
     TOTAL RAINFALL   (mm)=      54.95        54.95         54.95
     RUNOFF COEFFICIENT   =       0.98         0.63          0.81

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\ac308a9d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   98.91 |  0.75   52.75 |  1.08    6.59
                0.17    6.59 |  0.50  184.63 |  0.83   32.97 |
                0.25   19.78 |  0.58   98.91 |  0.92   19.78 |
                0.33   52.75 |  0.67   79.13 |  1.00    6.59 |

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| CALIB                |
| STANDHYD (  0004)|   Area    (ha)=   0.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  75.00
-------------------

                        IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.17         0.05
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      38.30        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     184.63        99.26
               over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.12 (ii)    4.68 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.34         0.22
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.08         0.01          0.098 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.50          0.50
     RUNOFF VOLUME    (mm)=      53.95        34.54         49.09
     TOTAL RAINFALL   (mm)=      54.95        54.95         54.95
     RUNOFF COEFFICIENT   =       0.98         0.63          0.89
```



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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\ac308a9d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   98.91 |  0.75   52.75 |  1.08    6.59
                0.17    6.59 |  0.50  184.63 |  0.83   32.97 |
                0.25   19.78 |  0.58   98.91 |  0.92   19.78 |
                0.33   52.75 |  0.67   79.13 |  1.00    6.59 |

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

-------------------
| CALIB                |
| STANDHYD (  0002)|   Area    (ha)=   1.05
|ID= 1 DT= 5.0 min |   Total Imp(%)=  51.00   Dir. Conn.(%)=  51.00
-------------------

                        IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.54         0.51
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      83.67        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     184.63        99.26
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.80 (ii)    8.88 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.12
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.27         0.10          0.320 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.67          0.50
     RUNOFF VOLUME    (mm)=      53.95        34.54         44.44
     TOTAL RAINFALL   (mm)=      54.95        54.95         54.95
     RUNOFF COEFFICIENT   =       0.98         0.63          0.81

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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  (  0010)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     1.04   0.305     0.50    43.85
     + ID2= 2 (  0002):     1.05   0.320     0.50    44.44
       ================================================
       ID = 3 (  0010):     2.09   0.625     0.50    44.15

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

-------------------
| ADD HYD  (  0010)|
```



```
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0010):     2.09   0.625     0.50    44.15
     + ID2= 2 (  0003):     1.06   0.327     0.50    44.63
       ================================================
       ID = 1 (  0010):     3.15   0.952     0.50    44.31

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

-------------------
| ADD HYD  (  0010)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0010):     3.15   0.952     0.50    44.31
     + ID2= 2 (  0004):     0.22   0.098     0.50    49.09
       ================================================
       ID = 3 (  0010):     3.37   1.049     0.50    44.62

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

-------------------
| ADD HYD  (  0010)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0010):     3.37   1.049     0.50    44.62
     + ID2= 2 (  0007):     2.05   0.158     0.75    15.68
       ================================================
       ID = 1 (  0010):     5.42   1.095     0.50    33.67

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

-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\ac308a9d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   98.91 |  0.75   52.75 |  1.08    6.59
                0.17    6.59 |  0.50  184.63 |  0.83   32.97 |
                0.25   19.78 |  0.58   98.91 |  0.92   19.78 |
                0.33   52.75 |  0.67   79.13 |  1.00    6.59 |

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

-------------------
| CALIB                |
| STANDHYD (  0008)|   Area    (ha)=  14.26
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
-------------------

                        IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       7.13         7.13
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     308.33        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     184.63        99.26
               over (min)        5.00        15.00
     Storage Coeff.  (min)=       3.93 (ii)   11.01 (ii)
     Unit Hyd. Tpeak (min)=       5.00        15.00
     Unit Hyd. peak  (cms)=       0.24         0.09
                                                        *TOTALS*
     PEAK FLOW       (cms)=       3.09         1.22          3.489 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.75          0.50
     RUNOFF VOLUME    (mm)=      53.95        34.54         44.24
     TOTAL RAINFALL   (mm)=      54.95        54.95         54.95
     RUNOFF COEFFICIENT   =       0.98         0.63          0.81

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



```
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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.

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

-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\ac308a9d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   98.91 |  0.75   52.75 |  1.08    6.59
                0.17    6.59 |  0.50  184.63 |  0.83   32.97 |
                0.25   19.78 |  0.58   98.91 |  0.92   19.78 |
                0.33   52.75 |  0.67   79.13 |  1.00    6.59 |

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

-------------------
| CALIB                |
| STANDHYD (  0006)|   Area    (ha)=   1.17
|ID= 1 DT= 5.0 min |   Total Imp(%)=  64.00   Dir. Conn.(%)=  64.00
-------------------

                        IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.75         0.42
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      88.32        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     184.63        99.26
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.86 (ii)    6.24 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.15
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.37         0.09          0.424 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58          0.50
     RUNOFF VOLUME    (mm)=      53.95        34.54         46.96
     TOTAL RAINFALL   (mm)=      54.95        54.95         54.95
     RUNOFF COEFFICIENT   =       0.98         0.63          0.85

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\ac308a9d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   98.91 |  0.75   52.75 |  1.08    6.59
                0.17    6.59 |  0.50  184.63 |  0.83   32.97 |
                0.25   19.78 |  0.58   98.91 |  0.92   19.78 |
                0.33   52.75 |  0.67   79.13 |  1.00    6.59 |

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```

```
| CALIB                |
| STANDHYD (  0005)|   Area    (ha)=   2.30
|ID= 1 DT= 5.0 min |   Total Imp(%)=  70.00   Dir. Conn.(%)=  70.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.61         0.69
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     123.83        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     184.63        99.26
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.27 (ii)    6.21 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.30         0.15
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.78         0.15          0.867 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58           0.50
     RUNOFF VOLUME    (mm)=      53.95        34.54          48.13
     TOTAL RAINFALL   (mm)=      54.95        54.95          54.95
     RUNOFF COEFFICIENT   =       0.98         0.63           0.88

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    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  (  0020)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0005):     2.30   0.867     0.50    48.13
     + ID2= 2 (  0006):     1.17   0.424     0.50    46.96
       ==========================================================
       ID = 3 (  0020):     3.47   1.292     0.50    47.73

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

--------------------
| ADD HYD  (  0020)|
|   3 +  2 =  1    |        AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0020):     3.47   1.292     0.50    47.73
     + ID2= 2 (  0008):    14.26   3.489     0.50    44.24
       ==========================================================
       ID = 1 (  0020):    17.73   4.780     0.50    44.93

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


       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M  M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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```



```
*****  D E T A I L E D   O U T P U T *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\a16962
c2-e8d3-46b4-a33e-90a3dc1bcc40\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\a16962
c2-e8d3-46b4-a33e-90a3dc1bcc40\sce


DATE: 11/12/2019                          TIME: 11:34:05

USER:


COMMENTS: _____

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  ************************************************
  ** SIMULATION : 06 AES 100-yr                 **
  ************************************************


--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\57b9b19e
| Ptotal= 60.87 mm |    Comments: 100yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  109.57 |  0.75   58.44 |  1.08    7.30
                0.17    7.30 |  0.50  204.52 |  0.83   36.52 |
                0.25   21.91 |  0.58  109.57 |  0.92   21.91 |
                0.33   58.44 |  0.67   87.65 |  1.00    7.30 |

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

--------------------
| CALIB            |
| STANDHYD (  0030)|   Area    (ha)=   1.58
|ID= 1 DT= 5.0 min |   Total Imp(%)=  65.00   Dir. Conn.(%)=  65.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.03         0.55
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     102.63        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     204.52       114.44
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.95 (ii)    6.09 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.31         0.15
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.56         0.14          0.645 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58           0.50
     RUNOFF VOLUME    (mm)=      59.87        39.79          52.84
     TOTAL RAINFALL   (mm)=      60.87        60.87          60.87
     RUNOFF COEFFICIENT   =       0.98         0.65           0.87

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    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.

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\57b9b19e
| Ptotal= 60.87 mm |    Comments: 100yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  109.57 |  0.75   58.44 |  1.08    7.30
                0.17    7.30 |  0.50  204.52 |  0.83   36.52 |
                0.25   21.91 |  0.58  109.57 |  0.92   21.91 |
                0.33   58.44 |  0.67   87.65 |  1.00    7.30 |

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

--------------------
| CALIB            |
| NASHYD   (  0007)|   Area    (ha)=   2.05   Curve Number   (CN)= 70.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=   0.391

     PEAK FLOW       (cms)=   0.191 (i)
     TIME TO PEAK    (hrs)=   0.750
     RUNOFF VOLUME    (mm)=  18.913
     TOTAL RAINFALL   (mm)=  60.870
     RUNOFF COEFFICIENT   =   0.311

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

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\57b9b19e
| Ptotal= 60.87 mm |    Comments: 100yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  109.57 |  0.75   58.44 |  1.08    7.30
                0.17    7.30 |  0.50  204.52 |  0.83   36.52 |
                0.25   21.91 |  0.58  109.57 |  0.92   21.91 |
                0.33   58.44 |  0.67   87.65 |  1.00    7.30 |

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

--------------------
| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   1.04
|ID= 1 DT= 5.0 min |   Total Imp(%)=  48.00   Dir. Conn.(%)=  48.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.50         0.54
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      83.27        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     204.52       114.44
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.72 (ii)    8.41 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.12
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.28         0.12          0.345 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.67           0.50
     RUNOFF VOLUME    (mm)=      59.87        39.79          49.42
     TOTAL RAINFALL   (mm)=      60.87        60.87          60.87
```



```
     RUNOFF COEFFICIENT   =       0.98         0.65           0.81

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\57b9b19e
| Ptotal= 60.87 mm |    Comments: 100yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  109.57 |  0.75   58.44 |  1.08    7.30
                0.17    7.30 |  0.50  204.52 |  0.83   36.52 |
                0.25   21.91 |  0.58  109.57 |  0.92   21.91 |
                0.33   58.44 |  0.67   87.65 |  1.00    7.30 |

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

--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   1.06
|ID= 1 DT= 5.0 min |   Total Imp(%)=  52.00   Dir. Conn.(%)=  52.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55         0.51
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      84.06        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     204.52       114.44
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.73 (ii)    8.42 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.12
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.30         0.11          0.369 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.67           0.50
     RUNOFF VOLUME    (mm)=      59.87        39.79          50.23
     TOTAL RAINFALL   (mm)=      60.87        60.87          60.87
     RUNOFF COEFFICIENT   =       0.98         0.65           0.83

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0    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.

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\57b9b19e
| Ptotal= 60.87 mm |    Comments: 100yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  109.57 |  0.75   58.44 |  1.08    7.30
                0.17    7.30 |  0.50  204.52 |  0.83   36.52 |
                0.25   21.91 |  0.58  109.57 |  0.92   21.91 |
                0.33   58.44 |  0.67   87.65 |  1.00    7.30 |
```

CALIB STANDHYD (0004)	Area (ha)= 0.22		
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00	Dir. Conn.(%)= 75.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.17	0.05
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	30.30	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		204.52	114.44
over (min)		5.00	5.00
Storage Coeff. (min)=		1.08 (ii)	4.49 (ii)
Unit Hyd. Tpeak (min)=		5.00	5.00
Unit Hyd. peak (cms)=		0.34	0.23
			TOTALS
PEAK FLOW	(cms)=	0.09	0.02 0.109 (iii)
TIME TO PEAK	(hrs)=	0.50	0.50 0.50
RUNOFF VOLUME	(mm)=	59.87	39.79 54.84
TOTAL RAINFALL	(mm)=	60.87	60.87 60.87
RUNOFF COEFFICIENT	=	0.98	0.65 0.90

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\11f23fa1-8a57-479d-b028-9b4fa00b599b\57b9b19e
Ptotal= 60.87 mm	Comments: 100yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	109.57	0.75	58.44	1.08	7.30
0.17	7.30	0.50	204.52	0.83	36.52		
0.25	21.91	0.58	109.57	0.92	21.91		
0.33	58.44	0.67	87.65	1.00	7.30		

CALIB STANDHYD (0002)	Area (ha)= 1.05		
ID= 1 DT= 5.0 min	Total Imp(%)= 51.00	Dir. Conn.(%)= 51.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.54	0.51
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.67	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		204.52	114.44
over (min)		5.00	10.00
Storage Coeff. (min)=		1.72 (ii)	8.41 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.32	0.12
			TOTALS
PEAK FLOW	(cms)=	0.30	0.11 0.361 (iii)
TIME TO PEAK	(hrs)=	0.50	0.67 0.50
RUNOFF VOLUME	(mm)=	59.87	39.79 50.03
TOTAL RAINFALL	(mm)=	60.87	60.87 60.87
RUNOFF COEFFICIENT	=	0.98	0.65 0.82

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0010)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0001):	1.04	0.345	0.50	49.42
	+ ID2= 2 (0002):	1.05	0.361	0.50	50.03
	ID = 3 (0010):	2.09	0.706	0.50	49.73

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1	ID1= 3 (0010):	2.09	0.706	0.50	49.73
	+ ID2= 2 (0003):	1.06	0.369	0.50	50.23
	ID = 1 (0010):	3.15	1.075	0.50	49.90

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0010):	3.15	1.075	0.50	49.90
	+ ID2= 2 (0004):	0.22	0.109	0.50	54.84
	ID = 3 (0010):	3.37	1.185	0.50	50.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1	ID1= 3 (0010):	3.37	1.185	0.50	50.22
	+ ID2= 2 (0007):	2.05	0.191	0.75	18.91
	ID = 1 (0010):	5.42	1.242	0.50	38.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\11f23fa1-8a57-479d-b028-9b4fa00b599b\57b9b19e
Ptotal= 60.87 mm	Comments: 100yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	109.57	0.75	58.44	1.08	7.30
0.17	7.30	0.50	204.52	0.83	36.52		
0.25	21.91	0.58	109.57	0.92	21.91		
0.33	58.44	0.67	87.65	1.00	7.30		

CALIB STANDHYD (0008)	Area (ha)= 14.26		
ID= 1 DT= 5.0 min	Total Imp(%)= 50.00	Dir. Conn.(%)= 50.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	7.13	7.13
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	308.33	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		204.52	114.44
over (min)		5.00	15.00
Storage Coeff. (min)=		3.77 (ii)	10.46 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.25	0.09
			TOTALS
PEAK FLOW	(cms)=	3.46	1.43 3.950 (iii)
TIME TO PEAK	(hrs)=	0.50	0.75 0.50
RUNOFF VOLUME	(mm)=	59.87	39.79 49.83
TOTAL RAINFALL	(mm)=	60.87	60.87 60.87
RUNOFF COEFFICIENT	=	0.98	0.65 0.82

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\11f23fa1-8a57-479d-b028-9b4fa00b599b\57b9b19e
Ptotal= 60.87 mm	Comments: 100yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	109.57	0.75	58.44	1.08	7.30
0.17	7.30	0.50	204.52	0.83	36.52		
0.25	21.91	0.58	109.57	0.92	21.91		
0.33	58.44	0.67	87.65	1.00	7.30		

CALIB STANDHYD (0006)	Area (ha)= 1.17		
ID= 1 DT= 5.0 min	Total Imp(%)= 64.00	Dir. Conn.(%)= 64.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.75	0.42
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	88.32	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		204.52	114.44
over (min)		5.00	10.00
Storage Coeff. (min)=		1.78 (ii)	5.99 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.32	0.15
			TOTALS
PEAK FLOW	(cms)=	0.41	0.11 0.477 (iii)
TIME TO PEAK	(hrs)=	0.50	0.58 0.50
RUNOFF VOLUME	(mm)=	59.87	39.79 52.64
TOTAL RAINFALL	(mm)=	60.87	60.87 60.87
RUNOFF COEFFICIENT	=	0.98	0.65 0.86

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\11f23fa1-8a57-479d-b028-9b4fa00b599b\57b9b19e
Ptotal= 60.87 mm	Comments: 100yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	109.57	0.75	58.44	1.08	7.30
0.17	7.30	0.50	204.52	0.83	36.52		
0.25	21.91	0.58	109.57	0.92	21.91		
0.33	58.44	0.67	87.65	1.00	7.30		

CALIB STANDHYD (0005)	Area (ha)= 2.30		
ID= 1 DT= 5.0 min	Total Imp(%)= 70.00	Dir. Conn.(%)= 70.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.61	0.69
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	123.83	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		204.52	114.44
over (min)		5.00	10.00
Storage Coeff. (min)=		2.18 (ii)	5.96 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.31	0.15
			TOTALS
PEAK FLOW	(cms)=	0.87	0.18 0.974 (iii)
TIME TO PEAK	(hrs)=	0.50	0.58 0.50
RUNOFF VOLUME	(mm)=	59.87	39.79 53.85
TOTAL RAINFALL	(mm)=	60.87	60.87 60.87
RUNOFF COEFFICIENT	=	0.98	0.65 0.88

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0020)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0005):	2.30	0.974	0.50	53.85
	+ ID2= 2 (0006):	1.17	0.477	0.50	52.64
	ID = 3 (0020):	3.47	1.450	0.50	53.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0020)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1					

```
   ID1= 3 (  0020):     3.47   1.450     0.50    53.44
 + ID2= 2 (  0008):    14.26   3.950     0.50    49.83
   ================================================
   ID = 1 (  0020):    17.73   5.400     0.50    50.54

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

```
       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\b3fdd7
dc-7ea3-4c5d-a71a-6ea787b104d9\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\b3fdd7
dc-7ea3-4c5d-a71a-6ea787b104d9\sce

DATE: 11/12/2019                          TIME: 11:34:06

USER:


COMMENTS: _____________________________________________________________
```

```
  ************************************************
  ** SIMULATION : 07 AES 250-yr                  **
  ************************************************


-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\d9c70000
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |
```

```
-------------------
| CALIB            |
| STANDHYD (  0030)|   Area    (ha)=   1.58
|ID= 1 DT= 5.0 min |   Total Imp(%)=  65.00   Dir. Conn.(%)=  65.00
-------------------
```



```
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.03         0.55
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     102.63        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     235.37       138.35
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.84 (ii)    5.75 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.15
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.65         0.17          0.756 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58           0.50
     RUNOFF VOLUME    (mm)=      69.05        48.10          61.72
     TOTAL RAINFALL   (mm)=      70.05        70.05          70.05
     RUNOFF COEFFICIENT   =       0.99         0.69           0.88

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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.
```

```
-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\d9c70000
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |
```

```
-------------------
| CALIB            |
| NASHYD   (  0007)|   Area    (ha)=   2.05   Curve Number   (CN)= 70.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=   0.391

     PEAK FLOW       (cms)=   0.245 (i)
     TIME TO PEAK    (hrs)=   0.750
     RUNOFF VOLUME    (mm)=  24.286
     TOTAL RAINFALL   (mm)=  70.050
     RUNOFF COEFFICIENT   =   0.347

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

```
-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\d9c70000
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |
```

```
-------------------
| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   1.04
|ID= 1 DT= 5.0 min |   Total Imp(%)=  48.00   Dir. Conn.(%)=  48.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.50         0.54
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      83.27        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     235.37       138.35
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.63 (ii)    7.82 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.13
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.32         0.15          0.408 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58           0.50
     RUNOFF VOLUME    (mm)=      69.05        48.10          58.15
     TOTAL RAINFALL   (mm)=      70.05        70.05          70.05
     RUNOFF COEFFICIENT   =       0.99         0.69           0.83

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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.
```

```
-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\d9c70000
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |
```

```
-------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   1.06
|ID= 1 DT= 5.0 min |   Total Imp(%)=  52.00   Dir. Conn.(%)=  52.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.55         0.51
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      84.06        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     235.37       138.35
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.63 (ii)    6.49 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.14
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.35         0.15          0.444 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58           0.50
     RUNOFF VOLUME    (mm)=      69.05        48.10          58.99
     TOTAL RAINFALL   (mm)=      70.05        70.05          70.05
```



```
     RUNOFF COEFFICIENT   =       0.99         0.69           0.84

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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.
```

```
-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\d9c70000
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |
```

```
-------------------
| CALIB            |
| STANDHYD (  0004)|   Area    (ha)=   0.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  75.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.17         0.05
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      38.30        40.00
     Mannings n           =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     235.37       138.35
               over (min)        5.00         5.00
     Storage Coeff.  (min)=       1.02 (ii)    4.25 (ii)
     Unit Hyd. Tpeak (min)=       5.00         5.00
     Unit Hyd. peak  (cms)=       0.34         0.24
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.11         0.02          0.128 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.50           0.50
     RUNOFF VOLUME    (mm)=      69.05        48.10          63.80
     TOTAL RAINFALL   (mm)=      70.05        70.05          70.05
     RUNOFF COEFFICIENT   =       0.99         0.69           0.91

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  90.0     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.
```

```
-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\d9c70000
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |
```

```
--------------------
| CALIB            |
| STANDHYD (  0002)|   Area    (ha)=   1.05
|ID= 1 DT= 5.0 min |   Total Imp(%)=  51.00   Dir. Conn.(%)=  51.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.54         0.51
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      83.67        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     235.37       138.35
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.63 (ii)    6.56 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.14
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.34         0.15          0.435 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58           0.50
     RUNOFF VOLUME    (mm)=      69.05        48.10          58.78
     TOTAL RAINFALL   (mm)=      70.05        70.05          70.05
     RUNOFF COEFFICIENT   =       0.99         0.69           0.84

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  90.0     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  (  0010)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0001):     1.04   0.408     0.50    58.15
     + ID2= 2 (  0002):     1.05   0.435     0.50    58.78
       ==========================================================
       ID = 3 (  0010):     2.09   0.843     0.50    58.47

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

--------------------
| ADD HYD  (  0010)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0010):     2.09   0.843     0.50    58.47
     + ID2= 2 (  0003):     1.06   0.444     0.50    58.99
       ==========================================================
       ID = 1 (  0010):     3.15   1.288     0.50    58.64

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

--------------------
| ADD HYD  (  0010)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0010):     3.15   1.288     0.50    58.64
     + ID2= 2 (  0004):     0.22   0.128     0.50    63.80
       ==========================================================
       ID = 3 (  0010):     3.37   1.415     0.50    58.98

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

--------------------
| ADD HYD  (  0010)|
```



```
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0010):     3.37   1.415     0.50    58.98
     + ID2= 2 (  0007):     2.05   0.245     0.75    24.29
       ==========================================================
       ID = 1 (  0010):     5.42   1.493     0.50    45.86

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\d9c70000
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |

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

--------------------
| CALIB            |
| STANDHYD (  0008)|   Area    (ha)=  14.26
|ID= 1 DT= 5.0 min |   Total Imp(%)=  50.00   Dir. Conn.(%)=  50.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       7.13         7.13
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     300.33        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     235.37       138.35
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       3.56 (ii)    9.76 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.26         0.11
                                                      *TOTALS*
     PEAK FLOW       (cms)=       4.04         1.83          5.075 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.67           0.50
     RUNOFF VOLUME    (mm)=      69.05        48.10          58.58
     TOTAL RAINFALL   (mm)=      70.05        70.05          70.05
     RUNOFF COEFFICIENT   =       0.99         0.69           0.84

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  90.0     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.

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\d9c70000
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |

--------------------------------------------------------------------------------
```



```
--------------------
| CALIB            |
| STANDHYD (  0006)|   Area    (ha)=   1.17
|ID= 1 DT= 5.0 min |   Total Imp(%)=  64.00   Dir. Conn.(%)=  64.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.75         0.42
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=      88.32        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     235.37       138.35
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       1.68 (ii)    5.66 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.32         0.15
                                                      *TOTALS*
     PEAK FLOW       (cms)=       0.48         0.13          0.559 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58           0.50
     RUNOFF VOLUME    (mm)=      69.05        48.10          61.51
     TOTAL RAINFALL   (mm)=      70.05        70.05          70.05
     RUNOFF COEFFICIENT   =       0.99         0.69           0.88

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  90.0     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.

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              11f23fa1-8a57-479d-b028-9b4fa00b599b\d9c70000
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |

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

--------------------
| CALIB            |
| STANDHYD (  0005)|   Area    (ha)=   2.30
|ID= 1 DT= 5.0 min |   Total Imp(%)=  70.00   Dir. Conn.(%)=  70.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       1.61         0.69
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     123.83        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     235.37       138.35
               over (min)        5.00        10.00
     Storage Coeff.  (min)=       2.06 (ii)    5.63 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.31         0.15
                                                      *TOTALS*
     PEAK FLOW       (cms)=       1.01         0.22          1.141 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.58           0.50
     RUNOFF VOLUME    (mm)=      69.05        48.10          62.76
     TOTAL RAINFALL   (mm)=      70.05        70.05          70.05
     RUNOFF COEFFICIENT   =       0.99         0.69           0.90

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



```
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  90.0     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  (  0020)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0005):     2.30   1.141     0.50    62.76
     + ID2= 2 (  0006):     1.17   0.559     0.50    61.51
       ==========================================================
       ID = 3 (  0020):     3.47   1.700     0.50    62.34

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

--------------------
| ADD HYD  (  0020)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0020):     3.47   1.700     0.50    62.34
     + ID2= 2 (  0008):    14.26   5.075     0.50    58.58
       ==========================================================
       ID = 1 (  0020):    17.73   6.774     0.50    59.31

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
================================================================================
====================

       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       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 M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                    *****  D E T A I L E D   O U T P U T *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\ba6448
a7-c0b3-4f36-8e8c-4fe363c672b1\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\ba6448
a7-c0b3-4f36-8e8c-4fe363c672b1\sce

DATE: 11/12/2019                          TIME: 11:34:03

USER:


COMMENTS: _____

--------------------------------------------------------------------------------
--------------------
```

```
  ************************************************
  ** SIMULATION : 08 Chicago - 3hr 2-yr         **
  ************************************************
```

```
--------------------
| CHICAGO STORM    |
| Ptotal= 33.36 mm |
--------------------
```

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

```
--------------------
| CALIB            |
| STANDHYD (  0030)|   Area    (ha)=   1.58
|ID= 1 DT= 5.0 min |   Total Imp(%)=  65.00   Dir. Conn.(%)=  65.00
--------------------
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.03	0.55
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	102.63	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	0.833	18.29	1.583	6.50	2.33	3.47
0.167	2.99	0.917	83.04	1.667	6.50	2.42	3.13
0.250	3.69	1.000	83.04	1.750	5.29	2.50	3.13
0.333	3.69	1.083	24.13	1.833	5.29	2.58	2.86
0.417	4.88	1.167	24.13	1.917	4.49	2.67	2.86
0.500	4.88	1.250	12.47	2.000	4.49	2.75	2.63
0.583	7.49	1.333	12.47	2.083	3.91	2.83	2.63
0.667	7.49	1.417	8.49	2.167	3.91	2.92	2.44
0.750	18.29	1.500	8.49	2.250	3.47	3.00	2.44

				TOTALS
Max.Eff.Inten.(mm/hr)=		83.04	31.18	
over (min)		5.00	15.00	
Storage Coeff. (min)=		2.80 (ii)	14.04 (ii)	
Unit Hyd. Tpeak (min)=		5.00	15.00	
Unit Hyd. peak (cms)=		0.28	0.08	
PEAK FLOW	(cms)=	0.23	0.03	0.247 (iii)
TIME TO PEAK	(hrs)=	1.00	1.17	1.00
RUNOFF VOLUME	(mm)=	32.36	16.51	26.81
TOTAL RAINFALL	(mm)=	33.36	33.36	33.36
RUNOFF COEFFICIENT	=	0.97	0.49	0.80

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.


```
| CHICAGO STORM    |
| Ptotal= 33.36 mm |
--------------------
```

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

```
--------------------
| CALIB            |
| NASHYD  (  0007)|   Area    (ha)=   2.05   Curve Number   (CN)= 70.0
|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 hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	0.833	18.29	1.583	6.50	2.33	3.47
0.167	2.99	0.917	83.04	1.667	6.50	2.42	3.13
0.250	3.69	1.000	83.04	1.750	5.29	2.50	3.13
0.333	3.69	1.083	24.13	1.833	5.29	2.58	2.86
0.417	4.88	1.167	24.13	1.917	4.49	2.67	2.86
0.500	4.88	1.250	12.47	2.000	4.49	2.75	2.63
0.583	7.49	1.333	12.47	2.083	3.91	2.83	2.63
0.667	7.49	1.417	8.49	2.167	3.91	2.92	2.44
0.750	18.29	1.500	8.49	2.250	3.47	3.00	2.44

Unit Hyd Qpeak (cms)= 0.391

PEAK FLOW (cms)= 0.037 (i)
TIME TO PEAK (hrs)= 1.167
RUNOFF VOLUME (mm)= 5.852
TOTAL RAINFALL (mm)= 33.364
RUNOFF COEFFICIENT = 0.175

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

```
--------------------
| CHICAGO STORM    |
| Ptotal= 33.36 mm |
--------------------
```

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

```
--------------------
| CALIB            |
```



```
| STANDHYD (  0001)|   Area    (ha)=   1.04
|ID= 1 DT= 5.0 min |   Total Imp(%)=  48.00   Dir. Conn.(%)=  48.00
--------------------
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.50	0.54
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.27	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	0.833	18.29	1.583	6.50	2.33	3.47
0.167	2.99	0.917	83.04	1.667	6.50	2.42	3.13
0.250	3.69	1.000	83.04	1.750	5.29	2.50	3.13
0.333	3.69	1.083	24.13	1.833	5.29	2.58	2.86
0.417	4.88	1.167	24.13	1.917	4.49	2.67	2.86
0.500	4.88	1.250	12.47	2.000	4.49	2.75	2.63
0.583	7.49	1.333	12.47	2.083	3.91	2.83	2.63
0.667	7.49	1.417	8.49	2.167	3.91	2.92	2.44
0.750	18.29	1.500	8.49	2.250	3.47	3.00	2.44

				TOTALS
Max.Eff.Inten.(mm/hr)=		83.04	31.18	
over (min)		5.00	15.00	
Storage Coeff. (min)=		2.47 (ii)	13.72 (ii)	
Unit Hyd. Tpeak (min)=		5.00	15.00	
Unit Hyd. peak (cms)=		0.30	0.08	
PEAK FLOW	(cms)=	0.11	0.03	0.128 (iii)
TIME TO PEAK	(hrs)=	1.00	1.17	1.00
RUNOFF VOLUME	(mm)=	32.36	16.51	24.11
TOTAL RAINFALL	(mm)=	33.36	33.36	33.36
RUNOFF COEFFICIENT	=	0.97	0.49	0.72

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| CHICAGO STORM    |
| Ptotal= 33.36 mm |
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IDF curve parameters: A= 724.700
B= 5.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

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--------------------
| CALIB            |
| STANDHYD (  0003)|   Area    (ha)=   1.06
|ID= 1 DT= 5.0 min |   Total Imp(%)=  52.00   Dir. Conn.(%)=  52.00
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```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.55	0.51

Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	84.06	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	0.833	18.29	1.583	6.50	2.33	3.47
0.167	2.99	0.917	83.04	1.667	6.50	2.42	3.13
0.250	3.69	1.000	83.04	1.750	5.29	2.50	3.13
0.333	3.69	1.083	24.13	1.833	5.29	2.58	2.86
0.417	4.88	1.167	24.13	1.917	4.49	2.67	2.86
0.500	4.88	1.250	12.47	2.000	4.49	2.75	2.63
0.583	7.49	1.333	12.47	2.083	3.91	2.83	2.63
0.667	7.49	1.417	8.49	2.167	3.91	2.92	2.44
0.750	18.29	1.500	8.49	2.250	3.47	3.00	2.44

				TOTALS
Max.Eff.Inten.(mm/hr)=		83.04	31.18	
over (min)		5.00	15.00	
Storage Coeff. (min)=		2.48 (ii)	13.73 (ii)	
Unit Hyd. Tpeak (min)=		5.00	15.00	
Unit Hyd. peak (cms)=		0.29	0.08	
PEAK FLOW	(cms)=	0.13	0.03	0.139 (iii)
TIME TO PEAK	(hrs)=	1.00	1.17	1.00
RUNOFF VOLUME	(mm)=	32.36	16.51	24.75
TOTAL RAINFALL	(mm)=	33.36	33.36	33.36
RUNOFF COEFFICIENT	=	0.97	0.49	0.74

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

```
--------------------
| CHICAGO STORM    |
| Ptotal= 33.36 mm |
--------------------
```

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

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--------------------
| CALIB            |
| STANDHYD (  0004)|   Area    (ha)=   0.22
|ID= 1 DT= 5.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  75.00
--------------------
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.17	0.05
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	38.30	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	0.833	18.29	1.583	6.50	2.33	3.47
0.167	2.99	0.917	83.04	1.667	6.50	2.42	3.13
0.250	3.69	1.000	83.04	1.750	5.29	2.50	3.13
0.333	3.69	1.083	24.13	1.833	5.29	2.58	2.86
0.417	4.88	1.167	24.13	1.917	4.49	2.67	2.86
0.500	4.88	1.250	12.47	2.000	4.49	2.75	2.63
0.583	7.49	1.333	12.47	2.083	3.91	2.83	2.63
0.667	7.49	1.417	8.49	2.167	3.91	2.92	2.44
0.750	18.29	1.500	8.49	2.250	3.47	3.00	2.44

			TOTALS
Max.Eff.Inten.(mm/hr)=		83.04	39.00
over (min)		5.00	10.00
Storage Coeff. (min)=		1.55 (ii)	6.45 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.33	0.14
PEAK FLOW	(cms)=	0.04	0.00 (0.042 (iii)
TIME TO PEAK	(hrs)=	1.00	1.08 1.00
RUNOFF VOLUME	(mm)=	32.36	16.51 28.39
TOTAL RAINFALL	(mm)=	33.36	33.36 33.36
RUNOFF COEFFICIENT	=	0.97	0.49 0.85

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM
Ptotal= 33.36 mm

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

CALIB
STANDHYD (0002)
ID= 1 DT= 5.0 min

Area (ha)= 1.05
Total Imp(%)= 51.00 Dir. Conn.(%)= 51.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.54	0.51
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.67	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	2.99	0.833	18.29	1.583	6.50	2.33	3.47
0.167	2.99	0.917	83.04	1.667	6.50	2.42	3.13
0.250	3.69	1.000	83.04	1.750	5.29	2.50	3.13
0.333	3.69	1.083	24.13	1.833	5.29	2.58	2.86
0.417	4.88	1.167	24.13	1.917	4.49	2.67	2.86
0.500	4.88	1.250	12.47	2.000	4.49	2.75	2.63
0.583	7.49	1.333	12.47	2.083	3.91	2.83	2.63
0.667	7.49	1.417	8.49	2.167	3.91	2.92	2.44
0.750	18.29	1.500	8.49	2.250	3.47	3.00	2.44

			TOTALS
Max.Eff.Inten.(mm/hr)=		83.04	31.18
over (min)		5.00	15.00
Storage Coeff. (min)=		2.47 (ii)	13.72 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.29	0.08
PEAK FLOW	(cms)=	0.12	0.03 0.136 (iii)
TIME TO PEAK	(hrs)=	1.00	1.17 1.00
RUNOFF VOLUME	(mm)=	32.36	16.51 24.59
TOTAL RAINFALL	(mm)=	33.36	33.36 33.36
RUNOFF COEFFICIENT	=	0.97	0.49 0.74

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0010)
1 + 2 = 3

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):		1.04	0.128	1.00	24.11
+ ID2= 2 (0002):		1.05	0.136	1.00	24.59
ID = 3 (0010):		2.09	0.264	1.00	24.35

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)
3 + 2 = 1

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0010):		2.09	0.264	1.00	24.35
+ ID2= 2 (0003):		1.06	0.139	1.00	24.75
ID = 1 (0010):		3.15	0.403	1.00	24.48

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)
1 + 2 = 3

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):		3.15	0.403	1.00	24.48
+ ID2= 2 (0004):		0.22	0.042	1.00	28.39
ID = 3 (0010):		3.37	0.445	1.00	24.74

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)
3 + 2 = 1

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0010):		3.37	0.445	1.00	24.74

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
+ ID2= 2 (0007):		2.05	0.037	1.17	5.85
ID = 1 (0010):		5.42	0.465	1.00	17.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CHICAGO STORM
Ptotal= 33.36 mm

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

CALIB
STANDHYD (0008)
ID= 1 DT= 5.0 min

Area (ha)= 14.26
Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	7.13	7.13
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	308.33	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	0.833	18.29	1.583	6.50	2.33	3.47
0.167	2.99	0.917	83.04	1.667	6.50	2.42	3.13
0.250	3.69	1.000	83.04	1.750	5.29	2.50	3.13
0.333	3.69	1.083	24.13	1.833	5.29	2.58	2.86
0.417	4.88	1.167	24.13	1.917	4.49	2.67	2.86
0.500	4.88	1.250	12.47	2.000	4.49	2.75	2.63
0.583	7.49	1.333	12.47	2.083	3.91	2.83	2.63
0.667	7.49	1.417	8.49	2.167	3.91	2.92	2.44
0.750	18.29	1.500	8.49	2.250	3.47	3.00	2.44

			TOTALS
Max.Eff.Inten.(mm/hr)=		83.04	31.18
over (min)		5.00	20.00
Storage Coeff. (min)=		5.41 (ii)	16.66 (ii)
Unit Hyd. Tpeak (min)=		5.00	20.00
Unit Hyd. peak (cms)=		0.21	0.06
PEAK FLOW	(cms)=	1.44	0.35 1.559 (iii)
TIME TO PEAK	(hrs)=	1.00	1.25 1.00
RUNOFF VOLUME	(mm)=	32.36	16.51 24.44
TOTAL RAINFALL	(mm)=	33.36	33.36 33.36
RUNOFF COEFFICIENT	=	0.97	0.49 0.73

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM
Ptotal= 33.36 mm

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

CALIB
STANDHYD (0006)
ID= 1 DT= 5.0 min

Area (ha)= 1.17
Total Imp(%)= 64.00 Dir. Conn.(%)= 64.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.75	0.42
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	88.32	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.99	0.833	18.29	1.583	6.50	2.33	3.47
0.167	2.99	0.917	83.04	1.667	6.50	2.42	3.13
0.250	3.69	1.000	83.04	1.750	5.29	2.50	3.13
0.333	3.69	1.083	24.13	1.833	5.29	2.58	2.86
0.417	4.88	1.167	24.13	1.917	4.49	2.67	2.86
0.500	4.88	1.250	12.47	2.000	4.49	2.75	2.63
0.583	7.49	1.333	12.47	2.083	3.91	2.83	2.63
0.667	7.49	1.417	8.49	2.167	3.91	2.92	2.44
0.750	18.29	1.500	8.49	2.250	3.47	3.00	2.44

			TOTALS
Max.Eff.Inten.(mm/hr)=		83.04	31.18
over (min)		5.00	15.00
Storage Coeff. (min)=		2.55 (ii)	13.00 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.29	0.08
PEAK FLOW	(cms)=	0.17	0.02 0.181 (iii)
TIME TO PEAK	(hrs)=	1.00	1.17 1.00
RUNOFF VOLUME	(mm)=	32.36	16.51 26.65
TOTAL RAINFALL	(mm)=	33.36	33.36 33.36
RUNOFF COEFFICIENT	=	0.97	0.49 0.80

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM
Ptotal= 33.36 mm

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

```
                    Duration of storm  =  3.00 hrs
                    Storm time step    = 10.00 min
                    Time to peak ratio =  0.33

              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.17    2.99 |  1.00   83.04 |'  1.83    5.29 |  2.67    2.86
              0.33    3.69 |  1.17   24.13 |'  2.00    4.49 |  2.83    2.63
              0.50    4.88 |  1.33   12.47 |'  2.17    3.91 |  3.00    2.44
              0.67    7.49 |  1.50    8.49 |'  2.33    3.47 |
              0.83   18.29 |  1.67    6.50 |'  2.50    3.13 |


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--------------------
| CALIB            |
| STANDHYD (  0005)|   Area    (ha)=   2.30
|ID= 1 DT= 5.0 min |   Total Imp(%)=  70.00   Dir. Conn.(%)=  70.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      1.61         0.69
     Dep. Storage     (mm)=      1.00         2.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=    123.83        40.00
     Mannings n           =     0.013        0.250

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

                          ---- TRANSFORMED HYETOGRAPH ----
              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
             0.083    2.99 | 0.833   18.29 | 1.583    6.50 |  2.33    3.47
             0.167    2.99 | 0.917   83.04 | 1.667    6.50 |  2.42    3.13
             0.250    3.69 | 1.000   83.04 | 1.750    5.29 |  2.50    3.13
             0.333    3.69 | 1.083   24.13 | 1.833    5.29 |  2.58    2.86
             0.417    4.88 | 1.167   24.13 | 1.917    4.49 |  2.67    2.86
             0.500    4.88 | 1.250   12.47 | 2.000    4.49 |  2.75    2.63
             0.583    7.49 | 1.333   12.47 | 2.083    3.91 |  2.83    2.63
             0.667    7.49 | 1.417    8.49 | 2.167    3.91 |  2.92    2.44
             0.750   18.29 | 1.500    8.49 | 2.250    3.47 |  3.00    2.44

     Max.Eff.Inten.(mm/hr)=     83.04        31.18
               over (min)        5.00        15.00
     Storage Coeff.  (min)=     3.13 (ii)   14.38 (ii)
     Unit Hyd. Tpeak (min)=     5.00        15.00
     Unit Hyd. peak  (cms)=     0.27         0.08
                                                      *TOTALS*
     PEAK FLOW       (cms)=     0.36         0.04       0.378 (iii)
     TIME TO PEAK    (hrs)=     1.00         1.17        1.00
     RUNOFF VOLUME    (mm)=    32.36        16.51       27.60
     TOTAL RAINFALL   (mm)=    33.36        33.36       33.36
     RUNOFF COEFFICIENT   =     0.97         0.49        0.83

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

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN*  =  90.0     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  (  0020)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0005):     2.30   0.378     1.00    27.60
     + ID2= 2 (  0006):     1.17   0.181     1.00    26.65
       ================================================
       ID = 3 (  0020):     3.47   0.559     1.00    27.28
```



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     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ADD HYD  (  0020)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0020):     3.47   0.559     1.00    27.28
     + ID2= 2 (  0008):    14.26   1.559     1.00    24.44
       ================================================
       ID = 1 (  0020):    17.73   2.118     1.00    24.99

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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================================================================================
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       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       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 M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                    *****  D E T A I L E D   O U T P U T *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\5dcce1
87-a065-4d2a-b3bf-43029a05d4f2\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\5dcce1
87-a065-4d2a-b3bf-43029a05d4f2\sce

DATE: 11/12/2019                          TIME: 11:34:02

USER:


COMMENTS: _____

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  **********************************************
  ** SIMULATION : 09 Chicago - 3hr 5-yr       **
  **********************************************

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| CHICAGO STORM    |    IDF curve parameters: A=1330.300
| Ptotal= 45.35 mm |                          B=   7.938
--------------------                          C=   0.855
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.17    3.43 |  1.00  112.71 |  1.83    6.69 |  2.67    3.25
              0.33    4.38 |  1.17   36.59 |  2.00    5.51 |  2.83    2.95
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              0.50    6.09 |  1.33   17.98 |  2.17    4.69 |  3.00    2.70
              0.67   10.04 |  1.50   11.61 |  2.33    4.08 |
              0.83   27.27 |  1.67    8.50 |  2.50    3.61 |


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--------------------
| CALIB            |
| STANDHYD (  0030)|   Area    (ha)=   1.58
|ID= 1 DT= 5.0 min |   Total Imp(%)=  65.00   Dir. Conn.(%)=  65.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      1.03         0.55
     Dep. Storage     (mm)=      1.00         2.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=    102.63        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    3.43 | 0.833   27.27 | 1.583    8.50 |  2.33    4.08
             0.167    3.43 | 0.917  112.71 | 1.667    8.50 |  2.42    3.61
             0.250    4.38 | 1.000  112.71 | 1.750    6.69 |  2.50    3.25
             0.333    4.38 | 1.083   36.59 | 1.833    6.69 |  2.58    3.25
             0.417    6.09 | 1.167   36.59 | 1.917    5.51 |  2.67    3.25
             0.500    6.09 | 1.250   17.98 | 2.000    5.51 |  2.75    2.95
             0.583   10.04 | 1.333   17.98 | 2.083    4.69 |  2.83    2.95
             0.667   10.04 | 1.417   11.61 | 2.167    4.69 |  2.92    2.70
             0.750   27.27 | 1.500   11.61 | 2.250    4.08 |  3.00    2.70

     Max.Eff.Inten.(mm/hr)=    112.71        64.47
               over (min)        5.00        15.00
     Storage Coeff.  (min)=     2.47 (ii)   10.89 (ii)
     Unit Hyd. Tpeak (min)=     5.00        15.00
     Unit Hyd. peak  (cms)=     0.29         0.09
                                                      *TOTALS*
     PEAK FLOW       (cms)=     0.32         0.06       0.347 (iii)
     TIME TO PEAK    (hrs)=     1.00         1.17        1.00
     RUNOFF VOLUME    (mm)=    44.35        26.25       38.01
     TOTAL RAINFALL   (mm)=    45.35        45.35       45.35
     RUNOFF COEFFICIENT   =     0.98         0.58        0.84

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

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN*  =  90.0     Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1330.300
| Ptotal= 45.35 mm |                          B=   7.938
--------------------                          C=   0.855
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.17    3.43 |  1.00  112.71 |  1.83    6.69 |  2.67    3.25
              0.33    4.38 |  1.17   36.59 |  2.00    5.51 |  2.83    2.95
              0.50    6.09 |  1.33   17.98 |  2.17    4.69 |  3.00    2.70
              0.67   10.04 |  1.50   11.61 |  2.33    4.08 |
              0.83   27.27 |  1.67    8.50 |  2.50    3.61 |
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--------------------
| CALIB            |
| NASHYD   (  0007)|   Area    (ha)=   2.05   Curve Number   (CN)= 70.0
|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    3.43 | 0.833   27.27 | 1.583    8.50 |  2.33    4.08
             0.167    3.43 | 0.917  112.71 | 1.667    8.50 |  2.42    3.61
             0.250    4.38 | 1.000  112.71 | 1.750    6.69 |  2.50    3.61
             0.333    4.38 | 1.083   36.59 | 1.833    6.69 |  2.58    3.25
             0.417    6.09 | 1.167   36.59 | 1.917    5.51 |  2.67    3.25
             0.500    6.09 | 1.250   17.98 | 2.000    5.51 |  2.75    2.95
             0.583   10.04 | 1.333   17.98 | 2.083    4.69 |  2.83    2.95
             0.667   10.04 | 1.417   11.61 | 2.167    4.69 |  2.92    2.70
             0.750   27.27 | 1.500   11.61 | 2.250    4.08 |  3.00    2.70

     Unit Hyd Qpeak  (cms)=   0.391

     PEAK FLOW       (cms)=   0.075 (i)
     TIME TO PEAK    (hrs)=   1.167
     RUNOFF VOLUME    (mm)=  10.889
     TOTAL RAINFALL   (mm)=  45.346
     RUNOFF COEFFICIENT   =   0.240

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

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| CHICAGO STORM    |    IDF curve parameters: A=1330.300
| Ptotal= 45.35 mm |                          B=   7.938
--------------------                          C=   0.855
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.17    3.43 |  1.00  112.71 |  1.83    6.69 |  2.67    3.25
              0.33    4.38 |  1.17   36.59 |  2.00    5.51 |  2.83    2.95
              0.50    6.09 |  1.33   17.98 |  2.17    4.69 |  3.00    2.70
              0.67   10.04 |  1.50   11.61 |  2.33    4.08 |
              0.83   27.27 |  1.67    8.50 |  2.50    3.61 |


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| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   1.04
|ID= 1 DT= 5.0 min |   Total Imp(%)=  48.00   Dir. Conn.(%)=  48.00
--------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      0.50         0.54
     Dep. Storage     (mm)=      1.00         2.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=     83.27        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    3.43 | 0.833   27.27 | 1.583    8.50 |  2.33    4.08
             0.167    3.43 | 0.917  112.71 | 1.667    8.50 |  2.42    3.61
```

0.250	4.38	1.000	112.71	1.750	6.69	2.50	3.61
0.333	4.38	1.083	36.59	1.833	6.69	2.58	3.25
0.417	6.09	1.167	36.59	1.917	5.51	2.67	3.25
0.500	6.09	1.250	17.98	2.000	5.51	2.75	2.95
0.583	10.04	1.333	17.98	2.083	4.69	2.83	2.95
0.667	10.04	1.417	11.61	2.167	4.69	2.92	2.70
0.750	27.27	1.500	11.61	2.250	4.08	3.00	2.70

Max.Eff.Inten.(mm/hr)=	112.71	64.47	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.18 (ii)	10.59 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.31	0.09	
		TOTALS	
PEAK FLOW (cms)=	0.16	0.06	0.185 (iii)
TIME TO PEAK (hrs)=	1.00	1.17	1.00
RUNOFF VOLUME (mm)=	44.35	26.25	34.93
TOTAL RAINFALL (mm)=	45.35	45.35	45.35
RUNOFF COEFFICIENT =	0.98	0.58	0.77

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	IDF curve parameters: A=1330.300
Ptotal= 45.35 mm	B= 7.938
	C= 0.855

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB			
STANDHYD (0003)	Area (ha)=	1.06	
ID= 1 DT= 5.0 min	Total Imp(%)=	52.00	Dir. Conn.(%)= 52.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.55	0.51
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	84.06	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.43	0.833	27.27	1.583	8.50	2.33	4.08
0.167	3.43	0.917	112.71	1.667	8.50	2.42	3.61
0.250	4.38	1.000	112.71	1.750	6.69	2.50	3.61
0.333	4.38	1.083	36.59	1.833	6.69	2.58	3.25
0.417	6.09	1.167	36.59	1.917	5.51	2.67	3.25
0.500	6.09	1.250	17.98	2.000	5.51	2.75	2.95
0.583	10.04	1.333	17.98	2.083	4.69	2.83	2.95

0.667	10.04	1.417	11.61	2.167	4.69	2.92	2.70
0.750	27.27	1.500	11.61	2.250	4.08	3.00	2.70

Max.Eff.Inten.(mm/hr)=	112.71	64.47	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.19 (ii)	10.61 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.31	0.09	
		TOTALS	
PEAK FLOW (cms)=	0.17	0.05	0.199 (iii)
TIME TO PEAK (hrs)=	1.00	1.17	1.00
RUNOFF VOLUME (mm)=	44.35	26.25	35.65
TOTAL RAINFALL (mm)=	45.35	45.35	45.35
RUNOFF COEFFICIENT =	0.98	0.58	0.79

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0004)	Area (ha)=	0.22	
ID= 1 DT= 5.0 min	Total Imp(%)=	75.00	Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.17	0.05
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	38.30	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.43	0.833	27.27	1.583	8.50	2.33	4.08
0.167	3.43	0.917	112.71	1.667	8.50	2.42	3.61
0.250	4.38	1.000	112.71	1.750	6.69	2.50	3.61
0.333	4.38	1.083	36.59	1.833	6.69	2.58	3.25
0.417	6.09	1.167	36.59	1.917	5.51	2.67	3.25
0.500	6.09	1.250	17.98	2.000	5.51	2.75	2.95
0.583	10.04	1.333	17.98	2.083	4.69	2.83	2.95
0.667	10.04	1.417	11.61	2.167	4.69	2.92	2.70
0.750	27.27	1.500	11.61	2.250	4.08	3.00	2.70

Max.Eff.Inten.(mm/hr)=	112.71	64.47	
over (min)	5.00	10.00	

Storage Coeff. (min)=	1.37 (ii)	5.70 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.33	0.15	
		TOTALS	
PEAK FLOW (cms)=	0.05	0.01	0.058 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	44.35	26.25	39.81
TOTAL RAINFALL (mm)=	45.35	45.35	45.35
RUNOFF COEFFICIENT =	0.98	0.58	0.88

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	IDF curve parameters: A=1330.300
Ptotal= 45.35 mm	B= 7.938
	C= 0.855

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB			
STANDHYD (0002)	Area (ha)=	1.05	
ID= 1 DT= 5.0 min	Total Imp(%)=	51.00	Dir. Conn.(%)= 51.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.54	0.51
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.67	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.43	0.833	27.27	1.583	8.50	2.33	4.08
0.167	3.43	0.917	112.71	1.667	8.50	2.42	3.61
0.250	4.38	1.000	112.71	1.750	6.69	2.50	3.61
0.333	4.38	1.083	36.59	1.833	6.69	2.58	3.25
0.417	6.09	1.167	36.59	1.917	5.51	2.67	3.25
0.500	6.09	1.250	17.98	2.000	5.51	2.75	2.95
0.583	10.04	1.333	17.98	2.083	4.69	2.83	2.95
0.667	10.04	1.417	11.61	2.167	4.69	2.92	2.70
0.750	27.27	1.500	11.61	2.250	4.08	3.00	2.70

Max.Eff.Inten.(mm/hr)=	112.71	64.47	
over (min)	5.00	15.00	
Storage Coeff. (min)=	2.19 (ii)	10.60 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.31	0.09	
		TOTALS	
PEAK FLOW (cms)=	0.17	0.05	0.195 (iii)

TIME TO PEAK (hrs)=	1.00	1.17	1.00
RUNOFF VOLUME (mm)=	44.35	26.25	35.47
TOTAL RAINFALL (mm)=	45.35	45.35	45.35
RUNOFF COEFFICIENT =	0.98	0.58	0.78

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0010)					
1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):		1.04	0.185	1.00	34.93
+ ID2= 2 (0002):		1.05	0.195	1.00	35.47
ID = 3 (0010):		2.09	0.380	1.00	35.20

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
3 + 2 = 1		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0010):		2.09	0.380	1.00	35.20
+ ID2= 2 (0003):		1.06	0.199	1.00	35.65
ID = 1 (0010):		3.15	0.579	1.00	35.35

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):		3.15	0.579	1.00	35.35
+ ID2= 2 (0004):		0.22	0.058	1.00	39.81
ID = 3 (0010):		3.37	0.637	1.00	35.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
3 + 2 = 1		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0010):		3.37	0.637	1.00	35.65
+ ID2= 2 (0007):		2.05	0.075	1.17	10.89
ID = 1 (0010):		5.42	0.679	1.00	26.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CHICAGO STORM	IDF curve parameters: A=1330.300
Ptotal= 45.35 mm	B= 7.938
	C= 0.855

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr

0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB
STANDHYD (0008) | Area (ha)= 14.26
ID= 1 DT= 5.0 min | Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	7.13	7.13
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	300.33	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.43	0.833	27.27	1.583	8.50	2.33	4.08
0.167	3.43	0.917	112.71	1.667	8.50	2.42	3.61
0.250	4.38	1.000	112.71	1.750	6.69	2.50	3.61
0.333	4.38	1.083	36.59	1.833	6.69	2.58	3.25
0.417	6.09	1.167	36.59	1.917	5.51	2.67	3.25
0.500	6.09	1.250	17.98	2.000	5.51	2.75	2.95
0.583	10.04	1.333	17.98	2.083	4.69	2.83	2.95
0.667	10.04	1.417	11.61	2.167	4.69	2.92	2.70
0.750	27.27	1.500	11.61	2.250	4.08	3.00	2.70

			TOTALS
Max.Eff.Inten.(mm/hr)=		112.71	64.47
over (min)		5.00	15.00
Storage Coeff. (min)=		4.79 (ii)	13.20 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.22	0.08
PEAK FLOW	(cms)=	2.02	0.69 2.365 (iii)
TIME TO PEAK	(hrs)=	1.00	1.17 1.00
RUNOFF VOLUME	(mm)=	44.35	26.25 35.30
TOTAL RAINFALL	(mm)=	45.35	45.35 45.35
RUNOFF COEFFICIENT	=	0.98	0.58 0.78

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM
Ptotal= 45.35 mm |

IDF curve parameters: A=1330.300
B= 7.938
C= 0.855
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB
STANDHYD (0006) | Area (ha)= 1.17
ID= 1 DT= 5.0 min | Total Imp(%)= 64.00 Dir. Conn.(%)= 64.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.75	0.42
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	88.32	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.43	0.833	27.27	1.583	8.50	2.33	4.08
0.167	3.43	0.917	112.71	1.667	8.50	2.42	3.61
0.250	4.38	1.000	112.71	1.750	6.69	2.50	3.61
0.333	4.38	1.083	36.59	1.833	6.69	2.58	3.25
0.417	6.09	1.167	36.59	1.917	5.51	2.67	3.25
0.500	6.09	1.250	17.98	2.000	5.51	2.75	2.95
0.583	10.04	1.333	17.98	2.083	4.69	2.83	2.95
0.667	10.04	1.417	11.61	2.167	4.69	2.92	2.70
0.750	27.27	1.500	11.61	2.250	4.08	3.00	2.70

			TOTALS
Max.Eff.Inten.(mm/hr)=		112.71	64.47
over (min)		5.00	15.00
Storage Coeff. (min)=		2.26 (ii)	10.67 (ii)
Unit Hyd. Tpeak (min)=		5.00	15.00
Unit Hyd. peak (cms)=		0.30	0.09
PEAK FLOW	(cms)=	0.23	0.04 0.256 (iii)
TIME TO PEAK	(hrs)=	1.00	1.17 1.00
RUNOFF VOLUME	(mm)=	44.35	26.25 37.83
TOTAL RAINFALL	(mm)=	45.35	45.35 45.35
RUNOFF COEFFICIENT	=	0.98	0.58 0.83

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM
Ptotal= 45.35 mm |

IDF curve parameters: A=1330.300
B= 7.938
C= 0.855
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB

STANDHYD (0005) | Area (ha)= 2.30
ID= 1 DT= 5.0 min | Total Imp(%)= 70.00 Dir. Conn.(%)= 70.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.61	0.69
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	123.83	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.43	0.833	27.27	1.583	8.50	2.33	4.08
0.167	3.43	0.917	112.71	1.667	8.50	2.42	3.61
0.250	4.38	1.000	112.71	1.750	6.69	2.50	3.61
0.333	4.38	1.083	36.59	1.833	6.69	2.58	3.25
0.417	6.09	1.167	36.59	1.917	5.51	2.67	3.25
0.500	6.09	1.250	17.98	2.000	5.51	2.75	2.95
0.583	10.04	1.333	17.98	2.083	4.69	2.83	2.95
0.667	10.04	1.417	11.61	2.167	4.69	2.92	2.70
0.750	27.27	1.500	11.61	2.250	4.08	3.00	2.70

			TOTALS
Max.Eff.Inten.(mm/hr)=		112.71	64.47
over (min)		5.00	10.00
Storage Coeff. (min)=		2.77 (ii)	7.56 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.28	0.13
PEAK FLOW	(cms)=	0.49	0.09 0.566 (iii)
TIME TO PEAK	(hrs)=	1.00	1.08 1.00
RUNOFF VOLUME	(mm)=	44.35	26.25 38.92
TOTAL RAINFALL	(mm)=	45.35	45.35 45.35
RUNOFF COEFFICIENT	=	0.98	0.58 0.86

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0020) |
1 + 2 = 3 |

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0005):		2.30	0.566	1.00	38.92
+ ID2= 2 (0006):		1.17	0.256	1.00	37.83
ID = 3 (0020):		3.47	0.822	1.00	38.55

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0020) |
3 + 2 = 1 |

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0020):		3.47	0.822	1.00	38.55
+ ID2= 2 (0008):		14.26	2.365	1.00	35.30
ID = 1 (0020):		17.73	3.187	1.00	35.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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      V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
      V    V   I    SS     U   U   A A   L
       V  V    I      SS   U   U  AAAAA  L
       V  V    I       SS  U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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DATE: 11/12/2019                          TIME: 11:34:03

USER:

COMMENTS: _____
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****
** SIMULATION : 10 Chicago - 3hr 25-yr **
****

CHICAGO STORM
Ptotal= 60.39 mm |

IDF curve parameters: A=1496.300
B= 5.250
C= 0.825
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.89	1.00	158.06	1.83	8.94	2.67	4.66
0.33	6.10	1.17	44.35	2.00	7.51	2.83	4.27
0.50	8.21	1.33	22.12	2.17	6.49	3.00	3.95
0.67	12.90	1.50	14.74	2.33	5.73		
0.83	33.21	1.67	11.10	2.50	5.14		

CALIB
STANDHYD (0030) | Area (ha)= 1.58
ID= 1 DT= 5.0 min | Total Imp(%)= 65.00 Dir. Conn.(%)= 65.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.03	0.55
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	102.63	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.89	0.833	33.21	1.583	11.10	2.33	5.73
0.167	4.89	0.917	158.06	1.667	11.10	2.42	5.14
0.250	6.10	1.000	158.06	1.750	8.94	2.50	5.14
0.333	6.10	1.083	44.35	1.833	8.94	2.58	4.66
0.417	8.21	1.167	44.35	1.917	7.51	2.67	4.66
0.500	8.21	1.250	22.12	2.000	7.51	2.75	4.27
0.583	12.90	1.333	22.12	2.083	6.49	2.83	4.27
0.667	12.90	1.417	14.74	2.167	6.49	2.92	3.95
0.750	33.21	1.500	14.74	2.250	5.73	3.00	3.95

Max.Eff.Inten.(mm/hr)=	158.06	104.59	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.16 (ii)	6.75 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.14	
			TOTALS
PEAK FLOW (cms)=	0.45	0.12	0.548 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	59.39	39.37	52.38
TOTAL RAINFALL (mm)=	60.39	60.39	60.39
RUNOFF COEFFICIENT =	0.98	0.65	0.87

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	IDF curve parameters: A=1496.300
Ptotal= 60.39 mm	B= 5.250
	C= 0.825

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.89	1.00	158.06	1.83	8.94	2.67	4.66
0.33	6.10	1.17	44.35	2.00	7.51	2.83	4.27
0.50	8.21	1.33	22.12	2.17	6.49	3.00	3.95
0.67	12.90	1.50	14.74	2.33	5.73		
0.83	33.21	1.67	11.10	2.50	5.14		

CALIB			
NASHYD (0007)	Area (ha)=	2.05	Curve Number (CN)= 70.0
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 hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.89	0.833	33.21	1.583	11.10	2.33	5.73
0.167	4.89	0.917	158.06	1.667	11.10	2.42	5.14
0.250	6.10	1.000	158.06	1.750	8.94	2.50	5.14
0.333	6.10	1.083	44.35	1.833	8.94	2.58	4.66

0.417	8.21	1.167	44.35	1.917	7.51	2.67	4.66
0.500	8.21	1.250	22.12	2.000	7.51	2.75	4.27
0.583	12.90	1.333	22.12	2.083	6.49	2.83	4.27
0.667	12.90	1.417	14.74	2.167	6.49	2.92	3.95
0.750	33.21	1.500	14.74	2.250	5.73	3.00	3.95

Unit Hyd Qpeak (cms)=	0.391		
PEAK FLOW (cms)=	0.134 (i)		
TIME TO PEAK (hrs)=	1.167		
RUNOFF VOLUME (mm)=	18.646		
TOTAL RAINFALL (mm)=	60.392		
RUNOFF COEFFICIENT =	0.309		

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

CHICAGO STORM	IDF curve parameters: A=1496.300		
Ptotal= 60.39 mm	B= 5.250		
	C= 0.825		

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.89	1.00	158.06	1.83	8.94	2.67	4.66
0.33	6.10	1.17	44.35	2.00	7.51	2.83	4.27
0.50	8.21	1.33	22.12	2.17	6.49	3.00	3.95
0.67	12.90	1.50	14.74	2.33	5.73		
0.83	33.21	1.67	11.10	2.50	5.14		

CALIB			
STANDHYD (0001)	Area (ha)=	1.04	
ID= 1 DT= 5.0 min	Total Imp(%)=	48.00	Dir. Conn.(%)= 48.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.50	0.54
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.27	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.89	0.833	33.21	1.583	11.10	2.33	5.73
0.167	4.89	0.917	158.06	1.667	11.10	2.42	5.14
0.250	6.10	1.000	158.06	1.750	8.94	2.50	5.14
0.333	6.10	1.083	44.35	1.833	8.94	2.58	4.66
0.417	8.21	1.167	44.35	1.917	7.51	2.67	4.66
0.500	8.21	1.250	22.12	2.000	7.51	2.75	4.27
0.583	12.90	1.333	22.12	2.083	6.49	2.83	4.27
0.667	12.90	1.417	14.74	2.167	6.49	2.92	3.95
0.750	33.21	1.500	14.74	2.250	5.73	3.00	3.95

Max.Eff.Inten.(mm/hr)=	158.06	104.59	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.91 (ii)	8.84 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.12	
			TOTALS
PEAK FLOW (cms)=	0.22	0.10	0.304 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	59.39	39.37	48.97

TOTAL RAINFALL (mm)=	60.39	60.39	60.39
RUNOFF COEFFICIENT =	0.98	0.65	0.81

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	IDF curve parameters: A=1496.300
Ptotal= 60.39 mm	B= 5.250
	C= 0.825

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.89	1.00	158.06	1.83	8.94	2.67	4.66
0.33	6.10	1.17	44.35	2.00	7.51	2.83	4.27
0.50	8.21	1.33	22.12	2.17	6.49	3.00	3.95
0.67	12.90	1.50	14.74	2.33	5.73		
0.83	33.21	1.67	11.10	2.50	5.14		

CALIB			
STANDHYD (0003)	Area (ha)=	1.06	
ID= 1 DT= 5.0 min	Total Imp(%)=	52.00	Dir. Conn.(%)= 52.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.55	0.51
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	84.06	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.89	0.833	33.21	1.583	11.10	2.33	5.73
0.167	4.89	0.917	158.06	1.667	11.10	2.42	5.14
0.250	6.10	1.000	158.06	1.750	8.94	2.50	5.14
0.333	6.10	1.083	44.35	1.833	8.94	2.58	4.66
0.417	8.21	1.167	44.35	1.917	7.51	2.67	4.66
0.500	8.21	1.250	22.12	2.000	7.51	2.75	4.27
0.583	12.90	1.333	22.12	2.083	6.49	2.83	4.27
0.667	12.90	1.417	14.74	2.167	6.49	2.92	3.95
0.750	33.21	1.500	14.74	2.250	5.73	3.00	3.95

Max.Eff.Inten.(mm/hr)=	158.06	104.59	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.92 (ii)	8.85 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.12	
			TOTALS
PEAK FLOW (cms)=	0.24	0.10	0.321 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	59.39	39.37	49.78
TOTAL RAINFALL (mm)=	60.39	60.39	60.39
RUNOFF COEFFICIENT =	0.98	0.65	0.82

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	IDF curve parameters: A=1496.300
Ptotal= 60.39 mm	B= 5.250
	C= 0.825

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.89	1.00	158.06	1.83	8.94	2.67	4.66
0.33	6.10	1.17	44.35	2.00	7.51	2.83	4.27
0.50	8.21	1.33	22.12	2.17	6.49	3.00	3.95
0.67	12.90	1.50	14.74	2.33	5.73		
0.83	33.21	1.67	11.10	2.50	5.14		

CALIB			
STANDHYD (0004)	Area (ha)=	0.22	
ID= 1 DT= 5.0 min	Total Imp(%)=	75.00	Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.17	0.05
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	38.30	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.89	0.833	33.21	1.583	11.10	2.33	5.73
0.167	4.89	0.917	158.06	1.667	11.10	2.42	5.14
0.250	6.10	1.000	158.06	1.750	8.94	2.50	5.14
0.333	6.10	1.083	44.35	1.833	8.94	2.58	4.66
0.417	8.21	1.167	44.35	1.917	7.51	2.67	4.66
0.500	8.21	1.250	22.12	2.000	7.51	2.75	4.27
0.583	12.90	1.333	22.12	2.083	6.49	2.83	4.27
0.667	12.90	1.417	14.74	2.167	6.49	2.92	3.95
0.750	33.21	1.500	14.74	2.250	5.73	3.00	3.95

Max.Eff.Inten.(mm/hr)=	158.06	104.59	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.20 (ii)	4.98 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.33	0.22	
			TOTALS
PEAK FLOW (cms)=	0.07	0.01	0.087 (iii)
TIME TO PEAK (hrs)=	1.00	1.00	1.00
RUNOFF VOLUME (mm)=	59.39	39.37	54.37
TOTAL RAINFALL (mm)=	60.39	60.39	60.39
RUNOFF COEFFICIENT =	0.98	0.65	0.90

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM Ptotal= 60.39 mm	IDF curve parameters: A=1496.300 B= 5.250 C= 0.825 used in: INTENSITY = A / (t + B)^C Duration of storm = 3.00 hrs Storm time step = 10.00 min Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.89	1.00	158.06	1.83	8.94	2.67	4.66
0.33	6.10	1.17	44.35	2.00	7.51	2.83	4.27
0.50	8.21	1.33	22.12	2.17	6.49	3.00	3.95
0.67	12.90	1.50	14.74	2.33	5.73		
0.83	33.21	1.67	11.10	2.50	5.14		

CALIB STANDHYD (0002) ID= 1 DT= 5.0 min	Area (ha)= 1.05 Total Imp(%)= 51.00 Dir. Conn.(%)= 51.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.54	0.51
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.67	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.89	0.833	33.21	1.583	11.10	2.33	5.73
0.167	4.89	0.917	158.06	1.667	11.10	2.42	5.14
0.250	6.10	1.000	158.06	1.750	8.94	2.50	5.14
0.333	6.10	1.083	44.35	1.833	8.94	2.58	4.66
0.417	8.21	1.167	44.35	1.917	7.51	2.67	4.66
0.500	8.21	1.250	22.12	2.000	7.51	2.75	4.27
0.583	12.90	1.333	22.12	2.083	6.49	2.83	4.27
0.667	12.90	1.417	14.74	2.167	6.49	2.92	3.95
0.750	33.21	1.500	14.74	2.250	5.73	3.00	3.95

				TOTALS
Max.Eff.Inten.(mm/hr)=		158.06	104.59	
over (min)		5.00	10.00	
Storage Coeff. (min)=		1.91 (ii)	8.04 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.31	0.12	
PEAK FLOW	(cms)=	0.23	0.10	0.316 (iii)
TIME TO PEAK	(hrs)=	1.00	1.08	1.00
RUNOFF VOLUME	(mm)=	59.39	39.37	49.58
TOTAL RAINFALL	(mm)=	60.39	60.39	60.39
RUNOFF COEFFICIENT	=	0.98	0.65	0.82

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0010)

1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	1.04	0.304	1.00	48.97
+ ID2= 2 (0002):	1.05	0.316	1.00	49.58
ID = 3 (0010):	2.09	0.619	1.00	49.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)

3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0010):	2.09	0.619	1.00	49.28
+ ID2= 2 (0003):	1.06	0.321	1.00	49.78
ID = 1 (0010):	3.15	0.941	1.00	49.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)

1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):	3.15	0.941	1.00	49.44
+ ID2= 2 (0004):	0.22	0.087	1.00	54.37
ID = 3 (0010):	3.37	1.028	1.00	49.77

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)

3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0010):	3.37	1.028	1.00	49.77
+ ID2= 2 (0007):	2.05	0.134	1.17	18.65
ID = 1 (0010):	5.42	1.109	1.00	38.00

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CHICAGO STORM Ptotal= 60.39 mm	IDF curve parameters: A=1496.300 B= 5.250 C= 0.825 used in: INTENSITY = A / (t + B)^C Duration of storm = 3.00 hrs Storm time step = 10.00 min Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.89	1.00	158.06	1.83	8.94	2.67	4.66
0.33	6.10	1.17	44.35	2.00	7.51	2.83	4.27
0.50	8.21	1.33	22.12	2.17	6.49	3.00	3.95
0.67	12.90	1.50	14.74	2.33	5.73		
0.83	33.21	1.67	11.10	2.50	5.14		

CALIB STANDHYD (0008) ID= 1 DT= 5.0 min	Area (ha)= 14.26 Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	7.13	7.13
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00

Length	(m)=	308.33	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.89	0.833	33.21	1.583	11.10	2.33	5.73
0.167	4.89	0.917	158.06	1.667	11.10	2.42	5.14
0.250	6.10	1.000	158.06	1.750	8.94	2.50	5.14
0.333	6.10	1.083	44.35	1.833	8.94	2.58	4.66
0.417	8.21	1.167	44.35	1.917	7.51	2.67	4.66
0.500	8.21	1.250	22.12	2.000	7.51	2.75	4.27
0.583	12.90	1.333	22.12	2.083	6.49	2.83	4.27
0.667	12.90	1.417	14.74	2.167	6.49	2.92	3.95
0.750	33.21	1.500	14.74	2.250	5.73	3.00	3.95

				TOTALS
Max.Eff.Inten.(mm/hr)=		158.06	104.59	
over (min)		5.00	15.00	
Storage Coeff. (min)=		4.18 (ii)	11.11 (ii)	
Unit Hyd. Tpeak (min)=		5.00	15.00	
Unit Hyd. peak (cms)=		0.24	0.09	
PEAK FLOW	(cms)=	2.90	1.16	3.530 (iii)
TIME TO PEAK	(hrs)=	1.00	1.17	1.00
RUNOFF VOLUME	(mm)=	59.39	39.37	49.38
TOTAL RAINFALL	(mm)=	60.39	60.39	60.39
RUNOFF COEFFICIENT	=	0.98	0.65	0.82

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM Ptotal= 60.39 mm	IDF curve parameters: A=1496.300 B= 5.250 C= 0.825 used in: INTENSITY = A / (t + B)^C Duration of storm = 3.00 hrs Storm time step = 10.00 min Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.89	1.00	158.06	1.83	8.94	2.67	4.66
0.33	6.10	1.17	44.35	2.00	7.51	2.83	4.27
0.50	8.21	1.33	22.12	2.17	6.49	3.00	3.95
0.67	12.90	1.50	14.74	2.33	5.73		
0.83	33.21	1.67	11.10	2.50	5.14		

CALIB STANDHYD (0006) ID= 1 DT= 5.0 min	Area (ha)= 1.17 Total Imp(%)= 64.00 Dir. Conn.(%)= 64.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.75	0.42
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	88.32	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.89	0.833	33.21	1.583	11.10	2.33	5.73
0.167	4.89	0.917	158.06	1.667	11.10	2.42	5.14
0.250	6.10	1.000	158.06	1.750	8.94	2.50	5.14
0.333	6.10	1.083	44.35	1.833	8.94	2.58	4.66
0.417	8.21	1.167	44.35	1.917	7.51	2.67	4.66
0.500	8.21	1.250	22.12	2.000	7.51	2.75	4.27
0.583	12.90	1.333	22.12	2.083	6.49	2.83	4.27
0.667	12.90	1.417	14.74	2.167	6.49	2.92	3.95
0.750	33.21	1.500	14.74	2.250	5.73	3.00	3.95

				TOTALS
Max.Eff.Inten.(mm/hr)=		158.06	104.59	
over (min)		5.00	10.00	
Storage Coeff. (min)=		1.97 (ii)	6.64 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.31	0.14	
PEAK FLOW	(cms)=	0.33	0.09	0.404 (iii)
TIME TO PEAK	(hrs)=	1.00	1.08	1.00
RUNOFF VOLUME	(mm)=	59.39	39.37	52.18
TOTAL RAINFALL	(mm)=	60.39	60.39	60.39
RUNOFF COEFFICIENT	=	0.98	0.65	0.86

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM Ptotal= 60.39 mm	IDF curve parameters: A=1496.300 B= 5.250 C= 0.825 used in: INTENSITY = A / (t + B)^C Duration of storm = 3.00 hrs Storm time step = 10.00 min Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.89	1.00	158.06	1.83	8.94	2.67	4.66
0.33	6.10	1.17	44.35	2.00	7.51	2.83	4.27
0.50	8.21	1.33	22.12	2.17	6.49	3.00	3.95
0.67	12.90	1.50	14.74	2.33	5.73		
0.83	33.21	1.67	11.10	2.50	5.14		

CALIB STANDHYD (0005) ID= 1 DT= 5.0 min	Area (ha)= 2.30 Total Imp(%)= 70.00 Dir. Conn.(%)= 70.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.61	0.69
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	123.83	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.89	0.833	33.21	1.583	11.10	2.33	5.73

0.167	4.89	0.917	158.06	1.667	11.10	2.42	5.14
0.250	6.10	1.000	158.06	1.750	8.94	2.50	5.14
0.333	6.10	1.083	44.35	1.833	8.94	2.58	4.66
0.417	8.21	1.167	44.35	1.917	7.51	2.67	4.66
0.500	8.21	1.250	22.12	2.000	7.51	2.75	4.27
0.583	12.90	1.333	22.12	2.083	6.49	2.83	4.27
0.667	12.90	1.417	14.74	2.167	6.49	2.92	3.95
0.750	33.21	1.500	14.74	2.250	5.73	3.00	3.95

Max.Eff.Inten.(mm/hr)=	158.06	104.59	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.42 (ii)	6.61 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.30	0.14	
			TOTALS
PEAK FLOW (cms)=	0.70	0.15	0.825 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	59.39	39.37	53.38
TOTAL RAINFALL (mm)=	60.39	60.39	60.39
RUNOFF COEFFICIENT =	0.98	0.65	0.88

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0020)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (0005):	2.30	0.825	1.00	53.38	
+ ID2= 2 (0006):	1.17	0.404	1.00	52.18	
ID = 3 (0020):	3.47	1.229	1.00	52.98	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0020)					
3 + 2 = 1	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 3 (0020):	3.47	1.229	1.00	52.98	
+ ID2= 2 (0008):	14.26	3.530	1.00	49.38	
ID = 1 (0020):	17.73	4.759	1.00	50.08	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
V    V   I    SS     U   U   A A   L
 V  V    I     SS    U   U  AAAAA  L
 V  V    I      SS   U   U  A   A  L
  VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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Output filename:
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DATE: 11/12/2019 TIME: 11:34:02

USER:

COMMENTS: _____

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  ** SIMULATION : 11 Chicago - 3hr 100-yr       **
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CHICAGO STORM	IDF curve parameters: A=1499.500
Ptotal= 71.76 mm	B= 3.298
	C= 0.794

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

CALIB					
STANDHYD (0030)	Area	(ha)=	1.58		
ID= 1 DT= 5.0 min	Total Imp(%)=	65.00	Dir. Conn.(%)=	65.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.03	0.55
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	102.63	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.35	0.833	36.28	1.583	13.33	2.33	7.33
0.167	6.35	0.917	192.16	1.667	13.33	2.42	6.64
0.250	7.76	1.000	192.16	1.750	10.97	2.50	6.64
0.333	7.76	1.083	47.74	1.833	10.97	2.58	6.07
0.417	10.16	1.167	47.74	1.917	9.37	2.67	6.07
0.500	10.16	1.250	24.88	2.000	9.37	2.75	5.61
0.583	15.26	1.333	24.88	2.083	8.21	2.83	5.61
0.667	15.26	1.417	17.22	2.167	8.21	2.92	5.22
0.750	36.28	1.500	17.22	2.250	7.33	3.00	5.22

Max.Eff.Inten.(mm/hr)=	192.16	136.59	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.00 (ii)	6.24 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.15	
			TOTALS
PEAK FLOW (cms)=	0.55	0.15	0.682 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	70.76	49.66	63.37
TOTAL RAINFALL (mm)=	71.76	71.76	71.76
RUNOFF COEFFICIENT =	0.99	0.69	0.88

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	IDF curve parameters: A=1499.500
Ptotal= 71.76 mm	B= 3.298
	C= 0.794

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

CALIB					
NASHYD (0007)	Area	(ha)=	2.05	Curve Number	(CN)= 70.0
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 hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.35	0.833	36.28	1.583	13.33	2.33	7.33
0.167	6.35	0.917	192.16	1.667	13.33	2.42	6.64
0.250	7.76	1.000	192.16	1.750	10.97	2.50	6.64
0.333	7.76	1.083	47.74	1.833	10.97	2.58	6.07
0.417	10.16	1.167	47.74	1.917	9.37	2.67	6.07
0.500	10.16	1.250	24.88	2.000	9.37	2.75	5.61
0.583	15.26	1.333	24.88	2.083	8.21	2.83	5.61
0.667	15.26	1.417	17.22	2.167	8.21	2.92	5.22
0.750	36.28	1.500	17.22	2.250	7.33	3.00	5.22

Unit Hyd Qpeak (cms)=	0.391	
PEAK FLOW (cms)=	0.184 (i)	
TIME TO PEAK (hrs)=	1.167	
RUNOFF VOLUME (mm)=	25.328	
TOTAL RAINFALL (mm)=	71.757	
RUNOFF COEFFICIENT =	0.353	

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

CHICAGO STORM	IDF curve parameters: A=1499.500
Ptotal= 71.76 mm	B= 3.298
	C= 0.794

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

CALIB					
STANDHYD (0001)	Area	(ha)=	1.04		
ID= 1 DT= 5.0 min	Total Imp(%)=	48.00	Dir. Conn.(%)=	48.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.50	0.54
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.27	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.35	0.833	36.28	1.583	13.33	2.33	7.33
0.167	6.35	0.917	192.16	1.667	13.33	2.42	6.64
0.250	7.76	1.000	192.16	1.750	10.97	2.50	6.64
0.333	7.76	1.083	47.74	1.833	10.97	2.58	6.07
0.417	10.16	1.167	47.74	1.917	9.37	2.67	6.07
0.500	10.16	1.250	24.88	2.000	9.37	2.75	5.61
0.583	15.26	1.333	24.88	2.083	8.21	2.83	5.61
0.667	15.26	1.417	17.22	2.167	8.21	2.92	5.22
0.750	36.28	1.500	17.22	2.250	7.33	3.00	5.22

Max.Eff.Inten.(mm/hr)=	192.16	136.59	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.76 (ii)	7.99 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.13	
			TOTALS
PEAK FLOW (cms)=	0.27	0.14	0.384 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	70.76	49.66	59.78
TOTAL RAINFALL (mm)=	71.76	71.76	71.76
RUNOFF COEFFICIENT =	0.99	0.69	0.83

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	IDF curve parameters: A=1499.500
Ptotal= 71.76 mm	B= 3.298
	C= 0.794

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

CALIB
STANDHYD (0003)
ID= 1 DT= 5.0 min

Area (ha)= 1.06
Total Imp(%)= 52.00 Dir. Conn.(%)= 52.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.55	0.51
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	84.06	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.35	0.833	36.28	1.583	13.33	2.33	7.33
0.167	6.35	0.917	192.16	1.667	13.33	2.42	6.64
0.250	7.76	1.000	192.16	1.750	10.97	2.50	6.64
0.333	7.76	1.083	47.74	1.833	10.97	2.58	6.07
0.417	10.16	1.167	47.74	1.917	9.37	2.67	6.07
0.500	10.16	1.250	24.88	2.000	9.37	2.75	5.61
0.583	15.26	1.333	24.88	2.083	8.21	2.83	5.61
0.667	15.26	1.417	17.22	2.167	8.21	2.92	5.22
0.750	36.28	1.500	17.22	2.250	7.33	3.00	5.22

Max.Eff.Inten.(mm/hr)=		192.16	136.59	
over (min)		5.00	10.00	
Storage Coeff. (min)=		1.77 (ii)	8.00 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.32	0.13	
				TOTALS
PEAK FLOW	(cms)=	0.29	0.13	0.405 (iii)
TIME TO PEAK	(hrs)=	1.00	1.08	1.00
RUNOFF VOLUME	(mm)=	70.76	49.66	60.63
TOTAL RAINFALL	(mm)=	71.76	71.76	71.76
RUNOFF COEFFICIENT	=	0.99	0.69	0.84

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM
Ptotal= 71.76 mm

IDF curve parameters: A=1499.500
B= 3.298
C= 0.794
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

CALIB
STANDHYD (0004)
ID= 1 DT= 5.0 min

Area (ha)= 0.22
Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.17	0.05
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	38.30	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.35	0.833	36.28	1.583	13.33	2.33	7.33
0.167	6.35	0.917	192.16	1.667	13.33	2.42	6.64
0.250	7.76	1.000	192.16	1.750	10.97	2.50	6.64
0.333	7.76	1.083	47.74	1.833	10.97	2.58	6.07
0.417	10.16	1.167	47.74	1.917	9.37	2.67	6.07
0.500	10.16	1.250	24.88	2.000	9.37	2.75	5.61
0.583	15.26	1.333	24.88	2.083	8.21	2.83	5.61
0.667	15.26	1.417	17.22	2.167	8.21	2.92	5.22
0.750	36.28	1.500	17.22	2.250	7.33	3.00	5.22

Max.Eff.Inten.(mm/hr)=		192.16	136.59	
over (min)		5.00	5.00	
Storage Coeff. (min)=		1.11 (ii)	4.61 (ii)	
Unit Hyd. Tpeak (min)=		5.00	5.00	
Unit Hyd. peak (cms)=		0.34	0.22	
				TOTALS
PEAK FLOW	(cms)=	0.09	0.02	0.108 (iii)
TIME TO PEAK	(hrs)=	1.00	1.00	1.00
RUNOFF VOLUME	(mm)=	70.76	49.66	65.47
TOTAL RAINFALL	(mm)=	71.76	71.76	71.76
RUNOFF COEFFICIENT	=	0.99	0.69	0.91

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM
Ptotal= 71.76 mm

IDF curve parameters: A=1499.500
B= 3.298
C= 0.794
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

CALIB
STANDHYD (0002)
ID= 1 DT= 5.0 min

Area (ha)= 1.05
Total Imp(%)= 51.00 Dir. Conn.(%)= 51.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.54	0.51
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	83.67	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.35	0.833	36.28	1.583	13.33	2.33	7.33
0.167	6.35	0.917	192.16	1.667	13.33	2.42	6.64
0.250	7.76	1.000	192.16	1.750	10.97	2.50	6.64
0.333	7.76	1.083	47.74	1.833	10.97	2.58	6.07
0.417	10.16	1.167	47.74	1.917	9.37	2.67	6.07
0.500	10.16	1.250	24.88	2.000	9.37	2.75	5.61
0.583	15.26	1.333	24.88	2.083	8.21	2.83	5.61
0.667	15.26	1.417	17.22	2.167	8.21	2.92	5.22
0.750	36.28	1.500	17.22	2.250	7.33	3.00	5.22

Max.Eff.Inten.(mm/hr)=		192.16	136.59	
over (min)		5.00	10.00	
Storage Coeff. (min)=		1.77 (ii)	8.00 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.32	0.13	
				TOTALS
PEAK FLOW	(cms)=	0.29	0.13	0.398 (iii)
TIME TO PEAK	(hrs)=	1.00	1.08	1.00
RUNOFF VOLUME	(mm)=	70.76	49.66	60.42
TOTAL RAINFALL	(mm)=	71.76	71.76	71.76
RUNOFF COEFFICIENT	=	0.99	0.69	0.84

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0010)					
1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):		1.04	0.384	1.00	59.78
+ ID2= 2 (0002):		1.05	0.398	1.00	60.42
ID = 3 (0010):		2.09	0.782	1.00	60.10

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
3 + 2 = 1		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0010):		2.09	0.782	1.00	60.10
+ ID2= 2 (0003):		1.06	0.405	1.00	60.63
ID = 1 (0010):		3.15	1.187	1.00	60.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):		3.15	1.187	1.00	60.28
+ ID2= 2 (0004):		0.22	0.108	1.00	65.47
ID = 3 (0010):		3.37	1.295	1.00	60.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
3 + 2 = 1		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0010):		3.37	1.295	1.00	60.62
+ ID2= 2 (0007):		2.05	0.184	1.17	25.33
ID = 1 (0010):		5.42	1.412	1.00	47.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CHICAGO STORM
Ptotal= 71.76 mm

IDF curve parameters: A=1499.500
B= 3.298
C= 0.794
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

CALIB
STANDHYD (0008)
ID= 1 DT= 5.0 min

Area (ha)= 14.26
Total Imp(%)= 50.00 Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	7.13	7.13
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	308.33	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.35	0.833	36.28	1.583	13.33	2.33	7.33
0.167	6.35	0.917	192.16	1.667	13.33	2.42	6.64
0.250	7.76	1.000	192.16	1.750	10.97	2.50	6.64
0.333	7.76	1.083	47.74	1.833	10.97	2.58	6.07
0.417	10.16	1.167	47.74	1.917	9.37	2.67	6.07
0.500	10.16	1.250	24.88	2.000	9.37	2.75	5.61
0.583	15.26	1.333	24.88	2.083	8.21	2.83	5.61
0.667	15.26	1.417	17.22	2.167	8.21	2.92	5.22

0.750	36.28	1.500	17.22	2.250	7.33	3.00	5.22		

Max.Eff.Inten.(mm/hr)=	192.16	136.59	
over (min)	5.00	15.00	
Storage Coeff. (min)=	3.87 (ii)	10.10 (ii)	
Unit Hyd. Tpeak (min)=	5.00	15.00	
Unit Hyd. peak (cms)=	0.25	0.10	
			TOTALS
PEAK FLOW (cms)=	3.57	1.54	4.438 (iii)
TIME TO PEAK (hrs)=	1.00	1.17	1.00
RUNOFF VOLUME (mm)=	70.76	49.66	60.21
TOTAL RAINFALL (mm)=	71.76	71.76	71.76
RUNOFF COEFFICIENT =	0.99	0.69	0.84

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	IDF curve parameters: A=1499.500
Ptotal= 71.76 mm	B= 3.298
	C= 0.794

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

CALIB	
STANDHYD (0006)	Area (ha)= 1.17
ID= 1 DT= 5.0 min	Total Imp(%)= 64.00 Dir. Conn.(%)= 64.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.75	0.42
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	88.32	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.35	0.833	36.28	1.583	13.33	2.33	7.33
0.167	6.35	0.917	192.16	1.667	13.33	2.42	6.64
0.250	7.76	1.000	192.16	1.750	10.97	2.50	6.64
0.333	7.76	1.083	47.74	1.833	10.97	2.58	6.07
0.417	10.16	1.167	47.74	1.917	9.37	2.67	6.07
0.500	10.16	1.250	24.88	2.000	9.37	2.75	5.61
0.583	15.26	1.333	24.88	2.083	8.21	2.83	5.61
0.667	15.26	1.417	17.22	2.167	8.21	2.92	5.22
0.750	36.28	1.500	17.22	2.250	7.33	3.00	5.22

Max.Eff.Inten.(mm/hr)=	192.16	136.59	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.83 (ii)	6.14 (ii)	

Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.15	
			TOTALS
PEAK FLOW (cms)=	0.40	0.12	0.504 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	70.76	49.66	63.16
TOTAL RAINFALL (mm)=	71.76	71.76	71.76
RUNOFF COEFFICIENT =	0.99	0.69	0.88

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	IDF curve parameters: A=1499.500
Ptotal= 71.76 mm	B= 3.298
	C= 0.794

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

CALIB	
STANDHYD (0005)	Area (ha)= 2.30
ID= 1 DT= 5.0 min	Total Imp(%)= 70.00 Dir. Conn.(%)= 70.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.61	0.69
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	123.83	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	6.35	0.833	36.28	1.583	13.33	2.33	7.33
0.167	6.35	0.917	192.16	1.667	13.33	2.42	6.64
0.250	7.76	1.000	192.16	1.750	10.97	2.50	6.64
0.333	7.76	1.083	47.74	1.833	10.97	2.58	6.07
0.417	10.16	1.167	47.74	1.917	9.37	2.67	6.07
0.500	10.16	1.250	24.88	2.000	9.37	2.75	5.61
0.583	15.26	1.333	24.88	2.083	8.21	2.83	5.61
0.667	15.26	1.417	17.22	2.167	8.21	2.92	5.22
0.750	36.28	1.500	17.22	2.250	7.33	3.00	5.22

Max.Eff.Inten.(mm/hr)=	192.16	136.59	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.24 (ii)	6.11 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.30	0.15	
			TOTALS
PEAK FLOW (cms)=	0.85	0.19	1.024 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00

RUNOFF VOLUME (mm)=	70.76	49.66	64.43
TOTAL RAINFALL (mm)=	71.76	71.76	71.76
RUNOFF COEFFICIENT =	0.99	0.69	0.90

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0020)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0005):	2.30	1.024	1.00	64.43
+ ID2= 2 (0006):	1.17	0.504	1.00	63.16
ID = 3 (0020):	3.47	1.528	1.00	64.00

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0020)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0020):	3.47	1.528	1.00	64.00
+ ID2= 2 (0008):	14.26	4.438	1.00	60.21
ID = 1 (0020):	17.73	5.966	1.00	60.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
V    V   I    SS     U   U   A A   L
 V  V    I     SS    U   U  AAAAA  L
 V  V    I      SS   U   U  A   A  L
  VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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Output filename:
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DATE: 11/12/2019 TIME: 11:34:01

USER:

COMMENTS: _____

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**********************************************
** SIMULATION : 12 Chicago - 3hr 250-yr Regul **
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CHICAGO STORM	IDF curve parameters: A=1498.100
Ptotal= 78.29 mm	B= 2.188
	C= 0.778

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

CALIB	
STANDHYD (0030)	Area (ha)= 1.58
ID= 1 DT= 5.0 min	Total Imp(%)= 65.00 Dir. Conn.(%)= 65.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.03	0.55
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	102.63	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	7.21	0.833	37.27	1.583	14.57	2.33	8.28
0.167	7.21	0.917	214.13	1.667	14.57	2.42	7.53
0.250	8.74	1.000	214.13	1.750	12.13	2.50	7.53
0.333	8.74	1.083	48.43	1.833	12.13	2.58	6.92
0.417	11.28	1.167	48.43	1.917	10.45	2.67	6.92
0.500	11.28	1.250	26.15	2.000	10.45	2.75	6.41
0.583	16.53	1.333	26.15	2.083	9.22	2.83	6.41
0.667	16.53	1.417	18.53	2.167	9.22	2.92	5.98
0.750	37.27	1.500	18.53	2.250	8.28	3.00	5.98

Max.Eff.Inten.(mm/hr)=	214.13	157.21	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.91 (ii)	5.98 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.15	
			TOTALS
PEAK FLOW (cms)=	0.61	0.18	0.769 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	77.29	55.69	69.73
TOTAL RAINFALL (mm)=	78.29	78.29	78.29
RUNOFF COEFFICIENT =	0.99	0.71	0.89

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

| CHICAGO STORM | IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm | B= 2.188
C= 0.778
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

| CALIB | |
| NASHYD (0007)| Area (ha)= 2.05 Curve Number (CN)= 70.0
|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 hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	7.21	0.833	37.27	1.583	14.57	2.33	8.28
0.167	7.21	0.917	214.13	1.667	14.57	2.42	7.53
0.250	8.74	1.000	214.13	1.750	12.13	2.50	7.53
0.333	8.74	1.083	48.43	1.833	12.13	2.58	6.92
0.417	11.28	1.167	48.43	1.917	10.45	2.67	6.92
0.500	11.28	1.250	26.15	2.000	10.45	2.75	6.41
0.583	16.53	1.333	26.15	2.083	9.22	2.83	6.41
0.667	16.53	1.417	18.53	2.167	9.22	2.92	5.98
0.750	37.27	1.500	18.53	2.250	8.28	3.00	5.98

Unit Hyd Qpeak (cms)= 0.391

PEAK FLOW (cms)= 0.215 (i)
TIME TO PEAK (hrs)= 1.167
RUNOFF VOLUME (mm)= 29.435
TOTAL RAINFALL (mm)= 78.293
RUNOFF COEFFICIENT = 0.376

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

| CHICAGO STORM | IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm | B= 2.188
C= 0.778
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

| CALIB |
| STANDHYD (0001)| Area (ha)= 1.04
|ID= 1 DT= 5.0 min | Total Imp(%)= 48.00 Dir. Conn.(%)= 48.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.50	0.54
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	83.27	40.00
Mannings n =	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	7.21	0.833	37.27	1.583	14.57	2.33	8.28
0.167	7.21	0.917	214.13	1.667	14.57	2.42	7.53
0.250	8.74	1.000	214.13	1.750	12.13	2.50	7.53
0.333	8.74	1.083	48.43	1.833	12.13	2.58	6.92
0.417	11.28	1.167	48.43	1.917	10.45	2.67	6.92
0.500	11.28	1.250	26.15	2.000	10.45	2.75	6.41
0.583	16.53	1.333	26.15	2.083	9.22	2.83	6.41
0.667	16.53	1.417	18.53	2.167	9.22	2.92	5.98
0.750	37.27	1.500	18.53	2.250	8.28	3.00	5.98

		TOTALS
Max.Eff.Inten.(mm/hr)=	214.13	157.21
over (min)	5.00	10.00
Storage Coeff. (min)=	1.69 (ii)	7.58 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.13
PEAK FLOW (cms)=	0.30	0.16 0.437 (iii)
TIME TO PEAK (hrs)=	1.00	1.08 1.00
RUNOFF VOLUME (mm)=	77.29	55.69 66.06
TOTAL RAINFALL (mm)=	78.29	78.29 78.29
RUNOFF COEFFICIENT =	0.99	0.71 0.84

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

| CHICAGO STORM | IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm | B= 2.188
C= 0.778
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

| CALIB |

| STANDHYD (0003)| Area (ha)= 1.06
|ID= 1 DT= 5.0 min | Total Imp(%)= 52.00 Dir. Conn.(%)= 52.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.55	0.51
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	84.06	40.00
Mannings n =	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	7.21	0.833	37.27	1.583	14.57	2.33	8.28
0.167	7.21	0.917	214.13	1.667	14.57	2.42	7.53
0.250	8.74	1.000	214.13	1.750	12.13	2.50	7.53
0.333	8.74	1.083	48.43	1.833	12.13	2.58	6.92
0.417	11.28	1.167	48.43	1.917	10.45	2.67	6.92
0.500	11.28	1.250	26.15	2.000	10.45	2.75	6.41
0.583	16.53	1.333	26.15	2.083	9.22	2.83	6.41
0.667	16.53	1.417	18.53	2.167	9.22	2.92	5.98
0.750	37.27	1.500	18.53	2.250	8.28	3.00	5.98

		TOTALS
Max.Eff.Inten.(mm/hr)=	214.13	157.21
over (min)	5.00	10.00
Storage Coeff. (min)=	1.70 (ii)	7.59 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.13
PEAK FLOW (cms)=	0.33	0.15 0.459 (iii)
TIME TO PEAK (hrs)=	1.00	1.08 1.00
RUNOFF VOLUME (mm)=	77.29	55.69 66.92
TOTAL RAINFALL (mm)=	78.29	78.29 78.29
RUNOFF COEFFICIENT =	0.99	0.71 0.85

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

| CHICAGO STORM | IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm | B= 2.188
C= 0.778
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

| CALIB |
| STANDHYD (0004)| Area (ha)= 0.22
|ID= 1 DT= 5.0 min | Total Imp(%)= 75.00 Dir. Conn.(%)= 75.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.17	0.05

Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	38.30	40.00
Mannings n =	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	7.21	0.833	37.27	1.583	14.57	2.33	8.28
0.167	7.21	0.917	214.13	1.667	14.57	2.42	7.53
0.250	8.74	1.000	214.13	1.750	12.13	2.50	7.53
0.333	8.74	1.083	48.43	1.833	12.13	2.58	6.92
0.417	11.28	1.167	48.43	1.917	10.45	2.67	6.92
0.500	11.28	1.250	26.15	2.000	10.45	2.75	6.41
0.583	16.53	1.333	26.15	2.083	9.22	2.83	6.41
0.667	16.53	1.417	18.53	2.167	9.22	2.92	5.98
0.750	37.27	1.500	18.53	2.250	8.28	3.00	5.98

		TOTALS
Max.Eff.Inten.(mm/hr)=	214.13	157.21
over (min)	5.00	5.00
Storage Coeff. (min)=	1.06 (ii)	4.41 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.34	0.23
PEAK FLOW (cms)=	0.10	0.02 0.121 (iii)
TIME TO PEAK (hrs)=	1.00	1.00 1.00
RUNOFF VOLUME (mm)=	77.29	55.69 71.87
TOTAL RAINFALL (mm)=	78.29	78.29 78.29
RUNOFF COEFFICIENT =	0.99	0.71 0.92

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

| CHICAGO STORM | IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm | B= 2.188
C= 0.778
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

| CALIB |
| STANDHYD (0002)| Area (ha)= 1.05
|ID= 1 DT= 5.0 min | Total Imp(%)= 51.00 Dir. Conn.(%)= 51.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.54	0.51
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	2.00
Length (m)=	83.67	40.00
Mannings n =	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	7.21	0.833	37.27	1.583	14.57	2.33	8.28
0.167	7.21	0.917	214.13	1.667	14.57	2.42	7.53
0.250	8.74	1.000	214.13	1.750	12.13	2.50	7.53
0.333	8.74	1.083	48.43	1.833	12.13	2.58	6.92
0.417	11.28	1.167	48.43	1.917	10.45	2.67	6.92
0.500	11.28	1.250	26.15	2.000	10.45	2.75	6.41
0.583	16.53	1.333	26.15	2.083	9.22	2.83	6.41
0.667	16.53	1.417	18.53	2.167	9.22	2.92	5.98
0.750	37.27	1.500	18.53	2.250	8.28	3.00	5.98

Max.Eff.Inten.(mm/hr)=	214.13	157.21	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.69 (ii)	7.58 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.13	
			TOTALS
PEAK FLOW (cms)=	0.32	0.15	0.451 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	77.29	55.69	66.70
TOTAL RAINFALL (mm)=	78.29	78.29	78.29
RUNOFF COEFFICIENT =	0.99	0.71	0.85

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0010)					
1 + 2 = 3		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0001):		1.04	0.437	1.00	66.06
+ ID2= 2 (0002):		1.05	0.451	1.00	66.70
ID = 3 (0010):		2.09	0.888	1.00	66.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
3 + 2 = 1		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0010):		2.09	0.888	1.00	66.38
+ ID2= 2 (0003):		1.06	0.459	1.00	66.92
ID = 1 (0010):		3.15	1.347	1.00	66.56

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)					
1 + 2 = 3		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):		3.15	1.347	1.00	66.56
+ ID2= 2 (0004):		0.22	0.121	1.00	71.87
ID = 3 (0010):		3.37	1.468	1.00	66.91

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0010)				
3 + 2 = 1	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0010):	3.37	1.468	1.00	66.91
+ ID2= 2 (0007):	2.05	0.215	1.17	29.43
ID = 1 (0010):	5.42	1.609	1.00	52.74

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CHICAGO STORM	
Ptotal= 78.29 mm	

IDF curve parameters: A=1498.100
B= 2.188
C= 0.778
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

CALIB			
STANDHYD (0008)	Area	(ha)=	14.26
ID= 1 DT= 5.0 min	Total Imp(%)=	50.00	Dir. Conn.(%)= 50.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	7.13	7.13
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	300.33	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	7.21	0.833	37.27	1.583	14.57	2.33	8.28
0.167	7.21	0.917	214.13	1.667	14.57	2.42	7.53
0.250	8.74	1.000	214.13	1.750	12.13	2.50	7.53
0.333	8.74	1.083	48.43	1.833	12.13	2.58	6.92
0.417	11.28	1.167	48.43	1.917	10.45	2.67	6.92
0.500	11.28	1.250	26.15	2.000	10.45	2.75	6.41
0.583	16.53	1.333	26.15	2.083	9.22	2.83	6.41
0.667	16.53	1.417	18.53	2.167	9.22	2.92	5.98
0.750	37.27	1.500	18.53	2.250	8.28	3.00	5.98

Max.Eff.Inten.(mm/hr)=	214.13	157.21	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.70 (ii)	9.59 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.25	0.11	
			TOTALS
PEAK FLOW (cms)=	4.00	1.93	5.630 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	77.29	55.69	66.49
TOTAL RAINFALL (mm)=	78.29	78.29	78.29
RUNOFF COEFFICIENT =	0.99	0.71	0.85

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

CN* = 90.0 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.

CHICAGO STORM	
Ptotal= 78.29 mm	

IDF curve parameters: A=1498.100
B= 2.188
C= 0.778
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

CALIB			
STANDHYD (0006)	Area	(ha)=	1.17
ID= 1 DT= 5.0 min	Total Imp(%)=	64.00	Dir. Conn.(%)= 64.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.75	0.42
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	88.32	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	7.21	0.833	37.27	1.583	14.57	2.33	8.28
0.167	7.21	0.917	214.13	1.667	14.57	2.42	7.53
0.250	8.74	1.000	214.13	1.750	12.13	2.50	7.53
0.333	8.74	1.083	48.43	1.833	12.13	2.58	6.92
0.417	11.28	1.167	48.43	1.917	10.45	2.67	6.92
0.500	11.28	1.250	26.15	2.000	10.45	2.75	6.41
0.583	16.53	1.333	26.15	2.083	9.22	2.83	6.41
0.667	16.53	1.417	18.53	2.167	9.22	2.92	5.98
0.750	37.27	1.500	18.53	2.250	8.28	3.00	5.98

Max.Eff.Inten.(mm/hr)=	214.13	157.21	
over (min)	5.00	10.00	
Storage Coeff. (min)=	1.75 (ii)	5.88 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.15	
			TOTALS
PEAK FLOW (cms)=	0.44	0.14	0.568 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	77.29	55.69	69.51
TOTAL RAINFALL (mm)=	78.29	78.29	78.29
RUNOFF COEFFICIENT =	0.99	0.71	0.89

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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.

CHICAGO STORM	
Ptotal= 78.29 mm	

IDF curve parameters: A=1498.100
B= 2.188
C= 0.778
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

CALIB			
STANDHYD (0005)	Area	(ha)=	2.30
ID= 1 DT= 5.0 min	Total Imp(%)=	70.00	Dir. Conn.(%)= 70.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.61	0.69
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	123.83	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	7.21	0.833	37.27	1.583	14.57	2.33	8.28
0.167	7.21	0.917	214.13	1.667	14.57	2.42	7.53
0.250	8.74	1.000	214.13	1.750	12.13	2.50	7.53
0.333	8.74	1.083	48.43	1.833	12.13	2.58	6.92
0.417	11.28	1.167	48.43	1.917	10.45	2.67	6.92
0.500	11.28	1.250	26.15	2.000	10.45	2.75	6.41
0.583	16.53	1.333	26.15	2.083	9.22	2.83	6.41
0.667	16.53	1.417	18.53	2.167	9.22	2.92	5.98
0.750	37.27	1.500	18.53	2.250	8.28	3.00	5.98

Max.Eff.Inten.(mm/hr)=	214.13	157.21	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.14 (ii)	5.85 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.15	
			TOTALS
PEAK FLOW (cms)=	0.95	0.22	1.153 (iii)
TIME TO PEAK (hrs)=	1.00	1.08	1.00
RUNOFF VOLUME (mm)=	77.29	55.69	70.81
TOTAL RAINFALL (mm)=	78.29	78.29	78.29
RUNOFF COEFFICIENT =	0.99	0.71	0.90

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 90.0 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 (0020)				
1 + 2 = 3		AREA	QPEAK	TPEAK	R.V.

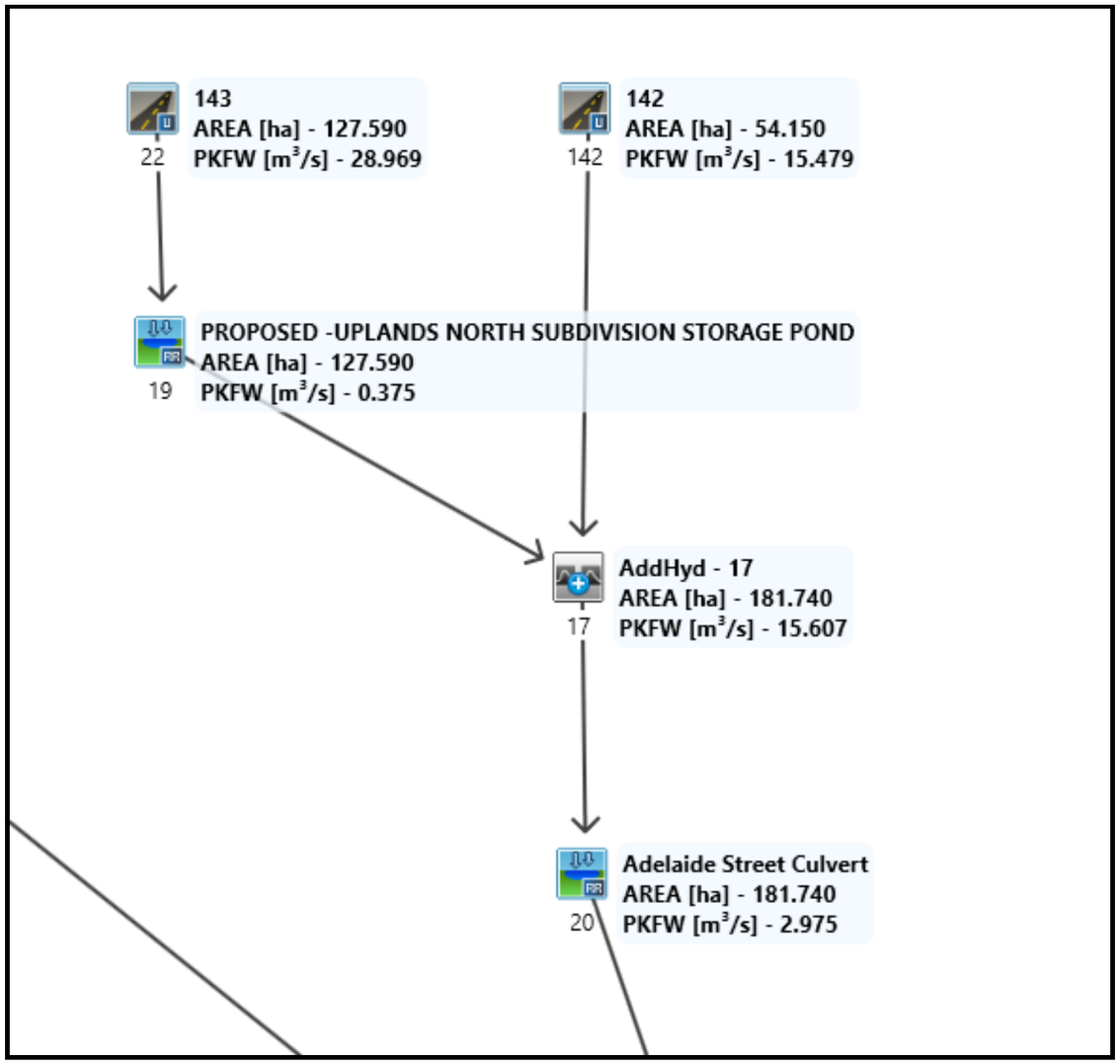
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0005):	2.30	1.153	1.00	70.81
+ ID2= 2 (0006):	1.17	0.568	1.00	69.51
ID = 3 (0020):	3.47	1.721	1.00	70.37

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0020)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0020):	3.47	1.721	1.00	70.37
+ ID2= 2 (0008):	14.26	5.630	1.00	66.49
ID = 1 (0020):	17.73	7.350	1.00	67.25

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

Visual OTTHYMO Modelling Schematic-3 - Upstream Drainage



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================================================================================
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       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       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 M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
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5c-dfed-478a-a977-cb0364927108\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\4b43d3
5c-dfed-478a-a977-cb0364927108\sce

DATE: 11/28/2019                          TIME: 11:04:52

USER:


COMMENTS: _____________________________________________________

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  ************************************************
  ** SIMULATION : 01 AES 2-Yr                   **
  ************************************************


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|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\376738e9
| Ptotal= 34.03 mm |    Comments: 2yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   61.25 |  0.75   32.67 |  1.08    4.08
                0.17    4.08 |  0.50  114.34 |  0.83   20.42 |
                0.25   12.25 |  0.58   61.25 |  0.92   12.25 |
                0.33   32.67 |  0.67   49.00 |  1.00    4.08 |

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--------------------
| CALIB            |
| NASHYD   (  0153)|   Area    (ha)=  91.47   Curve Number   (CN)= 69.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  22.82   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
                                      Page 1
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                0.167    2.04 | 0.500   87.80 | 0.833   26.54 |  1.17    2.04
                0.333   22.46 | 0.667   55.13 | 1.000    8.17 |

     Unit Hyd Qpeak  (cms)=  17.469

     PEAK FLOW       (cms)=   0.452 (i)
     TIME TO PEAK    (hrs)=   0.833
     RUNOFF VOLUME    (mm)=   0.977
     TOTAL RAINFALL   (mm)=  34.030
     RUNOFF COEFFICIENT   =   0.029

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

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--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\376738e9
| Ptotal= 34.03 mm |    Comments: 2yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   61.25 |  0.75   32.67 |  1.08    4.08
                0.17    4.08 |  0.50  114.34 |  0.83   20.42 |
                0.25   12.25 |  0.58   61.25 |  0.92   12.25 |
                0.33   32.67 |  0.67   49.00 |  1.00    4.08 |

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--------------------
| CALIB            |
| NASHYD   (  0152)|   Area    (ha)=  90.60   Curve Number   (CN)= 70.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  21.77   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
                0.167    2.04 | 0.500   87.80 | 0.833   26.54 |  1.17    2.04
                0.333   22.46 | 0.667   55.13 | 1.000    8.17 |

     Unit Hyd Qpeak  (cms)=  17.302

     PEAK FLOW       (cms)=   0.564 (i)
     TIME TO PEAK    (hrs)=   0.833
     RUNOFF VOLUME    (mm)=   1.209
     TOTAL RAINFALL   (mm)=  34.030
     RUNOFF COEFFICIENT   =   0.036

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

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--------------------
| ADD HYD  (  0002)|
|  1 +  2 =  3     |          AREA    QPEAK    TPEAK     R.V.
--------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0152):    90.60   0.564     0.83     1.21
     + ID2= 2 (  0153):    91.47   0.452     0.83     0.98
     ================================================
       ID = 3 (  0002):   182.07   1.016     0.83     1.09

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\376738e9
| Ptotal= 34.03 mm |    Comments: 2yr 1hr AES
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                                      Page 2
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--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   61.25 |  0.75   32.67 |  1.08    4.08
                0.17    4.08 |  0.50  114.34 |  0.83   20.42 |
                0.25   12.25 |  0.58   61.25 |  0.92   12.25 |
                0.33   32.67 |  0.67   49.00 |  1.00    4.08 |

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--------------------
| CALIB            |
| NASHYD   (  0151)|   Area    (ha)=  18.20   Curve Number   (CN)= 68.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  11.95   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
                0.167    2.04 | 0.500   87.80 | 0.833   26.54 |  1.17    2.04
                0.333   22.46 | 0.667   55.13 | 1.000    8.17 |

     Unit Hyd Qpeak  (cms)=   3.476

     PEAK FLOW       (cms)=   0.312 (i)
     TIME TO PEAK    (hrs)=   0.833
     RUNOFF VOLUME    (mm)=   3.353
     TOTAL RAINFALL   (mm)=  34.030
     RUNOFF COEFFICIENT   =   0.099

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

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|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\376738e9
| Ptotal= 34.03 mm |    Comments: 2yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   61.25 |  0.75   32.67 |  1.08    4.08
                0.17    4.08 |  0.50  114.34 |  0.83   20.42 |
                0.25   12.25 |  0.58   61.25 |  0.92   12.25 |
                0.33   32.67 |  0.67   49.00 |  1.00    4.08 |

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--------------------
| CALIB            |
| STANDHYD (  1421)|   Area    (ha)=  15.00
|ID= 1 DT=10.0 min |   Total Imp(%)=  30.00   Dir. Conn.(%)=  29.00
--------------------

                        IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       4.50        10.50
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         3.00
     Length            (m)=     258.20        40.00
     Mannings n            =      0.015        0.200

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
                0.167    2.04 | 0.500   87.80 | 0.833   26.54 |  1.17    2.04
                0.333   22.46 | 0.667   55.13 | 1.000    8.17 |

     Max.Eff.Inten.(mm/hr)=      87.80        15.83
                                      Page 3
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                over (min)       10.00        20.00
     Storage Coeff.  (min)=       5.18 (ii)   16.61 (ii)
     Unit Hyd. Tpeak (min)=      10.00        20.00
     Unit Hyd. peak  (cms)=       0.15         0.06
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.93         0.33          1.013 (iii)
     TIME TO PEAK    (hrs)=       0.50         0.83          0.50
     RUNOFF VOLUME    (mm)=      33.03         7.65         15.01
     TOTAL RAINFALL   (mm)=      34.03        34.03         34.03
     RUNOFF COEFFICIENT   =       0.97         0.22          0.44

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  71.0    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.

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\376738e9
| Ptotal= 34.03 mm |    Comments: 2yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   61.25 |  0.75   32.67 |  1.08    4.08
                0.17    4.08 |  0.50  114.34 |  0.83   20.42 |
                0.25   12.25 |  0.58   61.25 |  0.92   12.25 |
                0.33   32.67 |  0.67   49.00 |  1.00    4.08 |

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

--------------------
| CALIB            |
| STANDHYD (  0142)|   Area    (ha)=  59.20
|ID= 1 DT=10.0 min |   Total Imp(%)=  67.00   Dir. Conn.(%)=  64.00
--------------------

                        IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      39.66        19.54
     Dep. Storage     (mm)=       1.00        16.04
     Average Slope     (%)=       1.00         3.00
     Length            (m)=     628.23        40.00
     Mannings n            =      0.015        0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
                0.167    2.04 | 0.500   87.80 | 0.833   26.54 |  1.17    2.04
                0.333   22.46 | 0.667   55.13 | 1.000    8.17 |

     Max.Eff.Inten.(mm/hr)=      87.80        10.47
                over (min)       10.00        30.00
     Storage Coeff.  (min)=       8.83 (ii)   24.24 (ii)
     Unit Hyd. Tpeak (min)=      10.00        30.00
     Unit Hyd. peak  (cms)=       0.12         0.04
                                                          *TOTALS*
     PEAK FLOW       (cms)=       6.69         0.27          6.693 (iii)
     TIME TO PEAK    (hrs)=       0.50         1.17          0.50
     RUNOFF VOLUME    (mm)=      33.03         4.02         22.59
     TOTAL RAINFALL   (mm)=      34.03        34.03         34.03
     RUNOFF COEFFICIENT   =       0.97         0.12          0.66

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  76.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
                                      Page 4
```

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

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\c0a758ec-b7cc-4a17-823b-afaf544e7a0a\376738e9
Ptotal= 34.03 mm	Comments: 2yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	61.25	0.75	32.67	1.08	4.08
0.17	4.08	0.50	114.34	0.83	20.42		
0.25	12.25	0.58	61.25	0.92	12.25		
0.33	32.67	0.67	49.00	1.00	4.08		

CALIB	
STANDHYD (0022)	Area (ha)= 123.05
ID= 1 DT=10.0 min	Total Imp(%)= 61.00 Dir. Conn.(%)= 49.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	75.06	47.99
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	905.72	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.04	0.500	87.80	0.833	26.54	1.17	2.04
0.333	22.46	0.667	55.13	1.000	8.17		

Max.Eff.Inten.(mm/hr)=	87.80	20.43	
over (min)	10.00	30.00	
Storage Coeff. (min)=	10.10 (ii)	23.42 (ii)	
Unit Hyd. Tpeak (min)=	10.00	30.00	
Unit Hyd. peak (cms)=	0.11	0.04	
			TOTALS
PEAK FLOW (cms)=	9.73	1.58	10.082 (iii)
TIME TO PEAK (hrs)=	0.50	1.00	0.67
RUNOFF VOLUME (mm)=	32.03	7.77	19.66
TOTAL RAINFALL (mm)=	34.03	34.03	34.03
RUNOFF COEFFICIENT =	0.94	0.23	0.58

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 69.0 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 (0017)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0142):	59.20	6.693	0.50	22.59
+ ID2= 2 (0022):	123.05	10.082	0.67	19.66
ID = 3 (0017):	182.25	16.621	0.50	20.61

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (1421):	15.00	1.013	0.50	15.01
+ ID2= 2 (0151):	18.20	0.312	0.83	3.35
ID = 3 (0003):	33.20	1.190	0.67	8.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0003):	33.20	1.190	0.67	8.62
+ ID2= 2 (0017):	182.25	16.621	0.50	20.61
ID = 1 (0003):	215.45	17.682	0.50	18.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0003):	215.45	17.682	0.50	18.76
+ ID2= 2 (0002):	182.07	1.016	0.83	1.09
ID = 3 (0003):	397.52	17.787	0.67	10.67

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       V    V   I    SS     U   U   A A   L
        V  V    I      SS   U   U  AAAAA  L
        V  V    I     SS    U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\e10156
ad-2343-4ecf-816f-c8c59262c665\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\e10156
ad-2343-4ecf-816f-c8c59262c665\sce

DATE: 11/28/2019                          TIME: 11:04:53

USER:

COMMENTS: _____
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  ************************************************
  ** SIMULATION : 02 AES 5-Yr                   **
  ************************************************
```

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\c0a758ec-b7cc-4a17-823b-afaf544e7a0a\c44996e4
Ptotal= 34.64 mm	Comments: 5yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB			
NASHYD (0153)	Area (ha)= 91.47	Curve Number (CN)= 69.0	
ID= 1 DT=10.0 min	Ia (mm)= 22.82	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.08	0.500	89.37	0.833	27.02	1.17	2.08
0.333	22.86	0.667	56.12	1.000	8.31		

Unit Hyd Qpeak (cms)=	17.469		
PEAK FLOW	(cms)=	0.504 (i)	
TIME TO PEAK	(hrs)=	0.833	
RUNOFF VOLUME	(mm)=	1.081	
TOTAL RAINFALL	(mm)=	34.640	
RUNOFF COEFFICIENT	=	0.031	

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

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\c0a758ec-b7cc-4a17-823b-afaf544e7a0a\c44996e4
Ptotal= 34.64 mm	Comments: 5yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB			
NASHYD (0152)	Area (ha)= 90.60	Curve Number (CN)= 70.0	
ID= 1 DT=10.0 min	Ia (mm)= 21.77	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.08	0.500	89.37	0.833	27.02	1.17	2.08
0.333	22.86	0.667	56.12	1.000	8.31		

Unit Hyd Qpeak (cms)=	17.302		
PEAK FLOW	(cms)=	0.621 (i)	
TIME TO PEAK	(hrs)=	0.833	
RUNOFF VOLUME	(mm)=	1.325	
TOTAL RAINFALL	(mm)=	34.640	
RUNOFF COEFFICIENT	=	0.038	

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

ADD HYD (0002)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0152):	90.60	0.621	0.83	1.33
+ ID2= 2 (0153):	91.47	0.504	0.83	1.08
ID = 3 (0002):	182.07	1.125	0.83	1.20

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\c0a758ec-b7cc-4a17-823b-afaf544e7a0a\c44996e4
Ptotal= 34.64 mm	Comments: 5yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB			
NASHYD (0151)	Area (ha)= 18.20	Curve Number (CN)= 68.0	
ID= 1 DT=10.0 min	Ia (mm)= 11.95	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.08	0.500	89.37	0.833	27.02	1.17	2.08
0.333	22.86	0.667	56.12	1.000	8.31		

Unit Hyd Qpeak (cms)=	3.476		
PEAK FLOW	(cms)=	0.327 (i)	
TIME TO PEAK	(hrs)=	0.833	
RUNOFF VOLUME	(mm)=	3.526	
TOTAL RAINFALL	(mm)=	34.640	
RUNOFF COEFFICIENT	=	0.102	

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

READ STORM	Filename: C:\Users\p001279d\AppD

	ata\Local\Temp\
	c0a758ec-b7cc-4a17-823b-afaf544e7a0a\c44996e4
Ptotal= 34.64 mm	Comments: 5yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB	
STANDHYD (1421)	Area (ha)= 15.00
ID= 1 DT=10.0 min	Total Imp(%)= 30.00 Dir. Conn.(%)= 29.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.50	10.50
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	3.00
Length (m)=	258.20	40.00
Mannings n =	0.015	0.200

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.08	0.500	89.37	0.833	27.02	1.17	2.08
0.333	22.86	0.667	56.12	1.000	8.31		

		TOTALS
Max.Eff.Inten.(mm/hr)=	89.37	16.38
over (min)	10.00	20.00
Storage Coeff. (min)=	5.14 (ii)	16.42 (ii)
Unit Hyd. Tpeak (min)=	10.00	20.00
Unit Hyd. peak (cms)=	0.15	0.06
PEAK FLOW (cms)=	0.95	0.34 1.035 (iii)
TIME TO PEAK (hrs)=	0.50	0.83 0.50
RUNOFF VOLUME (mm)=	33.64	7.91 15.37
TOTAL RAINFALL (mm)=	34.64	34.64 34.64
RUNOFF COEFFICIENT =	0.97	0.23 0.44

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD
	ata\Local\Temp\
	c0a758ec-b7cc-4a17-823b-afaf544e7a0a\c44996e4
Ptotal= 34.64 mm	Comments: 5yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB	
STANDHYD (0142)	Area (ha)= 59.20

ID= 1 DT=10.0 min	Total Imp(%)= 67.00 Dir. Conn.(%)= 64.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	39.66	19.54
Dep. Storage (mm)=	1.00	16.04
Average Slope (%)=	1.00	3.00
Length (m)=	628.23	40.00
Mannings n =	0.015	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.08	0.500	89.37	0.833	27.02	1.17	2.08
0.333	22.86	0.667	56.12	1.000	8.31		

		TOTALS
Max.Eff.Inten.(mm/hr)=	89.37	11.03
over (min)	10.00	30.00
Storage Coeff. (min)=	8.77 (ii)	23.87 (ii)
Unit Hyd. Tpeak (min)=	10.00	30.00
Unit Hyd. peak (cms)=	0.12	0.04
PEAK FLOW (cms)=	6.83	0.29 6.839 (iii)
TIME TO PEAK (hrs)=	0.50	1.00 0.50
RUNOFF VOLUME (mm)=	33.64	4.25 23.06
TOTAL RAINFALL (mm)=	34.64	34.64 34.64
RUNOFF COEFFICIENT =	0.97	0.12 0.67

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 76.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD
	ata\Local\Temp\
	c0a758ec-b7cc-4a17-823b-afaf544e7a0a\c44996e4
Ptotal= 34.64 mm	Comments: 5yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB	
STANDHYD (0022)	Area (ha)= 123.05
ID= 1 DT=10.0 min	Total Imp(%)= 61.00 Dir. Conn.(%)= 49.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	75.06	47.99
Dep. Storage (mm)=	2.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	905.72	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.08	0.500	89.37	0.833	27.02	1.17	2.08

0.333	22.86	0.667	56.12	1.000	8.31		

		TOTALS
Max.Eff.Inten.(mm/hr)=	89.37	21.19
over (min)	10.00	30.00
Storage Coeff. (min)=	10.02 (ii)	23.15 (ii)
Unit Hyd. Tpeak (min)=	10.00	30.00
Unit Hyd. peak (cms)=	0.11	0.04
PEAK FLOW (cms)=	9.95	1.65 10.297 (iii)
TIME TO PEAK (hrs)=	0.50	1.00 0.67
RUNOFF VOLUME (mm)=	32.64	8.04 20.10
TOTAL RAINFALL (mm)=	34.64	34.64 34.64
RUNOFF COEFFICIENT =	0.94	0.23 0.58

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 69.0 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 (0017)					
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 1 (0142):	59.20	6.839	0.50	23.06	
+ ID2= 2 (0022):	123.05	10.297	0.67	20.10	
ID = 3 (0017):	182.25	16.997	0.50	21.06	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)					
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 1 (1421):	15.00	1.035	0.50	15.37	
+ ID2= 2 (0151):	18.20	0.327	0.83	3.53	
ID = 3 (0003):	33.20	1.227	0.67	8.88	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)					
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 3 (0003):	33.20	1.227	0.67	8.88	
+ ID2= 2 (0017):	182.25	16.997	0.50	21.06	
ID = 1 (0003):	215.45	18.086	0.50	19.18	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)					
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 1 (0003):	215.45	18.086	0.50	19.18	
+ ID2= 2 (0002):	182.07	1.125	0.83	1.20	
ID = 3 (0003):	397.52	18.224	0.67	10.95	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

FINISH


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V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
V    V   I    SS     U   U   A A   L
 V  V    I     SS    U   U  AAAAA  L
 V  V    I      SS   U   U  A   A  L
  VV     I    SSSSS  UUUUU  A   A  LLLLL

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

Output filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\05d6ed76-6e21-4b6f-bf98-07f6f6bff67e\sce
Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\05d6ed76-6e21-4b6f-bf98-07f6f6bff67e\sce

DATE: 11/28/2019 TIME: 11:04:50

USER:

COMMENTS: _____

** SIMULATION : 03 AES 10-Yr **

READ STORM	Filename: C:\Users\p001279d\AppD
	ata\Local\Temp\
	c0a758ec-b7cc-4a17-823b-afaf544e7a0a\c9d32900
Ptotal= 41.26 mm	Comments: 10yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB	
NASHYD (0153)	Area (ha)= 91.47 Curve Number (CN)= 69.0
ID= 1 DT=10.0 min	Ia (mm)= 22.82 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 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
0.167	2.48	0.500	106.45	0.833	32.18	1.17	2.48
0.333	27.23	0.667	66.84	1.000	9.90		

Unit Hyd Qpeak (cms)= 17.469

PEAK FLOW (cms)= 1.212 (i)
TIME TO PEAK (hrs)= 0.833
RUNOFF VOLUME (mm)= 2.499
TOTAL RAINFALL (mm)= 41.260
RUNOFF COEFFICIENT = 0.061

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

READ STORM | Filename: C:\Users\p001279d\AppData\Local\Temp\c0a758ec-b7cc-4a17-823b-afaf544e7a0a\c9d32900
Ptotal= 41.26 mm | Comments: 10yr 1hr AES

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB
NASHYD (0152) | Area (ha)= 90.60 Curve Number (CN)= 70.0
ID= 1 DT=10.0 min | Ia (mm)= 21.77 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.167	2.48	0.500	106.45	0.833	32.18	1.17	2.48
0.333	27.23	0.667	66.84	1.000	9.90		

Unit Hyd Qpeak (cms)= 17.302

PEAK FLOW (cms)= 1.391 (i)
TIME TO PEAK (hrs)= 0.833
RUNOFF VOLUME (mm)= 2.883
TOTAL RAINFALL (mm)= 41.260
RUNOFF COEFFICIENT = 0.070

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

ADD HYD (0002)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0152):	90.60	1.391	0.83	2.88
+ ID2= 2 (0153):	91.47	1.212	0.83	2.50
ID = 3 (0002):	182.07	2.603	0.83	2.69

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM | Filename: C:\Users\p001279d\AppData\Local\Temp\c0a758ec-b7cc-4a17-823b-afaf544e7a0a\c9d32900

Ptotal= 41.26 mm | Comments: 10yr 1hr AES

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB
NASHYD (0151) | Area (ha)= 18.20 Curve Number (CN)= 68.0
ID= 1 DT=10.0 min | Ia (mm)= 11.95 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.167	2.48	0.500	106.45	0.833	32.18	1.17	2.48
0.333	27.23	0.667	66.84	1.000	9.90		

Unit Hyd Qpeak (cms)= 3.476

PEAK FLOW (cms)= 0.510 (i)
TIME TO PEAK (hrs)= 0.833
RUNOFF VOLUME (mm)= 5.622
TOTAL RAINFALL (mm)= 41.260
RUNOFF COEFFICIENT = 0.136

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

READ STORM | Filename: C:\Users\p001279d\AppData\Local\Temp\c0a758ec-b7cc-4a17-823b-afaf544e7a0a\c9d32900
Ptotal= 41.26 mm | Comments: 10yr 1hr AES

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB
STANDHYD (1421) | Area (ha)= 15.00
ID= 1 DT=10.0 min | Total Imp(%)= 30.00 Dir. Conn.(%)= 29.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.50	10.50
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	3.00
Length (m)=	258.20	40.00
Mannings n =	0.015	0.200

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.167	2.48	0.500	106.45	0.833	32.18	1.17	2.48
0.333	27.23	0.667	66.84	1.000	9.90		

Max.Eff.Inten.(mm/hr)= 106.45 24.81
over (min) 10.00 20.00
Storage Coeff. (min)= 4.80 (ii) 14.34 (ii)
Unit Hyd. Tpeak (min)= 10.00 20.00
Unit Hyd. peak (cms)= 0.15 0.07

		TOTALS
PEAK FLOW	(cms)=	1.16 0.50 1.285 (iii)
TIME TO PEAK	(hrs)=	0.50 0.83 0.50
RUNOFF VOLUME	(mm)=	40.26 10.90 19.42
TOTAL RAINFALL	(mm)=	41.26 41.26 41.26
RUNOFF COEFFICIENT	=	0.98 0.26 0.47

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

READ STORM | Filename: C:\Users\p001279d\AppData\Local\Temp\c0a758ec-b7cc-4a17-823b-afaf544e7a0a\c9d32900
Ptotal= 41.26 mm | Comments: 10yr 1hr AES

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB
STANDHYD (0142) | Area (ha)= 59.20
ID= 1 DT=10.0 min | Total Imp(%)= 67.00 Dir. Conn.(%)= 64.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	39.66	19.54
Dep. Storage (mm)=	1.00	16.04
Average Slope (%)=	1.00	3.00
Length (m)=	628.23	40.00
Mannings n =	0.015	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.167	2.48	0.500	106.45	0.833	32.18	1.17	2.48
0.333	27.23	0.667	66.84	1.000	9.90		

Max.Eff.Inten.(mm/hr)= 106.45 17.47
over (min) 10.00 30.00
Storage Coeff. (min)= 8.18 (ii) 20.74 (ii)
Unit Hyd. Tpeak (min)= 10.00 30.00
Unit Hyd. peak (cms)= 0.12 0.05

		TOTALS
PEAK FLOW	(cms)=	8.42 0.53 8.449 (iii)
TIME TO PEAK	(hrs)=	0.50 1.00 0.50
RUNOFF VOLUME	(mm)=	40.26 7.05 28.30
TOTAL RAINFALL	(mm)=	41.26 41.26 41.26
RUNOFF COEFFICIENT	=	0.98 0.17 0.69

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 76.0 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.

READ STORM | Filename: C:\Users\p001279d\AppData\Local\Temp\c0a758ec-b7cc-4a17-823b-afaf544e7a0a\c9d32900
Ptotal= 41.26 mm | Comments: 10yr 1hr AES

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.08	0.00	0.42	74.27	0.75	39.61	1.08	4.95
0.17	4.95	0.50	138.63	0.83	24.76		
0.25	14.85	0.58	74.27	0.92	14.85		
0.33	39.61	0.67	59.41	1.00	4.95		

CALIB
STANDHYD (0022) | Area (ha)= 123.05
ID= 1 DT=10.0 min | Total Imp(%)= 61.00 Dir. Conn.(%)= 49.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	75.06	47.99
Dep. Storage (mm)=	2.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	905.72	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.167	2.48	0.500	106.45	0.833	32.18	1.17	2.48
0.333	27.23	0.667	66.84	1.000	9.90		

Max.Eff.Inten.(mm/hr)= 106.45 30.07
over (min) 10.00 30.00
Storage Coeff. (min)= 9.35 (ii) 20.76 (ii)
Unit Hyd. Tpeak (min)= 10.00 30.00
Unit Hyd. peak (cms)= 0.11 0.05

		TOTALS
PEAK FLOW	(cms)=	12.38 2.42 12.706 (iii)
TIME TO PEAK	(hrs)=	0.50 1.00 0.50
RUNOFF VOLUME	(mm)=	39.26 11.24 24.97
TOTAL RAINFALL	(mm)=	41.26 41.26 41.26
RUNOFF COEFFICIENT	=	0.95 0.27 0.61

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 69.0 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 (0017)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0142):	59.20	8.449	0.50	28.30
+ ID2= 2 (0022):	123.05	12.706	0.50	24.97
ID = 3 (0017):	182.25	21.155	0.50	26.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| ADD HYD  (  0003)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  1421):    15.00   1.285     0.50    19.42
     + ID2= 2 (  0151):    18.20   0.510     0.83     5.62
       ====================================================
       ID = 3 (  0003):    33.20   1.662     0.67    11.85

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| ADD HYD  (  0003)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0003):    33.20   1.662     0.67    11.85
     + ID2= 2 (  0017):   182.25  21.155     0.50    26.05
       ====================================================
       ID = 1 (  0003):   215.45  22.557     0.50    23.86

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):   215.45  22.557     0.50    23.86
     + ID2= 2 (  0002):   182.07   2.603     0.83     2.69
       ====================================================
       ID = 3 (  0003):   397.52  23.368     0.67    14.17

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\428f12
1e-01c4-4603-9f9c-5d4c24efad3b\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\428f12
1e-01c4-4603-9f9c-5d4c24efad3b\sce

DATE: 11/28/2019                          TIME: 11:04:52

USER:
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COMMENTS: _____

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  ************************************************
  ** SIMULATION : 04 AES 25-Yr                  **
  ************************************************


--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\54806dbf
| Ptotal= 49.17 mm |    Comments: 25yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   88.51 |  0.75   47.20 |  1.08    5.90
                0.17    5.90 |  0.50  165.21 |  0.83   29.50 |
                0.25   17.70 |  0.58   88.51 |  0.92   17.70 |
                0.33   47.20 |  0.67   70.80 |  1.00    5.90 |

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--------------------
| CALIB            |
| NASHYD   (  0153)|   Area    (ha)=  91.47   Curve Number   (CN)= 69.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  22.82   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    2.95 | 0.500  126.86 | 0.833   38.35 |  1.17    2.95
               0.333   32.45 | 0.667   79.66 | 1.000   11.80 |

    Unit Hyd Qpeak  (cms)=  17.469

    PEAK FLOW      (cms)=   2.334 (i)
    TIME TO PEAK   (hrs)=   0.833
    RUNOFF VOLUME   (mm)=   4.815
    TOTAL RAINFALL  (mm)=  49.170
    RUNOFF COEFFICIENT   =   0.098

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

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--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\54806dbf
| Ptotal= 49.17 mm |    Comments: 25yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   88.51 |  0.75   47.20 |  1.08    5.90
                0.17    5.90 |  0.50  165.21 |  0.83   29.50 |
                0.25   17.70 |  0.58   88.51 |  0.92   17.70 |
                0.33   47.20 |  0.67   70.80 |  1.00    5.90 |

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--------------------
| CALIB            |
| NASHYD   (  0152)|   Area    (ha)=  90.60   Curve Number   (CN)= 70.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  21.77   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 MIN. TIME STEP.
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                        ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.167    2.95 | 0.500  126.86 | 0.833   38.35 |  1.17    2.95
               0.333   32.45 | 0.667   79.66 | 1.000   11.80 |

    Unit Hyd Qpeak  (cms)=  17.302

    PEAK FLOW      (cms)=   2.564 (i)
    TIME TO PEAK   (hrs)=   0.833
    RUNOFF VOLUME   (mm)=   5.367
    TOTAL RAINFALL  (mm)=  49.170
    RUNOFF COEFFICIENT   =   0.109

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

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--------------------
| ADD HYD  (  0002)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0152):    90.60   2.564     0.83     5.37
     + ID2= 2 (  0153):    91.47   2.334     0.83     4.81
       ====================================================
       ID = 3 (  0002):   182.07   4.898     0.83     5.09

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\54806dbf
| Ptotal= 49.17 mm |    Comments: 25yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   88.51 |  0.75   47.20 |  1.08    5.90
                0.17    5.90 |  0.50  165.21 |  0.83   29.50 |
                0.25   17.70 |  0.58   88.51 |  0.92   17.70 |
                0.33   47.20 |  0.67   70.80 |  1.00    5.90 |

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--------------------
| CALIB            |
| NASHYD   (  0151)|   Area    (ha)=  18.20   Curve Number   (CN)= 68.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  11.95   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    2.95 | 0.500  126.86 | 0.833   38.35 |  1.17    2.95
               0.333   32.45 | 0.667   79.66 | 1.000   11.80 |

    Unit Hyd Qpeak  (cms)=   3.476

    PEAK FLOW      (cms)=   0.765 (i)
    TIME TO PEAK   (hrs)=   0.833
    RUNOFF VOLUME   (mm)=   8.608
    TOTAL RAINFALL  (mm)=  49.170
    RUNOFF COEFFICIENT   =   0.175

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

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--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\54806dbf
| Ptotal= 49.17 mm |    Comments: 25yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   88.51 |  0.75   47.20 |  1.08    5.90
                0.17    5.90 |  0.50  165.21 |  0.83   29.50 |
                0.25   17.70 |  0.58   88.51 |  0.92   17.70 |
                0.33   47.20 |  0.67   70.80 |  1.00    5.90 |

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--------------------
| CALIB            |
| STANDHYD (  1421)|   Area    (ha)=  15.00
|ID= 1 DT=10.0 min |   Total Imp(%)=  30.00   Dir. Conn.(%)=  29.00
--------------------

                        IMPERVIOUS    PERVIOUS (i)
    Surface Area     (ha)=       4.50         10.50
    Dep. Storage     (mm)=       1.00          2.00
    Average Slope     (%)=       1.00          3.00
    Length            (m)=     258.20         40.00
    Mannings n           =      0.015         0.200

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    2.95 | 0.500  126.86 | 0.833   38.35 |  1.17    2.95
               0.333   32.45 | 0.667   79.66 | 1.000   11.80 |

    Max.Eff.Inten.(mm/hr)=     126.86        33.60
              over (min)        10.00        20.00
    Storage Coeff.  (min)=      4.47 (ii)    12.93 (ii)
    Unit Hyd. Tpeak (min)=     10.00        20.00
    Unit Hyd. peak  (cms)=      0.15         0.07
                                                    *TOTALS*
    PEAK FLOW       (cms)=      1.40         0.70      1.594 (iii)
    TIME TO PEAK    (hrs)=      0.50         0.83       0.50
    RUNOFF VOLUME    (mm)=     49.17        14.90      24.55
    TOTAL RAINFALL   (mm)=     49.17        49.17      49.17
    RUNOFF COEFFICIENT   =      0.98         0.30       0.50

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

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN*  =  71.0    Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\54806dbf
| Ptotal= 49.17 mm |    Comments: 25yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   88.51 |  0.75   47.20 |  1.08    5.90
                0.17    5.90 |  0.50  165.21 |  0.83   29.50 |
                0.25   17.70 |  0.58   88.51 |  0.92   17.70 |
                0.33   47.20 |  0.67   70.80 |  1.00    5.90 |

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| CALIB                |
| STANDHYD (  0142)|   Area    (ha)=  59.20
|ID= 1 DT=10.0 min |   Total Imp(%)=  67.00   Dir. Conn.(%)=  64.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      39.66        19.54
     Dep. Storage     (mm)=       1.00        16.04
     Average Slope     (%)=       1.00         3.00
     Length            (m)=     628.23        40.00
     Mannings n           =      0.015        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    2.95 | 0.500  126.86 | 0.833   38.35 |  1.17    2.95
               0.333   32.45 | 0.667   79.66 | 1.000   11.80 |

     Max.Eff.Inten.(mm/hr)=     126.86        31.71
               over (min)       10.00        20.00
     Storage Coeff. (min)=       7.62 (ii)   17.52 (ii)
     Unit Hyd. Tpeak (min)=     10.00        20.00
     Unit Hyd. peak  (cms)=      0.12         0.06
                                                    *TOTALS*
     PEAK FLOW       (cms)=     10.36         0.94        10.476 (iii)
     TIME TO PEAK    (hrs)=      0.50         0.83         0.50
     RUNOFF VOLUME    (mm)=     48.17        11.00        34.79
     TOTAL RAINFALL   (mm)=     49.17        49.17        49.17
     RUNOFF COEFFICIENT   =      0.98         0.22         0.71

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  76.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\54806dbf
| Ptotal= 49.17 mm |    Comments: 25yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42   88.51 |  0.75   47.20 |  1.08    5.90
               0.17    5.90 |  0.50  165.21 |  0.83   29.50 |
               0.25   17.70 |  0.58   88.51 |  0.92   17.70 |
               0.33   47.20 |  0.67   70.80 |  1.00    5.90 |

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-------------------
| CALIB                |
| STANDHYD (  0022)|   Area    (ha)= 123.05
|ID= 1 DT=10.0 min |   Total Imp(%)=  61.00   Dir. Conn.(%)=  49.00
-------------------
                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      75.06        47.99
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     905.72        40.00
     Mannings n           =      0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    2.95 | 0.500  126.86 | 0.833   38.35 |  1.17    2.95
               0.333   32.45 | 0.667   79.66 | 1.000   11.80 |

     Max.Eff.Inten.(mm/hr)=     126.86        46.15
               over (min)       10.00        20.00
     Storage Coeff. (min)=       8.71 (ii)   18.33 (ii)
     Unit Hyd. Tpeak (min)=     10.00        20.00
     Unit Hyd. peak  (cms)=      0.12         0.06
                                                    *TOTALS*
     PEAK FLOW       (cms)=     15.35         3.77        16.814 (iii)
     TIME TO PEAK    (hrs)=      0.50         0.83         0.67
     RUNOFF VOLUME    (mm)=     47.17        15.51        31.02
     TOTAL RAINFALL   (mm)=     49.17        49.17        49.17
     RUNOFF COEFFICIENT   =      0.96         0.32         0.63

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  69.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
| ADD HYD  (  0017)|
|  1 +  2 =  3     |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
     ID1= 1 (  0142):    59.20  10.476     0.50    34.79
   + ID2= 2 (  0022):   123.05  16.814     0.67    31.02
     ==========================================================
     ID = 3 (  0017):   182.25  26.724     0.50    32.25

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

-------------------
| ADD HYD  (  0003)|
|  1 +  2 =  3     |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
     ID1= 1 (  1421):    15.00   1.594     0.50    24.55
   + ID2= 2 (  0151):    18.20   0.765     0.83     8.61
     ==========================================================
     ID = 3 (  0003):    33.20   2.250     0.67    15.81

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

-------------------
| ADD HYD  (  0003)|
|  3 +  2 =  1     |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
     ID1= 3 (  0003):    33.20   2.250     0.67    15.81
   + ID2= 2 (  0017):   182.25  26.724     0.50    32.25
     ==========================================================
     ID = 1 (  0003):   215.45  28.543     0.50    29.71

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

-------------------
| ADD HYD  (  0003)|
|  1 +  2 =  3     |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
     ID1= 1 (  0003):    215.45  28.543     0.50    29.71
   + ID2= 2 (  0002):    182.07   4.898     0.83     5.09
     ==========================================================
     ID = 3 (  0003):   397.52  31.784     0.67    18.43

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       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 M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\b3d6ab
f6-6c64-47fc-b4ae-ecee40681c14\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\b3d6ab
f6-6c64-47fc-b4ae-ecee40681c14\sce


DATE: 11/28/2019                          TIME: 11:04:52

USER:


COMMENTS: _____

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  **********************************************
  ** SIMULATION : 05 AES 50-Yr                **
  **********************************************


-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\2cfb217d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42   98.91 |  0.75   52.75 |  1.08    6.59
               0.17    6.59 |  0.50  184.63 |  0.83   32.97 |
               0.25   19.78 |  0.58   98.91 |  0.92   19.78 |
               0.33   52.75 |  0.67   79.13 |  1.00    6.59 |

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-------------------
| CALIB                |
| NASHYD   (  0153)|   Area    (ha)=  91.47   Curve Number   (CN)= 69.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  22.82   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

         NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    3.30 | 0.500  141.77 | 0.833   42.86 |  1.17    3.30
```



```
               0.333   36.27 | 0.667   89.02 | 1.000   13.19 |

     Unit Hyd Qpeak  (cms)=  17.469

     PEAK FLOW       (cms)=   3.288 (i)
     TIME TO PEAK    (hrs)=   0.833
     RUNOFF VOLUME    (mm)=   6.875
     TOTAL RAINFALL   (mm)=  54.950
     RUNOFF COEFFICIENT   =   0.125

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

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-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\2cfb217d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42   98.91 |  0.75   52.75 |  1.08    6.59
               0.17    6.59 |  0.50  184.63 |  0.83   32.97 |
               0.25   19.78 |  0.58   98.91 |  0.92   19.78 |
               0.33   52.75 |  0.67   79.13 |  1.00    6.59 |

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

-------------------
| CALIB                |
| NASHYD   (  0152)|   Area    (ha)=  90.60   Curve Number   (CN)= 70.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  21.77   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

         NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    3.30 | 0.500  141.77 | 0.833   42.86 |  1.17    3.30
               0.333   36.27 | 0.667   89.02 | 1.000   13.19 |

     Unit Hyd Qpeak  (cms)=  17.302

     PEAK FLOW       (cms)=   3.552 (i)
     TIME TO PEAK    (hrs)=   0.833
     RUNOFF VOLUME    (mm)=   7.549
     TOTAL RAINFALL   (mm)=  54.950
     RUNOFF COEFFICIENT   =   0.137

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

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-------------------
| ADD HYD  (  0002)|
|  1 +  2 =  3     |          AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
     ID1= 1 (  0152):    90.60   3.552     0.83     7.55
   + ID2= 2 (  0153):    91.47   3.288     0.83     6.88
     ==========================================================
     ID = 3 (  0002):   182.07   6.841     0.83     7.21

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\2cfb217d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
-------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	98.91	0.75	52.75	1.08	6.59
0.17	6.59	0.50	184.63	0.83	32.97		
0.25	19.78	0.58	98.91	0.92	19.78		
0.33	52.75	0.67	79.13	1.00	6.59		

CALIB			
NASHYD (0151)	Area	(ha)= 18.20	Curve Number (CN)= 68.0
ID= 1 DT=10.0 min	Ia	(mm)= 11.95	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20		

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	3.30	0.500	141.77	0.833	42.86	1.17	3.30
0.333	36.27	0.667	89.02	1.000	13.19		

Unit Hyd Qpeak (cms)= 3.476

PEAK FLOW (cms)= 0.972 (i)
TIME TO PEAK (hrs)= 0.833
RUNOFF VOLUME (mm)= 11.081
TOTAL RAINFALL (mm)= 54.950
RUNOFF COEFFICIENT = 0.202

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

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\c0a758ec-b7cc-4a17-823b-afaf544e7a0a\2cfb217d
Ptotal= 54.95 mm	Comments: 50yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	98.91	0.75	52.75	1.08	6.59
0.17	6.59	0.50	184.63	0.83	32.97		
0.25	19.78	0.58	98.91	0.92	19.78		
0.33	52.75	0.67	79.13	1.00	6.59		

CALIB			
STANDHYD (1421)	Area	(ha)= 15.00	
ID= 1 DT=10.0 min	Total Imp(%)= 30.00	Dir. Conn.(%)= 29.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.50	10.50
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	3.00
Length (m)=	258.20	40.00
Mannings n =	0.015	0.200

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	3.30	0.500	141.77	0.833	42.86	1.17	3.30
0.333	36.27	0.667	89.02	1.000	13.19		

Max.Eff.Inten.(mm/hr)=	141.77	40.51
over (min)	10.00	20.00

Storage Coeff. (min)=	4.28 (ii)	12.12 (ii)
Unit Hyd. Tpeak (min)=	10.00	20.00
Unit Hyd. peak (cms)=	0.15	0.07
		TOTALS
PEAK FLOW (cms)=	1.58	0.87 1.851 (iii)
TIME TO PEAK (hrs)=	0.50	0.83 0.67
RUNOFF VOLUME (mm)=	53.95	18.08 28.48
TOTAL RAINFALL (mm)=	54.95	54.95 54.95
RUNOFF COEFFICIENT =	0.98	0.33 0.52

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\c0a758ec-b7cc-4a17-823b-afaf544e7a0a\2cfb217d
Ptotal= 54.95 mm	Comments: 50yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	98.91	0.75	52.75	1.08	6.59
0.17	6.59	0.50	184.63	0.83	32.97		
0.25	19.78	0.58	98.91	0.92	19.78		
0.33	52.75	0.67	79.13	1.00	6.59		

CALIB			
STANDHYD (0142)	Area	(ha)= 59.20	
ID= 1 DT=10.0 min	Total Imp(%)= 67.00	Dir. Conn.(%)= 64.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	39.66	19.54
Dep. Storage (mm)=	1.00	16.04
Average Slope (%)=	1.00	3.00
Length (m)=	628.23	40.00
Mannings n =	0.015	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	3.30	0.500	141.77	0.833	42.86	1.17	3.30
0.333	36.27	0.667	89.02	1.000	13.19		

Max.Eff.Inten.(mm/hr)=	141.77	40.36
over (min)	10.00	20.00
Storage Coeff. (min)=	7.29 (ii)	16.28 (ii)
Unit Hyd. Tpeak (min)=	10.00	20.00
Unit Hyd. peak (cms)=	0.13	0.06
		TOTALS
PEAK FLOW (cms)=	11.80	1.26 11.983 (iii)
TIME TO PEAK (hrs)=	0.50	0.83 0.50
RUNOFF VOLUME (mm)=	53.95	14.24 39.65
TOTAL RAINFALL (mm)=	54.95	54.95 54.95
RUNOFF COEFFICIENT =	0.98	0.26 0.72

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 76.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\c0a758ec-b7cc-4a17-823b-afaf544e7a0a\2cfb217d
Ptotal= 54.95 mm	Comments: 50yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	98.91	0.75	52.75	1.08	6.59
0.17	6.59	0.50	184.63	0.83	32.97		
0.25	19.78	0.58	98.91	0.92	19.78		
0.33	52.75	0.67	79.13	1.00	6.59		

CALIB			
STANDHYD (0022)	Area	(ha)= 123.05	
ID= 1 DT=10.0 min	Total Imp(%)= 61.00	Dir. Conn.(%)= 49.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	75.06	47.99
Dep. Storage (mm)=	2.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	905.72	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	3.30	0.500	141.77	0.833	42.86	1.17	3.30
0.333	36.27	0.667	89.02	1.000	13.19		

Max.Eff.Inten.(mm/hr)=	141.77	55.72
over (min)	10.00	20.00
Storage Coeff. (min)=	8.33 (ii)	17.25 (ii)
Unit Hyd. Tpeak (min)=	10.00	20.00
Unit Hyd. peak (cms)=	0.12	0.06
		TOTALS
PEAK FLOW (cms)=	17.56	4.72 19.346 (iii)
TIME TO PEAK (hrs)=	0.50	0.83 0.67
RUNOFF VOLUME (mm)=	52.95	18.89 35.58
TOTAL RAINFALL (mm)=	54.95	54.95 54.95
RUNOFF COEFFICIENT =	0.96	0.34 0.65

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 69.0 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 (0017)				
1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 1 (0142):	59.20	11.983	0.50	39.65
	+ ID2= 2 (0022):	123.05	19.346	0.67	35.58
	ID = 3 (0017):	182.25	30.718	0.50	36.90

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)				
1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 1 (1421):	15.00	1.851	0.67	28.48
	+ ID2= 2 (0151):	18.20	0.972	0.83	11.08
	ID = 3 (0003):	33.20	2.725	0.67	18.94

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)				
3 + 2 = 1		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 3 (0003):	33.20	2.725	0.67	18.94
	+ ID2= 2 (0017):	182.25	30.718	0.50	36.90
	ID = 1 (0003):	215.45	32.868	0.50	34.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)				
1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 1 (0003):	215.45	32.868	0.50	34.13
	+ ID2= 2 (0002):	182.07	6.841	0.83	7.21
	ID = 3 (0003):	397.52	37.781	0.67	21.80

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       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 M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\162043
9b-ba95-45ff-adfe-c79412ef22c6\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\162043
9b-ba95-45ff-adfe-c79412ef22c6\sce

DATE: 11/28/2019                          TIME: 11:04:51

USER:


COMMENTS: _____
```

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  ************************************************
  ** SIMULATION : 06 AES 100-Yr                  **
  ************************************************


--------------------
|    READ STORM     |    Filename: C:\Users\p001279d\AppD
|                   |              ata\Local\Temp\
|                   |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\8e50d755
| Ptotal= 60.87 mm  |    Comments: 100yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'  hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42  109.57 |  0.75   58.44 |  1.08    7.30
               0.17    7.30 |  0.50  204.52 |  0.83   36.52 |
               0.25   21.91 |  0.58  109.57 |  0.92   21.91 |
               0.33   58.44 |  0.67   87.65 |  1.00    7.30 |

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--------------------
| CALIB             |
| NASHYD   (  0153)|   Area    (ha)=  91.47   Curve Number   (CN)= 69.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  22.82   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    3.65 | 0.500  157.04 | 0.833   47.48 |  1.17    3.65
               0.333   40.17 | 0.667   98.61 | 1.000   14.61 |

    Unit Hyd Qpeak  (cms)=  17.469

    PEAK FLOW       (cms)=   4.367 (i)
    TIME TO PEAK    (hrs)=   0.833
    RUNOFF VOLUME    (mm)=   9.267
    TOTAL RAINFALL   (mm)=  60.870
    RUNOFF COEFFICIENT   =   0.152

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

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--------------------
|    READ STORM     |    Filename: C:\Users\p001279d\AppD
|                   |              ata\Local\Temp\
|                   |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\8e50d755
| Ptotal= 60.87 mm  |    Comments: 100yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'  hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42  109.57 |  0.75   58.44 |  1.08    7.30
               0.17    7.30 |  0.50  204.52 |  0.83   36.52 |
               0.25   21.91 |  0.58  109.57 |  0.92   21.91 |
               0.33   58.44 |  0.67   87.65 |  1.00    7.30 |

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--------------------
| CALIB             |
| NASHYD   (  0152)|   Area    (ha)=  90.60   Curve Number   (CN)= 70.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  21.77   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    3.65 | 0.500  157.04 | 0.833   47.48 |  1.17    3.65
               0.333   40.17 | 0.667   98.61 | 1.000   14.61 |

    Unit Hyd Qpeak  (cms)=  17.302

    PEAK FLOW       (cms)=   4.664 (i)
    TIME TO PEAK    (hrs)=   0.833
    RUNOFF VOLUME    (mm)=  10.064
    TOTAL RAINFALL   (mm)=  60.870
    RUNOFF COEFFICIENT   =   0.165

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

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--------------------
| ADD HYD  (  0002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
      ID1= 1 (  0152):    90.60   4.664     0.83     10.06
    + ID2= 2 (  0153):    91.47   4.367     0.83      9.27
      ========================================================
      ID = 3 (  0002):   182.07   9.030     0.83      9.66

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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|    READ STORM     |    Filename: C:\Users\p001279d\AppD
|                   |              ata\Local\Temp\
|                   |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\8e50d755
| Ptotal= 60.87 mm  |    Comments: 100yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'  hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42  109.57 |  0.75   58.44 |  1.08    7.30
               0.17    7.30 |  0.50  204.52 |  0.83   36.52 |
               0.25   21.91 |  0.58  109.57 |  0.92   21.91 |
               0.33   58.44 |  0.67   87.65 |  1.00    7.30 |

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--------------------
| CALIB             |
| NASHYD   (  0151)|   Area    (ha)=  18.20   Curve Number   (CN)= 68.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  11.95   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    3.65 | 0.500  157.04 | 0.833   47.48 |  1.17    3.65
               0.333   40.17 | 0.667   98.61 | 1.000   14.61 |

    Unit Hyd Qpeak  (cms)=   3.476

    PEAK FLOW       (cms)=   1.201 (i)
    TIME TO PEAK    (hrs)=   0.833
    RUNOFF VOLUME    (mm)=  13.838
    TOTAL RAINFALL   (mm)=  60.870
    RUNOFF COEFFICIENT   =   0.227

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

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|    READ STORM     |    Filename: C:\Users\p001279d\AppD
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```
|                   |              ata\Local\Temp\
|                   |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\8e50d755
| Ptotal= 60.87 mm  |    Comments: 100yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'  hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42  109.57 |  0.75   58.44 |  1.08    7.30
               0.17    7.30 |  0.50  204.52 |  0.83   36.52 |
               0.25   21.91 |  0.58  109.57 |  0.92   21.91 |
               0.33   58.44 |  0.67   87.65 |  1.00    7.30 |

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--------------------
| CALIB             |
| STANDHYD (  1421)|   Area    (ha)=  15.00
|ID= 1 DT=10.0 min |   Total Imp(%)=  30.00   Dir. Conn.(%)=  29.00
--------------------

                        IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       4.50        10.50
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         3.00
     Length            (m)=     258.20        40.00
     Mannings n            =      0.015        0.200

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    3.65 | 0.500  157.04 | 0.833   47.48 |  1.17    3.65
               0.333   40.17 | 0.667   98.61 | 1.000   14.61 |

     Max.Eff.Inten.(mm/hr)=     157.04        47.96
               over (min)       10.00        20.00
     Storage Coeff.  (min)=      4.11 (ii)   11.44 (ii)
     Unit Hyd. Tpeak (min)=     10.00        20.00
     Unit Hyd. peak  (cms)=      0.16         0.08
                                                      *TOTALS*
     PEAK FLOW       (cms)=      1.77         1.05         2.140 (iii)
     TIME TO PEAK    (hrs)=      0.50         0.83          0.67
     RUNOFF VOLUME    (mm)=     59.87        21.52         32.64
     TOTAL RAINFALL   (mm)=     60.87        60.87         60.87
     RUNOFF COEFFICIENT   =      0.98         0.35          0.54

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  71.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
|    READ STORM     |    Filename: C:\Users\p001279d\AppD
|                   |              ata\Local\Temp\
|                   |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\8e50d755
| Ptotal= 60.87 mm  |    Comments: 100yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'  hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42  109.57 |  0.75   58.44 |  1.08    7.30
               0.17    7.30 |  0.50  204.52 |  0.83   36.52 |
               0.25   21.91 |  0.58  109.57 |  0.92   21.91 |
               0.33   58.44 |  0.67   87.65 |  1.00    7.30 |

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


--------------------
| CALIB             |
| STANDHYD (  0142)|   Area    (ha)=  59.20
```



```
|ID= 1 DT=10.0 min |   Total Imp(%)=  67.00   Dir. Conn.(%)=  64.00
--------------------

                        IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      39.66        19.54
     Dep. Storage     (mm)=       1.00        16.04
     Average Slope     (%)=       1.00         3.00
     Length            (m)=     628.23        40.00
     Mannings n            =      0.015        0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    3.65 | 0.500  157.04 | 0.833   47.48 |  1.17    3.65
               0.333   40.17 | 0.667   98.61 | 1.000   14.61 |

     Max.Eff.Inten.(mm/hr)=     157.04        49.63
               over (min)       10.00        20.00
     Storage Coeff.  (min)=      7.00 (ii)   15.27 (ii)
     Unit Hyd. Tpeak (min)=     10.00        20.00
     Unit Hyd. peak  (cms)=      0.13         0.07
                                                      *TOTALS*
     PEAK FLOW       (cms)=     13.29         1.63        13.556 (iii)
     TIME TO PEAK    (hrs)=      0.50         0.83         0.50
     RUNOFF VOLUME    (mm)=     59.87        17.81        44.73
     TOTAL RAINFALL   (mm)=     60.87        60.87        60.87
     RUNOFF COEFFICIENT   =      0.98         0.29         0.73

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  76.0    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.

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


--------------------
|    READ STORM     |    Filename: C:\Users\p001279d\AppD
|                   |              ata\Local\Temp\
|                   |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\8e50d755
| Ptotal= 60.87 mm  |    Comments: 100yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'  hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42  109.57 |  0.75   58.44 |  1.08    7.30
               0.17    7.30 |  0.50  204.52 |  0.83   36.52 |
               0.25   21.91 |  0.58  109.57 |  0.92   21.91 |
               0.33   58.44 |  0.67   87.65 |  1.00    7.30 |

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--------------------
| CALIB             |
| STANDHYD (  0022)|   Area    (ha)= 123.05
|ID= 1 DT=10.0 min |   Total Imp(%)=  61.00   Dir. Conn.(%)=  49.00
--------------------

                        IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      75.06        47.99
     Dep. Storage     (mm)=       2.00         5.00
     Average Slope     (%)=       1.00         2.00
     Length            (m)=     905.72        40.00
     Mannings n            =      0.013        0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    3.65 | 0.500  157.04 | 0.833   47.48 |  1.17    3.65
```

```
0.333   40.17 | 0.667   98.61 | 1.000   14.61 |

     Max.Eff.Inten.(mm/hr)=     157.04        65.97
               over (min)        10.00        20.00
     Storage Coeff.  (min)=      8.00 (ii)   16.34 (ii)
     Unit Hyd. Tpeak (min)=     10.00        20.00
     Unit Hyd. peak  (cms)=      0.12         0.06
                                                    *TOTALS*
     PEAK FLOW      (cms)=     19.86         5.77        22.018 (iii)
     TIME TO PEAK   (hrs)=      0.50         0.83         0.67
     RUNOFF VOLUME   (mm)=     58.87        22.55        40.35
     TOTAL RAINFALL  (mm)=     60.87        60.87        60.87
     RUNOFF COEFFICIENT   =     0.97         0.37         0.66

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

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN*  =  69.0    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  (  0017)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
      ID1= 1 (  0142):    59.20  13.556     0.50    44.73
    + ID2= 2 (  0022):   123.05  22.018     0.67    40.35
      ================================================
      ID = 3 (  0017):   182.25  34.903     0.50    41.77

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


-------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
      ID1= 1 (  1421):    15.00   2.140     0.67    32.64
    + ID2= 2 (  0151):    18.20   1.201     0.83    13.84
      ================================================
      ID = 3 (  0003):    33.20   3.247     0.67    22.33

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


-------------------
| ADD HYD  (  0003)|
|   3 +  2 =  1    |        AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
      ID1= 3 (  0003):    33.20   3.247     0.67    22.33
    + ID2= 2 (  0017):   182.25  34.903     0.50    41.77
      ================================================
      ID = 1 (  0003):   215.45  37.414     0.50    38.77

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


-------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
      ID1= 1 (  0003):   215.45  37.414     0.50    38.77
    + ID2= 2 (  0002):   182.07   9.030     0.83     9.66
      ================================================
      ID = 3 (  0003):   397.52  44.338     0.67    25.44

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
================================================================================
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 V    V   I    SSSSS  U   U    A     L                (v 5.2.2003)
 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 M  O   O
  OOO     T      T    H   H    Y    M   M   OOO
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                *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\1ba0d7
de-f2a0-4bc7-a25d-ede68bff8f4f\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\1ba0d7
de-f2a0-4bc7-a25d-ede68bff8f4f\sce

DATE: 11/28/2019                          TIME: 11:04:51

USER:


COMMENTS: _____

--------------------------------------------------------------------------------
-------------------
  ************************************************
  ** SIMULATION : 07 AES 250-Yr                 **
  ************************************************


-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\3a4314b1
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
-------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42  126.09 |  0.75   67.25 |  1.08    8.41
               0.17    8.41 |  0.50  235.37 |  0.83   42.03 |
               0.25   25.22 |  0.58  126.09 |  0.92   25.22 |
               0.33   67.25 |  0.67  100.87 |  1.00    8.41 |

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


-------------------
| CALIB            |
| NASHYD   (  0153)|   Area    (ha)=  91.47   Curve Number   (CN)= 69.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  22.82   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    4.20 | 0.500  180.73 | 0.833   54.64 |  1.17    4.20
               0.333   46.23 | 0.667  113.48 | 1.000   16.81 |
```



```
     Unit Hyd Qpeak  (cms)=  17.469

     PEAK FLOW      (cms)=   6.211 (i)
     TIME TO PEAK   (hrs)=   0.833
     RUNOFF VOLUME   (mm)=  13.466
     TOTAL RAINFALL  (mm)=  70.050
     RUNOFF COEFFICIENT   =   0.192

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

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


-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\3a4314b1
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
-------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42  126.09 |  0.75   67.25 |  1.08    8.41
               0.17    8.41 |  0.50  235.37 |  0.83   42.03 |
               0.25   25.22 |  0.58  126.09 |  0.92   25.22 |
               0.33   67.25 |  0.67  100.87 |  1.00    8.41 |

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


-------------------
| CALIB            |
| NASHYD   (  0152)|   Area    (ha)=  90.60   Curve Number   (CN)= 70.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  21.77   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    4.20 | 0.500  180.73 | 0.833   54.64 |  1.17    4.20
               0.333   46.23 | 0.667  113.48 | 1.000   16.81 |

     Unit Hyd Qpeak  (cms)=  17.302

     PEAK FLOW      (cms)=   6.554 (i)
     TIME TO PEAK   (hrs)=   0.833
     RUNOFF VOLUME   (mm)=  14.448
     TOTAL RAINFALL  (mm)=  70.050
     RUNOFF COEFFICIENT   =   0.206

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

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


-------------------
| ADD HYD  (  0002)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
      ID1= 1 (  0152):    90.60   6.554     0.83    14.45
    + ID2= 2 (  0153):    91.47   6.211     0.83    13.47
      ================================================
      ID = 3 (  0002):   182.07  12.764     0.83    13.95

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


-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\3a4314b1
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
-------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
```



```
               0.08    0.00 |  0.42  126.09 |  0.75   67.25 |  1.08    8.41
               0.17    8.41 |  0.50  235.37 |  0.83   42.03 |
               0.25   25.22 |  0.58  126.09 |  0.92   25.22 |
               0.33   67.25 |  0.67  100.87 |  1.00    8.41 |

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


-------------------
| CALIB            |
| NASHYD   (  0151)|   Area    (ha)=  18.20   Curve Number   (CN)= 68.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  11.95   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    4.20 | 0.500  180.73 | 0.833   54.64 |  1.17    4.20
               0.333   46.23 | 0.667  113.48 | 1.000   16.81 |

     Unit Hyd Qpeak  (cms)=   3.476

     PEAK FLOW      (cms)=   1.585 (i)
     TIME TO PEAK   (hrs)=   0.833
     RUNOFF VOLUME   (mm)=  18.510
     TOTAL RAINFALL  (mm)=  70.050
     RUNOFF COEFFICIENT   =   0.264

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

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-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\3a4314b1
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
-------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42  126.09 |  0.75   67.25 |  1.08    8.41
               0.17    8.41 |  0.50  235.37 |  0.83   42.03 |
               0.25   25.22 |  0.58  126.09 |  0.92   25.22 |
               0.33   67.25 |  0.67  100.87 |  1.00    8.41 |

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


-------------------
| CALIB            |
| STANDHYD (  1421)|   Area    (ha)=  15.00
|ID= 1 DT=10.0 min |   Total Imp(%)=  30.00   Dir. Conn.(%)=  29.00
-------------------

                        IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       4.50        10.50
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         3.00
     Length            (m)=     258.20        40.00
     Mannings n          =      0.015        0.200

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    4.20 | 0.500  180.73 | 0.833   54.64 |  1.17    4.20
               0.333   46.23 | 0.667  113.48 | 1.000   16.81 |

     Max.Eff.Inten.(mm/hr)=     180.73        60.12
               over (min)        10.00        20.00
     Storage Coeff.  (min)=      3.88 (ii)   10.58 (ii)
     Unit Hyd. Tpeak (min)=     10.00        20.00
```

```
     Unit Hyd. peak  (cms)=       0.16          0.08
                                                          *TOTALS*
     PEAK FLOW       (cms)=       2.06          1.35         2.614 (iii)
     TIME TO PEAK    (hrs)=       0.50          0.83          0.67
     RUNOFF VOLUME    (mm)=      69.05         27.20         39.34
     TOTAL RAINFALL   (mm)=      70.05         70.05         70.05
     RUNOFF COEFFICIENT   =       0.99          0.39          0.56

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  71.0    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.

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\3a4314b1
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |

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

--------------------
| CALIB            |
| STANDHYD (  0142)|   Area    (ha)=  59.20
|ID= 1 DT=10.0 min |   Total Imp(%)=  67.00   Dir. Conn.(%)=  64.00
--------------------
                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      39.66         19.54
     Dep. Storage     (mm)=       1.00         16.04
     Average Slope     (%)=       1.00          3.00
     Length            (m)=     628.23         40.00
     Mannings n             =    0.015         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
                0.167    4.20 | 0.500  180.73 | 0.833   54.64 |  1.17    4.20
                0.333   46.23 | 0.667  113.48 | 1.000   16.81 |

     Max.Eff.Inten.(mm/hr)=     180.73         64.67
                 over (min)       10.00         20.00
     Storage Coeff.  (min)=       6.62 (ii)    14.06 (ii)
     Unit Hyd. Tpeak (min)=      10.00         20.00
     Unit Hyd. peak  (cms)=       0.13          0.07
                                                          *TOTALS*
     PEAK FLOW       (cms)=      15.63          2.25        16.048 (iii)
     TIME TO PEAK    (hrs)=       0.50          0.83          0.50
     RUNOFF VOLUME    (mm)=      69.05         23.77         52.75
     TOTAL RAINFALL   (mm)=      70.05         70.05         70.05
     RUNOFF COEFFICIENT   =       0.99          0.34          0.75

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  76.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
```



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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              c0a758ec-b7cc-4a17-823b-afaf544e7a0a\3a4314b1
| Ptotal= 70.05 mm |    Comments: 250yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42  126.09 |'  0.75   67.25 |  1.08    8.41
                0.17    8.41 |  0.50  235.37 |'  0.83   42.03 |
                0.25   25.22 |  0.58  126.09 |'  0.92   25.22 |
                0.33   67.25 |  0.67  100.87 |'  1.00    8.41 |

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

--------------------
| CALIB            |
| STANDHYD (  0022)|   Area    (ha)= 123.05
|ID= 1 DT=10.0 min |   Total Imp(%)=  61.00   Dir. Conn.(%)=  49.00
--------------------
                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      75.06         47.99
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       1.00          2.00
     Length            (m)=     905.72         40.00
     Mannings n             =    0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
                0.167    4.20 | 0.500  180.73 | 0.833   54.64 |  1.17    4.20
                0.333   46.23 | 0.667  113.48 | 1.000   16.81 |

     Max.Eff.Inten.(mm/hr)=     180.73         82.63
                 over (min)       10.00         20.00
     Storage Coeff.  (min)=       7.56 (ii)    15.18 (ii)
     Unit Hyd. Tpeak (min)=      10.00         20.00
     Unit Hyd. peak  (cms)=       0.12          0.07
                                                          *TOTALS*
     PEAK FLOW       (cms)=      23.46          7.52        26.304 (iii)
     TIME TO PEAK    (hrs)=       0.50          0.83          0.67
     RUNOFF VOLUME    (mm)=      68.05         28.57         47.92
     TOTAL RAINFALL   (mm)=      70.05         70.05         70.05
     RUNOFF COEFFICIENT   =       0.97          0.41          0.68

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  69.0    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  (  0017)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0142):    59.20  16.048     0.50    52.75
     + ID2= 2 (  0022):   123.05  26.304     0.67    47.92
       ================================================
       ID = 3 (  0017):   182.25  41.561     0.50    49.49

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

--------------------
| ADD HYD  (  0003)|
--------------------
```



```
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  1421):    15.00   2.614     0.67    39.34
     + ID2= 2 (  0151):    18.20   1.585     0.83    18.51
       ================================================
       ID = 3 (  0003):    33.20   4.121     0.67    27.92

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

--------------------
| ADD HYD  (  0003)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0003):    33.20   4.121     0.67    27.92
     + ID2= 2 (  0017):   182.25  41.561     0.50    49.49
       ================================================
       ID = 1 (  0003):   215.45  44.734     0.67    46.16

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

--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):   215.45  44.734     0.67    46.16
     + ID2= 2 (  0002):   182.07  12.764     0.83    13.95
       ================================================
       ID = 3 (  0003):   397.52  55.247     0.67    31.41

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


       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       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 M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\6ce217
2f-4475-46e2-8500-ef29a9862c79\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\6ce217
2f-4475-46e2-8500-ef29a9862c79\sce


DATE: 11/28/2019                          TIME: 11:04:49

USER:


COMMENTS: _____
```



```
  ************************************************
  ** SIMULATION : New DesignStormChicago - 3hr  **
  ************************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1499.500
| Ptotal= 71.76 mm |                          B=   3.298
--------------------                          C=   0.794
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    6.35 |  1.00  192.16 |'  1.83   10.97 |  2.67    6.07
                0.33    7.76 |  1.17   47.74 |'  2.00    9.37 |  2.83    5.61
                0.50   10.16 |  1.33   24.88 |'  2.17    8.21 |  3.00    5.22
                0.67   15.26 |  1.50   17.22 |'  2.33    7.33 |
                0.83   36.28 |  1.67   13.33 |'  2.50    6.64 |

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

--------------------
| CALIB            |
| NASHYD   (  0153)|   Area    (ha)=  91.47   Curve Number   (CN)= 69.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  22.82   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=  17.469

     PEAK FLOW       (cms)=   3.540 (i)
     TIME TO PEAK    (hrs)=   1.167
     RUNOFF VOLUME    (mm)=  14.306
     TOTAL RAINFALL   (mm)=  71.757
     RUNOFF COEFFICIENT   =   0.199

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

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

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1499.500
| Ptotal= 71.76 mm |                          B=   3.298
--------------------                          C=   0.794
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    6.35 |  1.00  192.16 |'  1.83   10.97 |  2.67    6.07
                0.33    7.76 |  1.17   47.74 |'  2.00    9.37 |  2.83    5.61
                0.50   10.16 |  1.33   24.88 |'  2.17    8.21 |  3.00    5.22
                0.67   15.26 |  1.50   17.22 |'  2.33    7.33 |
                0.83   36.28 |  1.67   13.33 |'  2.50    6.64 |

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

--------------------
| CALIB            |
| NASHYD   (  0152)|   Area    (ha)=  90.60   Curve Number   (CN)= 70.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  21.77   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=  17.302

     PEAK FLOW       (cms)=   3.855 (i)
     TIME TO PEAK    (hrs)=   1.167
     RUNOFF VOLUME    (mm)=  15.322
     TOTAL RAINFALL   (mm)=  71.757
```

```
     RUNOFF COEFFICIENT   =   0.214

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

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

--------------------
| ADD HYD  (  0002)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0152):    90.60   3.855     1.17    15.32
     + ID2= 2 (  0153):    91.47   3.540     1.17    14.31
       ==========================================
       ID = 3 (  0002):   182.07   7.395     1.17    14.81

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |     IDF curve parameters: A=1499.500
| Ptotal= 71.76 mm |                           B=   3.298
--------------------                           C=   0.794
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    6.35 |  1.00  192.16 |  1.83   10.97 |  2.67    6.07
                0.33    7.76 |  1.17   47.74 |  2.00    9.37 |  2.83    5.61
                0.50   10.16 |  1.33   24.88 |  2.17    8.21 |  3.00    5.22
                0.67   15.26 |  1.50   17.22 |  2.33    7.33 |
                0.83   36.28 |  1.67   13.33 |  2.50    6.64 |


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0151)|   Area    (ha)=  18.20   Curve Number   (CN)= 68.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  11.95   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=   3.476

     PEAK FLOW       (cms)=   1.141 (i)
     TIME TO PEAK    (hrs)=   1.167
     RUNOFF VOLUME    (mm)=  19.427
     TOTAL RAINFALL   (mm)=  71.757
     RUNOFF COEFFICIENT   =   0.271

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

--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |     IDF curve parameters: A=1499.500
| Ptotal= 71.76 mm |                           B=   3.298
--------------------                           C=   0.794
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    6.35 |  1.00  192.16 |  1.83   10.97 |  2.67    6.07
                0.33    7.76 |  1.17   47.74 |  2.00    9.37 |  2.83    5.61
                0.50   10.16 |  1.33   24.88 |  2.17    8.21 |  3.00    5.22
                0.67   15.26 |  1.50   17.22 |  2.33    7.33 |
                0.83   36.28 |  1.67   13.33 |  2.50    6.64 |


--------------------------------------------------------------------------------
                                     Page 41
```



```
--------------------
| CALIB            |
| STANDHYD (  1421)|   Area    (ha)=  15.00
|ID= 1 DT=10.0 min |   Total Imp(%)=  30.00   Dir. Conn.(%)=  29.00
--------------------

                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        4.50         10.50
     Dep. Storage     (mm)=        1.00          2.00
     Average Slope     (%)=        1.00          3.00
     Length            (m)=      258.20         40.00
     Mannings n             =     0.015         0.200

     Max.Eff.Inten.(mm/hr)=      192.16         70.37
               over (min)        10.00         20.00
     Storage Coeff.  (min)=       3.79 (ii)    10.08 (ii)
     Unit Hyd. Tpeak (min)=      10.00         20.00
     Unit Hyd. peak  (cms)=       0.16          0.08
                                                      *TOTALS*
     PEAK FLOW       (cms)=       2.19          1.19      2.752 (iii)
     TIME TO PEAK    (hrs)=       1.00          1.17       1.00
     RUNOFF VOLUME    (mm)=      70.76         28.30      40.61
     TOTAL RAINFALL   (mm)=      71.76         71.76      71.76
     RUNOFF COEFFICIENT   =       0.99          0.39       0.57

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  71.0    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.

--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |     IDF curve parameters: A=1499.500
| Ptotal= 71.76 mm |                           B=   3.298
--------------------                           C=   0.794
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    6.35 |  1.00  192.16 |  1.83   10.97 |  2.67    6.07
                0.33    7.76 |  1.17   47.74 |  2.00    9.37 |  2.83    5.61
                0.50   10.16 |  1.33   24.88 |  2.17    8.21 |  3.00    5.22
                0.67   15.26 |  1.50   17.22 |  2.33    7.33 |
                0.83   36.28 |  1.67   13.33 |  2.50    6.64 |


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0142)|   Area    (ha)=  59.20
|ID= 1 DT=10.0 min |   Total Imp(%)=  67.00   Dir. Conn.(%)=  64.00
--------------------

                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       39.66         19.54
     Dep. Storage     (mm)=        1.00         16.04
     Average Slope     (%)=        1.00          3.00
     Length            (m)=      628.23         40.00
     Mannings n             =     0.015         0.250

     Max.Eff.Inten.(mm/hr)=      192.16         56.77
               over (min)        10.00         20.00
     Storage Coeff.  (min)=       6.46 (ii)    14.30 (ii)
     Unit Hyd. Tpeak (min)=      10.00         20.00
     Unit Hyd. peak  (cms)=       0.13          0.07
                                                      *TOTALS*
     PEAK FLOW       (cms)=      16.63          1.54      17.251 (iii)
     TIME TO PEAK    (hrs)=       1.00          1.17       1.00
     RUNOFF VOLUME    (mm)=      70.76         24.93      54.26
```



```
     TOTAL RAINFALL   (mm)=      71.76         71.76          71.76
     RUNOFF COEFFICIENT   =       0.99          0.35           0.76

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  76.0    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.

--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |     IDF curve parameters: A=1499.500
| Ptotal= 71.76 mm |                           B=   3.298
--------------------                           C=   0.794
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    6.35 |  1.00  192.16 |  1.83   10.97 |  2.67    6.07
                0.33    7.76 |  1.17   47.74 |  2.00    9.37 |  2.83    5.61
                0.50   10.16 |  1.33   24.88 |  2.17    8.21 |  3.00    5.22
                0.67   15.26 |  1.50   17.22 |  2.33    7.33 |
                0.83   36.28 |  1.67   13.33 |  2.50    6.64 |


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0022)|   Area    (ha)= 123.05
|ID= 1 DT=10.0 min |   Total Imp(%)=  61.00   Dir. Conn.(%)=  49.00
--------------------

                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       75.06         47.99
     Dep. Storage     (mm)=        2.00          5.00
     Average Slope     (%)=        1.00          2.00
     Length            (m)=      905.72         40.00
     Mannings n             =     0.013         0.250

     Max.Eff.Inten.(mm/hr)=      192.16         95.80
               over (min)        10.00         20.00
     Storage Coeff.  (min)=       7.38 (ii)    14.56 (ii)
     Unit Hyd. Tpeak (min)=      10.00         20.00
     Unit Hyd. peak  (cms)=       0.13          0.07
                                                      *TOTALS*
     PEAK FLOW       (cms)=      25.19          6.18      28.054 (iii)
     TIME TO PEAK    (hrs)=       1.00          1.17       1.00
     RUNOFF VOLUME    (mm)=      69.76         29.74      49.35
     TOTAL RAINFALL   (mm)=      71.76         71.76      71.76
     RUNOFF COEFFICIENT   =       0.97          0.41       0.69

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  69.0    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  (  0017)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0142):    59.20  17.251     1.00    54.26
     + ID2= 2 (  0022):   123.05  28.054     1.00    49.35
       ==========================================
       ID = 3 (  0017):   182.25  45.305     1.00    50.94
```



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

--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  1421):    15.00   2.752     1.00    40.61
     + ID2= 2 (  0151):    18.20   1.141     1.17    19.43
       ==========================================
       ID = 3 (  0003):    33.20   3.684     1.00    29.00

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

--------------------
| ADD HYD  (  0003)|
|   3 +  2 =  1    |        AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0003):    33.20   3.684     1.00    29.00
     + ID2= 2 (  0017):   182.25  45.305     1.00    50.94
       ==========================================
       ID = 1 (  0003):   215.45  48.988     1.00    47.56

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

--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):   215.45  48.988     1.00    47.56
     + ID2= 2 (  0002):   182.07   7.395     1.17    14.81
       ==========================================
       ID = 3 (  0003):   397.52  53.953     1.00    32.56

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

       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       V    V   I    SS     U   U   A A   L
        V  V    I      SS   U   U  AAAAA  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\581c2b
c8-2656-473b-8f53-f586a57cce01\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\581c2b
c8-2656-473b-8f53-f586a57cce01\sce

DATE: 11/28/2019                          TIME: 11:04:49

USER:
```

COMMENTS: _____

```
  **********************************************
  ** SIMULATION : New DesignStormChicago - 3hr  **
  **********************************************

-------------------
| CHICAGO STORM    |    IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm |                          B=   2.188
-------------------                          C=   0.778
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    7.21 |  1.00  214.13 |  1.83   12.13 |  2.67    6.92
                0.33    8.74 |  1.17   48.43 |  2.00   10.45 |  2.83    6.41
                0.50   11.28 |  1.33   26.15 |  2.17    9.22 |  3.00    5.98
                0.67   16.53 |  1.50   18.53 |  2.33    8.28 |
                0.83   37.27 |  1.67   14.57 |  2.50    7.53 |


-------------------
| CALIB            |
| NASHYD   (  0153)|   Area    (ha)=  91.47   Curve Number   (CN)= 69.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  22.82   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=  17.469

     PEAK FLOW       (cms)=   4.517 (i)
     TIME TO PEAK    (hrs)=   1.167
     RUNOFF VOLUME    (mm)=  17.674
     TOTAL RAINFALL   (mm)=  78.293
     RUNOFF COEFFICIENT   =   0.226

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

-------------------
| CHICAGO STORM    |    IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm |                          B=   2.188
-------------------                          C=   0.778
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    7.21 |  1.00  214.13 |  1.83   12.13 |  2.67    6.92
                0.33    8.74 |  1.17   48.43 |  2.00   10.45 |  2.83    6.41
                0.50   11.28 |  1.33   26.15 |  2.17    9.22 |  3.00    5.98
                0.67   16.53 |  1.50   18.53 |  2.33    8.28 |
                0.83   37.27 |  1.67   14.57 |  2.50    7.53 |


-------------------
| CALIB            |
| NASHYD   (  0152)|   Area    (ha)=  90.60   Curve Number   (CN)= 70.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  21.77   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20
```



```
     Unit Hyd Qpeak  (cms)=  17.302

     PEAK FLOW       (cms)=   4.872 (i)
     TIME TO PEAK    (hrs)=   1.167
     RUNOFF VOLUME    (mm)=  18.816
     TOTAL RAINFALL   (mm)=  78.293
     RUNOFF COEFFICIENT   =   0.240

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

-------------------
| ADD HYD  (  0002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0152):    90.60   4.872     1.17    18.82
     + ID2= 2 (  0153):    91.47   4.517     1.17    17.67
       ================================================
       ID = 3 (  0002):   182.07   9.388     1.17    18.24

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-------------------
| CHICAGO STORM    |    IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm |                          B=   2.188
-------------------                          C=   0.778
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    7.21 |  1.00  214.13 |  1.83   12.13 |  2.67    6.92
                0.33    8.74 |  1.17   48.43 |  2.00   10.45 |  2.83    6.41
                0.50   11.28 |  1.33   26.15 |  2.17    9.22 |  3.00    5.98
                0.67   16.53 |  1.50   18.53 |  2.33    8.28 |
                0.83   37.27 |  1.67   14.57 |  2.50    7.53 |


-------------------
| CALIB            |
| NASHYD   (  0151)|   Area    (ha)=  18.20   Curve Number   (CN)= 68.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  11.95   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=   3.476

     PEAK FLOW       (cms)=   1.364 (i)
     TIME TO PEAK    (hrs)=   1.167
     RUNOFF VOLUME    (mm)=  23.064
     TOTAL RAINFALL   (mm)=  78.293
     RUNOFF COEFFICIENT   =   0.295

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

-------------------
| CHICAGO STORM    |    IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm |                          B=   2.188
-------------------                          C=   0.778
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    7.21 |  1.00  214.13 |  1.83   12.13 |  2.67    6.92
                0.33    8.74 |  1.17   48.43 |  2.00   10.45 |  2.83    6.41
```



```
                0.50   11.28 |  1.33   26.15 |  2.17    9.22 |  3.00    5.98
                0.67   16.53 |  1.50   18.53 |  2.33    8.28 |
                0.83   37.27 |  1.67   14.57 |  2.50    7.53 |


-------------------
| CALIB            |
| STANDHYD (  1421)|   Area    (ha)=  15.00
|ID= 1 DT=10.0 min |   Total Imp(%)=  30.00   Dir. Conn.(%)=  29.00
-------------------

                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      4.50         10.50
     Dep. Storage     (mm)=      1.00          2.00
     Average Slope     (%)=      1.00          3.00
     Length            (m)=    250.20         40.00
     Mannings n            =     0.015         0.200

     Max.Eff.Inten.(mm/hr)=    214.13         83.66
               over (min)        10.00         10.00
     Storage Coeff.  (min)=      3.63 (ii)     9.50 (ii)
     Unit Hyd. Tpeak (min)=     10.00         10.00
     Unit Hyd. peak  (cms)=      0.16          0.11
                                                      *TOTALS*
     PEAK FLOW       (cms)=      2.45          1.63          4.079 (iii)
     TIME TO PEAK    (hrs)=      1.00          1.00           1.00
     RUNOFF VOLUME    (mm)=     77.29         32.61          45.57
     TOTAL RAINFALL   (mm)=     78.29         78.29          78.29
     RUNOFF COEFFICIENT   =      0.99          0.42           0.58

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

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN*  =  71.0    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.

-------------------
| CHICAGO STORM    |    IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm |                          B=   2.188
-------------------                          C=   0.778
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    7.21 |  1.00  214.13 |  1.83   12.13 |  2.67    6.92
                0.33    8.74 |  1.17   48.43 |  2.00   10.45 |  2.83    6.41
                0.50   11.28 |  1.33   26.15 |  2.17    9.22 |  3.00    5.98
                0.67   16.53 |  1.50   18.53 |  2.33    8.28 |
                0.83   37.27 |  1.67   14.57 |  2.50    7.53 |


-------------------
| CALIB            |
| STANDHYD (  0142)|   Area    (ha)=  59.20
|ID= 1 DT=10.0 min |   Total Imp(%)=  67.00   Dir. Conn.(%)=  64.00
-------------------

                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=     39.66         19.54
     Dep. Storage     (mm)=      1.00         16.04
     Average Slope     (%)=      1.00          3.00
     Length            (m)=    628.23         40.00
     Mannings n            =     0.015         0.250

     Max.Eff.Inten.(mm/hr)=    214.13         72.09
               over (min)        10.00         20.00
     Storage Coeff.  (min)=      6.18 (ii)    13.31 (ii)
```



```
     Unit Hyd. Tpeak (min)=     10.00         20.00
     Unit Hyd. peak  (cms)=      0.14          0.07
                                                      *TOTALS*
     PEAK FLOW       (cms)=     18.75          1.98          19.569 (iii)
     TIME TO PEAK    (hrs)=      1.00          1.17           1.00
     RUNOFF VOLUME    (mm)=     77.29         29.49          60.08
     TOTAL RAINFALL   (mm)=     78.29         78.29          78.29
     RUNOFF COEFFICIENT   =      0.99          0.38           0.77

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

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN*  =  76.0    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.

-------------------
| CHICAGO STORM    |    IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm |                          B=   2.188
-------------------                          C=   0.778
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    7.21 |  1.00  214.13 |  1.83   12.13 |  2.67    6.92
                0.33    8.74 |  1.17   48.43 |  2.00   10.45 |  2.83    6.41
                0.50   11.28 |  1.33   26.15 |  2.17    9.22 |  3.00    5.98
                0.67   16.53 |  1.50   18.53 |  2.33    8.28 |
                0.83   37.27 |  1.67   14.57 |  2.50    7.53 |


-------------------
| CALIB            |
| STANDHYD (  0022)|   Area    (ha)= 123.05
|ID= 1 DT=10.0 min |   Total Imp(%)=  61.00   Dir. Conn.(%)=  49.00
-------------------

                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=     75.06         47.99
     Dep. Storage     (mm)=      2.00          5.00
     Average Slope     (%)=      1.00          2.00
     Length            (m)=    905.72         40.00
     Mannings n            =     0.013         0.250

     Max.Eff.Inten.(mm/hr)=    214.13        114.18
               over (min)        10.00         20.00
     Storage Coeff.  (min)=      7.07 (ii)    13.76 (ii)
     Unit Hyd. Tpeak (min)=     10.00         20.00
     Unit Hyd. peak  (cms)=      0.13          0.07
                                                      *TOTALS*
     PEAK FLOW       (cms)=     28.45          7.46          31.955 (iii)
     TIME TO PEAK    (hrs)=      1.00          1.17           1.00
     RUNOFF VOLUME    (mm)=     76.29         34.29          54.87
     TOTAL RAINFALL   (mm)=     78.29         78.29          78.29
     RUNOFF COEFFICIENT   =      0.97          0.44           0.70

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

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN*  =  69.0    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  (  0017)|
```

```
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
-------------------        (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0142):    59.20  19.569     1.00    60.08
     + ID2= 2 (  0022):   123.05  31.955     1.00    54.87
       ==========================================================
       ID = 3 (  0017):   182.25  51.524     1.00    56.56

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

--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
-------------------        (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  1421):    15.00   4.079     1.00    45.57
     + ID2= 2 (  0151):    18.20   1.364     1.17    23.06
       ==========================================================
       ID = 3 (  0003):    33.20   5.252     1.00    33.23

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

--------------------
| ADD HYD  (  0003)|
|   3 +  2 =  1    |        AREA    QPEAK    TPEAK     R.V.
-------------------        (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0003):    33.20   5.252     1.00    33.23
     + ID2= 2 (  0017):   182.25  51.524     1.00    56.56
       ==========================================================
       ID = 1 (  0003):   215.45  56.776     1.00    52.97

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

--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
-------------------        (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):   215.45  56.776     1.00    52.97
     + ID2= 2 (  0002):   182.07   9.388     1.17    18.24
       ==========================================================
       ID = 3 (  0003):   397.52  63.719     1.00    37.06

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


       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       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 M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
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  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\bb9f66
a0-50db-421a-8092-91bd04dab910\sce
```



```
DATE: 11/28/2019                          TIME: 11:04:50

USER:


COMMENTS: _____

-------------------------------------------------------------------------------
--------------------
  ************************************************
  ** SIMULATION : New DesignStormChicago - 3hr  **
  ************************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1496.300
| Ptotal= 60.39 mm |                          B=   5.250
--------------------                          C=   0.825
                          used in:   INTENSITY =  A / (t + B)^C

                          Duration of storm  =  3.00 hrs
                          Storm time step    = 10.00 min
                          Time to peak ratio =  0.33

          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
          0.17    4.89 |  1.00  158.06 |'  1.83    8.94 |  2.67    4.66
          0.33    6.10 |  1.17   44.35 |'  2.00    7.51 |  2.83    4.27
          0.50    8.21 |  1.33   22.12 |'  2.17    6.49 |  3.00    3.95
          0.67   12.90 |  1.50   14.74 |'  2.33    5.73 |
          0.83   33.21 |  1.67   11.10 |'  2.50    5.14 |


-------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0153)|   Area    (ha)=  91.47   Curve Number   (CN)= 69.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  22.82   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=  17.469

     PEAK FLOW       (cms)=   2.068 (i)
     TIME TO PEAK    (hrs)=   1.167
     RUNOFF VOLUME    (mm)=   9.065
     TOTAL RAINFALL   (mm)=  60.393
     RUNOFF COEFFICIENT   =   0.150

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

-------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1496.300
| Ptotal= 60.39 mm |                          B=   5.250
--------------------                          C=   0.825
                          used in:   INTENSITY =  A / (t + B)^C

                          Duration of storm  =  3.00 hrs
                          Storm time step    = 10.00 min
                          Time to peak ratio =  0.33

          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
          0.17    4.89 |  1.00  158.06 |'  1.83    8.94 |  2.67    4.66
          0.33    6.10 |  1.17   44.35 |'  2.00    7.51 |  2.83    4.27
          0.50    8.21 |  1.33   22.12 |'  2.17    6.49 |  3.00    3.95
          0.67   12.90 |  1.50   14.74 |'  2.33    5.73 |
          0.83   33.21 |  1.67   11.10 |'  2.50    5.14 |


-------------------------------------------------------------------------------
```



```
--------------------
| CALIB            |
| NASHYD   (  0152)|   Area    (ha)=  90.60   Curve Number   (CN)= 70.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  21.77   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=  17.302

     PEAK FLOW       (cms)=   2.307 (i)
     TIME TO PEAK    (hrs)=   1.167
     RUNOFF VOLUME    (mm)=   9.852
     TOTAL RAINFALL   (mm)=  60.393
     RUNOFF COEFFICIENT   =   0.163

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

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

--------------------
| ADD HYD  (  0002)|
|   1 +  2 =  3    |        AREA    QPEAK    TPEAK     R.V.
-------------------        (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0152):    90.60   2.307     1.17     9.85
     + ID2= 2 (  0153):    91.47   2.068     1.17     9.07
       ==========================================================
       ID = 3 (  0002):   182.07   4.375     1.17     9.46

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1496.300
| Ptotal= 60.39 mm |                          B=   5.250
--------------------                          C=   0.825
                          used in:   INTENSITY =  A / (t + B)^C

                          Duration of storm  =  3.00 hrs
                          Storm time step    = 10.00 min
                          Time to peak ratio =  0.33

          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
          0.17    4.89 |  1.00  158.06 |'  1.83    8.94 |  2.67    4.66
          0.33    6.10 |  1.17   44.35 |'  2.00    7.51 |  2.83    4.27
          0.50    8.21 |  1.33   22.12 |'  2.17    6.49 |  3.00    3.95
          0.67   12.90 |  1.50   14.74 |'  2.33    5.73 |
          0.83   33.21 |  1.67   11.10 |'  2.50    5.14 |


-------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0151)|   Area    (ha)=  18.20   Curve Number   (CN)= 68.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  11.95   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=   3.476

     PEAK FLOW       (cms)=   0.787 (i)
     TIME TO PEAK    (hrs)=   1.167
     RUNOFF VOLUME    (mm)=  13.608
     TOTAL RAINFALL   (mm)=  60.393
     RUNOFF COEFFICIENT   =   0.225

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

-------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1496.300
| Ptotal= 60.39 mm |                          B=   5.250
--------------------                          C=   0.825
                          used in:   INTENSITY =  A / (t + B)^C

                          Duration of storm  =  3.00 hrs
                          Storm time step    = 10.00 min
```



```
                          Time to peak ratio =  0.33

          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
          0.17    4.89 |  1.00  158.06 |'  1.83    8.94 |  2.67    4.66
          0.33    6.10 |  1.17   44.35 |'  2.00    7.51 |  2.83    4.27
          0.50    8.21 |  1.33   22.12 |'  2.17    6.49 |  3.00    3.95
          0.67   12.90 |  1.50   14.74 |'  2.33    5.73 |
          0.83   33.21 |  1.67   11.10 |'  2.50    5.14 |


-------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  1421)|   Area    (ha)=  15.00
|ID= 1 DT=10.0 min |   Total Imp(%)=  30.00   Dir. Conn.(%)=  29.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       4.50        10.50
     Dep. Storage     (mm)=       1.00         2.00
     Average Slope     (%)=       1.00         3.00
     Length            (m)=     250.20        40.00
     Mannings n           =      0.015        0.200

     Max.Eff.Inten.(mm/hr)=     158.06        50.65
               over (min)       10.00        20.00
     Storage Coeff. (min)=       4.10 (ii)   11.27 (ii)
     Unit Hyd. Tpeak (min)=     10.00        20.00
     Unit Hyd. peak  (cms)=      0.16         0.08
                                                        *TOTALS*
     PEAK FLOW       (cms)=      1.78         0.83       2.165 (iii)
     TIME TO PEAK    (hrs)=      1.00         1.17        1.00
     RUNOFF VOLUME    (mm)=     59.39        21.24       32.30
     TOTAL RAINFALL   (mm)=     60.39        60.39       60.39
     RUNOFF COEFFICIENT   =      0.98         0.35        0.53

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  71.0    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.

-------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1496.300
| Ptotal= 60.39 mm |                          B=   5.250
--------------------                          C=   0.825
                          used in:   INTENSITY =  A / (t + B)^C

                          Duration of storm  =  3.00 hrs
                          Storm time step    = 10.00 min
                          Time to peak ratio =  0.33

          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
          0.17    4.89 |  1.00  158.06 |'  1.83    8.94 |  2.67    4.66
          0.33    6.10 |  1.17   44.35 |'  2.00    7.51 |  2.83    4.27
          0.50    8.21 |  1.33   22.12 |'  2.17    6.49 |  3.00    3.95
          0.67   12.90 |  1.50   14.74 |'  2.33    5.73 |
          0.83   33.21 |  1.67   11.10 |'  2.50    5.14 |


-------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0142)|   Area    (ha)=  59.20
|ID= 1 DT=10.0 min |   Total Imp(%)=  67.00   Dir. Conn.(%)=  64.00
--------------------

                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      39.66        19.54
     Dep. Storage     (mm)=       1.00        16.04
     Average Slope     (%)=       1.00         3.00
```

```
Length             (m)=     628.23        40.00
Mannings n            =      0.015        0.250

Max.Eff.Inten.(mm/hr)=     158.06        34.58
          over (min)        10.00        20.00
Storage Coeff.  (min)=       6.98 (ii)   16.54 (ii)
Unit Hyd. Tpeak (min)=      10.00        20.00
Unit Hyd. peak  (cms)=       0.13         0.06
                                          *TOTALS*
PEAK FLOW       (cms)=      13.37         0.95        13.715 (iii)
TIME TO PEAK    (hrs)=       1.00         1.33         1.00
RUNOFF VOLUME    (mm)=      59.39        17.51        44.32
TOTAL RAINFALL   (mm)=      60.39        60.39        60.39
RUNOFF COEFFICIENT   =       0.98         0.29         0.73

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

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN*  =  76.0    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.

--------------------------------------------------------------------------------
-------------------
| CHICAGO STORM    |    IDF curve parameters: A=1496.300
| Ptotal= 60.39 mm |                          B=   5.250
-------------------                          C=   0.825
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    4.89 |  1.00  158.06 |'  1.83    8.94 |  2.67    4.66
                0.33    6.10 |  1.17   44.35 |'  2.00    7.51 |  2.83    4.27
                0.50    8.21 |  1.33   22.12 |'  2.17    6.49 |  3.00    3.95
                0.67   12.90 |  1.50   14.74 |'  2.33    5.73 |
                0.83   33.21 |  1.67   11.10 |'  2.50    5.14 |


--------------------------------------------------------------------------------
-------------------
| CALIB            |
| STANDHYD (  0022)|    Area    (ha)= 123.05
|ID= 1 DT=10.0 min |    Total Imp(%)=  61.00   Dir. Conn.(%)=  49.00
-------------------
                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=     75.06        47.99
     Dep. Storage     (mm)=      2.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length             (m)=    905.72        40.00
     Mannings n            =      0.013        0.250

     Max.Eff.Inten.(mm/hr)=     158.06        68.41
               over (min)        10.00        20.00
     Storage Coeff.  (min)=       7.98 (ii)   16.20 (ii)
     Unit Hyd. Tpeak (min)=      10.00        20.00
     Unit Hyd. peak  (cms)=       0.12         0.06
                                               *TOTALS*
     PEAK FLOW       (cms)=      20.19         4.26        22.103 (iii)
     TIME TO PEAK    (hrs)=       1.00         1.17         1.00
     RUNOFF VOLUME    (mm)=      58.39        22.25        39.96
     TOTAL RAINFALL   (mm)=      60.39        60.39        60.39
     RUNOFF COEFFICIENT   =       0.97         0.37         0.66

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

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN*  =  69.0    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  (  0017)|
|  1 +  2 =  3     |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0142):    59.20  13.715     1.00    44.32
     + ID2= 2 (  0022):   123.05  22.103     1.00    39.96
       ================================================
       ID = 3 (  0017):   182.25  35.817     1.00    41.37

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
-------------------
| ADD HYD  (  0003)|
|  1 +  2 =  3     |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  1421):    15.00   2.165     1.00    32.30
     + ID2= 2 (  0151):    18.20   0.787     1.17    13.61
       ================================================
       ID = 3 (  0003):    33.20   2.750     1.00    22.05

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
-------------------
| ADD HYD  (  0003)|
|  3 +  2 =  1     |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0003):    33.20   2.750     1.00    22.05
     + ID2= 2 (  0017):   182.25  35.817     1.00    41.37
       ================================================
       ID = 1 (  0003):   215.45  38.567     1.00    38.40

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
-------------------
| ADD HYD  (  0003)|
|  1 +  2 =  3     |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):   215.45  38.567     1.00    38.40
     + ID2= 2 (  0002):   182.07   4.375     1.17     9.46
       ================================================
       ID = 3 (  0003):   397.52  40.913     1.00    25.14

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

       V    V   I    SSSSS  U   U    A     L                (v 5.2.2003)
       V    V   I    SS     U   U   A A    L
        V  V    I      SS   U   U  AAAAA  L
        V  V    I       SS  U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat
```



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  Output  filename:
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a7-c0b3-4f36-8e8c-4fe363c672b1\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\ba6448
a7-c0b3-4f36-8e8c-4fe363c672b1\sce

DATE: 11/28/2019                          TIME: 11:04:50

USER:


COMMENTS: _____

--------------------------------------------------------------------------------
-------------------
  ************************************************
  ** SIMULATION : New DesignStormChicago - 3hr   **
  ************************************************

-------------------
| CHICAGO STORM    |    IDF curve parameters: A= 724.700
| Ptotal= 33.36 mm |                          B=   5.000
-------------------                          C=   0.800
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    2.99 |  1.00   83.04 |'  1.83    5.29 |  2.67    2.86
                0.33    3.69 |  1.17   24.13 |'  2.00    4.49 |  2.83    2.63
                0.50    4.88 |  1.33   12.47 |'  2.17    3.91 |  3.00    2.44
                0.67    7.49 |  1.50    8.49 |'  2.33    3.47 |
                0.83   18.29 |  1.67    6.50 |'  2.50    3.13 |


--------------------------------------------------------------------------------
-------------------
| CALIB            |
| NASHYD   (  0153)|    Area    (ha)=  91.47   Curve Number   (CN)= 69.0
|ID= 1 DT=10.0 min |    Ia      (mm)=  22.82   # of Linear Res.(N)= 3.00
-------------------    U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=  17.469

     PEAK FLOW       (cms)=   0.134 (i)
     TIME TO PEAK    (hrs)=   1.833
     RUNOFF VOLUME    (mm)=   0.869
     TOTAL RAINFALL   (mm)=  33.364
     RUNOFF COEFFICIENT   =   0.026

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

--------------------------------------------------------------------------------
-------------------
| CHICAGO STORM    |    IDF curve parameters: A= 724.700
| Ptotal= 33.36 mm |                          B=   5.000
-------------------                          C=   0.800
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    2.99 |  1.00   83.04 |'  1.83    5.29 |  2.67    2.86
                0.33    3.69 |  1.17   24.13 |'  2.00    4.49 |  2.83    2.63
```



```
                0.50    4.88 |  1.33   12.47 |'  2.17    3.91 |  3.00    2.44
                0.67    7.49 |  1.50    8.49 |'  2.33    3.47 |
                0.83   18.29 |  1.67    6.50 |'  2.50    3.13 |


--------------------------------------------------------------------------------
-------------------
| CALIB            |
| NASHYD   (  0152)|    Area    (ha)=  90.60   Curve Number   (CN)= 70.0
|ID= 1 DT=10.0 min |    Ia      (mm)=  21.77   # of Linear Res.(N)= 3.00
-------------------    U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=  17.302

     PEAK FLOW       (cms)=   0.168 (i)
     TIME TO PEAK    (hrs)=   1.667
     RUNOFF VOLUME    (mm)=   1.087
     TOTAL RAINFALL   (mm)=  33.364
     RUNOFF COEFFICIENT   =   0.033

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

--------------------------------------------------------------------------------
-------------------
| ADD HYD  (  0002)|
|  1 +  2 =  3     |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0152):    90.60   0.168     1.67     1.09
     + ID2= 2 (  0153):    91.47   0.134     1.83     0.87
       ================================================
       ID = 3 (  0002):   182.07   0.299     1.83     0.98

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
-------------------
| CHICAGO STORM    |    IDF curve parameters: A= 724.700
| Ptotal= 33.36 mm |                          B=   5.000
-------------------                          C=   0.800
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    2.99 |  1.00   83.04 |'  1.83    5.29 |  2.67    2.86
                0.33    3.69 |  1.17   24.13 |'  2.00    4.49 |  2.83    2.63
                0.50    4.88 |  1.33   12.47 |'  2.17    3.91 |  3.00    2.44
                0.67    7.49 |  1.50    8.49 |'  2.33    3.47 |
                0.83   18.29 |  1.67    6.50 |'  2.50    3.13 |


--------------------------------------------------------------------------------
-------------------
| CALIB            |
| NASHYD   (  0151)|    Area    (ha)=  18.20   Curve Number   (CN)= 68.0
|ID= 1 DT=10.0 min |    Ia      (mm)=  11.95   # of Linear Res.(N)= 3.00
-------------------    U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=   3.476

     PEAK FLOW       (cms)=   0.134 (i)
     TIME TO PEAK    (hrs)=   1.333
     RUNOFF VOLUME    (mm)=   3.169
     TOTAL RAINFALL   (mm)=  33.364
     RUNOFF COEFFICIENT   =   0.095

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

--------------------------------------------------------------------------------
-------------------
| CHICAGO STORM    |    IDF curve parameters: A= 724.700
```

Ptotal= 33.36 mm

B= 5.000
C= 0.800

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

CALIB
STANDHYD (1421)
ID= 1 DT=10.0 min

Area (ha)= 15.00
Total Imp(%)= 30.00 Dir. Conn.(%)= 29.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.50	10.50
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	3.00
Length	(m)=	258.20	40.00
Mannings n	=	0.015	0.200
Max.Eff.Inten.(mm/hr)=		83.04	11.44
over (min)		10.00	20.00
Storage Coeff. (min)=		5.30 (ii)	18.31 (ii)
Unit Hyd. Tpeak (min)=		10.00	20.00
Unit Hyd. peak (cms)=		0.14	0.06
			TOTALS
PEAK FLOW	(cms)=	0.88	0.20 0.971 (iii)
TIME TO PEAK	(hrs)=	1.00	1.17 1.00
RUNOFF VOLUME	(mm)=	32.36	7.37 14.62
TOTAL RAINFALL	(mm)=	33.36	33.36 33.36
RUNOFF COEFFICIENT	=	0.97	0.22 0.44

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

CHICAGO STORM
Ptotal= 33.36 mm

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

CALIB
STANDHYD (0142)

Area (ha)= 59.20

ID= 1 DT=10.0 min	Total Imp(%)= 67.00 Dir. Conn.(%)= 64.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	39.66	19.54
Dep. Storage	(mm)=	1.00	16.04
Average Slope	(%)=	1.00	3.00
Length	(m)=	628.23	40.00
Mannings n	=	0.015	0.250
Max.Eff.Inten.(mm/hr)=		83.04	3.39
over (min)		10.00	40.00
Storage Coeff. (min)=		9.03 (ii)	33.23 (ii)
Unit Hyd. Tpeak (min)=		10.00	40.00
Unit Hyd. peak (cms)=		0.11	0.03
			TOTALS
PEAK FLOW	(cms)=	6.35	0.11 6.354 (iii)
TIME TO PEAK	(hrs)=	1.00	1.83 1.00
RUNOFF VOLUME	(mm)=	32.36	3.78 22.07
TOTAL RAINFALL	(mm)=	33.36	33.36 33.36
RUNOFF COEFFICIENT	=	0.97	0.11 0.66

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 76.0 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.

CHICAGO STORM
Ptotal= 33.36 mm

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

CALIB
STANDHYD (0022)
ID= 1 DT=10.0 min

Area (ha)= 123.05
Total Imp(%)= 61.00 Dir. Conn.(%)= 49.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	75.06	47.99
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	905.72	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		83.04	14.73
over (min)		10.00	30.00
Storage Coeff. (min)=		10.32 (ii)	25.51 (ii)
Unit Hyd. Tpeak (min)=		10.00	30.00
Unit Hyd. peak (cms)=		0.11	0.04
			TOTALS
PEAK FLOW	(cms)=	9.46	0.93 9.679 (iii)
TIME TO PEAK	(hrs)=	1.00	1.50 1.00
RUNOFF VOLUME	(mm)=	31.36	7.47 19.18
TOTAL RAINFALL	(mm)=	33.36	33.36 33.36
RUNOFF COEFFICIENT	=	0.94	0.22 0.57

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 69.0 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 (0017)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0142):	59.20	6.354	1.00	22.07
+ ID2= 2 (0022):	123.05	9.679	1.00	19.18
ID = 3 (0017):	182.25	16.032	1.00	20.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (1421):	15.00	0.971	1.00	14.62
+ ID2= 2 (0151):	18.20	0.134	1.33	3.17
ID = 3 (0003):	33.20	1.039	1.00	8.34

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0003):	33.20	1.039	1.00	8.34
+ ID2= 2 (0017):	182.25	16.032	1.00	20.12
ID = 1 (0003):	215.45	17.071	1.00	18.30

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0003):	215.45	17.071	1.00	18.30
+ ID2= 2 (0002):	182.07	0.299	1.83	0.98
ID = 3 (0003):	397.52	17.071	1.00	10.37

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

V V I SSSSS U U A L (v 5.2.2003)
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

OOO TTTTT TTTTT H H Y Y M M OOO TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
OOO T T H H Y M M OOO

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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

Output filename:
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Summary filename:
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DATE: 11/28/2019 TIME: 11:04:49

USER:

COMMENTS: _____

** SIMULATION : New DesignStormChicago - 3hr **

CHICAGO STORM
Ptotal= 45.35 mm

IDF curve parameters: A=1330.300
B= 7.938
C= 0.855

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB
NASHYD (0153)
ID= 1 DT=10.0 min

Area (ha)= 91.47 Curve Number (CN)= 69.0
Ia (mm)= 22.82 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

Unit Hyd Qpeak (cms)= 17.469

PEAK FLOW (cms)= 0.768 (i)
TIME TO PEAK (hrs)= 1.333
RUNOFF VOLUME (mm)= 3.617
TOTAL RAINFALL (mm)= 45.346
RUNOFF COEFFICIENT = 0.080

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

CHICAGO STORM
Ptotal= 45.35 mm

IDF curve parameters: A=1330.300
B= 7.938
C= 0.855

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB	
NASHYD (0152)	Area (ha)= 90.60 Curve Number (CN)= 70.0
ID= 1 DT=10.0 min	Ia (mm)= 21.77 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20

Unit Hyd Qpeak (cms)= 17.302

PEAK FLOW (cms)= 0.887 (i)
TIME TO PEAK (hrs)= 1.333
RUNOFF VOLUME (mm)= 4.088
TOTAL RAINFALL (mm)= 45.346
RUNOFF COEFFICIENT = 0.090

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

ADD HYD (0002)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0152):	90.60	0.887	1.33	4.09
	+ ID2= 2 (0153):	91.47	0.768	1.33	3.62
	ID = 3 (0002):	182.07	1.656	1.33	3.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CHICAGO STORM	IDF curve parameters: A=1330.300
Ptotal= 45.35 mm	B= 7.938
	C= 0.855

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB	
NASHYD (0151)	Area (ha)= 18.20 Curve Number (CN)= 68.0
ID= 1 DT=10.0 min	Ia (mm)= 11.95 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20

Unit Hyd Qpeak (cms)= 3.476

PEAK FLOW (cms)= 0.377 (i)
TIME TO PEAK (hrs)= 1.167
RUNOFF VOLUME (mm)= 7.103
TOTAL RAINFALL (mm)= 45.346
RUNOFF COEFFICIENT = 0.157

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

CHICAGO STORM	IDF curve parameters: A=1330.300
Ptotal= 45.35 mm	B= 7.938
	C= 0.855

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB	
STANDHYD (1421)	Area (ha)= 15.00
ID= 1 DT=10.0 min	Total Imp(%)= 30.00 Dir. Conn.(%)= 29.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.50	10.50
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	3.00
Length	(m)=	258.20	40.00
Mannings n	=	0.015	0.200
Max.Eff.Inten.(mm/hr)=		112.71	28.23
over (min)		10.00	20.00
Storage Coeff. (min)=		4.69 (ii)	13.75 (ii)
Unit Hyd. Tpeak (min)=		10.00	20.00
Unit Hyd. peak (cms)=		0.15	0.07

		TOTALS
PEAK FLOW	(cms)=	1.433 (iii)
TIME TO PEAK	(hrs)=	1.17
RUNOFF VOLUME	(mm)=	22.03
TOTAL RAINFALL	(mm)=	45.35
RUNOFF COEFFICIENT	=	0.49

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

CHICAGO STORM	IDF curve parameters: A=1330.300
Ptotal= 45.35 mm	B= 7.938
	C= 0.855

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB	
STANDHYD (0142)	Area (ha)= 59.20
ID= 1 DT=10.0 min	Total Imp(%)= 67.00 Dir. Conn.(%)= 64.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	39.66	19.54
Dep. Storage	(mm)=	1.00	16.04
Average Slope	(%)=	1.00	3.00
Length	(m)=	628.23	40.00
Mannings n	=	0.015	0.250
Max.Eff.Inten.(mm/hr)=		112.71	12.43
over (min)		10.00	30.00
Storage Coeff. (min)=		7.99 (ii)	22.38 (ii)
Unit Hyd. Tpeak (min)=		10.00	30.00
Unit Hyd. peak (cms)=		0.12	0.05

		TOTALS
PEAK FLOW	(cms)=	9.185 (iii)
TIME TO PEAK	(hrs)=	1.00
RUNOFF VOLUME	(mm)=	31.63
TOTAL RAINFALL	(mm)=	45.35
RUNOFF COEFFICIENT	=	0.70

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 76.0 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.

CHICAGO STORM	IDF curve parameters: A=1330.300
Ptotal= 45.35 mm	B= 7.938
	C= 0.855

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB	
STANDHYD (0022)	Area (ha)= 123.05
ID= 1 DT=10.0 min	Total Imp(%)= 61.00 Dir. Conn.(%)= 49.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	75.06	47.99
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	905.72	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		112.71	28.46
over (min)		10.00	30.00
Storage Coeff. (min)=		9.14 (ii)	20.80 (ii)
Unit Hyd. Tpeak (min)=		10.00	30.00
Unit Hyd. peak (cms)=		0.11	0.05

		TOTALS
PEAK FLOW	(cms)=	14.213 (iii)

TIME TO PEAK	(hrs)=	1.00	1.33	1.00
RUNOFF VOLUME	(mm)=	43.35	13.39	28.07
TOTAL RAINFALL	(mm)=	45.35	45.35	45.35
RUNOFF COEFFICIENT	=	0.96	0.30	0.62

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 69.0 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 (0017)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0142):	59.20	9.185	1.00	31.63
	+ ID2= 2 (0022):	123.05	14.213	1.00	28.07
	ID = 3 (0017):	182.25	23.398	1.00	29.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (1421):	15.00	1.433	1.00	22.03
	+ ID2= 2 (0151):	18.20	0.377	1.17	7.10
	ID = 3 (0003):	33.20	1.665	1.00	13.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
	ID1= 3 (0003):	33.20	1.665	1.00	13.85
	+ ID2= 2 (0017):	182.25	23.398	1.00	29.22
	ID = 1 (0003):	215.45	25.064	1.00	26.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0003):	215.45	25.064	1.00	26.85
	+ ID2= 2 (0002):	182.07	1.656	1.33	3.85
	ID = 3 (0003):	397.52	25.355	1.00	16.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       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 M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

Output filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\7ee98b6e-84af-4924-99ef-6f5d3b07ef37\sce
Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\7ee98b6e-84af-4924-99ef-6f5d3b07ef37\sce

DATE: 11/28/2019 TIME: 10:09:37

USER:

COMMENTS: _____

****
** SIMULATION : 01 AES 2-Yr **
****

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ fb082f85-bf5b-44d7-8765-aa036ef20a94\376738e9
Ptotal= 34.03 mm	Comments: 2yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	61.25	0.75	32.67	1.08	4.08
0.17	4.08	0.50	114.34	0.83	20.42		
0.25	12.25	0.58	61.25	0.92	12.25		
0.33	32.67	0.67	49.00	1.00	4.08		

CALIB	
NASHYD (0153)	Area (ha)= 91.47 Curve Number (CN)= 69.0
ID= 1 DT=10.0 min	Ia (mm)= 22.82 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	61.25	0.75	32.67	1.08	4.08
0.17	4.08	0.50	114.34	0.83	20.42		
0.25	12.25	0.58	61.25	0.92	12.25		
0.33	32.67	0.67	49.00	1.00	4.08		

CALIB	
NASHYD (0151)	Area (ha)= 18.20 Curve Number (CN)= 68.0
ID= 1 DT=10.0 min	Ia (mm)= 11.95 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.04	0.500	87.80	0.833	26.54	1.17	2.04
0.333	22.46	0.667	55.13	1.000	8.17		

Unit Hyd Qpeak (cms)= 3.476

PEAK FLOW (cms)= 0.312 (i)
TIME TO PEAK (hrs)= 0.833
RUNOFF VOLUME (mm)= 3.353
TOTAL RAINFALL (mm)= 34.030
RUNOFF COEFFICIENT = 0.099

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

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ fb082f85-bf5b-44d7-8765-aa036ef20a94\376738e9
Ptotal= 34.03 mm	Comments: 2yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	61.25	0.75	32.67	1.08	4.08
0.17	4.08	0.50	114.34	0.83	20.42		
0.25	12.25	0.58	61.25	0.92	12.25		
0.33	32.67	0.67	49.00	1.00	4.08		

CALIB	
STANDHYD (1421)	Area (ha)= 15.00
ID= 1 DT=10.0 min	Total Imp(%)= 30.00 Dir. Conn.(%)= 29.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.50	10.50
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	3.00
Length (m)=	258.20	40.00
Mannings n =	0.015	0.200

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.04	0.500	87.80	0.833	26.54	1.17	2.04
0.333	22.46	0.667	55.13	1.000	8.17		

Max.Eff.Inten.(mm/hr)= 87.80 15.83

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.04	0.500	87.80	0.833	26.54	1.17	2.04
0.333	22.46	0.667	55.13	1.000	8.17		

Unit Hyd Qpeak (cms)= 17.469

PEAK FLOW (cms)= 0.452 (i)
TIME TO PEAK (hrs)= 0.833
RUNOFF VOLUME (mm)= 0.977
TOTAL RAINFALL (mm)= 34.030
RUNOFF COEFFICIENT = 0.029

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

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ fb082f85-bf5b-44d7-8765-aa036ef20a94\376738e9
Ptotal= 34.03 mm	Comments: 2yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	61.25	0.75	32.67	1.08	4.08
0.17	4.08	0.50	114.34	0.83	20.42		
0.25	12.25	0.58	61.25	0.92	12.25		
0.33	32.67	0.67	49.00	1.00	4.08		

CALIB	
NASHYD (0152)	Area (ha)= 90.60 Curve Number (CN)= 70.0
ID= 1 DT=10.0 min	Ia (mm)= 21.77 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.04	0.500	87.80	0.833	26.54	1.17	2.04
0.333	22.46	0.667	55.13	1.000	8.17		

Unit Hyd Qpeak (cms)= 17.302

PEAK FLOW (cms)= 0.564 (i)
TIME TO PEAK (hrs)= 0.833
RUNOFF VOLUME (mm)= 1.209
TOTAL RAINFALL (mm)= 34.030
RUNOFF COEFFICIENT = 0.036

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

ADD HYD (0002)				
1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 1 (0152):	90.60	0.564	0.83	1.21
	+ ID2= 2 (0153):	91.47	0.452	0.83	0.98
	ID = 3 (0002):	182.07	1.016	0.83	1.09

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ fb082f85-bf5b-44d7-8765-aa036ef20a94\376738e9
Ptotal= 34.03 mm	Comments: 2yr 1hr AES

	over (min)	10.00	20.00
Storage Coeff.	(min)=	5.18 (ii)	16.61 (ii)
Unit Hyd. Tpeak	(min)=	10.00	20.00
Unit Hyd. peak	(cms)=	0.15	0.06

		TOTALS
PEAK FLOW	(cms)=	1.013 (iii)
TIME TO PEAK	(hrs)=	0.50
RUNOFF VOLUME	(mm)=	15.01
TOTAL RAINFALL	(mm)=	34.03
RUNOFF COEFFICIENT	=	0.44

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ fb082f85-bf5b-44d7-8765-aa036ef20a94\376738e9
Ptotal= 34.03 mm	Comments: 2yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	61.25	0.75	32.67	1.08	4.08
0.17	4.08	0.50	114.34	0.83	20.42		
0.25	12.25	0.58	61.25	0.92	12.25		
0.33	32.67	0.67	49.00	1.00	4.08		

CALIB	
STANDHYD (0142)	Area (ha)= 54.15
ID= 1 DT=10.0 min	Total Imp(%)= 67.00 Dir. Conn.(%)= 64.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	36.28	17.87
Dep. Storage (mm)=	1.00	16.04
Average Slope (%)=	1.00	3.00
Length (m)=	600.83	40.00
Mannings n =	0.015	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.04	0.500	87.80	0.833	26.54	1.17	2.04
0.333	22.46	0.667	55.13	1.000	8.17		

Max.Eff.Inten.(mm/hr)= 87.80 10.47
over (min) 10.00 30.00
Storage Coeff. (min)= 8.60 (ii) 24.01 (ii)
Unit Hyd. Tpeak (min)= 10.00 30.00
Unit Hyd. peak (cms)= 0.12 0.04

		TOTALS
PEAK FLOW	(cms)=	6.198 (iii)
TIME TO PEAK	(hrs)=	0.50
RUNOFF VOLUME	(mm)=	22.59
TOTAL RAINFALL	(mm)=	34.03
RUNOFF COEFFICIENT	=	0.66

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 76.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\376738e9
Ptotal= 34.03 mm	Comments: 2yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	61.25	0.75	32.67	1.08	4.08
0.17	4.08	0.50	114.34	0.83	20.42		
0.25	12.25	0.58	61.25	0.92	12.25		
0.33	32.67	0.67	49.00	1.00	4.08		

CALIB	
STANDHYD (0022)	Area (ha)= 127.59
ID= 1 DT=10.0 min	Total Imp(%)= 61.00 Dir. Conn.(%)= 49.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	77.83	49.76
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	922.28	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.04	0.500	87.80	0.833	26.54	1.17	2.04
0.333	22.46	0.667	55.13	1.000	8.17		

Max.Eff.Inten.(mm/hr)=		87.80	20.43	
over (min)		10.00	30.00	
Storage Coeff. (min)=		10.21 (ii)	23.53 (ii)	
Unit Hyd. Tpeak (min)=		10.00	30.00	
Unit Hyd. peak (cms)=		0.11	0.04	
				TOTALS
PEAK FLOW	(cms)=	10.03	1.64	10.432 (iii)
TIME TO PEAK	(hrs)=	0.50	1.00	0.67
RUNOFF VOLUME	(mm)=	32.03	7.77	19.66
TOTAL RAINFALL	(mm)=	34.03	34.03	34.03
RUNOFF COEFFICIENT	=	0.94	0.23	0.58

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 69.0 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(0019)	OVERFLOW IS OFF
IN= 2---> OUT= 1	
DT= 10.0 min	

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.3200	3.8870
0.1600	1.7840	0.3400	4.3720
0.2000	2.7010	0.3500	4.8700
0.2600	3.2740	0.3800	6.2160

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0022)	127.590	10.432	0.67	19.66

OUTFLOW: ID= 1 (0019)	127.590	0.187	2.00	19.63

PEAK FLOW REDUCTION [Qout/Qin](%)= 1.79
TIME SHIFT OF PEAK FLOW (min)= 80.00
MAXIMUM STORAGE USED (ha.m.)= 2.3929

ROUTE CHN(0026)	
IN= 2---> OUT= 1	Routing time step (min)= 10.00

<----- DATA FOR SECTION (1.1) ----->

Distance	Elevation	Manning	
0.00	274.12	0.0500	
5.20	273.17	0.0300	Main Channel
10.58	272.11	0.0300	Main Channel
11.50	272.00	0.0300	Main Channel
56.67	272.00	0.0300	Main Channel
64.61	272.44	0.0300	Main Channel
68.47	272.73	0.0300	Main Channel
73.75	273.06	0.0300 /0.0500	Main Channel
79.53	273.29	0.0500	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.07	272.07	.104E+04	0.9	0.29	19.48
0.13	272.13	.211E+04	2.8	0.46	12.41
0.20	272.20	.322E+04	5.6	0.59	9.56
0.26	272.26	.436E+04	9.1	0.71	7.96
0.33	272.33	.554E+04	13.3	0.82	6.93
0.40	272.40	.676E+04	18.2	0.91	6.19
0.46	272.46	.801E+04	23.7	1.01	5.62
0.53	272.53	.928E+04	30.0	1.09	5.16
0.60	272.60	.106E+05	36.8	1.18	4.80
0.66	272.66	.119E+05	44.2	1.26	4.49
0.73	272.73	.133E+05	52.2	1.33	4.24
0.79	272.79	.147E+05	60.7	1.40	4.03
0.86	272.86	.161E+05	69.7	1.47	3.84
0.93	272.93	.175E+05	79.3	1.54	3.68
0.99	272.99	.190E+05	89.5	1.60	3.54
1.06	273.06	.205E+05	100.3	1.66	3.41
1.14	273.14	.223E+05	114.9	1.74	3.24
1.22	273.22	.242E+05	130.7	1.83	3.09
1.29	273.29	.262E+05	147.5	1.91	2.96

<---- hydrograph ----> <-pipe / channel->

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (0019)	127.59	0.19	2.00	19.63	0.01	0.29
OUTFLOW: ID= 1 (0026)	127.59	0.19	2.67	19.63	0.01	0.29

ADD HYD (0017)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0142):	54.15	6.198	0.50	22.59
+ ID2= 2 (0026):	127.59	0.185	2.67	19.63
ID = 3 (0017):	181.74	6.207	0.50	20.51

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ROUTE CHN(0015)	
IN= 2---> OUT= 1	Routing time step (min)= 10.00

<----- DATA FOR SECTION (1.1) ----->

Distance	Elevation	Manning	
0.00	252.95	0.0500	
3.65	252.53	0.0500 /0.0300	Main Channel

12.66	251.31	0.0300	Main Channel	
14.58	251.05	0.0300	Main Channel	
76.79	251.08	0.0300	Main Channel	
87.59	252.17	0.0300	Main Channel	
90.94	252.44	0.0300 /0.0500	Main Channel	
98.65	253.00	0.0500		

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.16	251.15	.671E+04	4.4	0.82	25.64
0.20	251.25	.148E+05	15.9	1.36	15.43
0.30	251.35	.230E+05	32.9	1.80	11.67
0.40	251.45	.315E+05	54.5	2.18	9.63
0.49	251.55	.402E+05	80.5	2.53	8.32
0.59	251.64	.491E+05	110.6	2.84	7.40
0.69	251.74	.582E+05	144.6	3.13	6.71
0.79	251.84	.676E+05	182.5	3.41	6.17
0.89	251.94	.771E+05	224.1	3.67	5.74
0.99	252.04	.869E+05	269.3	3.91	5.38
1.09	252.14	.969E+05	318.2	4.15	5.07
1.19	252.24	.107E+06	370.2	4.36	4.82
1.29	252.34	.118E+06	425.6	4.57	4.60
1.39	252.44	.128E+06	484.6	4.77	4.41
1.49	252.54	.140E+06	554.9	5.02	4.19
1.59	252.64	.151E+06	632.3	5.28	3.99
1.69	252.75	.163E+06	714.0	5.52	3.81
1.80	252.85	.176E+06	799.8	5.75	3.66
1.90	252.95	.188E+06	889.9	5.97	3.52

<---- hydrograph ----> <-pipe / channel->

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (0017)	181.74	6.21	0.50	20.51	0.11	0.88
OUTFLOW: ID= 1 (0015)	181.74	3.46	0.83	20.51	0.08	0.82

RESERVOIR(0020)	OVERFLOW IS OFF
IN= 2---> OUT= 1	
DT= 10.0 min	

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	2.3900	1.8110
0.8500	1.4450	2.9700	1.8200
1.8300	1.7990	3.5000	1.8910
2.0100	1.8050	4.0000	1.9620
2.0200	1.8070	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0015)	181.740	3.458	0.83	20.51
OUTFLOW: ID= 1 (0020)	181.740	0.573	2.17	20.51

PEAK FLOW REDUCTION [Qout/Qin](%)= 16.57
TIME SHIFT OF PEAK FLOW (min)= 80.00
MAXIMUM STORAGE USED (ha.m.)= 0.9762

ADD HYD (0003)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (1421):	15.00	1.013	0.50	15.01
+ ID2= 2 (0151):	18.20	0.312	0.83	3.35
ID = 3 (0003):	33.20	1.190	0.67	8.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)

3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0003):	33.20	1.190	0.67	8.62
+ ID2= 2 (0002):	182.07	1.016	0.83	1.09
ID = 1 (0003):	215.27	2.033	0.83	2.25

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0003):	215.27	2.033	0.83	2.25
+ ID2= 2 (0020):	181.74	0.573	2.17	20.51
ID = 3 (0003):	397.01	2.243	0.83	10.61

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       V    V   I    SS     U   U   A A   L
        V  V    I      SS   U   U  AAAAA  L
        V  V    I       SS  U   U  A   A  L
         VV     I    SSSSS   UUUUU  A   A  LLLLL

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

Output filename:
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Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\bea4a6c9-9223-4519-9894-92c045a2e6c8\sce

DATE: 11/28/2019 TIME: 10:09:38

USER:

COMMENTS: _____

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  ************************************************
  ** SIMULATION : 02 AES 5-Yr                   **
  ************************************************
```

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\c44996e4
Ptotal= 34.64 mm	Comments: 5yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB	
NASHYD (0153)	Area (ha)= 91.47 Curve Number (CN)= 69.0
ID= 1 DT=10.0 min	Ia (mm)= 22.82 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.08	0.500	89.37	0.833	27.02	1.17	2.08
0.333	22.86	0.667	56.12	1.000	8.31		

Unit Hyd Qpeak (cms)= 17.469

PEAK FLOW (cms)= 0.504 (i)
TIME TO PEAK (hrs)= 0.833
RUNOFF VOLUME (mm)= 1.081
TOTAL RAINFALL (mm)= 34.640
RUNOFF COEFFICIENT = 0.031

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

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\c44996e4
Ptotal= 34.64 mm	Comments: 5yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB	
NASHYD (0152)	Area (ha)= 90.60 Curve Number (CN)= 70.0
ID= 1 DT=10.0 min	Ia (mm)= 21.77 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.08	0.500	89.37	0.833	27.02	1.17	2.08
0.333	22.86	0.667	56.12	1.000	8.31		

Unit Hyd Qpeak (cms)= 17.302

PEAK FLOW (cms)= 0.621 (i)
TIME TO PEAK (hrs)= 0.833
RUNOFF VOLUME (mm)= 1.325
TOTAL RAINFALL (mm)= 34.640
RUNOFF COEFFICIENT = 0.038

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

ADD HYD (0002)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0152):	90.60	0.621	0.83	1.33
	+ ID2= 2 (0153):	91.47	0.504	0.83	1.08
	ID = 3 (0002):	182.07	1.125	0.83	1.20

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\c44996e4
Ptotal= 34.64 mm	Comments: 5yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB	
NASHYD (0151)	Area (ha)= 18.20 Curve Number (CN)= 68.0
ID= 1 DT=10.0 min	Ia (mm)= 11.95 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.08	0.500	89.37	0.833	27.02	1.17	2.08
0.333	22.86	0.667	56.12	1.000	8.31		

Unit Hyd Qpeak (cms)= 3.476

PEAK FLOW (cms)= 0.327 (i)
TIME TO PEAK (hrs)= 0.833
RUNOFF VOLUME (mm)= 3.526
TOTAL RAINFALL (mm)= 34.640
RUNOFF COEFFICIENT = 0.102

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

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\c44996e4
Ptotal= 34.64 mm	Comments: 5yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB	
STANDHYD (1421)	Area (ha)= 15.00
ID= 1 DT=10.0 min	Total Imp(%)= 30.00 Dir. Conn.(%)= 29.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.50	10.50
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	3.00
Length	(m)=	258.20	40.00
Mannings n	=	0.015	0.200

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.08	0.500	89.37	0.833	27.02	1.17	2.08
0.333	22.86	0.667	56.12	1.000	8.31		

				TOTALS
Max.Eff.Inten.(mm/hr)=		89.37	16.38	
over (min)		10.00	20.00	
Storage Coeff. (min)=		5.14 (ii)	16.42 (ii)	
Unit Hyd. Tpeak (min)=		10.00	20.00	
Unit Hyd. peak (cms)=		0.15	0.06	
PEAK FLOW	(cms)=	0.95	0.34	1.035 (iii)
TIME TO PEAK	(hrs)=	0.50	0.83	0.50
RUNOFF VOLUME	(mm)=	33.64	7.91	15.37
TOTAL RAINFALL	(mm)=	34.64	34.64	34.64
RUNOFF COEFFICIENT	=	0.97	0.23	0.44

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\c44996e4
Ptotal= 34.64 mm	Comments: 5yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB	
STANDHYD (0142)	Area (ha)= 54.15
ID= 1 DT=10.0 min	Total Imp(%)= 67.00 Dir. Conn.(%)= 64.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	36.28	17.87
Dep. Storage	(mm)=	1.00	16.04
Average Slope	(%)=	1.00	3.00
Length	(m)=	600.83	40.00
Mannings n	=	0.015	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.08	0.500	89.37	0.833	27.02	1.17	2.08
0.333	22.86	0.667	56.12	1.000	8.31		

				TOTALS
Max.Eff.Inten.(mm/hr)=		89.37	11.03	
over (min)		10.00	30.00	
Storage Coeff. (min)=		8.54 (ii)	23.63 (ii)	
Unit Hyd. Tpeak (min)=		10.00	30.00	
Unit Hyd. peak (cms)=		0.12	0.04	
PEAK FLOW	(cms)=	0.27	0.27	6.333 (iii)
TIME TO PEAK	(hrs)=	0.50	1.00	0.50
RUNOFF VOLUME	(mm)=	33.64	4.25	23.06
TOTAL RAINFALL	(mm)=	34.64	34.64	34.64
RUNOFF COEFFICIENT	=	0.97	0.12	0.67

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 76.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\c44996e4
Ptotal= 34.64 mm	Comments: 5yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	62.35	0.75	33.25	1.08	4.16
0.17	4.16	0.50	116.39	0.83	20.78		
0.25	12.47	0.58	62.35	0.92	12.47		
0.33	33.25	0.67	49.88	1.00	4.16		

CALIB	
STANDHYD (0022)	Area (ha)= 127.59
ID= 1 DT=10.0 min	Total Imp(%)= 61.00 Dir. Conn.(%)= 49.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	77.83	49.76
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	922.28	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.08	0.500	89.37	0.833	27.02	1.17	2.08
0.333	22.86	0.667	56.12	1.000	8.31		

				TOTALS
Max.Eff.Inten.(mm/hr)=		89.37	21.19	
over (min)		10.00	30.00	
Storage Coeff. (min)=		10.13 (ii)	23.26 (ii)	
Unit Hyd. Tpeak (min)=		10.00	30.00	
Unit Hyd. peak (cms)=		0.11	0.04	
PEAK FLOW	(cms)=	10.26	1.70	10.655 (iii)
TIME TO PEAK	(hrs)=	0.50	1.00	0.67
RUNOFF VOLUME	(mm)=	32.64	8.04	20.10
TOTAL RAINFALL	(mm)=	34.64	34.64	34.64
RUNOFF COEFFICIENT	=	0.94	0.23	0.58

```
      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  69.0    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(  0019)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT= 10.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
-------------------     (cms)     (ha.m.)   |   (cms)     (ha.m.)
                        0.0000     0.0000   |   0.3200      3.8870
                        0.1600     1.7840   |   0.3400      4.3720
                        0.2000     2.7010   |   0.3500      4.8700
                        0.2600     3.2740   |   0.3800      6.2160

                              AREA     QPEAK     TPEAK      R.V.
                               (ha)     (cms)     (hrs)      (mm)
   INFLOW : ID= 2 (  0022)    127.590    10.655      0.67      20.10
   OUTFLOW: ID= 1 (  0019)    127.590     0.189      2.00      20.07

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  1.77
                  TIME SHIFT OF PEAK FLOW          (min)= 80.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  2.4477

--------------------------------------------------------------------------------
-------------------
| ROUTE CHN(  0026)|
| IN= 2---> OUT= 1 |     Routing time step (min)'= 10.00
-------------------
             <------ DATA FOR SECTION (   1.1) ------>
             Distance      Elevation       Manning
                 0.00         274.12        0.0500
                 5.20         273.17        0.0300      Main Channel
                10.58         272.11        0.0300      Main Channel
                11.50         272.00        0.0300      Main Channel
                56.67         272.00        0.0300      Main Channel
                64.61         272.44        0.0300      Main Channel
                68.47         272.73        0.0300      Main Channel
                73.75         273.06    0.0300 /0.0500  Main Channel
                79.53         273.29        0.0500

     <---------------------- TRAVEL TIME TABLE ----------------------->
      DEPTH     ELEV      VOLUME    FLOW RATE    VELOCITY   TRAV.TIME
       (m)       (m)     (cu.m.)      (cms)        (m/s)      (min)
      0.07   272.07    .104E+04        0.9         0.29       19.48
      0.13   272.13    .211E+04        2.8         0.46       12.41
      0.20   272.20    .322E+04        5.6         0.59        9.56
      0.26   272.26    .436E+04        9.1         0.71        7.96
      0.33   272.33    .554E+04       13.3         0.82        6.93
      0.40   272.40    .676E+04       18.2         0.91        6.19
      0.46   272.46    .801E+04       23.7         1.01        5.62
      0.53   272.53    .928E+04       30.0         1.09        5.16
      0.60   272.60    .106E+05       36.8         1.18        4.80
      0.66   272.66    .119E+05       44.2         1.26        4.49
      0.73   272.73    .133E+05       52.2         1.33        4.24
      0.79   272.79    .147E+05       60.7         1.40        4.03
      0.86   272.86    .161E+05       69.7         1.47        3.84
      0.93   272.93    .175E+05       79.3         1.54        3.68
      0.99   272.99    .190E+05       89.5         1.60        3.54
      1.06   273.06    .205E+05      100.3         1.66        3.41
      1.14   273.14    .223E+05      114.9         1.74        3.24
      1.22   273.22    .242E+05      130.7         1.83        3.09
      1.29   273.29    .262E+05      147.5         1.91        2.96

                                  <---- hydrograph ---->   <-pipe / channel->
                            AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                             (ha)    (cms)   (hrs)   (mm)      (m)      (m/s)
   INFLOW : ID= 2 (  0019)  127.59     0.19    2.00  20.07      0.01      0.29
   OUTFLOW: ID= 1 (  0026)  127.59     0.19    2.67  20.07      0.01      0.29
```



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--------------------------------------------------------------------------------
-------------------
| ADD HYD  (  0017)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0142):    54.15   6.333     0.50    23.06
     + ID2= 2 (  0026):   127.59   0.188     2.67    20.07
       ================================================
       ID = 3 (  0017):   181.74   6.342     0.50    20.96

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
-------------------
| ROUTE CHN(  0015)|
| IN= 2---> OUT= 1 |     Routing time step (min)'= 10.00
-------------------
             <------ DATA FOR SECTION (   1.1) ------>
             Distance      Elevation       Manning
                 0.00         252.95        0.0500
                 3.65         252.53    0.0500 /0.0300  Main Channel
                12.66         251.31        0.0300      Main Channel
                14.58         251.05        0.0300      Main Channel
                76.79         251.08        0.0300      Main Channel
                87.59         252.17        0.0300      Main Channel
                90.94         252.44    0.0300 /0.0500  Main Channel
                98.65         253.00        0.0500

     <---------------------- TRAVEL TIME TABLE ----------------------->
      DEPTH     ELEV      VOLUME    FLOW RATE    VELOCITY   TRAV.TIME
       (m)       (m)     (cu.m.)      (cms)        (m/s)      (min)
      0.10   251.15    .671E+04        4.4         0.82       25.64
      0.20   251.25    .148E+05       15.9         1.36       15.43
      0.30   251.35    .230E+05       32.9         1.80       11.67
      0.40   251.45    .315E+05       54.5         2.18        9.63
      0.49   251.55    .402E+05       80.5         2.53        8.32
      0.59   251.64    .491E+05      110.6         2.84        7.40
      0.69   251.74    .582E+05      144.6         3.13        6.71
      0.79   251.84    .676E+05      182.5         3.41        6.17
      0.89   251.94    .771E+05      224.1         3.67        5.74
      0.99   252.04    .869E+05      269.3         3.91        5.38
      1.09   252.14    .969E+05      318.2         4.15        5.07
      1.19   252.24    .107E+06      370.2         4.36        4.82
      1.29   252.34    .118E+06      425.6         4.57        4.60
      1.39   252.44    .128E+06      484.6         4.77        4.41
      1.49   252.54    .140E+06      554.9         5.02        4.19
      1.59   252.64    .151E+06      632.3         5.28        3.99
      1.69   252.75    .163E+06      714.0         5.52        3.81
      1.80   252.85    .176E+06      799.8         5.75        3.66
      1.90   252.95    .188E+06      889.9         5.97        3.52

                                  <---- hydrograph ---->   <-pipe / channel->
                            AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                             (ha)    (cms)   (hrs)   (mm)      (m)      (m/s)
   INFLOW : ID= 2 (  0017)  181.74     6.34    0.50  20.96      0.12      0.88
   OUTFLOW: ID= 1 (  0015)  181.74     3.53    0.83  20.96      0.08      0.82

--------------------------------------------------------------------------------
-------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT= 10.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
-------------------     (cms)     (ha.m.)   |   (cms)     (ha.m.)
                        0.0000     0.0000   |   2.3900      1.8110
                        0.8500     1.4450   |   2.9700      1.8200
                        1.8300     1.7990   |   3.5000      1.8910
                        2.0100     1.8050   |   4.0000      1.9620
                        2.0200     1.8070   |   0.0000      0.0000

                              AREA     QPEAK     TPEAK      R.V.
                               (ha)     (cms)     (hrs)      (mm)
   INFLOW : ID= 2 (  0015)    181.740     3.530      0.83      20.96
   OUTFLOW: ID= 1 (  0020)    181.740     0.585      2.17      20.96
```



```
                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 16.57
                  TIME SHIFT OF PEAK FLOW          (min)= 80.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.9964

--------------------------------------------------------------------------------
-------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  1421):    15.00   1.035     0.50    15.37
     + ID2= 2 (  0151):    18.20   0.327     0.83     3.53
       ================================================
       ID = 3 (  0003):    33.20   1.227     0.67     8.88

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
-------------------
| ADD HYD  (  0003)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0003):    33.20   1.227     0.67     8.88
     + ID2= 2 (  0002):   182.07   1.125     0.83     1.20
       ================================================
       ID = 1 (  0003):   215.27   2.176     0.83     2.39

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
-------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):   215.27   2.176     0.83     2.39
     + ID2= 2 (  0020):   181.74   0.585     2.17    20.96
       ================================================
       ID = 3 (  0003):   397.01   2.391     0.83    10.89

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

       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       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 M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                  *****  D E T A I L E D   O U T P U T *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\f34f00
c8-c6d7-4736-98ef-6a6ee46c06c3\sce
   Summary filename:
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c8-c6d7-4736-98ef-6a6ee46c06c3\sce

DATE: 11/28/2019                          TIME: 10:09:38
```



```
USER:


COMMENTS: _____

--------------------------------------------------------------------------------
-------------------
  ************************************************
  ** SIMULATION : 03 AES 10-Yr                  **
  ************************************************


-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              fb082f85-bf5b-44d7-8765-aa036ef20a94\c9d32900
| Ptotal= 41.26 mm |    Comments: 10yr 1hr AES
-------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.08    0.00 |  0.42   74.27 |  0.75   39.61 |  1.08    4.95
              0.17    4.95 |  0.50  138.63 |  0.83   24.76 |
              0.25   14.85 |  0.58   74.27 |  0.92   14.85 |
              0.33   39.61 |  0.67   59.41 |  1.00    4.95 |

--------------------------------------------------------------------------------
-------------------
| CALIB            |
| NASHYD   (  0153)|   Area    (ha)=  91.47   Curve Number   (CN)= 69.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  22.82   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
              0.167    2.48 | 0.500  106.45 | 0.833   32.18 |  1.17    2.48
              0.333   27.23 | 0.667   66.84 | 1.000    9.90 |

    Unit Hyd Qpeak  (cms)=  17.469

    PEAK FLOW      (cms)=   1.212 (i)
    TIME TO PEAK   (hrs)=   0.833
    RUNOFF VOLUME   (mm)=   2.499
    TOTAL RAINFALL  (mm)=  41.260
    RUNOFF COEFFICIENT  =   0.061

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

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-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              fb082f85-bf5b-44d7-8765-aa036ef20a94\c9d32900
| Ptotal= 41.26 mm |    Comments: 10yr 1hr AES
-------------------
               TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
               hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
              0.08    0.00 |  0.42   74.27 |  0.75   39.61 |  1.08    4.95
              0.17    4.95 |  0.50  138.63 |  0.83   24.76 |
              0.25   14.85 |  0.58   74.27 |  0.92   14.85 |
              0.33   39.61 |  0.67   59.41 |  1.00    4.95 |

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| CALIB            |
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```
| NASHYD   (  0152)|   Area     (ha)=  90.60   Curve Number   (CN)= 70.0
|ID= 1 DT=10.0 min |   Ia       (mm)=  21.77   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    2.48 | 0.500  106.45 | 0.833   32.18 |  1.17    2.48
               0.333   27.23 | 0.667   66.84 | 1.000    9.90 |

    Unit Hyd Qpeak  (cms)=  17.302

    PEAK FLOW      (cms)=   1.391 (i)
    TIME TO PEAK   (hrs)=   0.833
    RUNOFF VOLUME   (mm)=   2.883
    TOTAL RAINFALL  (mm)=  41.260
    RUNOFF COEFFICIENT   =   0.070

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

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-------------------
| ADD HYD  (  0002)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
     ID1= 1 (  0152):    90.60   1.391    0.83     2.88
   + ID2= 2 (  0153):    91.47   1.212    0.83     2.50
     ==============================================
     ID = 3 (  0002):   182.07   2.603    0.83     2.69

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              fb082f85-bf5b-44d7-8765-aa036ef20a94\c9d32900
| Ptotal= 41.26 mm |    Comments: 10yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42   74.27 |  0.75   39.61 |  1.08    4.95
               0.17    4.95 |  0.50  138.63 |  0.83   24.76 |
               0.25   14.85 |  0.58   74.27 |  0.92   14.85 |
               0.33   39.61 |  0.67   59.41 |  1.00    4.95 |

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-------------------
| CALIB            |
| NASHYD   (  0151)|   Area     (ha)=  18.20   Curve Number   (CN)= 68.0
|ID= 1 DT=10.0 min |   Ia       (mm)=  11.95   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    2.48 | 0.500  106.45 | 0.833   32.18 |  1.17    2.48
               0.333   27.23 | 0.667   66.84 | 1.000    9.90 |

    Unit Hyd Qpeak  (cms)=   3.476

    PEAK FLOW      (cms)=   0.510 (i)
    TIME TO PEAK   (hrs)=   0.833
    RUNOFF VOLUME   (mm)=   5.622
    TOTAL RAINFALL  (mm)=  41.260
    RUNOFF COEFFICIENT   =   0.136
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    (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              fb082f85-bf5b-44d7-8765-aa036ef20a94\c9d32900
| Ptotal= 41.26 mm |    Comments: 10yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42   74.27 |  0.75   39.61 |  1.08    4.95
               0.17    4.95 |  0.50  138.63 |  0.83   24.76 |
               0.25   14.85 |  0.58   74.27 |  0.92   14.85 |
               0.33   39.61 |  0.67   59.41 |  1.00    4.95 |

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-------------------
| CALIB            |
| STANDHYD (  1421)|   Area     (ha)=  15.00
|ID= 1 DT=10.0 min |   Total Imp(%)=  30.00   Dir. Conn.(%)=  29.00
-------------------

                        IMPERVIOUS    PERVIOUS (i)
    Surface Area     (ha)=       4.50        10.50
    Dep. Storage     (mm)=       1.00         2.00
    Average Slope     (%)=       1.00         3.00
    Length            (m)=     258.20        40.00
    Mannings n            =      0.015        0.200

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    2.48 | 0.500  106.45 | 0.833   32.18 |  1.17    2.48
               0.333   27.23 | 0.667   66.84 | 1.000    9.90 |

    Max.Eff.Inten.(mm/hr)=     106.45        24.81
              over (min)       10.00        20.00
    Storage Coeff.  (min)=      4.80 (ii)   14.34 (ii)
    Unit Hyd. Tpeak (min)=     10.00        20.00
    Unit Hyd. peak  (cms)=      0.15         0.07
                                                      *TOTALS*
    PEAK FLOW      (cms)=       1.16         0.50        1.285 (iii)
    TIME TO PEAK   (hrs)=       0.50         0.83         0.50
    RUNOFF VOLUME   (mm)=      40.26        10.90        19.42
    TOTAL RAINFALL  (mm)=      41.26        41.26        41.26
    RUNOFF COEFFICIENT   =      0.98         0.26         0.47

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  71.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              fb082f85-bf5b-44d7-8765-aa036ef20a94\c9d32900
| Ptotal= 41.26 mm |    Comments: 10yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42   74.27 |  0.75   39.61 |  1.08    4.95
               0.17    4.95 |  0.50  138.63 |  0.83   24.76 |
               0.25   14.85 |  0.58   74.27 |  0.92   14.85 |
```



```
               0.33   39.61 |  0.67   59.41 |  1.00    4.95 |

-------------------
| CALIB            |
| STANDHYD (  0142)|   Area     (ha)=  54.15
|ID= 1 DT=10.0 min |   Total Imp(%)=  67.00   Dir. Conn.(%)=  64.00
-------------------

                        IMPERVIOUS    PERVIOUS (i)
    Surface Area     (ha)=      36.28        17.87
    Dep. Storage     (mm)=       1.00        16.04
    Average Slope     (%)=       1.00         3.00
    Length            (m)=     600.83        40.00
    Mannings n            =      0.015        0.250

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    2.48 | 0.500  106.45 | 0.833   32.18 |  1.17    2.48
               0.333   27.23 | 0.667   66.84 | 1.000    9.90 |

    Max.Eff.Inten.(mm/hr)=     106.45        17.47
              over (min)       10.00        30.00
    Storage Coeff.  (min)=      7.96 (ii)   20.52 (ii)
    Unit Hyd. Tpeak (min)=     10.00        30.00
    Unit Hyd. peak  (cms)=      0.12         0.05
                                                      *TOTALS*
    PEAK FLOW      (cms)=       7.79         0.48        7.818 (iii)
    TIME TO PEAK   (hrs)=       0.50         1.00         0.50
    RUNOFF VOLUME   (mm)=      40.26        41.26        41.26
    TOTAL RAINFALL  (mm)=      41.26        41.26        41.26
    RUNOFF COEFFICIENT   =      0.98         0.17         0.69

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  76.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              fb082f85-bf5b-44d7-8765-aa036ef20a94\c9d32900
| Ptotal= 41.26 mm |    Comments: 10yr 1hr AES
-------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42   74.27 |  0.75   39.61 |  1.08    4.95
               0.17    4.95 |  0.50  138.63 |  0.83   24.76 |
               0.25   14.85 |  0.58   74.27 |  0.92   14.85 |
               0.33   39.61 |  0.67   59.41 |  1.00    4.95 |

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-------------------
| CALIB            |
| STANDHYD (  0022)|   Area     (ha)= 127.59
|ID= 1 DT=10.0 min |   Total Imp(%)=  61.00   Dir. Conn.(%)=  49.00
-------------------

                        IMPERVIOUS    PERVIOUS (i)
    Surface Area     (ha)=      77.83        49.76
    Dep. Storage     (mm)=       2.00         5.00
    Average Slope     (%)=       1.00         2.00
    Length            (m)=     922.28        40.00
    Mannings n            =      0.013        0.250
```



```
        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    2.48 | 0.500  106.45 | 0.833   32.18 |  1.17    2.48
               0.333   27.23 | 0.667   66.84 | 1.000    9.90 |

    Max.Eff.Inten.(mm/hr)=     106.45        30.07
              over (min)       10.00        30.00
    Storage Coeff.  (min)=      9.45 (ii)   20.86 (ii)
    Unit Hyd. Tpeak (min)=     10.00        30.00
    Unit Hyd. peak  (cms)=      0.11         0.05
                                                      *TOTALS*
    PEAK FLOW      (cms)=      12.77         2.50       13.112 (iii)
    TIME TO PEAK   (hrs)=       0.50         1.00         0.67
    RUNOFF VOLUME   (mm)=      39.26        11.24        24.97
    TOTAL RAINFALL  (mm)=      41.26        41.26        41.26
    RUNOFF COEFFICIENT   =      0.95         0.27         0.61

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  69.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-------------------
| RESERVOIR(  0019)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT= 10.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
-------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000   |  0.3200      3.8870
                         0.1600     1.7840   |  0.3400      4.3720
                         0.2000     2.7010   |  0.3500      4.8700
                         0.2600     3.2740   |  0.3800      6.2160

                              AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0022)    127.590     13.112      0.67      24.97
   OUTFLOW: ID= 1 (  0019)    127.590      0.237      2.00      24.95

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  1.80
                  TIME SHIFT OF PEAK FLOW          (min)= 80.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  3.0501

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-------------------
| ROUTE CHN(  0026)|
| IN= 2---> OUT= 1 |     Routing time step (min)'= 10.00
-------------------

              <------ DATA FOR SECTION (   1.1) ------>
              Distance      Elevation       Manning
                  0.00         274.12        0.0500
                  5.20         273.17        0.0300      Main Channel
                 10.58         272.11        0.0300      Main Channel
                 11.50         272.00        0.0300      Main Channel
                 56.67         272.00        0.0300      Main Channel
                 64.61         272.44        0.0300      Main Channel
                 68.47         272.73        0.0300      Main Channel
                 73.75         273.06    0.0300 /0.0500  Main Channel
                 79.53         273.29        0.0500

     <---------------------- TRAVEL TIME TABLE ---------------------->
      DEPTH     ELEV      VOLUME    FLOW RATE     VELOCITY   TRAV.TIME
       (m)       (m)     (cu.m.)       (cms)        (m/s)       (min)
      0.07   272.07    .104E+04         0.9         0.29       19.48
      0.13   272.13    .211E+04         2.8         0.46       12.41
      0.20   272.20    .322E+04         5.6         0.59        9.56
      0.26   272.26    .436E+04         9.1         0.71        7.96
      0.33   272.33    .554E+04        13.3         0.82        6.93
```

0.40	272.40	.676E+04	18.2	0.91	6.19
0.46	272.46	.801E+04	23.7	1.01	5.62
0.53	272.53	.928E+04	30.0	1.09	5.16
0.60	272.60	.106E+05	36.8	1.18	4.80
0.66	272.66	.119E+05	44.2	1.26	4.49
0.73	272.73	.133E+05	52.2	1.33	4.24
0.79	272.79	.147E+05	60.7	1.40	4.03
0.86	272.86	.161E+05	69.7	1.47	3.84
0.93	272.93	.175E+05	79.3	1.54	3.68
0.99	272.99	.190E+05	89.5	1.60	3.54
1.06	273.06	.205E+05	100.3	1.66	3.41
1.14	273.14	.223E+05	114.9	1.74	3.24
1.22	273.22	.242E+05	130.7	1.83	3.09
1.29	273.29	.262E+05	147.5	1.91	2.96

<---- hydrograph ----> <-pipe / channel->

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (	0019)	127.59	0.24	2.00	24.95	0.02	0.29
OUTFLOW: ID= 1 (	0026)	127.59	0.23	2.67	24.95	0.02	0.29

ADD HYD (0017)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (	0142):	54.15	7.818	0.50	28.30
+ ID2= 2 (	0026):	127.59	0.234	2.67	24.95
ID = 3 (	0017):	181.74	7.829	0.50	25.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ROUTE CHN (0015)	
IN= 2---> OUT= 1	Routing time step (min)'= 10.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	252.95	0.0500	
3.65	252.53	0.0500 /0.0300	Main Channel
12.66	251.31	0.0300	Main Channel
14.58	251.05	0.0300	Main Channel
76.79	251.08	0.0300	Main Channel
87.59	252.17	0.0300	Main Channel
90.94	252.44	0.0300 /0.0500	Main Channel
98.65	253.00	0.0500	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.10	251.15	.671E+04	4.4	0.82	25.64
0.20	251.25	.148E+05	15.9	1.36	15.43
0.30	251.35	.230E+05	32.9	1.80	11.67
0.40	251.45	.315E+05	54.5	2.18	9.63
0.49	251.55	.402E+05	80.5	2.53	8.32
0.59	251.64	.491E+05	110.6	2.84	7.40
0.69	251.74	.582E+05	144.6	3.13	6.71
0.79	251.84	.676E+05	182.5	3.41	6.17
0.89	251.94	.771E+05	224.1	3.67	5.74
0.99	252.04	.869E+05	269.3	3.91	5.38
1.09	252.14	.969E+05	318.2	4.15	5.07
1.19	252.24	.107E+06	370.2	4.36	4.82
1.29	252.34	.118E+06	425.6	4.57	4.60
1.39	252.44	.128E+06	484.6	4.77	4.41
1.49	252.54	.140E+06	554.9	5.02	4.19
1.59	252.64	.151E+06	632.3	5.28	3.99
1.69	252.75	.163E+06	714.0	5.52	3.81
1.80	252.85	.176E+06	799.8	5.75	3.66
1.90	252.95	.188E+06	889.9	5.97	3.52

<---- hydrograph ----> <-pipe / channel->

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (	0017)	181.74	7.83	0.50	25.95	0.13	0.93
OUTFLOW: ID= 1 (	0015)	181.74	4.33	0.83	25.95	0.10	0.82

RESERVOIR(0020)	OVERFLOW IS OFF
IN= 2---> OUT= 1	
DT= 10.0 min	

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	2.3900	1.8110
0.8500	1.4450	2.9700	1.8200
1.8300	1.7990	3.5000	1.8910
2.0100	1.8050	4.0000	1.9620
2.0200	1.8070	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (| 0015)	181.740	4.326	0.83	25.95
OUTFLOW: ID= 1 (| 0020)	181.740	0.717	2.17	25.94

PEAK FLOW REDUCTION [Qout/Qin](%)= 16.58
TIME SHIFT OF PEAK FLOW (min)= 80.00
MAXIMUM STORAGE USED (ha.m.)= 1.2215

ADD HYD (0003)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (	1421):	15.00	1.285	0.50	19.42
+ ID2= 2 (	0151):	18.20	0.510	0.83	5.62
ID = 3 (	0003):	33.20	1.662	0.67	11.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (	0003):	33.20	1.662	0.67	11.85
+ ID2= 2 (	0002):	182.07	2.603	0.83	2.69
ID = 1 (	0003):	215.27	4.056	0.83	4.10

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (	0003):	215.27	4.056	0.83	4.10
+ ID2= 2 (	0020):	181.74	0.717	2.17	25.94
ID = 3 (	0003):	397.01	4.325	0.83	14.10

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

FINISH

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V V I SSSSS U U A L (v 5.2.2003)
V V I SS U U A A L

V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

OOO TTTTT TTTTT H H Y Y M M OOO TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
OOO T T H H Y M M OOO

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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

Output filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\87b1f4ee-4f70-465e-9b07-9a1339cbf94d\sce
Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\87b1f4ee-4f70-465e-9b07-9a1339cbf94d\sce

DATE: 11/28/2019 TIME: 10:09:37

USER:

COMMENTS: _____

** SIMULATION : 04 AES 25-Yr **

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\54806dbf
Ptotal= 49.17 mm	Comments: 25yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	88.51	0.75	47.20	1.08	5.90
0.17	5.90	0.50	165.21	0.83	29.50		
0.25	17.70	0.58	88.51	0.92	17.70		
0.33	47.20	0.67	70.80	1.00	5.90		

CALIB			
NASHYD (0153)	Area	(ha)= 91.47	Curve Number (CN)= 69.0
ID= 1 DT=10.0 min	Ia	(mm)= 22.82	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20		

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.95	0.500	126.86	0.833	38.35	1.17	2.95
0.333	32.45	0.667	79.66	1.000	11.80		

Unit Hyd Qpeak (cms)= 17.469

PEAK FLOW (cms)= 2.334 (i)
TIME TO PEAK (hrs)= 0.833
RUNOFF VOLUME (mm)= 4.815
TOTAL RAINFALL (mm)= 49.170
RUNOFF COEFFICIENT = 0.098

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

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\54806dbf
Ptotal= 49.17 mm	Comments: 25yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	88.51	0.75	47.20	1.08	5.90
0.17	5.90	0.50	165.21	0.83	29.50		
0.25	17.70	0.58	88.51	0.92	17.70		
0.33	47.20	0.67	70.80	1.00	5.90		

CALIB			
NASHYD (0152)	Area	(ha)= 90.60	Curve Number (CN)= 70.0
ID= 1 DT=10.0 min	Ia	(mm)= 21.77	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20		

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.95	0.500	126.86	0.833	38.35	1.17	2.95
0.333	32.45	0.667	79.66	1.000	11.80		

Unit Hyd Qpeak (cms)= 17.302

PEAK FLOW (cms)= 2.564 (i)
TIME TO PEAK (hrs)= 0.833
RUNOFF VOLUME (mm)= 5.367
TOTAL RAINFALL (mm)= 49.170
RUNOFF COEFFICIENT = 0.109

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

ADD HYD (0002)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (	0152):	90.60	2.564	0.83	5.37
+ ID2= 2 (	0153):	91.47	2.334	0.83	4.81
ID = 3 (	0002):	182.07	4.898	0.83	5.09

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\54806dbf
Ptotal= 49.17 mm	Comments: 25yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	88.51	0.75	47.20	1.08	5.90
0.17	5.90	0.50	165.21	0.83	29.50		

0.25	17.70	0.58	88.51	0.92	17.70	
0.33	47.20	0.67	70.80	1.00	5.90	

CALIB						
NASHYD (0151)	Area (ha)= 18.20	Curve Number (CN)= 68.0				
ID= 1 DT=10.0 min	Ia (mm)= 11.95	# of Linear Res.(N)= 3.00				
	U.H. Tp(hrs)= 0.20					

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.95	0.500	126.86	0.833	38.35	1.17	2.95
0.333	32.45	0.667	79.66	1.000	11.80		

Unit Hyd Qpeak (cms)=	3.476	
PEAK FLOW	(cms)=	0.765 (i)
TIME TO PEAK	(hrs)=	0.833
RUNOFF VOLUME	(mm)=	8.608
TOTAL RAINFALL	(mm)=	49.170
RUNOFF COEFFICIENT	=	0.175

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

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ fb082f85-bf5b-44d7-8765-aa036ef20a94\54806dbf
Ptotal= 49.17 mm	Comments: 25yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	88.51	0.75	47.20	1.08	5.90
0.17	5.90	0.50	165.21	0.83	29.50		
0.25	17.70	0.58	88.51	0.92	17.70		
0.33	47.20	0.67	70.80	1.00	5.90		

CALIB						
STANDHYD (1421)	Area (ha)= 15.00					
ID= 1 DT=10.0 min	Total Imp(%)= 30.00	Dir. Conn.(%)= 29.00				

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.50	10.50
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	3.00
Length (m)=	258.20	40.00
Mannings n =	0.015	0.200

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.95	0.500	126.86	0.833	38.35	1.17	2.95
0.333	32.45	0.667	79.66	1.000	11.80		

			TOTALS
Max.Eff.Inten.(mm/hr)=	126.86	33.60	
over (min)	10.00	20.00	
Storage Coeff. (min)=	4.47 (ii)	12.93 (ii)	
Unit Hyd. Tpeak (min)=	10.00	20.00	
Unit Hyd. peak (cms)=	0.15	0.07	

			TOTALS
PEAK FLOW (cms)=	1.40	0.70	1.594 (iii)
TIME TO PEAK (hrs)=	0.50	0.83	0.50
RUNOFF VOLUME (mm)=	48.17	14.90	24.55
TOTAL RAINFALL (mm)=	49.17	49.17	49.17
RUNOFF COEFFICIENT =	0.98	0.30	0.50

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ fb082f85-bf5b-44d7-8765-aa036ef20a94\54806dbf
Ptotal= 49.17 mm	Comments: 25yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	88.51	0.75	47.20	1.08	5.90
0.17	5.90	0.50	165.21	0.83	29.50		
0.25	17.70	0.58	88.51	0.92	17.70		
0.33	47.20	0.67	70.80	1.00	5.90		

CALIB						
STANDHYD (0142)	Area (ha)= 54.15					
ID= 1 DT=10.0 min	Total Imp(%)= 67.00	Dir. Conn.(%)= 64.00				

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	36.28	17.87
Dep. Storage (mm)=	1.00	16.04
Average Slope (%)=	1.00	3.00
Length (m)=	600.83	40.00
Mannings n =	0.015	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.95	0.500	126.86	0.833	38.35	1.17	2.95
0.333	32.45	0.667	79.66	1.000	11.80		

			TOTALS
Max.Eff.Inten.(mm/hr)=	126.86	31.71	
over (min)	10.00	20.00	
Storage Coeff. (min)=	7.42 (ii)	17.32 (ii)	
Unit Hyd. Tpeak (min)=	10.00	20.00	
Unit Hyd. peak (cms)=	0.13	0.06	
PEAK FLOW	(cms)=	9.58	0.86	9.686 (iii)
TIME TO PEAK	(hrs)=	0.50	0.83	0.50
RUNOFF VOLUME	(mm)=	48.17	11.00	34.79
TOTAL RAINFALL	(mm)=	49.17	49.17	49.17
RUNOFF COEFFICIENT	=	0.98	0.22	0.71

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 76.0 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.

0.25	17.70	0.58	88.51	0.92	17.70	
0.33	47.20	0.67	70.80	1.00	5.90	

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ fb082f85-bf5b-44d7-8765-aa036ef20a94\54806dbf
Ptotal= 49.17 mm	Comments: 25yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	88.51	0.75	47.20	1.08	5.90
0.17	5.90	0.50	165.21	0.83	29.50		
0.25	17.70	0.58	88.51	0.92	17.70		
0.33	47.20	0.67	70.80	1.00	5.90		

CALIB						
STANDHYD (0022)	Area (ha)= 127.59					
ID= 1 DT=10.0 min	Total Imp(%)= 61.00	Dir. Conn.(%)= 49.00				

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	77.83	49.76
Dep. Storage (mm)=	2.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	922.28	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	2.95	0.500	126.86	0.833	38.35	1.17	2.95
0.333	32.45	0.667	79.66	1.000	11.80		

			TOTALS
Max.Eff.Inten.(mm/hr)=	126.86	46.15	
over (min)	10.00	20.00	
Storage Coeff. (min)=	8.81 (ii)	18.42 (ii)	
Unit Hyd. Tpeak (min)=	10.00	20.00	
Unit Hyd. peak (cms)=	0.12	0.06	
PEAK FLOW	(cms)=	15.84	3.90	17.407 (iii)
TIME TO PEAK	(hrs)=	0.50	0.83	0.67
RUNOFF VOLUME	(mm)=	47.17	15.51	31.02
TOTAL RAINFALL	(mm)=	49.17	49.17	49.17
RUNOFF COEFFICIENT	=	0.96	0.32	0.63

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 69.0 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(0019)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 10.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.3200	3.8870
	0.1600	1.7840	0.3400	4.3720
	0.2000	2.7010	0.3500	4.8700
	0.2600	3.2740	0.3800	6.2160

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0022)	127.590	17.407	0.67	31.02
OUTFLOW: ID= 1 (0019)	127.590	0.312	1.83	31.00

PEAK FLOW REDUCTION [Qout/Qin](%)= 1.79
TIME SHIFT OF PEAK FLOW (min)= 70.00

MAXIMUM STORAGE USED (ha.m.)= 3.8043

ROUTE CHN(0026)		
IN= 2---> OUT= 1	Routing time step (min)'= 10.00	

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	274.12	0.0500	
5.20	273.17	0.0300	Main Channel
10.58	272.11	0.0300	Main Channel
11.50	272.00	0.0300	Main Channel
56.67	272.00	0.0300	Main Channel
64.61	272.44	0.0300	Main Channel
68.47	272.73	0.0300	Main Channel
73.75	273.06	0.0300 /0.0500	Main Channel
79.53	273.29	0.0500	

<---------- TRAVEL TIME TABLE ---------->

DEPTH	ELEV	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.07	272.07	.104E+04	0.9	0.29	19.48
0.13	272.13	.211E+04	2.8	0.46	12.41
0.20	272.20	.322E+04	5.6	0.59	9.56
0.26	272.26	.436E+04	9.1	0.71	7.96
0.33	272.33	.554E+04	13.3	0.82	6.93
0.40	272.40	.676E+04	18.2	0.91	6.19
0.46	272.46	.801E+04	23.7	1.01	5.62
0.53	272.53	.928E+04	30.0	1.09	5.16
0.60	272.60	.106E+05	36.8	1.18	4.80
0.66	272.66	.119E+05	44.2	1.26	4.49
0.73	272.73	.133E+05	52.2	1.33	4.24
0.79	272.79	.147E+05	60.7	1.40	4.03
0.86	272.86	.161E+05	69.7	1.47	3.84
0.93	272.93	.175E+05	79.3	1.54	3.68
0.99	272.99	.190E+05	89.5	1.60	3.54
1.06	273.06	.205E+05	100.3	1.66	3.41
1.14	273.14	.223E+05	114.9	1.74	3.24
1.22	273.22	.242E+05	130.7	1.83	3.09
1.29	273.29	.262E+05	147.5	1.91	2.96

<---- hydrograph ----> <-pipe / channel->

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (0019)	127.59	0.31	1.83	31.00	0.02	0.29
OUTFLOW: ID= 1 (0026)	127.59	0.31	2.50	31.00	0.02	0.29

ADD HYD (0017)					
1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 1 (0142):	54.15	9.686	0.50	34.79
	+ ID2= 2 (0026):	127.59	0.308	2.50	31.00
	ID = 3 (0017):	181.74	9.701	0.50	32.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ROUTE CHN(0015)		
IN= 2---> OUT= 1	Routing time step (min)'= 10.00	

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	252.95	0.0500	
3.65	252.53	0.0500 /0.0300	Main Channel
12.66	251.31	0.0300	Main Channel
14.58	251.05	0.0300	Main Channel
76.79	251.08	0.0300	Main Channel
87.59	252.17	0.0300	Main Channel

```
      90.94        252.44    0.0300 /0.0500  Main Channel
      98.65        253.00       0.0500

     <--------------------- TRAVEL TIME TABLE ---------------------->
      DEPTH     ELEV      VOLUME    FLOW RATE    VELOCITY   TRAV.TIME
        (m)      (m)     (cu.m.)      (cms)        (m/s)      (min)
       0.10   251.15    .671E+04       4.4          0.82      25.64
       0.20   251.25    .148E+05      15.9          1.36      15.43
       0.30   251.35    .230E+05      32.9          1.80      11.67
       0.40   251.45    .315E+05      54.5          2.18       9.63
       0.49   251.55    .402E+05      80.5          2.53       8.32
       0.59   251.64    .491E+05     110.6          2.84       7.40
       0.69   251.74    .582E+05     144.6          3.13       6.71
       0.79   251.84    .676E+05     182.5          3.41       6.17
       0.89   251.94    .771E+05     224.1          3.67       5.74
       0.99   252.04    .869E+05     269.3          3.91       5.38
       1.09   252.14    .969E+05     318.2          4.15       5.07
       1.19   252.24    .107E+06     370.2          4.36       4.82
       1.29   252.34    .118E+06     425.6          4.57       4.60
       1.39   252.44    .128E+06     484.6          4.77       4.41
       1.49   252.54    .140E+06     554.9          5.02       4.19
       1.59   252.64    .151E+06     632.3          5.28       3.99
       1.69   252.75    .163E+06     714.0          5.52       3.81
       1.80   252.85    .176E+06     799.8          5.75       3.66
       1.90   252.95    .188E+06     889.9          5.97       3.52

                                 <---- hydrograph ---->   <-pipe / channel->
                          AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                          (ha)    (cms)   (hrs)   (mm)      (m)      (m/s)
 INFLOW : ID= 2 (  0017)  181.74    9.70    0.50  32.13      0.14      1.00
 OUTFLOW: ID= 1 (  0015)  181.74    5.53    0.83  32.13      0.11      0.85


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--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT= 10.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
-------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000   |   2.3900     1.8110
                         0.8500     1.4450   |   2.9700     1.8200
                         1.8300     1.7990   |   3.5000     1.8910
                         2.0100     1.8050   |   4.0000     1.9620
                         2.0200     1.8070   |   0.0000     0.0000

                            AREA     QPEAK     TPEAK       R.V.
                            (ha)     (cms)     (hrs)       (mm)
 INFLOW : ID= 2 (  0015)    181.740     5.532      0.83      32.13
 OUTFLOW: ID= 1 (  0020)    181.740     0.996      2.00      32.13

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 18.01
                  TIME SHIFT OF PEAK FLOW        (min)= 70.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  1.4990

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--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  1421):    15.00   1.594     0.50    24.55
     + ID2= 2 (  0151):    18.20   0.765     0.83     8.61
       ==============================================
       ID = 3 (  0003):    33.20   2.250     0.67    15.81

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

--------------------
| ADD HYD  (  0003)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0003):    33.20   2.250     0.67    15.81
     + ID2= 2 (  0002):   182.07   4.898     0.83     5.09
```



```
       ==============================================
       ID = 1 (  0003):   215.27   6.888     0.83     6.74

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):   215.27   6.888     0.83     6.74
     + ID2= 2 (  0020):   181.74   0.996     2.00    32.13
       ==============================================
       ID = 3 (  0003):   397.01   7.231     0.83    18.36

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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================================================================================
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       V    V   I    SSSSS  U   U    A     L                (v 5.2.2003)
       V    V   I    SS     U   U   A A    L
        V  V    I     SS    U   U  AAAAA   L
         V V    I      SS   U   U  A   A   L
          VV    I    SSSSS  UUUUU  A   A  LLLLL

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


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\5f3870
b1-6d35-4f9a-9930-459450a38781\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\5f3870
b1-6d35-4f9a-9930-459450a38781\sce


DATE: 11/28/2019                          TIME: 10:09:36

USER:


COMMENTS: _____

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  ************************************************
  ** SIMULATION : 05 AES 50-Yr                   **
  ************************************************


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|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              fb082f85-bf5b-44d7-8765-aa036ef20a94\2cfb217d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   98.91 |  0.75   52.75 |  1.08    6.59
                0.17    6.59 |  0.50  184.63 |  0.83   32.97 |
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                0.25   19.78 |  0.58   98.91 |  0.92   19.78 |
                0.33   52.75 |  0.67   79.13 |  1.00    6.59 |

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--------------------
| CALIB            |
| NASHYD   (  0153)|   Area    (ha)=  91.47   Curve Number   (CN)= 69.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  22.82   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
                0.167    3.30 | 0.500  141.77 | 0.833   42.86 |  1.17    3.30
                0.333   36.27 | 0.667   89.02 | 1.000   13.19 |

    Unit Hyd Qpeak  (cms)=  17.469

    PEAK FLOW       (cms)=   3.288 (i)
    TIME TO PEAK    (hrs)=   0.833
    RUNOFF VOLUME    (mm)=   6.875
    TOTAL RAINFALL   (mm)=  54.950
    RUNOFF COEFFICIENT   =   0.125

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

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|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              fb082f85-bf5b-44d7-8765-aa036ef20a94\2cfb217d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   98.91 |  0.75   52.75 |  1.08    6.59
                0.17    6.59 |  0.50  184.63 |  0.83   32.97 |
                0.25   19.78 |  0.58   98.91 |  0.92   19.78 |
                0.33   52.75 |  0.67   79.13 |  1.00    6.59 |

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--------------------
| CALIB            |
| NASHYD   (  0152)|   Area    (ha)=  90.60   Curve Number   (CN)= 70.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  21.77   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
                0.167    3.30 | 0.500  141.77 | 0.833   42.86 |  1.17    3.30
                0.333   36.27 | 0.667   89.02 | 1.000   13.19 |

    Unit Hyd Qpeak  (cms)=  17.302

    PEAK FLOW       (cms)=   3.552 (i)
    TIME TO PEAK    (hrs)=   0.833
    RUNOFF VOLUME    (mm)=   7.549
    TOTAL RAINFALL   (mm)=  54.950
    RUNOFF COEFFICIENT   =   0.137

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

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| ADD HYD  (  0002)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0152):    90.60   3.552     0.83     7.55
     + ID2= 2 (  0153):    91.47   3.288     0.83     6.88
       ==============================================
       ID = 3 (  0002):   182.07   6.841     0.83     7.21

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              fb082f85-bf5b-44d7-8765-aa036ef20a94\2cfb217d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   98.91 |  0.75   52.75 |  1.08    6.59
                0.17    6.59 |  0.50  184.63 |  0.83   32.97 |
                0.25   19.78 |  0.58   98.91 |  0.92   19.78 |
                0.33   52.75 |  0.67   79.13 |  1.00    6.59 |

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--------------------
| CALIB            |
| NASHYD   (  0151)|   Area    (ha)=  18.20   Curve Number   (CN)= 68.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  11.95   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

        NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
                0.167    3.30 | 0.500  141.77 | 0.833   42.86 |  1.17    3.30
                0.333   36.27 | 0.667   89.02 | 1.000   13.19 |

    Unit Hyd Qpeak  (cms)=   3.476

    PEAK FLOW       (cms)=   0.972 (i)
    TIME TO PEAK    (hrs)=   0.833
    RUNOFF VOLUME    (mm)=  11.081
    TOTAL RAINFALL   (mm)=  54.950
    RUNOFF COEFFICIENT   =   0.202

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

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--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              fb082f85-bf5b-44d7-8765-aa036ef20a94\2cfb217d
| Ptotal= 54.95 mm |    Comments: 50yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.08    0.00 |  0.42   98.91 |  0.75   52.75 |  1.08    6.59
                0.17    6.59 |  0.50  184.63 |  0.83   32.97 |
                0.25   19.78 |  0.58   98.91 |  0.92   19.78 |
                0.33   52.75 |  0.67   79.13 |  1.00    6.59 |

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| CALIB            |
| STANDHYD (  1421)|   Area    (ha)=  15.00
|ID= 1 DT=10.0 min |   Total Imp(%)=  30.00   Dir. Conn.(%)=  29.00
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		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.50	10.50
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	3.00
Length	(m)=	258.20	40.00
Mannings n	=	0.015	0.200

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	3.30	0.500	141.77	0.833	42.86	1.17	3.30
0.333	36.27	0.667	89.02	1.000	13.19		

			TOTALS
Max.Eff.Inten.(mm/hr)=		141.77	40.51
	over (min)	10.00	20.00
Storage Coeff. (min)=		4.28 (ii)	12.12 (ii)
Unit Hyd. Tpeak (min)=		10.00	20.00
Unit Hyd. peak (cms)=		0.15	0.07
PEAK FLOW	(cms)=	1.58	0.87 1.851 (iii)
TIME TO PEAK	(hrs)=	0.50	0.83 0.67
RUNOFF VOLUME	(mm)=	53.95	18.08 28.48
TOTAL RAINFALL	(mm)=	54.95	54.95 54.95
RUNOFF COEFFICIENT	=	0.98	0.33 0.52

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ fb082f85-bf5b-44d7-8765-aa036ef20a94\2cfb217d
Ptotal= 54.95 mm	Comments: 50yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	98.91	0.75	52.75	1.08	6.59
0.17	6.59	0.50	184.63	0.83	32.97		
0.25	19.78	0.58	98.91	0.92	19.78		
0.33	52.75	0.67	79.13	1.00	6.59		

CALIB	
STANDHYD (0142)	Area (ha)= 54.15
ID= 1 DT=10.0 min	Total Imp(%)= 67.00 Dir. Conn.(%)= 64.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	36.28	17.87
Dep. Storage	(mm)=	1.00	16.04
Average Slope	(%)=	1.00	3.00
Length	(m)=	600.83	40.00
Mannings n	=	0.015	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	3.30	0.500	141.77	0.833	42.86	1.17	3.30
0.333	36.27	0.667	89.02	1.000	13.19		

			TOTALS
Max.Eff.Inten.(mm/hr)=		141.77	40.36
	over (min)	10.00	20.00
Storage Coeff. (min)=		7.10 (ii)	16.08 (ii)
Unit Hyd. Tpeak (min)=		10.00	20.00
Unit Hyd. peak (cms)=		0.13	0.06
PEAK FLOW	(cms)=	10.91	1.16 11.073 (iii)
TIME TO PEAK	(hrs)=	0.50	0.83 0.50
RUNOFF VOLUME	(mm)=	53.95	14.24 39.65
TOTAL RAINFALL	(mm)=	54.95	54.95 54.95
RUNOFF COEFFICIENT	=	0.98	0.26 0.72

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 76.0 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.

READ STORM	Filename: C:\Users\p001279d\AppD ata\Local\Temp\ fb082f85-bf5b-44d7-8765-aa036ef20a94\2cfb217d
Ptotal= 54.95 mm	Comments: 50yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	98.91	0.75	52.75	1.08	6.59
0.17	6.59	0.50	184.63	0.83	32.97		
0.25	19.78	0.58	98.91	0.92	19.78		
0.33	52.75	0.67	79.13	1.00	6.59		

CALIB	
STANDHYD (0022)	Area (ha)= 127.59
ID= 1 DT=10.0 min	Total Imp(%)= 61.00 Dir. Conn.(%)= 49.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	77.83	49.76
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	922.28	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	3.30	0.500	141.77	0.833	42.86	1.17	3.30
0.333	36.27	0.667	89.02	1.000	13.19		

			TOTALS
Max.Eff.Inten.(mm/hr)=		141.77	55.72
	over (min)	10.00	20.00
Storage Coeff. (min)=		8.43 (ii)	17.34 (ii)
Unit Hyd. Tpeak (min)=		10.00	20.00
Unit Hyd. peak (cms)=		0.12	0.06
PEAK FLOW	(cms)=	18.12	4.89 20.032 (iii)
TIME TO PEAK	(hrs)=	0.50	0.83 0.67
RUNOFF VOLUME	(mm)=	52.95	18.89 35.58
TOTAL RAINFALL	(mm)=	54.95	54.95 54.95
RUNOFF COEFFICIENT	=	0.96	0.34 0.65

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 69.0 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(0019)	OVERFLOW IS OFF
IN= 2---> OUT= 1	
DT= 10.0 min	

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.3200	3.8870
0.1600	1.7840	0.3400	4.3720
0.2000	2.7010	0.3500	4.8700
0.2600	3.2740	0.3800	6.2160

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (	0022)	127.590	20.032	0.67	35.58
OUTFLOW: ID= 1 (	0019)	127.590	0.340	1.83	35.56

PEAK FLOW REDUCTION [Qout/Qin](%)= 1.70
TIME SHIFT OF PEAK FLOW (min)= 70.00
MAXIMUM STORAGE USED (ha.m.)= 4.3713

ROUTE CHN(0026)	
IN= 2---> OUT= 1	Routing time step (min)'= 10.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	274.12	0.0500	
5.20	273.17	0.0300	Main Channel
10.58	272.11	0.0300	Main Channel
11.50	272.00	0.0300	Main Channel
56.67	272.00	0.0300	Main Channel
64.61	272.44	0.0300	Main Channel
68.47	272.73	0.0300	Main Channel
73.75	273.06	0.0300 /0.0500	Main Channel
79.53	273.29	0.0500	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.07	272.07	.104E+04	0.9	0.29	19.48
0.13	272.13	.211E+04	2.8	0.46	12.41
0.20	272.20	.322E+04	5.6	0.59	9.56
0.26	272.26	.436E+04	9.1	0.71	7.96
0.33	272.33	.554E+04	13.3	0.82	6.93
0.40	272.40	.676E+04	18.2	0.91	6.19
0.46	272.46	.801E+04	23.7	1.01	5.62
0.53	272.53	.928E+04	30.0	1.09	5.16
0.60	272.60	.106E+05	36.8	1.18	4.80
0.66	272.66	.119E+05	44.2	1.26	4.49
0.73	272.73	.133E+05	52.2	1.33	4.24
0.79	272.79	.147E+05	60.7	1.40	4.03
0.86	272.86	.161E+05	69.7	1.47	3.84
0.93	272.93	.175E+05	79.3	1.54	3.68
0.99	272.99	.190E+05	89.5	1.60	3.54
1.06	273.06	.205E+05	100.3	1.66	3.41
1.14	273.14	.223E+05	114.9	1.74	3.24
1.22	273.22	.242E+05	130.7	1.83	3.09
1.29	273.29	.262E+05	147.5	1.91	2.96

<---- hydrograph ----> <-pipe / channel->

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (	0019)	127.59	0.34	1.83	35.56	0.03	0.29
OUTFLOW: ID= 1 (	0026)	127.59	0.34	2.67	35.56	0.03	0.29

ADD HYD (0017)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0142):	54.15	11.073	0.50	39.65
+ ID2= 2 (0026):	127.59	0.337	2.67	35.56
ID = 3 (0017):	181.74	11.090	0.50	36.78

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ROUTE CHN(0015)	
IN= 2---> OUT= 1	Routing time step (min)'= 10.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	252.95	0.0500	
3.65	252.53	0.0500 /0.0300	Main Channel
12.66	251.31	0.0300	Main Channel
14.58	251.05	0.0300	Main Channel
76.79	251.08	0.0300	Main Channel
87.59	252.17	0.0300	Main Channel
90.94	252.44	0.0300 /0.0500	Main Channel
98.65	253.00	0.0500	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.10	251.15	.671E+04	4.4	0.82	25.64
0.20	251.25	.148E+05	15.9	1.36	15.43
0.30	251.35	.230E+05	32.9	1.80	11.67
0.40	251.45	.315E+05	54.5	2.18	9.63
0.49	251.55	.402E+05	80.5	2.53	8.32
0.59	251.64	.491E+05	110.6	2.84	7.40
0.69	251.74	.582E+05	144.6	3.13	6.71
0.79	251.84	.676E+05	182.5	3.41	6.17
0.89	251.94	.771E+05	224.1	3.67	5.74
0.99	252.04	.869E+05	269.3	3.91	5.38
1.09	252.14	.969E+05	318.2	4.15	5.07
1.19	252.24	.107E+06	370.2	4.36	4.82
1.29	252.34	.118E+06	425.6	4.57	4.60
1.39	252.44	.128E+06	484.6	4.77	4.41
1.49	252.54	.140E+06	554.9	5.02	4.19
1.59	252.64	.151E+06	632.3	5.28	3.99
1.69	252.75	.163E+06	714.0	5.52	3.81
1.80	252.85	.176E+06	799.8	5.75	3.66
1.90	252.95	.188E+06	889.9	5.97	3.52

<---- hydrograph ----> <-pipe / channel->

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (	0017)	181.74	11.09	0.50	36.78	0.16	1.07
OUTFLOW: ID= 1 (	0015)	181.74	6.44	0.83	36.78	0.12	0.88

RESERVOIR(0020)	OVERFLOW IS OFF
IN= 2---> OUT= 1	
DT= 10.0 min	

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	2.3900	1.8110
0.8500	1.4450	2.9700	1.8200
1.8300	1.7990	3.5000	1.8910
2.0100	1.8050	4.0000	1.9620
2.0200	1.8070	0.0000	0.0000

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (	0015)	181.740	6.437	0.83	36.78
OUTFLOW: ID= 1 (	0020)	181.740	1.418	1.83	36.77

PEAK FLOW REDUCTION [Qout/Qin](%)= 22.04
TIME SHIFT OF PEAK FLOW (min)= 60.00

MAXIMUM STORAGE USED (ha.m.)= 1.6510

ADD HYD (0003)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (1421):		15.00	1.851	0.67	28.48
+ ID2= 2 (0151):		18.20	0.972	0.83	11.08
ID = 3 (0003):		33.20	2.725	0.67	18.94

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0003):		33.20	2.725	0.67	18.94
+ ID2= 2 (0002):		182.07	6.841	0.83	7.21
ID = 1 (0003):		215.27	9.259	0.83	9.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0003):		215.27	9.259	0.83	9.02
+ ID2= 2 (0020):		181.74	1.418	1.83	36.77
ID = 3 (0003):		397.01	9.660	0.83	21.73

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
V    V   I    SS     U   U   A A   L
 V  V    I     SS    U   U  AAAAA  L
  V V    I      SS   U   U  A   A  L
   VV    I    SSSSS  UUUUU  A   A  LLLLL

 OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
O   O    T      T    H   H   Y Y   MM MM  O   O
O   O    T      T    H   H    Y    M   M  O   O
 OOO     T      T    H   H    Y    M   M   OOO
```

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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

Output filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\3051a893-0488-4c10-b754-bf2707b99274\sce
Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\3051a893-0488-4c10-b754-bf2707b99274\sce

DATE: 11/28/2019 TIME: 10:09:35

USER:

COMMENTS: _____

```
  **********************************************
  ** SIMULATION : 06 AES 100-Yr                **
  **********************************************
```

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\8e50d755
Ptotal= 60.87 mm	Comments: 100yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	109.57	0.75	58.44	1.08	7.30
0.17	7.30	0.50	204.52	0.83	36.52		
0.25	21.91	0.58	109.57	0.92	21.91		
0.33	58.44	0.67	87.65	1.00	7.30		

CALIB				
NASHYD (0153)	Area	(ha)= 91.47	Curve Number	(CN)= 69.0
ID= 1 DT=10.0 min	Ia	(mm)= 22.82	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20			

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	3.65	0.500	157.04	0.833	47.48	1.17	3.65
0.333	40.17	0.667	98.61	1.000	14.61		

Unit Hyd Qpeak (cms)= 17.469

PEAK FLOW	(cms)=	4.367 (i)
TIME TO PEAK	(hrs)=	0.833
RUNOFF VOLUME	(mm)=	9.267
TOTAL RAINFALL	(mm)=	60.870
RUNOFF COEFFICIENT	=	0.152

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

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\8e50d755
Ptotal= 60.87 mm	Comments: 100yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	109.57	0.75	58.44	1.08	7.30
0.17	7.30	0.50	204.52	0.83	36.52		
0.25	21.91	0.58	109.57	0.92	21.91		
0.33	58.44	0.67	87.65	1.00	7.30		

CALIB				
NASHYD (0152)	Area	(ha)= 90.60	Curve Number	(CN)= 70.0
ID= 1 DT=10.0 min	Ia	(mm)= 21.77	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20			

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	3.65	0.500	157.04	0.833	47.48	1.17	3.65
0.333	40.17	0.667	98.61	1.000	14.61		

Unit Hyd Qpeak (cms)= 17.302

PEAK FLOW	(cms)=	4.664 (i)
TIME TO PEAK	(hrs)=	0.833
RUNOFF VOLUME	(mm)=	10.064
TOTAL RAINFALL	(mm)=	60.870
RUNOFF COEFFICIENT	=	0.165

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

ADD HYD (0002)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0152):		90.60	4.664	0.83	10.06
+ ID2= 2 (0153):		91.47	4.367	0.83	9.27
ID = 3 (0002):		182.07	9.030	0.83	9.66

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\8e50d755
Ptotal= 60.87 mm	Comments: 100yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	109.57	0.75	58.44	1.08	7.30
0.17	7.30	0.50	204.52	0.83	36.52		
0.25	21.91	0.58	109.57	0.92	21.91		
0.33	58.44	0.67	87.65	1.00	7.30		

CALIB				
NASHYD (0151)	Area	(ha)= 18.20	Curve Number	(CN)= 68.0
ID= 1 DT=10.0 min	Ia	(mm)= 11.95	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20			

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	3.65	0.500	157.04	0.833	47.48	1.17	3.65
0.333	40.17	0.667	98.61	1.000	14.61		

Unit Hyd Qpeak (cms)= 3.476

PEAK FLOW	(cms)=	1.201 (i)
TIME TO PEAK	(hrs)=	0.833
RUNOFF VOLUME	(mm)=	13.838
TOTAL RAINFALL	(mm)=	60.870
RUNOFF COEFFICIENT	=	0.227

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

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\8e50d755
Ptotal= 60.87 mm	Comments: 100yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	109.57	0.75	58.44	1.08	7.30
0.17	7.30	0.50	204.52	0.83	36.52		
0.25	21.91	0.58	109.57	0.92	21.91		
0.33	58.44	0.67	87.65	1.00	7.30		

CALIB				
STANDHYD (1421)	Area	(ha)= 15.00		
ID= 1 DT=10.0 min	Total Imp(%)= 30.00		Dir. Conn.(%)= 29.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.50	10.50
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	3.00
Length	(m)=	258.20	40.00
Mannings n	=	0.015	0.200

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	3.65	0.500	157.04	0.833	47.48	1.17	3.65
0.333	40.17	0.667	98.61	1.000	14.61		

Max.Eff.Inten.(mm/hr)=	157.04	47.96	
over (min)	10.00	20.00	
Storage Coeff. (min)=	4.11 (ii)	11.44 (ii)	
Unit Hyd. Tpeak (min)=	10.00	20.00	
Unit Hyd. peak (cms)=	0.16	0.08	
			TOTALS
PEAK FLOW (cms)=	1.77	1.05	2.140 (iii)
TIME TO PEAK (hrs)=	0.50	0.83	0.67
RUNOFF VOLUME (mm)=	59.87	21.52	32.64
TOTAL RAINFALL (mm)=	60.87	60.87	60.87
RUNOFF COEFFICIENT =	0.98	0.35	0.54

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

READ STORM	Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\8e50d755
Ptotal= 60.87 mm	Comments: 100yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	109.57	0.75	58.44	1.08	7.30
0.17	7.30	0.50	204.52	0.83	36.52		
0.25	21.91	0.58	109.57	0.92	21.91		
0.33	58.44	0.67	87.65	1.00	7.30		

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--------------------
| CALIB            |
| STANDHYD (  0142)|   Area    (ha)=  54.15
|ID= 1 DT=10.0 min |   Total Imp(%)=  67.00   Dir. Conn.(%)=  64.00
--------------------

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      36.28         17.87
     Dep. Storage     (mm)=       1.00         16.04
     Average Slope     (%)=       1.00          3.00
     Length            (m)=     600.83         40.00
     Mannings n           =      0.015         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    3.65 | 0.500  157.04 | 0.833   47.48 |  1.17    3.65
               0.333   40.17 | 0.667   98.61 | 1.000   14.61 |

     Max.Eff.Inten.(mm/hr)=     157.04         49.63
               over (min)        10.00         20.00
     Storage Coeff.  (min)=      6.82 (ii)    15.09 (ii)
     Unit Hyd. Tpeak (min)=     10.00         20.00
     Unit Hyd. peak  (cms)=      0.13          0.07
                                                    *TOTALS*
     PEAK FLOW       (cms)=     12.28          1.50       12.521 (iii)
     TIME TO PEAK    (hrs)=      0.50          0.83        0.50
     RUNOFF VOLUME    (mm)=     59.87         17.81       44.73
     TOTAL RAINFALL   (mm)=     60.87         60.87       60.87
     RUNOFF COEFFICIENT   =      0.98          0.29        0.73

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  76.0    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.

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

--------------------
|    READ STORM    |    Filename: C:\Users\p001279d\AppD
|                  |              ata\Local\Temp\
|                  |              fb082f85-bf5b-44d7-8765-aa036ef20a94\8e50d755
| Ptotal= 60.87 mm |    Comments: 100yr 1hr AES
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.08    0.00 |  0.42  109.57 |  0.75   58.44 |  1.08    7.30
               0.17    7.30 |  0.50  204.52 |  0.83   36.52 |
               0.25   21.91 |  0.58  109.57 |  0.92   21.91 |
               0.33   58.44 |  0.67   87.65 |  1.00    7.30 |

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--------------------
| CALIB            |
| STANDHYD (  0022)|   Area    (ha)= 127.59
|ID= 1 DT=10.0 min |   Total Imp(%)=  61.00   Dir. Conn.(%)=  49.00
--------------------

                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      77.83         49.76
     Dep. Storage     (mm)=       2.00          5.00
     Average Slope     (%)=       1.00          2.00
     Length            (m)=     922.28         40.00
     Mannings n           =      0.013         0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 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
               0.167    3.65 | 0.500  157.04 | 0.833   47.48 |  1.17    3.65
               0.333   40.17 | 0.667   98.61 | 1.000   14.61 |

     Max.Eff.Inten.(mm/hr)=     157.04         65.97
               over (min)        10.00         20.00
     Storage Coeff.  (min)=      8.09 (ii)    16.42 (ii)
     Unit Hyd. Tpeak (min)=     10.00         20.00
     Unit Hyd. peak  (cms)=      0.12          0.06
                                                    *TOTALS*
     PEAK FLOW       (cms)=     20.49          5.97       22.801 (iii)
     TIME TO PEAK    (hrs)=      0.50          0.83        0.67
     RUNOFF VOLUME    (mm)=     58.87         22.55       40.35
     TOTAL RAINFALL   (mm)=     60.87         60.87       60.87
     RUNOFF COEFFICIENT   =      0.97          0.37        0.66

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  69.0    Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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--------------------
| RESERVOIR(  0019)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT= 10.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)    |   (cms)     (ha.m.)
                          0.0000     0.0000    |  0.3200     3.8870
                          0.1600     1.7840    |  0.3400     4.3720
                          0.2000     2.7010    |  0.3500     4.8700
                          0.2600     3.2740    |  0.3800     6.2160

                                 AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0022)    127.590     22.801     0.67       40.35
   OUTFLOW: ID= 1 (  0019)    127.590      0.352     1.83       40.32

                PEAK   FLOW   REDUCTION [Qout/Qin](%)=  1.54
                TIME SHIFT OF PEAK FLOW          (min)= 70.00
                MAXIMUM  STORAGE   USED       (ha.m.)=  4.9709

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

--------------------
| ROUTE CHN(  0026)|
| IN= 2---> OUT= 1 |     Routing time step (min)'= 10.00
--------------------
                <------ DATA FOR SECTION (   1.1) ------>
                Distance      Elevation       Manning
                    0.00         274.12        0.0500
                    5.20         273.17        0.0300      Main Channel
                   10.58         272.11        0.0300      Main Channel
                   11.50         272.00        0.0300      Main Channel
                   56.67         272.00        0.0300      Main Channel
                   64.61         272.44        0.0300      Main Channel
                   68.47         272.73        0.0300      Main Channel
                   73.75         273.06    0.0300 /0.0500  Main Channel
                   79.53         273.29        0.0500

          <---------------------- TRAVEL TIME TABLE ---------------------->
           DEPTH    ELEV      VOLUME    FLOW RATE    VELOCITY   TRAV.TIME
            (m)      (m)     (cu.m.)      (cms)       (m/s)      (min)
           0.07   272.07    .104E+04       0.9          0.29      19.48
           0.13   272.13    .211E+04       2.8          0.46      12.41
           0.20   272.20    .322E+04       5.6          0.59       9.56
           0.26   272.26    .436E+04       9.1          0.71       7.96
           0.33   272.33    .554E+04      13.3          0.82       6.93
           0.40   272.40    .676E+04      18.2          0.91       6.19
           0.46   272.46    .801E+04      23.7          1.01       5.62
           0.53   272.53    .928E+04      30.0          1.09       5.16
```



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           0.60   272.60    .106E+05      36.8          1.18       4.80
           0.66   272.66    .119E+05      44.2          1.26       4.49
           0.73   272.73    .133E+05      52.2          1.33       4.24
           0.79   272.79    .147E+05      60.7          1.40       4.03
           0.86   272.86    .161E+05      69.7          1.47       3.84
           0.93   272.93    .175E+05      79.3          1.54       3.68
           0.99   272.99    .190E+05      89.5          1.60       3.54
           1.06   273.06    .205E+05     100.3          1.66       3.41
           1.14   273.14    .223E+05     114.9          1.74       3.24
           1.22   273.22    .242E+05     130.7          1.83       3.09
           1.29   273.29    .262E+05     147.5          1.91       2.96

                                  <---- hydrograph ---->   <-pipe / channel->
                               AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                                (ha)    (cms)   (hrs)   (mm)      (m)      (m/s)
   INFLOW : ID= 2 (  0019)  127.59     0.35    1.83  40.32      0.03      0.29
   OUTFLOW: ID= 1 (  0026)  127.59     0.35    2.83  40.32      0.03      0.29

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--------------------
| ADD HYD  (  0017)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0142):    54.15  12.521     0.50    44.73
     + ID2= 2 (  0026):   127.59   0.350     2.83    40.32
       ==========================================================
       ID = 3 (  0017):   181.74  12.541     0.50    41.64

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

--------------------
| ROUTE CHN(  0015)|
| IN= 2---> OUT= 1 |     Routing time step (min)'= 10.00
--------------------
                <------ DATA FOR SECTION (   1.1) ------>
                Distance      Elevation       Manning
                    0.00         252.95        0.0500
                    3.65         252.53    0.0500 /0.0300  Main Channel
                   12.66         251.31        0.0300      Main Channel
                   14.58         251.05        0.0300      Main Channel
                   76.79         251.08        0.0300      Main Channel
                   87.59         252.17        0.0300      Main Channel
                   90.94         252.44    0.0300 /0.0500  Main Channel
                   98.65         253.00        0.0500

          <---------------------- TRAVEL TIME TABLE ---------------------->
           DEPTH    ELEV      VOLUME    FLOW RATE    VELOCITY   TRAV.TIME
            (m)      (m)     (cu.m.)      (cms)       (m/s)      (min)
           0.10   251.15    .671E+04       4.4          0.82      25.64
           0.20   251.25    .148E+05      15.9          1.36      15.43
           0.30   251.35    .230E+05      32.9          1.80      11.67
           0.40   251.45    .315E+05      54.5          2.18       9.63
           0.49   251.55    .402E+05      80.5          2.53       8.32
           0.59   251.64    .491E+05     110.6          2.84       7.40
           0.69   251.74    .582E+05     144.6          3.13       6.71
           0.79   251.84    .676E+05     182.5          3.41       6.17
           0.89   251.94    .771E+05     224.1          3.67       5.74
           0.99   252.04    .869E+05     269.3          3.91       5.38
           1.09   252.14    .969E+05     318.2          4.15       5.07
           1.19   252.24    .107E+06     370.2          4.36       4.82
           1.29   252.34    .118E+06     425.6          4.57       4.60
           1.39   252.44    .128E+06     484.6          4.77       4.41
           1.49   252.54    .140E+06     554.9          5.02       4.19
           1.59   252.64    .151E+06     632.3          5.28       3.99
           1.69   252.75    .163E+06     714.0          5.52       3.81
           1.80   252.85    .176E+06     799.8          5.75       3.66
           1.90   252.95    .188E+06     889.9          5.97       3.52

                                  <---- hydrograph ---->   <-pipe / channel->
                               AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                                (ha)    (cms)   (hrs)   (mm)      (m)      (m/s)
   INFLOW : ID= 2 (  0017)  181.74    12.54    0.50  41.64      0.17      1.14
```



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   OUTFLOW: ID= 1 (  0015)  181.74     7.43    0.83  41.64      0.12      0.92

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

--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT= 10.0 min     |     OUTFLOW    STORAGE    |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)    |   (cms)     (ha.m.)
                          0.0000     0.0000    |  2.3900     1.8110
                          0.8500     1.4450    |  2.9700     1.8200
                          1.8300     1.7990    |  3.5000     1.8910
                          2.0100     1.8050    |  4.0000     1.9620
                          2.0200     1.8070    |  0.0000     0.0000

                                 AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0015)    181.740     7.430     0.83       41.64
   OUTFLOW: ID= 1 (  0020)    181.740     1.824     1.67       41.63

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 24.55
                TIME SHIFT OF PEAK FLOW          (min)= 50.00
                MAXIMUM  STORAGE   USED       (ha.m.)=  1.8034

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

--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  1421):    15.00   2.140     0.67    32.64
     + ID2= 2 (  0151):    18.20   1.201     0.83    13.84
       ==========================================================
       ID = 3 (  0003):    33.20   3.247     0.67    22.33

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0003)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0003):    33.20   3.247     0.67    22.33
     + ID2= 2 (  0002):   182.07   9.030     0.83     9.66
       ==========================================================
       ID = 1 (  0003):   215.27  11.915     0.83    11.62

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):   215.27  11.915     0.83    11.62
     + ID2= 2 (  0020):   181.74   1.824     1.67    41.63
       ==========================================================
       ID = 3 (  0003):   397.01  12.379     0.83    25.36

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
================================================================================
====================
```

```
       V    V   I    SSSSS  U   U    A    L                (v 5.2.2003)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M   M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
```

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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

Output filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\689d184f-e5e0-497e-8cdf-1b53b78b5c2c\sce
Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\689d184f-e5e0-497e-8cdf-1b53b78b5c2c\sce

DATE: 11/28/2019 TIME: 10:09:36

USER:

COMMENTS: _____

****
** SIMULATION : 07 AES 250-Yr **
****

READ STORM | Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\3a4314b1
Ptotal= 70.05 mm | Comments: 250yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	126.09	0.75	67.25	1.08	8.41
0.17	8.41	0.50	235.37	0.83	42.03		
0.25	25.22	0.58	126.09	0.92	25.22		
0.33	67.25	0.67	100.87	1.00	8.41		

CALIB
NASHYD (0153) | Area (ha)= 91.47 Curve Number (CN)= 69.0
ID= 1 DT=10.0 min | Ia (mm)= 22.82 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	4.20	0.500	180.73	0.833	54.64	1.17	4.20
0.333	46.23	0.667	113.48	1.000	16.81		

Unit Hyd Qpeak (cms)= 17.469

PEAK FLOW (cms)= 6.211 (i)
TIME TO PEAK (hrs)= 0.833
RUNOFF VOLUME (mm)= 13.466
TOTAL RAINFALL (mm)= 70.050
RUNOFF COEFFICIENT = 0.192

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

READ STORM | Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\3a4314b1
Ptotal= 70.05 mm | Comments: 250yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	126.09	0.75	67.25	1.08	8.41
0.17	8.41	0.50	235.37	0.83	42.03		
0.25	25.22	0.58	126.09	0.92	25.22		
0.33	67.25	0.67	100.87	1.00	8.41		

CALIB
NASHYD (0152) | Area (ha)= 90.60 Curve Number (CN)= 70.0
ID= 1 DT=10.0 min | Ia (mm)= 21.77 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	4.20	0.500	180.73	0.833	54.64	1.17	4.20
0.333	46.23	0.667	113.48	1.000	16.81		

Unit Hyd Qpeak (cms)= 17.302

PEAK FLOW (cms)= 6.554 (i)
TIME TO PEAK (hrs)= 0.833
RUNOFF VOLUME (mm)= 14.448
TOTAL RAINFALL (mm)= 70.050
RUNOFF COEFFICIENT = 0.206

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

ADD HYD (0002)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0152):	90.60	6.554	0.83	14.45
+ ID2= 2 (0153):	91.47	6.211	0.83	13.47
ID = 3 (0002):	182.07	12.764	0.83	13.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM | Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\3a4314b1
Ptotal= 70.05 mm | Comments: 250yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	126.09	0.75	67.25	1.08	8.41
0.17	8.41	0.50	235.37	0.83	42.03		
0.25	25.22	0.58	126.09	0.92	25.22		
0.33	67.25	0.67	100.87	1.00	8.41		

CALIB
NASHYD (0151) | Area (ha)= 18.20 Curve Number (CN)= 68.0

ID= 1 DT=10.0 min | Ia (mm)= 11.95 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	4.20	0.500	180.73	0.833	54.64	1.17	4.20
0.333	46.23	0.667	113.48	1.000	16.81		

Unit Hyd Qpeak (cms)= 3.476

PEAK FLOW (cms)= 1.585 (i)
TIME TO PEAK (hrs)= 0.833
RUNOFF VOLUME (mm)= 18.510
TOTAL RAINFALL (mm)= 70.050
RUNOFF COEFFICIENT = 0.264

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

READ STORM | Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\3a4314b1
Ptotal= 70.05 mm | Comments: 250yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	126.09	0.75	67.25	1.08	8.41
0.17	8.41	0.50	235.37	0.83	42.03		
0.25	25.22	0.58	126.09	0.92	25.22		
0.33	67.25	0.67	100.87	1.00	8.41		

CALIB
STANDHYD (1421) | Area (ha)= 15.00
ID= 1 DT=10.0 min | Total Imp(%)= 30.00 Dir. Conn.(%)= 29.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	4.50	10.50
Dep. Storage (mm)=	1.00	2.00
Average Slope (%)=	1.00	3.00
Length (m)=	258.20	40.00
Mannings n =	0.015	0.200

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	4.20	0.500	180.73	0.833	54.64	1.17	4.20
0.333	46.23	0.667	113.48	1.000	16.81		

Max.Eff.Inten.(mm/hr)=	180.73	60.12	
over (min)	10.00	20.00	
Storage Coeff. (min)=	3.88 (ii)	10.58 (ii)	
Unit Hyd. Tpeak (min)=	10.00	20.00	
Unit Hyd. peak (cms)=	0.16	0.08	
		TOTALS	
PEAK FLOW (cms)=	2.06	1.35	2.614 (iii)
TIME TO PEAK (hrs)=	0.50	0.83	0.67
RUNOFF VOLUME (mm)=	69.05	27.20	39.34
TOTAL RAINFALL (mm)=	70.05	70.05	70.05
RUNOFF COEFFICIENT =	0.99	0.39	0.56

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

READ STORM | Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\3a4314b1
Ptotal= 70.05 mm | Comments: 250yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.08	0.00	0.42	126.09	0.75	67.25	1.08	8.41
0.17	8.41	0.50	235.37	0.83	42.03		
0.25	25.22	0.58	126.09	0.92	25.22		
0.33	67.25	0.67	100.87	1.00	8.41		

CALIB
STANDHYD (0142) | Area (ha)= 54.15
ID= 1 DT=10.0 min | Total Imp(%)= 67.00 Dir. Conn.(%)= 64.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	36.28	17.87
Dep. Storage (mm)=	1.00	16.04
Average Slope (%)=	1.00	3.00
Length (m)=	600.83	40.00
Mannings n =	0.015	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	4.20	0.500	180.73	0.833	54.64	1.17	4.20
0.333	46.23	0.667	113.48	1.000	16.81		

Max.Eff.Inten.(mm/hr)=	100.73	64.67	
over (min)	10.00	20.00	
Storage Coeff. (min)=	6.44 (ii)	13.88 (ii)	
Unit Hyd. Tpeak (min)=	10.00	20.00	
Unit Hyd. peak (cms)=	0.13	0.07	
		TOTALS	
PEAK FLOW (cms)=	14.43	2.07	14.815 (iii)
TIME TO PEAK (hrs)=	0.50	0.83	0.50
RUNOFF VOLUME (mm)=	69.05	23.77	52.75
TOTAL RAINFALL (mm)=	70.05	70.05	70.05
RUNOFF COEFFICIENT =	0.99	0.34	0.75

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 76.0 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.

READ STORM | Filename: C:\Users\p001279d\AppData\Local\Temp\fb082f85-bf5b-44d7-8765-aa036ef20a94\3a4314b1
Ptotal= 70.05 mm | Comments: 250yr 1hr AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr

0.08	0.00	0.42	126.09	0.75	67.25	1.08	8.41
0.17	8.41	0.50	235.37	0.83	42.03		
0.25	25.22	0.58	126.09	0.92	25.22		
0.33	67.25	0.67	100.87	1.00	8.41		

CALIB	
STANDHYD (0022)	Area (ha)= 127.59
ID= 1 DT=10.0 min	Total Imp(%)= 61.00 Dir. Conn.(%)= 49.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	77.83	49.76
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	922.28	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 10.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	4.20	0.500	180.73	0.833	54.64	1.17	4.20
0.333	46.23	0.667	113.48	1.000	16.81		

			TOTALS
Max.Eff.Inten.(mm/hr)=	180.73	82.63	
over (min)	10.00	20.00	
Storage Coeff. (min)=	7.65 (ii)	15.26 (ii)	
Unit Hyd. Tpeak (min)=	10.00	20.00	
Unit Hyd. peak (cms)=	0.12	0.07	
PEAK FLOW (cms)=	24.22	7.78	27.244 (iii)
TIME TO PEAK (hrs)=	0.50	0.83	0.67
RUNOFF VOLUME (mm)=	68.05	28.57	47.92
TOTAL RAINFALL (mm)=	70.05	70.05	70.05
RUNOFF COEFFICIENT =	0.97	0.41	0.68

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 69.0 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(0019)	OVERFLOW IS OFF
IN= 2---> OUT= 1	
DT= 10.0 min	

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.3200	3.8870
0.1600	1.7840	0.3400	4.3720
0.2000	2.7010	0.3500	4.8700
0.2600	3.2740	0.3800	6.2160

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (	0022)	127.590	27.244	0.67	47.92
OUTFLOW: ID= 1 (	0019)	127.590	0.374	1.83	47.90

PEAK FLOW REDUCTION [Qout/Qin]= 1.37
TIME SHIFT OF PEAK FLOW (min)= 70.00
MAXIMUM STORAGE USED (ha.m.)= 5.9263

ROUTE CHN(0026)	
IN= 2---> OUT= 1	Routing time step (min)'= 10.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	274.12	0.0500	
5.20	273.17	0.0300	Main Channel
10.58	272.11	0.0300	Main Channel
11.50	272.00	0.0300	Main Channel
56.67	272.00	0.0300	Main Channel
64.61	272.44	0.0300	Main Channel
68.47	272.73	0.0300	Main Channel
73.75	273.06	0.0300 /0.0500	Main Channel
79.53	273.29	0.0500	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.07	272.07	.104E+04	0.9	0.29	19.48
0.13	272.13	.211E+04	2.8	0.46	12.41
0.20	272.20	.322E+04	5.6	0.59	9.56
0.26	272.26	.436E+04	9.1	0.71	7.96
0.33	272.33	.554E+04	13.3	0.82	6.93
0.40	272.40	.676E+04	18.2	0.91	6.19
0.46	272.46	.801E+04	23.7	1.01	5.62
0.53	272.53	.928E+04	30.0	1.09	5.16
0.60	272.60	.106E+05	36.8	1.18	4.80
0.66	272.66	.119E+05	44.2	1.26	4.49
0.73	272.73	.133E+05	52.2	1.33	4.24
0.79	272.79	.147E+05	60.7	1.40	4.03
0.86	272.86	.161E+05	69.7	1.47	3.84
0.93	272.93	.175E+05	79.3	1.54	3.68
0.99	272.99	.190E+05	89.5	1.60	3.54
1.06	273.06	.205E+05	100.3	1.66	3.41
1.14	273.14	.223E+05	114.9	1.74	3.24
1.22	273.22	.242E+05	130.7	1.83	3.09
1.29	273.29	.262E+05	147.5	1.91	2.96

<---- hydrograph ----> <-pipe / channel->

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (	0019)	127.59	0.37	1.83	47.90	0.03	0.29
OUTFLOW: ID= 1 (	0026)	127.59	0.37	2.67	47.90	0.03	0.29

ADD HYD (0017)					
1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 1 (0142):	54.15	14.815	0.50	52.75
	+ ID2= 2 (0026):	127.59	0.371	2.67	47.90
	ID = 3 (0017):	181.74	14.839	0.50	49.34

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ROUTE CHN(0015)	
IN= 2---> OUT= 1	Routing time step (min)'= 10.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	252.95	0.0500	
3.65	252.53	0.0500 /0.0300	Main Channel
12.66	251.31	0.0300	Main Channel
14.58	251.05	0.0300	Main Channel
76.79	251.08	0.0300	Main Channel
87.59	252.17	0.0300	Main Channel
90.94	252.44	0.0300 /0.0500	Main Channel
98.65	253.00	0.0500	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.10	251.15	.671E+04	4.4	0.82	25.64
0.20	251.25	.148E+05	15.9	1.36	15.43

0.30	251.35	.230E+05	32.9	1.80	11.67		
0.40	251.45	.315E+05	54.5	2.18	9.63		
0.49	251.55	.402E+05	80.5	2.53	8.32		
0.59	251.64	.491E+05	110.6	2.84	7.40		
0.69	251.74	.582E+05	144.6	3.13	6.71		
0.79	251.84	.676E+05	182.5	3.41	6.17		
0.89	251.94	.771E+05	224.1	3.67	5.74		
0.99	252.04	.869E+05	269.3	3.91	5.38		
1.09	252.14	.969E+05	318.2	4.15	5.07		
1.19	252.24	.107E+06	370.2	4.36	4.82		
1.29	252.34	.118E+06	425.6	4.57	4.60		
1.39	252.44	.128E+06	484.6	4.77	4.41		
1.49	252.54	.140E+06	554.9	5.02	4.19		
1.59	252.64	.151E+06	632.3	5.28	3.99		
1.69	252.75	.163E+06	714.0	5.52	3.81		
1.80	252.85	.176E+06	799.8	5.75	3.66		
1.90	252.95	.188E+06	889.9	5.97	3.52		

<---- hydrograph ----> <-pipe / channel->

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (	0017)	181.74	14.84	0.50	49.34	0.19	1.28
OUTFLOW: ID= 1 (	0015)	181.74	9.11	0.83	49.34	0.14	0.98

RESERVOIR(0020)	OVERFLOW IS OFF
IN= 2---> OUT= 1	
DT= 10.0 min	

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	2.3900	1.8110
0.8500	1.4450	2.9700	1.8200
1.8300	1.7990	3.5000	1.8910
2.0100	1.8050	4.0000	1.9620
2.0200	1.8070	0.0000	0.0000

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (	0015)	181.740	9.110	0.83	49.34
OUTFLOW: ID= 1 (	0020)	181.740	3.575	1.50	49.34

PEAK FLOW REDUCTION [Qout/Qin](%)= 39.24
TIME SHIFT OF PEAK FLOW (min)= 40.00
MAXIMUM STORAGE USED (ha.m.)= 1.9159

ADD HYD (0003)					
1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 1 (1421):	15.00	2.614	0.67	39.34
	+ ID2= 2 (0151):	18.20	1.585	0.83	18.51
	ID = 3 (0003):	33.20	4.121	0.67	27.92

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)					
3 + 2 = 1		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 3 (0003):	33.20	4.121	0.67	27.92
	+ ID2= 2 (0002):	182.07	12.764	0.83	16.11
	ID = 1 (0003):	215.27	16.420	0.83	16.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0003)

1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 1 (0003):	215.27	16.420	0.83	16.11
	+ ID2= 2 (0020):	181.74	3.575	1.50	49.34
	ID = 3 (0003):	397.01	16.990	0.83	31.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

V V I SSSSS U U A L (v 5.2.2003)
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

OOO TTTTT TTTTT H H Y Y M M OOO TM
O O T T H H Y Y MM MM O O
O O T T H H Y M M O O
OOO T T H H Y M M OOO

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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

Output filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\0b6d5720-e380-4e97-a3f3-c91af1449dc1\sce
Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\0b6d5720-e380-4e97-a3f3-c91af1449dc1\sce

DATE: 11/28/2019 TIME: 10:09:34

USER:

COMMENTS: _____

****
** SIMULATION : New DesignStormChicago - 3hr **
****

CHICAGO STORM	IDF curve parameters: A=1499.500
Ptotal= 71.76 mm	B= 3.298
	C= 0.794

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	6.35	1.00	192.16	1.83	10.97	2.67	6.07
0.33	7.76	1.17	47.74	2.00	9.37	2.83	5.61
0.50	10.16	1.33	24.88	2.17	8.21	3.00	5.22
0.67	15.26	1.50	17.22	2.33	7.33		
0.83	36.28	1.67	13.33	2.50	6.64		

```
| CALIB                |
| NASHYD   (  0153)|   Area    (ha)=  91.47   Curve Number   (CN)= 69.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  22.82   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=  17.469

     PEAK FLOW       (cms)=   3.540 (i)
     TIME TO PEAK    (hrs)=   1.167
     RUNOFF VOLUME    (mm)=  14.306
     TOTAL RAINFALL   (mm)=  71.757
     RUNOFF COEFFICIENT   =   0.199

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

-------------------
| CHICAGO STORM    |    IDF curve parameters: A=1499.500
| Ptotal= 71.76 mm |                          B=   3.298
-------------------                          C=   0.794
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    6.35 |  1.00  192.16 |   1.83   10.97 |  2.67    6.07
                0.33    7.76 |  1.17   47.74 |   2.00    9.37 |  2.83    5.61
                0.50   10.16 |  1.33   24.88 |   2.17    8.21 |  3.00    5.22
                0.67   15.26 |  1.50   17.22 |   2.33    7.33 |
                0.83   36.28 |  1.67   13.33 |   2.50    6.64 |

-------------------
| CALIB                |
| NASHYD   (  0152)|   Area    (ha)=  90.60   Curve Number   (CN)= 70.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  21.77   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=  17.302

     PEAK FLOW       (cms)=   3.855 (i)
     TIME TO PEAK    (hrs)=   1.167
     RUNOFF VOLUME    (mm)=  15.322
     TOTAL RAINFALL   (mm)=  71.757
     RUNOFF COEFFICIENT   =   0.214

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

-------------------
| ADD HYD  (  0002)|
|  1 +  2 =  3     |          AREA    QPEAK    TPEAK     R.V.
-------------------           (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0152):    90.60   3.855     1.17    15.32
     + ID2= 2 (  0153):    91.47   3.540     1.17    14.31
       ================================================
       ID = 3 (  0002):   182.07   7.395     1.17    14.81

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------
| CHICAGO STORM    |    IDF curve parameters: A=1499.500
| Ptotal= 71.76 mm |                          B=   3.298
-------------------                          C=   0.794
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
```



```
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    6.35 |  1.00  192.16 |   1.83   10.97 |  2.67    6.07
                0.33    7.76 |  1.17   47.74 |   2.00    9.37 |  2.83    5.61
                0.50   10.16 |  1.33   24.88 |   2.17    8.21 |  3.00    5.22
                0.67   15.26 |  1.50   17.22 |   2.33    7.33 |
                0.83   36.28 |  1.67   13.33 |   2.50    6.64 |


-------------------
| CALIB                |
| NASHYD   (  0151)|   Area    (ha)=  18.20   Curve Number   (CN)= 68.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  11.95   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=   3.476

     PEAK FLOW       (cms)=   1.141 (i)
     TIME TO PEAK    (hrs)=   1.167
     RUNOFF VOLUME    (mm)=  19.427
     TOTAL RAINFALL   (mm)=  71.757
     RUNOFF COEFFICIENT   =   0.271

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

-------------------
| CHICAGO STORM    |    IDF curve parameters: A=1499.500
| Ptotal= 71.76 mm |                          B=   3.298
-------------------                          C=   0.794
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    6.35 |  1.00  192.16 |   1.83   10.97 |  2.67    6.07
                0.33    7.76 |  1.17   47.74 |   2.00    9.37 |  2.83    5.61
                0.50   10.16 |  1.33   24.88 |   2.17    8.21 |  3.00    5.22
                0.67   15.26 |  1.50   17.22 |   2.33    7.33 |
                0.83   36.28 |  1.67   13.33 |   2.50    6.64 |


-------------------
| CALIB                |
| STANDHYD (  1421)|   Area    (ha)=  15.00
|ID= 1 DT=10.0 min |   Total Imp(%)=  30.00   Dir. Conn.(%)=  29.00
-------------------

                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      4.50         10.50
     Dep. Storage     (mm)=      1.00          2.00
     Average Slope     (%)=      1.00          3.00
     Length            (m)=    258.20         40.00
     Mannings n            =     0.015         0.200

     Max.Eff.Inten.(mm/hr)=    192.16         70.37
               over (min)      10.00         20.00
     Storage Coeff.  (min)=     3.79 (ii)    10.08 (ii)
     Unit Hyd. Tpeak (min)=    10.00         20.00
     Unit Hyd. peak  (cms)=     0.16          0.08
                                                        *TOTALS*
     PEAK FLOW       (cms)=     2.19          1.19        2.752 (iii)
     TIME TO PEAK    (hrs)=     1.00          1.17        1.00
     RUNOFF VOLUME    (mm)=    70.76         28.30       40.61
     TOTAL RAINFALL   (mm)=    71.76         71.76       71.76
     RUNOFF COEFFICIENT   =     0.99          0.39        0.57
```



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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  71.0    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.

-------------------
| CHICAGO STORM    |    IDF curve parameters: A=1499.500
| Ptotal= 71.76 mm |                          B=   3.298
-------------------                          C=   0.794
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    6.35 |  1.00  192.16 |   1.83   10.97 |  2.67    6.07
                0.33    7.76 |  1.17   47.74 |   2.00    9.37 |  2.83    5.61
                0.50   10.16 |  1.33   24.88 |   2.17    8.21 |  3.00    5.22
                0.67   15.26 |  1.50   17.22 |   2.33    7.33 |
                0.83   36.28 |  1.67   13.33 |   2.50    6.64 |


-------------------
| CALIB                |
| STANDHYD (  0142)|   Area    (ha)=  54.15
|ID= 1 DT=10.0 min |   Total Imp(%)=  67.00   Dir. Conn.(%)=  64.00
-------------------

                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=     36.28         17.87
     Dep. Storage     (mm)=      1.00         16.04
     Average Slope     (%)=      1.00          3.00
     Length            (m)=    600.83         40.00
     Mannings n            =     0.015         0.250

     Max.Eff.Inten.(mm/hr)=    192.16         56.77
               over (min)      10.00         20.00
     Storage Coeff.  (min)=     6.29 (ii)    14.12 (ii)
     Unit Hyd. Tpeak (min)=    10.00         20.00
     Unit Hyd. peak  (cms)=     0.14          0.07
                                                        *TOTALS*
     PEAK FLOW       (cms)=    15.35          1.42       15.922 (iii)
     TIME TO PEAK    (hrs)=     1.00          1.17        1.00
     RUNOFF VOLUME    (mm)=    70.76         24.93       54.26
     TOTAL RAINFALL   (mm)=    71.76         71.76       71.76
     RUNOFF COEFFICIENT   =     0.99          0.35        0.76

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  76.0    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.

-------------------
| CHICAGO STORM    |    IDF curve parameters: A=1499.500
| Ptotal= 71.76 mm |                          B=   3.298
-------------------                          C=   0.794
                         used in:   INTENSITY =  A / (t + B)^C

                         Duration of storm  =  3.00 hrs
                         Storm time step    = 10.00 min
                         Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
```



```
                0.17    6.35 |  1.00  192.16 |   1.83   10.97 |  2.67    6.07
                0.33    7.76 |  1.17   47.74 |   2.00    9.37 |  2.83    5.61
                0.50   10.16 |  1.33   24.88 |   2.17    8.21 |  3.00    5.22
                0.67   15.26 |  1.50   17.22 |   2.33    7.33 |
                0.83   36.28 |  1.67   13.33 |   2.50    6.64 |


-------------------
| CALIB                |
| STANDHYD (  0022)|   Area    (ha)= 127.59
|ID= 1 DT=10.0 min |   Total Imp(%)=  61.00   Dir. Conn.(%)=  49.00
-------------------

                         IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=     77.83         49.76
     Dep. Storage     (mm)=      2.00          5.00
     Average Slope     (%)=      1.00          2.00
     Length            (m)=    922.28         40.00
     Mannings n            =     0.013         0.250

     Max.Eff.Inten.(mm/hr)=    192.16         95.80
               over (min)      10.00         20.00
     Storage Coeff.  (min)=     7.46 (ii)    14.64 (ii)
     Unit Hyd. Tpeak (min)=    10.00         20.00
     Unit Hyd. peak  (cms)=     0.13          0.07
                                                        *TOTALS*
     PEAK FLOW       (cms)=    26.01          6.38       28.969 (iii)
     TIME TO PEAK    (hrs)=     1.00          1.17        1.00
     RUNOFF VOLUME    (mm)=    69.76         29.74       49.35
     TOTAL RAINFALL   (mm)=    71.76         71.76       71.76
     RUNOFF COEFFICIENT   =     0.97          0.41        0.69

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  69.0    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(  0019)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT= 10.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
-------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                         0.0000     0.0000   |   0.3200     3.8870
                         0.1600     1.7840   |   0.3400     4.3720
                         0.2000     2.7010   |   0.3500     4.8700
                         0.2600     3.2740   |   0.3800     6.2160

                               AREA     QPEAK     TPEAK      R.V.
                                (ha)     (cms)     (hrs)      (mm)
   INFLOW : ID= 2 (  0022)    127.590    28.969     1.00      49.35
   OUTFLOW: ID= 1 (  0019)    127.590     0.375     3.33      49.32

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  1.29
                  TIME SHIFT OF PEAK FLOW       (min)=140.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  5.9751

-------------------
| ROUTE CHN(  0026)|
| IN= 2---> OUT= 1 |     Routing time step (min)'= 10.00
-------------------

              <------ DATA FOR SECTION (   1.1) ------>
             Distance      Elevation       Manning
                 0.00         274.12        0.0500
                 5.20         273.17        0.0300      Main Channel
                10.58         272.11        0.0300      Main Channel
                11.50         272.00        0.0300      Main Channel
                56.67         272.00        0.0300      Main Channel
                64.61         272.44        0.0300      Main Channel
                68.47         272.73        0.0300      Main Channel
```

```
                73.75        273.06    0.0300 /0.0500  Main Channel
                79.53        273.29       0.0500

      <-------------------- TRAVEL TIME TABLE ---------------------->
       DEPTH     ELEV      VOLUME    FLOW RATE    VELOCITY   TRAV.TIME
         (m)       (m)    (cu.m.)      (cms)       (m/s)       (min)
       0.07   272.07    .104E+04        0.9        0.29       19.48
       0.13   272.13    .211E+04        2.8        0.46       12.41
       0.20   272.20    .322E+04        5.6        0.59        9.56
       0.26   272.26    .436E+04        9.1        0.71        7.96
       0.33   272.33    .554E+04       13.3        0.82        6.93
       0.40   272.40    .676E+04       18.2        0.91        6.19
       0.46   272.46    .801E+04       23.7        1.01        5.62
       0.53   272.53    .928E+04       30.0        1.09        5.16
       0.60   272.60    .106E+05       36.8        1.18        4.80
       0.66   272.66    .119E+05       44.2        1.26        4.49
       0.73   272.73    .133E+05       52.2        1.33        4.24
       0.79   272.79    .147E+05       60.7        1.40        4.03
       0.86   272.86    .161E+05       69.7        1.47        3.84
       0.93   272.93    .175E+05       79.3        1.54        3.68
       0.99   272.99    .190E+05       89.5        1.60        3.54
       1.06   273.06    .205E+05      100.3        1.66        3.41
       1.14   273.14    .223E+05      114.9        1.74        3.24
       1.22   273.22    .242E+05      130.7        1.83        3.09
       1.29   273.29    .262E+05      147.5        1.91        2.96

                                  <---- hydrograph ---->   <-pipe / channel->
                            AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                             (ha)    (cms)   (hrs)   (mm)      (m)      (m/s)
   INFLOW : ID= 2 (  0019)  127.59    0.37    3.83  49.32     0.03      0.29
   OUTFLOW: ID= 1 (  0026)  127.59    0.37    3.83  49.32     0.03      0.29


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

-------------------
| ADD HYD  (  0017)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0142):    54.15  15.922     1.00     54.26
     + ID2= 2 (  0026):   127.59   0.374     3.83     49.32
       ==========================================================
       ID = 3 (  0017):   181.74  15.963     1.00     50.79

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------
-------------------
| ROUTE CHN(  0015)|
| IN= 2---> OUT= 1 |     Routing time step (min)'= 10.00
-------------------
                <------ DATA FOR SECTION (   1.1) ------>
                Distance      Elevation       Manning
                    0.00         252.95        0.0500
                    3.65         252.53    0.0500 /0.0300  Main Channel
                   12.66         251.31        0.0300      Main Channel
                   14.58         251.05        0.0300      Main Channel
                   76.79         251.08        0.0300      Main Channel
                   87.59         252.17        0.0300      Main Channel
                   90.94         252.44    0.0300 /0.0500  Main Channel
                   98.65         253.00        0.0500

      <-------------------- TRAVEL TIME TABLE ---------------------->
       DEPTH     ELEV      VOLUME    FLOW RATE    VELOCITY   TRAV.TIME
         (m)       (m)    (cu.m.)      (cms)       (m/s)       (min)
       0.10   251.15    .671E+04        4.4        0.82       25.64
       0.20   251.25    .148E+05       15.9        1.36       15.43
       0.30   251.35    .230E+05       32.9        1.80       11.67
       0.40   251.45    .315E+05       54.5        2.18        9.63
       0.49   251.55    .402E+05       80.5        2.53        8.32
       0.59   251.64    .491E+05      110.6        2.84        7.40
       0.69   251.74    .582E+05      144.6        3.13        6.71
       0.79   251.84    .676E+05      182.5        3.41        6.17
       0.89   251.94    .771E+05      224.1        3.67        5.74
       0.99   252.04    .869E+05      269.3        3.91        5.38
```



```
       1.09   252.14    .969E+05      318.2        4.15        5.07
       1.19   252.24    .107E+06      370.2        4.36        4.82
       1.29   252.34    .118E+06      425.6        4.57        4.60
       1.39   252.44    .128E+06      484.6        4.77        4.41
       1.49   252.54    .140E+06      554.9        5.02        4.19
       1.59   252.64    .151E+06      632.3        5.28        3.99
       1.69   252.75    .163E+06      714.0        5.52        3.81
       1.80   252.85    .176E+06      799.8        5.75        3.66
       1.90   252.95    .188E+06      889.9        5.97        3.52

                                  <---- hydrograph ---->   <-pipe / channel->
                            AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                             (ha)    (cms)   (hrs)   (mm)      (m)      (m/s)
   INFLOW : ID= 2 (  0017)  181.74    15.96    1.00  50.79     0.20      1.36
   OUTFLOW: ID= 1 (  0015)  181.74     7.44    1.17  50.79     0.13      0.92


-------------------------------------------------------------------------------
-------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT= 10.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
-------------------       (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   2.3900     1.8110
                          0.8500     1.4450   |   2.9700     1.8200
                          1.8300     1.7990   |   3.5000     1.8910
                          2.0100     1.8050   |   4.0000     1.9620
                          2.0200     1.8070   |   0.0000     0.0000

                              AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0015)    181.740     7.444     1.17      50.79
   OUTFLOW: ID= 1 (  0020)    181.740     3.014     2.17      50.79

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 40.50
                TIME SHIFT OF PEAK FLOW       (min)= 60.00
                MAXIMUM  STORAGE   USED       (ha.m.)=  1.8375

-------------------------------------------------------------------------------
-------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  1421):    15.00   2.752     1.00     40.61
     + ID2= 2 (  0151):    18.20   1.141     1.17     19.43
       ==========================================================
       ID = 3 (  0003):    33.20   3.684     1.00     29.00

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------
-------------------
| ADD HYD  (  0003)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0003):    33.20   3.684     1.00     29.00
     + ID2= 2 (  0002):   182.07   7.395     1.17     14.81
       ==========================================================
       ID = 1 (  0003):   215.27  10.416     1.17     17.00

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------
-------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):   215.27  10.416     1.17     17.00
     + ID2= 2 (  0020):   181.74   3.014     2.17     50.79
       ==========================================================
       ID = 3 (  0003):   397.01  10.757     1.17     32.47

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



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-------------------------------------------------------------------------------
===============================================================================
====================

       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       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 M  O   O
        OOO     T      T    H   H    Y    M   M   OOO
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                *****  D E T A I L E D   O U T P U T *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\05dca9
e7-1bf5-4985-8c56-aecc15e9fd9d\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\05dca9
e7-1bf5-4985-8c56-aecc15e9fd9d\sce

DATE: 11/28/2019                          TIME: 10:09:33

USER:


COMMENTS: _____

-------------------------------------------------------------------------------
-------------------
  ************************************************
  ** SIMULATION : New DesignStormChicago - 3hr  **
  ************************************************

-------------------
| CHICAGO STORM    |    IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm |                          B=   2.188
-------------------                          C=   0.778
                          used in:   INTENSITY =  A / (t + B)^C

                          Duration of storm  =  3.00 hrs
                          Storm time step    = 10.00 min
                          Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    7.21 |  1.00  214.13 |  1.83   12.13 |  2.67    6.92
                0.33    8.74 |  1.17   48.43 |  2.00   10.45 |  2.83    6.41
                0.50   11.28 |  1.33   26.15 |  2.17    9.22 |  3.00    5.98
                0.67   16.53 |  1.50   18.53 |  2.33    8.28 |
                0.83   37.27 |  1.67   14.57 |  2.50    7.53 |


-------------------------------------------------------------------------------
-------------------
| CALIB            |
| NASHYD   (  0153)|   Area    (ha)=  91.47   Curve Number   (CN)= 69.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  22.82   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=  17.469
```



```
     PEAK FLOW      (cms)=   4.517 (i)
     TIME TO PEAK   (hrs)=   1.167
     RUNOFF VOLUME   (mm)=  17.674
     TOTAL RAINFALL  (mm)=  78.293
     RUNOFF COEFFICIENT  =   0.226

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

-------------------------------------------------------------------------------
-------------------
| CHICAGO STORM    |    IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm |                          B=   2.188
-------------------                          C=   0.778
                          used in:   INTENSITY =  A / (t + B)^C

                          Duration of storm  =  3.00 hrs
                          Storm time step    = 10.00 min
                          Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    7.21 |  1.00  214.13 |  1.83   12.13 |  2.67    6.92
                0.33    8.74 |  1.17   48.43 |  2.00   10.45 |  2.83    6.41
                0.50   11.28 |  1.33   26.15 |  2.17    9.22 |  3.00    5.98
                0.67   16.53 |  1.50   18.53 |  2.33    8.28 |
                0.83   37.27 |  1.67   14.57 |  2.50    7.53 |


-------------------------------------------------------------------------------
-------------------
| CALIB            |
| NASHYD   (  0152)|   Area    (ha)=  90.60   Curve Number   (CN)= 70.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  21.77   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=  17.302

     PEAK FLOW      (cms)=   4.872 (i)
     TIME TO PEAK   (hrs)=   1.167
     RUNOFF VOLUME   (mm)=  18.816
     TOTAL RAINFALL  (mm)=  78.293
     RUNOFF COEFFICIENT  =   0.240

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

-------------------------------------------------------------------------------
-------------------
| ADD HYD  (  0002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0152):    90.60   4.872     1.17     18.82
     + ID2= 2 (  0153):    91.47   4.517     1.17     17.67
       ==========================================================
       ID = 3 (  0002):   182.07   9.388     1.17     18.24

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
-------------------------------------------------------------------------------
-------------------
| CHICAGO STORM    |    IDF curve parameters: A=1498.100
| Ptotal= 78.29 mm |                          B=   2.188
-------------------                          C=   0.778
                          used in:   INTENSITY =  A / (t + B)^C

                          Duration of storm  =  3.00 hrs
                          Storm time step    = 10.00 min
                          Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    7.21 |  1.00  214.13 |  1.83   12.13 |  2.67    6.92
                0.33    8.74 |  1.17   48.43 |  2.00   10.45 |  2.83    6.41
                0.50   11.28 |  1.33   26.15 |  2.17    9.22 |  3.00    5.98
```

0.67	16.53	1.50	18.53	2.33	8.28	
0.83	37.27	1.67	14.57	2.50	7.53	

CALIB			
NASHYD (0151)	Area (ha)= 18.20	Curve Number (CN)= 68.0	
ID= 1 DT=10.0 min	Ia (mm)= 11.95	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

Unit Hyd Qpeak (cms)= 3.476

PEAK FLOW	(cms)=	1.364 (i)
TIME TO PEAK	(hrs)=	1.167
RUNOFF VOLUME	(mm)=	23.064
TOTAL RAINFALL	(mm)=	78.293
RUNOFF COEFFICIENT	=	0.295

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

CHICAGO STORM	IDF curve parameters: A=1498.100
Ptotal= 78.29 mm	B= 2.188
	C= 0.778
	used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

CALIB			
STANDHYD (1421)	Area (ha)= 15.00		
ID= 1 DT=10.0 min	Total Imp(%)= 30.00	Dir. Conn.(%)= 29.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.50	10.50
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	3.00
Length	(m)=	258.20	40.00
Mannings n	=	0.015	0.200
Max.Eff.Inten.(mm/hr)=		214.13	83.66
over (min)		10.00	10.00
Storage Coeff. (min)=		3.63 (ii)	9.50 (ii)
Unit Hyd. Tpeak (min)=		10.00	10.00
Unit Hyd. peak (cms)=		0.16	0.11

		TOTALS
PEAK FLOW	(cms)=	2.45 1.63 4.079 (iii)
TIME TO PEAK	(hrs)=	1.00 1.00 1.00
RUNOFF VOLUME	(mm)=	77.29 32.61 45.57
TOTAL RAINFALL	(mm)=	78.29 78.29 78.29
RUNOFF COEFFICIENT	=	0.99 0.42 0.58

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

CHICAGO STORM	IDF curve parameters: A=1498.100
Ptotal= 78.29 mm	B= 2.188
	C= 0.778
	used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

CALIB			
STANDHYD (0142)	Area (ha)= 54.15		
ID= 1 DT=10.0 min	Total Imp(%)= 67.00	Dir. Conn.(%)= 64.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	36.28	17.87
Dep. Storage	(mm)=	1.00	16.04
Average Slope	(%)=	1.00	3.00
Length	(m)=	600.83	40.00
Mannings n	=	0.015	0.250
Max.Eff.Inten.(mm/hr)=		214.13	72.09
over (min)		10.00	20.00
Storage Coeff. (min)=		6.02 (ii)	13.14 (ii)
Unit Hyd. Tpeak (min)=		10.00	20.00
Unit Hyd. peak (cms)=		0.14	0.07

		TOTALS
PEAK FLOW	(cms)=	17.30 1.82 18.057 (iii)
TIME TO PEAK	(hrs)=	1.00 1.17 1.00
RUNOFF VOLUME	(mm)=	77.29 29.49 60.08
TOTAL RAINFALL	(mm)=	78.29 78.29 78.29
RUNOFF COEFFICIENT	=	0.99 0.38 0.77

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 76.0 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.

CHICAGO STORM	IDF curve parameters: A=1498.100
Ptotal= 78.29 mm	B= 2.188
	C= 0.778
	used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	7.21	1.00	214.13	1.83	12.13	2.67	6.92
0.33	8.74	1.17	48.43	2.00	10.45	2.83	6.41
0.50	11.28	1.33	26.15	2.17	9.22	3.00	5.98
0.67	16.53	1.50	18.53	2.33	8.28		
0.83	37.27	1.67	14.57	2.50	7.53		

CALIB			
STANDHYD (0022)	Area (ha)= 127.59		
ID= 1 DT=10.0 min	Total Imp(%)= 61.00	Dir. Conn.(%)= 49.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	77.83	49.76
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	922.28	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		214.13	114.18
over (min)		10.00	20.00
Storage Coeff. (min)=		7.14 (ii)	13.84 (ii)
Unit Hyd. Tpeak (min)=		10.00	20.00
Unit Hyd. peak (cms)=		0.13	0.07

		TOTALS
PEAK FLOW	(cms)=	29.37 7.71 33.000 (iii)
TIME TO PEAK	(hrs)=	1.00 1.17 1.00
RUNOFF VOLUME	(mm)=	76.29 34.29 54.87
TOTAL RAINFALL	(mm)=	78.29 78.29 78.29
RUNOFF COEFFICIENT	=	0.97 0.44 0.70

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 69.0 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(0019)	OVERFLOW IS OFF
IN= 2---> OUT= 1	
DT= 10.0 min	

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.3200	3.8870
0.1600	1.7840	0.3400	4.3720
0.2000	2.7010	0.3500	4.8700
0.2600	3.2740	0.3800	6.2160

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0022)	127.590	33.000	1.00	54.87
OUTFLOW: ID= 1 (0019)	127.590	0.390	3.33	54.85

PEAK FLOW REDUCTION [Qout/Qin](%)= 1.18
TIME SHIFT OF PEAK FLOW (min)=140.00
MAXIMUM STORAGE USED (ha.m.)= 6.6632

ROUTE CHN(0026)	
IN= 2---> OUT= 1	Routing time step (min)'= 10.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	274.12	0.0500	
5.20	273.17	0.0300	Main Channel
10.58	272.11	0.0300	Main Channel
11.50	272.00	0.0300	Main Channel
56.67	272.00	0.0300	Main Channel
64.61	272.44	0.0300	Main Channel
68.47	272.73	0.0300	Main Channel
73.75	273.06	0.0300 /0.0500	Main Channel
79.53	273.29	0.0500	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.07	272.07	.104E+04	0.9	0.29	19.48
0.13	272.13	.211E+04	2.8	0.46	12.41

0.20	272.20	.322E+04	5.6	0.59	9.56
0.26	272.26	.436E+04	9.1	0.71	7.96
0.33	272.33	.554E+04	13.3	0.82	6.93
0.40	272.40	.676E+04	18.2	0.91	6.19
0.46	272.46	.801E+04	23.7	1.01	5.62
0.53	272.53	.928E+04	30.0	1.09	5.16
0.60	272.60	.106E+05	36.8	1.18	4.80
0.66	272.66	.119E+05	44.2	1.26	4.49
0.73	272.73	.133E+05	52.2	1.33	4.24
0.79	272.79	.147E+05	60.7	1.40	4.03
0.86	272.86	.161E+05	69.7	1.47	3.84
0.93	272.93	.175E+05	79.3	1.54	3.68
0.99	272.99	.190E+05	89.5	1.60	3.54
1.06	273.06	.205E+05	100.3	1.66	3.41
1.14	273.14	.223E+05	114.9	1.74	3.24
1.22	273.22	.242E+05	130.7	1.83	3.09
1.29	273.29	.262E+05	147.5	1.91	2.96

<---- hydrograph ----> <-pipe / channel->

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (0019)	127.59	0.39	3.33	54.85	0.03	0.29
OUTFLOW: ID= 1 (0026)	127.59	0.39	3.83	54.85	0.03	0.29

ADD HYD (0017)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0142):	54.15	18.057	1.00	60.08
+ ID2= 2 (0026):	127.59	0.389	3.83	54.85
ID = 3 (0017):	181.74	18.104	1.00	56.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ROUTE CHN(0015)	
IN= 2---> OUT= 1	Routing time step (min)'= 10.00

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	252.95	0.0500	
3.65	252.53	0.0500 /0.0300	Main Channel
12.66	251.31	0.0300	Main Channel
14.58	251.05	0.0300	Main Channel
76.79	251.08	0.0300	Main Channel
87.59	252.17	0.0300	Main Channel
90.94	252.44	0.0300 /0.0500	Main Channel
98.65	253.00	0.0500	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.10	251.15	.671E+04	4.4	0.82	25.64
0.20	251.25	.148E+05	15.9	1.36	15.43
0.30	251.35	.230E+05	32.9	1.80	11.67
0.40	251.45	.315E+05	54.5	2.18	9.63
0.49	251.55	.402E+05	80.5	2.53	8.32
0.59	251.64	.491E+05	110.6	2.84	7.40
0.69	251.74	.582E+05	144.6	3.13	6.71
0.79	251.84	.676E+05	182.5	3.41	6.17
0.89	251.94	.771E+05	224.1	3.67	5.74
0.99	252.04	.869E+05	269.3	3.91	5.38
1.09	252.14	.969E+05	318.2	4.15	5.07
1.19	252.24	.107E+06	370.2	4.36	4.82
1.29	252.34	.118E+06	425.6	4.57	4.60
1.39	252.44	.128E+06	484.6	4.77	4.41
1.49	252.54	.140E+06	554.9	5.02	4.19
1.59	252.64	.151E+06	632.3	5.28	3.99
1.69	252.75	.163E+06	714.0	5.52	3.81
1.80	252.85	.176E+06	799.8	5.75	3.66

```
      1.90   252.95    .188E+06     889.9         5.97      3.52

                                  <---- hydrograph ---->   <-pipe / channel->
                              AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                               (ha)    (cms)   (hrs)   (mm)      (m)      (m/s)
  INFLOW : ID= 2 (  0017)  181.74    18.10    1.00  56.41      0.21      1.41
  OUTFLOW: ID= 1 (  0015)  181.74     8.47    1.17  56.41      0.13      0.95


--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0020)|      OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT= 10.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   2.3900     1.8110
                          0.8500     1.4450   |   2.9700     1.8200
                          1.8300     1.7990   |   3.5000     1.8910
                          2.0100     1.8050   |   4.0000     1.9620
                          2.0200     1.8070   |   0.0000     0.0000

                             AREA      QPEAK     TPEAK       R.V.
                              (ha)      (cms)     (hrs)       (mm)
  INFLOW : ID= 2 (  0015)    181.740     8.473     1.17       56.41
  OUTFLOW: ID= 1 (  0020)    181.740     3.263     2.00       56.41

                 PEAK   FLOW   REDUCTION [Qout/Qin](%)= 38.51
                 TIME SHIFT OF PEAK FLOW         (min)= 50.00
                 MAXIMUM  STORAGE   USED       (ha.m.)=  1.8618

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

--------------------
| ADD HYD  (  0003)|
|  1 +  2 =  3     |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  1421):    15.00   4.079     1.00    45.57
     + ID2= 2 (  0151):    18.20   1.364     1.17    23.06
       ================================================
       ID = 3 (  0003):    33.20   5.252     1.00    33.23

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

--------------------
| ADD HYD  (  0003)|
|  3 +  2 =  1     |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0003):    33.20   5.252     1.00    33.23
     + ID2= 2 (  0002):   182.07   9.388     1.17    18.24
       ================================================
       ID = 1 (  0003):   215.27  12.543     1.17    20.55

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

--------------------
| ADD HYD  (  0003)|
|  1 +  2 =  3     |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):   215.27  12.543     1.17    20.55
     + ID2= 2 (  0020):   181.74   3.263     2.00    56.41
       ================================================
       ID = 3 (  0003):   397.01  12.928     1.17    36.97

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

       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       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
                                  Page 65
```



```
          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 M  O   O
         OOO     T      T    H   H    Y    M   M   OOO
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                    *****  D E T A I L E D    O U T P U T *****

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\269e5f
e1-864b-4ce5-9da5-e3ae993287ec\sce
  Summary filename:
C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\269e5f
e1-864b-4ce5-9da5-e3ae993287ec\sce

DATE: 11/28/2019                          TIME: 10:09:34

USER:


COMMENTS: _____

--------------------------------------------------------------------------------
--------------------
  ************************************************
  ** SIMULATION : New DesignStormChicago - 3hr  **
  ************************************************

--------------------
| CHICAGO STORM    |     IDF curve parameters: A=1496.300
| Ptotal= 60.39 mm |                           B=   5.250
--------------------                           C=   0.825
                          used in:   INTENSITY =  A / (t + B)^C

                          Duration of storm  =  3.00 hrs
                          Storm time step    = 10.00 min
                          Time to peak ratio =  0.33

          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
          0.17    4.89 |  1.00  158.06 |'  1.83    8.94 |  2.67    4.66
          0.33    6.10 |  1.17   44.35 |'  2.00    7.51 |  2.83    4.27
          0.50    8.21 |  1.33   22.12 |'  2.17    6.49 |  3.00    3.95
          0.67   12.90 |  1.50   14.74 |'  2.33    5.73 |
          0.83   33.21 |  1.67   11.10 |'  2.50    5.14 |


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0153)|   Area    (ha)=  91.47   Curve Number   (CN)= 69.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  22.82   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=  17.469

     PEAK FLOW       (cms)=   2.068 (i)
     TIME TO PEAK    (hrs)=   1.167
     RUNOFF VOLUME    (mm)=   9.065
     TOTAL RAINFALL   (mm)=  60.393
     RUNOFF COEFFICIENT   =   0.150

     (i) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.
                                  Page 66
```



```
--------------------
| CHICAGO STORM    |     IDF curve parameters: A=1496.300
| Ptotal= 60.39 mm |                           B=   5.250
--------------------                           C=   0.825
                          used in:   INTENSITY =  A / (t + B)^C

                          Duration of storm  =  3.00 hrs
                          Storm time step    = 10.00 min
                          Time to peak ratio =  0.33

          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
          0.17    4.89 |  1.00  158.06 |'  1.83    8.94 |  2.67    4.66
          0.33    6.10 |  1.17   44.35 |'  2.00    7.51 |  2.83    4.27
          0.50    8.21 |  1.33   22.12 |'  2.17    6.49 |  3.00    3.95
          0.67   12.90 |  1.50   14.74 |'  2.33    5.73 |
          0.83   33.21 |  1.67   11.10 |'  2.50    5.14 |


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0152)|   Area    (ha)=  90.60   Curve Number   (CN)= 70.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  21.77   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=  17.302

     PEAK FLOW       (cms)=   2.307 (i)
     TIME TO PEAK    (hrs)=   1.167
     RUNOFF VOLUME    (mm)=   9.852
     TOTAL RAINFALL   (mm)=  60.393
     RUNOFF COEFFICIENT   =   0.163

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

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

--------------------
| ADD HYD  (  0002)|
|  1 +  2 =  3     |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0152):    90.60   2.307     1.17     9.85
     + ID2= 2 (  0153):    91.47   2.068     1.17     9.07
       ================================================
       ID = 3 (  0002):   182.07   4.375     1.17     9.46

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |     IDF curve parameters: A=1496.300
| Ptotal= 60.39 mm |                           B=   5.250
--------------------                           C=   0.825
                          used in:   INTENSITY =  A / (t + B)^C

                          Duration of storm  =  3.00 hrs
                          Storm time step    = 10.00 min
                          Time to peak ratio =  0.33

          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
          0.17    4.89 |  1.00  158.06 |'  1.83    8.94 |  2.67    4.66
          0.33    6.10 |  1.17   44.35 |'  2.00    7.51 |  2.83    4.27
          0.50    8.21 |  1.33   22.12 |'  2.17    6.49 |  3.00    3.95
          0.67   12.90 |  1.50   14.74 |'  2.33    5.73 |
          0.83   33.21 |  1.67   11.10 |'  2.50    5.14 |


--------------------------------------------------------------------------------
--------------------
| CALIB
| NASHYD   (  0151)|   Area    (ha)=  18.20   Curve Number   (CN)= 68.0
                                  Page 67
```



```
|ID= 1 DT=10.0 min |   Ia      (mm)=  11.95   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=   3.476

     PEAK FLOW       (cms)=   0.787 (i)
     TIME TO PEAK    (hrs)=   1.167
     RUNOFF VOLUME    (mm)=  13.608
     TOTAL RAINFALL   (mm)=  60.393
     RUNOFF COEFFICIENT   =   0.225

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

--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |     IDF curve parameters: A=1496.300
| Ptotal= 60.39 mm |                           B=   5.250
--------------------                           C=   0.825
                          used in:   INTENSITY =  A / (t + B)^C

                          Duration of storm  =  3.00 hrs
                          Storm time step    = 10.00 min
                          Time to peak ratio =  0.33

          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
          0.17    4.89 |  1.00  158.06 |'  1.83    8.94 |  2.67    4.66
          0.33    6.10 |  1.17   44.35 |'  2.00    7.51 |  2.83    4.27
          0.50    8.21 |  1.33   22.12 |'  2.17    6.49 |  3.00    3.95
          0.67   12.90 |  1.50   14.74 |'  2.33    5.73 |
          0.83   33.21 |  1.67   11.10 |'  2.50    5.14 |


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  1421)|   Area    (ha)=  15.00
|ID= 1 DT=10.0 min |   Total Imp(%)=  30.00   Dir. Conn.(%)=  29.00
--------------------

                                IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=        4.50          10.50
     Dep. Storage     (mm)=        1.00           2.00
     Average Slope     (%)=        1.00           3.00
     Length            (m)=      258.20          40.00
     Mannings n           =       0.015          0.200

     Max.Eff.Inten.(mm/hr)=      158.06          50.65
               over (min)        10.00          20.00
     Storage Coeff.  (min)=       4.10 (ii)     11.27 (ii)
     Unit Hyd. Tpeak (min)=      10.00          20.00
     Unit Hyd. peak  (cms)=       0.16           0.08
                                                          *TOTALS*
     PEAK FLOW       (cms)=       1.78           0.83       2.165 (iii)
     TIME TO PEAK    (hrs)=       1.00           1.17        1.00
     RUNOFF VOLUME    (mm)=      59.39          21.24       32.30
     TOTAL RAINFALL   (mm)=      60.39          60.39       60.39
     RUNOFF COEFFICIENT   =       0.98           0.35        0.53

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
             CN*  =  71.0   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.

--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |     IDF curve parameters: A=1496.300
| Ptotal= 60.39 mm |                           B=   5.250
--------------------                           C=   0.825
                          used in:   INTENSITY =  A / (t + B)^C

                          Duration of storm  =  3.00 hrs
                                  Page 68
```

```
 Storm time step    = 10.00 min
 Time to peak ratio =  0.33

 TIME   RAIN |  TIME   RAIN |'  TIME   RAIN |  TIME   RAIN
  hrs  mm/hr |   hrs  mm/hr |'   hrs  mm/hr |   hrs  mm/hr
 0.17   4.89 |  1.00  158.06 |'  1.83   8.94 |  2.67   4.66
 0.33   6.10 |  1.17   44.35 |'  2.00   7.51 |  2.83   4.27
 0.50   8.21 |  1.33   22.12 |'  2.17   6.49 |  3.00   3.95
 0.67  12.90 |  1.50   14.74 |'  2.33   5.73 |
 0.83  33.21 |  1.67   11.10 |'  2.50   5.14 |
```

```
| CALIB          |
| STANDHYD (  0142)|   Area    (ha)=  54.15
|ID= 1 DT=10.0 min |   Total Imp(%)=  67.00   Dir. Conn.(%)=  64.00
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	36.28	17.87
Dep. Storage	(mm)=	1.00	16.04
Average Slope	(%)=	1.00	3.00
Length	(m)=	600.83	40.00
Mannings n	=	0.015	0.250
Max.Eff.Inten.(mm/hr)=		158.06	34.58
over (min)		10.00	20.00
Storage Coeff. (min)=		6.80 (ii)	16.35 (ii)
Unit Hyd. Tpeak (min)=		10.00	20.00
Unit Hyd. peak (cms)=		0.13	0.06

		TOTALS
PEAK FLOW	(cms)=	12.35	0.87	12.665 (iii)
TIME TO PEAK	(hrs)=	1.00	1.33	1.00
RUNOFF VOLUME	(mm)=	59.39	17.51	44.32
TOTAL RAINFALL	(mm)=	60.39	60.39	60.39
RUNOFF COEFFICIENT	=	0.98	0.29	0.73

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 76.0 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.

```
| CHICAGO STORM    |     IDF curve parameters: A=1496.300
| Ptotal= 60.39 mm |                           B=   5.250
                                               C=   0.825
                     used in:   INTENSITY =  A / (t + B)^C

                     Duration of storm  =  3.00 hrs
                     Storm time step    = 10.00 min
                     Time to peak ratio =  0.33

 TIME   RAIN |  TIME   RAIN |'  TIME   RAIN |  TIME   RAIN
  hrs  mm/hr |   hrs  mm/hr |'   hrs  mm/hr |   hrs  mm/hr
 0.17   4.89 |  1.00  158.06 |'  1.83   8.94 |  2.67   4.66
 0.33   6.10 |  1.17   44.35 |'  2.00   7.51 |  2.83   4.27
 0.50   8.21 |  1.33   22.12 |'  2.17   6.49 |  3.00   3.95
 0.67  12.90 |  1.50   14.74 |'  2.33   5.73 |
 0.83  33.21 |  1.67   11.10 |'  2.50   5.14 |
```

```
| CALIB          |
| STANDHYD (  0022)|   Area    (ha)= 127.59
|ID= 1 DT=10.0 min |   Total Imp(%)=  61.00   Dir. Conn.(%)=  49.00
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	77.83	49.76
Dep. Storage	(mm)=	2.00	5.00

Average Slope	(%)=	1.00	2.00
Length	(m)=	922.28	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		158.06	68.41
over (min)		10.00	20.00
Storage Coeff. (min)=		8.07 (ii)	16.28 (ii)
Unit Hyd. Tpeak (min)=		10.00	20.00
Unit Hyd. peak (cms)=		0.12	0.06

		TOTALS
PEAK FLOW	(cms)=	20.84	4.40	22.818 (iii)
TIME TO PEAK	(hrs)=	1.00	1.17	1.00
RUNOFF VOLUME	(mm)=	58.39	22.25	39.96
TOTAL RAINFALL	(mm)=	60.39	60.39	60.39
RUNOFF COEFFICIENT	=	0.97	0.37	0.66

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 69.0 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(  0019)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT= 10.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.3200     3.8870
                          0.1600     1.7840   |   0.3400     4.3720
                          0.2000     2.7010   |   0.3500     4.8700
                          0.2600     3.2740   |   0.3800     6.2160

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
  INFLOW : ID= 2 (  0022)    127.590     22.818      1.00      39.96
  OUTFLOW: ID= 1 (  0019)    127.590      0.349      3.33      39.94

                PEAK   FLOW   REDUCTION [Qout/Qin](%)=  1.53
                TIME SHIFT OF PEAK FLOW          (min)=140.00
                MAXIMUM  STORAGE   USED       (ha.m.)=  4.8101
```

```
| ROUTE CHN(  0026)|
| IN= 2---> OUT= 1 |     Routing time step (min)'= 10.00
```

<-------- DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	274.12	0.0500	
5.20	273.17	0.0300	Main Channel
10.58	272.11	0.0300	Main Channel
11.50	272.00	0.0300	Main Channel
56.67	272.00	0.0300	Main Channel
64.61	272.44	0.0300	Main Channel
68.47	272.73	0.0300	Main Channel
73.75	273.06	0.0300 /0.0500	Main Channel
79.53	273.29	0.0500	

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH	ELEV	VOLUME	FLOW RATE	VELOCITY	TRAV.TIME
(m)	(m)	(cu.m.)	(cms)	(m/s)	(min)
0.07	272.07	.104E+04	0.9	0.29	19.48
0.13	272.13	.211E+04	2.8	0.46	12.41
0.20	272.20	.322E+04	5.6	0.59	9.56
0.26	272.26	.436E+04	9.1	0.71	7.96
0.33	272.33	.554E+04	13.3	0.82	6.93
0.40	272.40	.676E+04	18.2	0.91	6.19
0.46	272.46	.801E+04	23.7	1.01	5.62
0.53	272.53	.928E+04	30.0	1.09	5.16
0.60	272.60	.106E+05	36.8	1.18	4.80
0.66	272.66	.119E+05	44.2	1.26	4.49

0.73	272.73	.133E+05	52.2	1.33	4.24
0.79	272.79	.147E+05	60.7	1.40	4.03
0.86	272.86	.161E+05	69.7	1.47	3.84
0.93	272.93	.175E+05	79.3	1.54	3.68
0.99	272.99	.190E+05	89.5	1.60	3.54
1.06	273.06	.205E+05	100.3	1.66	3.41
1.14	273.14	.223E+05	114.9	1.74	3.24
1.22	273.22	.242E+05	130.7	1.83	3.09
1.29	273.29	.262E+05	147.5	1.91	2.96

<---- hydrograph ----> <-pipe / channel->

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (	0019)	127.59	0.35	3.33	39.94	0.03	0.29
OUTFLOW: ID= 1 (	0026)	127.59	0.35	3.83	39.94	0.03	0.29

```
| ADD HYD (  0017)|
|  1 +  2 =  3    |
------------------
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (	0142):	54.15	12.665	1.00	44.32
+ ID2= 2 (	0026):	127.59	0.348	3.83	39.94
ID = 3 (	0017):	181.74	12.697	1.00	41.24

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ROUTE CHN(  0015)|
| IN= 2---> OUT= 1 |     Routing time step (min)'= 10.00
```

<------ DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	252.95	0.0500	
3.65	252.53	0.0500 /0.0300	Main Channel
12.66	251.31	0.0300	Main Channel
14.58	251.05	0.0300	Main Channel
76.79	251.08	0.0300	Main Channel
87.59	252.17	0.0300	Main Channel
90.94	252.44	0.0300 /0.0500	Main Channel
98.65	253.00	0.0500	

<-------------------- TRAVEL TIME TABLE ---------------------->

DEPTH	ELEV	VOLUME	FLOW RATE	VELOCITY	TRAV.TIME
(m)	(m)	(cu.m.)	(cms)	(m/s)	(min)
0.10	251.15	.671E+04	4.4	0.82	25.64
0.20	251.25	.148E+05	15.9	1.36	15.43
0.30	251.35	.230E+05	32.9	1.80	11.67
0.40	251.45	.315E+05	54.5	2.18	9.63
0.49	251.55	.402E+05	80.5	2.53	8.32
0.59	251.64	.491E+05	110.6	2.84	7.40
0.69	251.74	.582E+05	144.6	3.13	6.71
0.79	251.84	.676E+05	182.5	3.41	6.17
0.89	251.94	.771E+05	224.1	3.67	5.74
0.99	252.04	.869E+05	269.3	3.91	5.38
1.09	252.14	.969E+05	318.2	4.15	5.07
1.19	252.24	.107E+06	370.2	4.36	4.82
1.29	252.34	.118E+06	425.6	4.57	4.60
1.39	252.44	.128E+06	484.6	4.77	4.41
1.49	252.54	.140E+06	554.9	5.02	4.19
1.59	252.64	.151E+06	632.3	5.28	3.99
1.69	252.75	.163E+06	714.0	5.52	3.81
1.80	252.85	.176E+06	799.8	5.75	3.66
1.90	252.95	.188E+06	889.9	5.97	3.52

<---- hydrograph ----> <-pipe / channel->

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (	0017)	181.74	12.70	1.00	41.24	0.17	1.15
OUTFLOW: ID= 1 (	0015)	181.74	5.79	1.17	41.24	0.11	0.86

```
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT= 10.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
                          (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   2.3900     1.8110
                          0.8500     1.4450   |   2.9700     1.8200
                          1.8300     1.7990   |   3.5000     1.8910
                          2.0100     1.8050   |   4.0000     1.9620
                          2.0200     1.8070   |   0.0000     0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
  INFLOW : ID= 2 (  0015)    181.740     5.794      1.17      41.24
  OUTFLOW: ID= 1 (  0020)    181.740     1.469      2.67      41.24

                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 25.35
                TIME SHIFT OF PEAK FLOW          (min)= 90.00
                MAXIMUM  STORAGE   USED       (ha.m.)=  1.6694
```

```
| ADD HYD (  0003)|
|  1 +  2 =  3    |
------------------
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (	1421):	15.00	2.165	1.00	32.30
+ ID2= 2 (	0151):	18.20	0.787	1.17	13.61
ID = 3 (	0003):	33.20	2.750	1.00	22.05

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD (  0003)|
|  3 +  2 =  1    |
------------------
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (	0003):	33.20	2.750	1.00	22.05
+ ID2= 2 (	0002):	182.07	4.375	1.17	9.46
ID = 1 (	0003):	215.27	6.640	1.17	11.40

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| ADD HYD (  0003)|
|  1 +  2 =  3    |
------------------
```

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (	0003):	215.27	6.640	1.17	11.40
+ ID2= 2 (	0020):	181.74	1.469	2.67	41.24
ID = 3 (	0003):	397.01	6.908	1.17	25.06

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
==============================================================================
==========
```

```
       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       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 M  O   O
       OOO     T      T    H   H    Y    M   M   OOO
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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

Output filename: C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\09129ce5-5ece-4bb5-8fd8-ed67bf91cb5a\sce
Summary filename: C:\Users\p001279d\AppData\Local\Civica\VH5\b8ccece0-2cc7-4973-8ab8-dd0de50b3a28\09129ce5-5ece-4bb5-8fd8-ed67bf91cb5a\sce

DATE: 11/28/2019 TIME: 10:09:34

USER:

COMMENTS: _____

** SIMULATION : New DesignStormChicago - 3hr **

CHICAGO STORM	Ptotal= 33.36 mm

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

CALIB	NASHYD (0153)	ID= 1 DT=10.0 min

Area (ha)= 91.47 Curve Number (CN)= 69.0
Ia (mm)= 22.82 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

Unit Hyd Qpeak (cms)= 17.469

PEAK FLOW (cms)= 0.134 (i)
TIME TO PEAK (hrs)= 1.833
RUNOFF VOLUME (mm)= 0.869
TOTAL RAINFALL (mm)= 33.364
RUNOFF COEFFICIENT = 0.026

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

CHICAGO STORM	Ptotal= 33.36 mm

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

CALIB	NASHYD (0152)	ID= 1 DT=10.0 min

Area (ha)= 90.60 Curve Number (CN)= 70.0
Ia (mm)= 21.77 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

Unit Hyd Qpeak (cms)= 17.302

PEAK FLOW (cms)= 0.168 (i)
TIME TO PEAK (hrs)= 1.667
RUNOFF VOLUME (mm)= 1.087
TOTAL RAINFALL (mm)= 33.364
RUNOFF COEFFICIENT = 0.033

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

ADD HYD	1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0152):	90.60	0.168	1.67	1.09
+ ID2= 2 (0153):	91.47	0.134	1.83	0.87
ID = 3 (0002):	182.07	0.299	1.83	0.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CHICAGO STORM	Ptotal= 33.36 mm

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

CALIB	NASHYD (0151)	ID= 1 DT=10.0 min

Area (ha)= 18.20 Curve Number (CN)= 68.0
Ia (mm)= 11.95 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

Unit Hyd Qpeak (cms)= 3.476

PEAK FLOW (cms)= 0.134 (i)
TIME TO PEAK (hrs)= 1.333
RUNOFF VOLUME (mm)= 3.169

TOTAL RAINFALL (mm)= 33.364
RUNOFF COEFFICIENT = 0.095

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

CHICAGO STORM	Ptotal= 33.36 mm

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

CALIB	STANDHYD (1421)	ID= 1 DT=10.0 min

Area (ha)= 15.00
Total Imp(%)= 30.00 Dir. Conn.(%)= 29.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.50	10.50
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	3.00
Length	(m)=	258.20	40.00
Mannings n	=	0.015	0.200
Max.Eff.Inten.(mm/hr)=		83.04	11.44
over (min)		10.00	20.00
Storage Coeff. (min)=		5.30 (ii)	18.31 (ii)
Unit Hyd. Tpeak (min)=		10.00	20.00
Unit Hyd. peak (cms)=		0.14	0.06

		TOTALS
PEAK FLOW	(cms)=	0.88 0.971 (iii)
TIME TO PEAK	(hrs)=	1.00 1.00
RUNOFF VOLUME	(mm)=	32.36 14.62
TOTAL RAINFALL	(mm)=	33.36 33.36
RUNOFF COEFFICIENT	=	0.97 0.22 0.44

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

CHICAGO STORM	Ptotal= 33.36 mm

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44

0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

CALIB	STANDHYD (0142)	ID= 1 DT=10.0 min

Area (ha)= 54.15
Total Imp(%)= 67.00 Dir. Conn.(%)= 64.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	36.28	17.87
Dep. Storage	(mm)=	1.00	16.04
Average Slope	(%)=	1.00	3.00
Length	(m)=	600.83	40.00
Mannings n	=	0.015	0.250
Max.Eff.Inten.(mm/hr)=		83.04	3.39
over (min)		10.00	40.00
Storage Coeff. (min)=		8.79 (ii)	32.99 (ii)
Unit Hyd. Tpeak (min)=		10.00	40.00
Unit Hyd. peak (cms)=		0.12	0.03

		TOTALS
PEAK FLOW	(cms)=	5.88 0.10 5.881 (iii)
TIME TO PEAK	(hrs)=	1.00 1.83 1.00
RUNOFF VOLUME	(mm)=	32.36 3.78 22.07
TOTAL RAINFALL	(mm)=	33.36 33.36 33.36
RUNOFF COEFFICIENT	=	0.97 0.11 0.66

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 76.0 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.

CHICAGO STORM	Ptotal= 33.36 mm

IDF curve parameters: A= 724.700
B= 5.000
C= 0.800
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.99	1.00	83.04	1.83	5.29	2.67	2.86
0.33	3.69	1.17	24.13	2.00	4.49	2.83	2.63
0.50	4.88	1.33	12.47	2.17	3.91	3.00	2.44
0.67	7.49	1.50	8.49	2.33	3.47		
0.83	18.29	1.67	6.50	2.50	3.13		

CALIB	STANDHYD (0022)	ID= 1 DT=10.0 min

Area (ha)= 127.59
Total Imp(%)= 61.00 Dir. Conn.(%)= 49.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	77.83	49.76
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	922.28	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		83.04	14.73
over (min)		10.00	30.00
Storage Coeff. (min)=		10.44 (ii)	25.62 (ii)
Unit Hyd. Tpeak (min)=		10.00	30.00

```
Unit Hyd. peak  (cms)=       0.10          0.04
                                                    *TOTALS*
PEAK FLOW       (cms)=       9.75          0.97        9.982 (iii)
TIME TO PEAK    (hrs)=       1.00          1.50         1.00
RUNOFF VOLUME    (mm)=      31.36          7.47        19.18
TOTAL RAINFALL   (mm)=      33.36         33.36        33.36
RUNOFF COEFFICIENT   =       0.94          0.22         0.57

  (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
      CN* =  69.0    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(  0019)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT= 10.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.3200      3.8870
                          0.1600     1.7840   |   0.3400      4.3720
                          0.2000     2.7010   |   0.3500      4.8700
                          0.2600     3.2740   |   0.3800      6.2160

                              AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0022)    127.590     9.982     1.00      19.18
   OUTFLOW: ID= 1 (  0019)    127.590     0.182     3.50      19.16

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  1.82
                  TIME SHIFT OF PEAK FLOW         (min)=150.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  2.2831

--------------------------------------------------------------------------------
--------------------
| ROUTE CHN(  0026)|
| IN= 2---> OUT= 1 |     Routing time step (min)'= 10.00
--------------------
             <------ DATA FOR SECTION (   1.1) ------>
            Distance      Elevation       Manning
                0.00        274.12        0.0500
                5.20        273.17        0.0300      Main Channel
               10.58        272.11        0.0300      Main Channel
               11.50        272.00        0.0300      Main Channel
               56.67        272.00        0.0300      Main Channel
               64.61        272.44        0.0300      Main Channel
               68.47        272.73        0.0300      Main Channel
               73.75        273.06    0.0300 /0.0500  Main Channel
               79.53        273.29        0.0500

    <---------------------- TRAVEL TIME TABLE ---------------------->
     DEPTH     ELEV      VOLUME    FLOW RATE    VELOCITY   TRAV.TIME
      (m)      (m)     (cu.m.)      (cms)        (m/s)      (min)
     0.07   272.07    .104E+04        0.9         0.29      19.48
     0.13   272.13    .211E+04        2.8         0.46      12.41
     0.20   272.20    .322E+04        5.6         0.59       9.56
     0.26   272.26    .436E+04        9.1         0.71       7.96
     0.33   272.33    .554E+04       13.3         0.82       6.93
     0.40   272.40    .676E+04       18.2         0.91       6.19
     0.46   272.46    .801E+04       23.7         1.01       5.62
     0.53   272.53    .928E+04       30.0         1.09       5.16
     0.60   272.60    .106E+05       36.8         1.18       4.80
     0.66   272.66    .119E+05       44.2         1.26       4.49
     0.73   272.73    .133E+05       52.2         1.33       4.24
     0.79   272.79    .147E+05       60.7         1.40       4.03
     0.86   272.86    .161E+05       69.7         1.47       3.84
     0.93   272.93    .175E+05       79.3         1.54       3.68
     0.99   272.99    .190E+05       89.5         1.60       3.54
     1.06   273.06    .205E+05      100.3         1.66       3.41
     1.14   273.14    .223E+05      114.9         1.74       3.24
     1.22   273.22    .242E+05      130.7         1.83       3.09
     1.29   273.29    .262E+05      147.5         1.91       2.96
```



```
                                  <---- hydrograph ---->   <-pipe / channel->
                                    AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                                    (ha)    (cms)   (hrs)   (mm)       (m)      (m/s)
   INFLOW : ID= 2 (  0019)  127.59     0.18    3.50  19.16      0.01      0.29
   OUTFLOW: ID= 1 (  0026)  127.59     0.18    4.00  19.16      0.01      0.29

--------------------------------------------------------------------------------
--------------------
| ADD HYD  (  0017)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0142):    54.15   5.881     1.00     22.07
     + ID2= 2 (  0026):   127.59   0.181     4.00     19.16
       ==========================================================
       ID = 3 (  0017):   181.74   5.893     1.00     20.02

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTE CHN(  0015)|
| IN= 2---> OUT= 1 |     Routing time step (min)'= 10.00
--------------------
             <------ DATA FOR SECTION (   1.1) ------>
            Distance      Elevation       Manning
                0.00        252.95        0.0500
                3.65        252.53    0.0500 /0.0300  Main Channel
               12.66        251.31        0.0300      Main Channel
               14.58        251.05        0.0300      Main Channel
               76.79        251.08        0.0300      Main Channel
               87.59        252.17        0.0300      Main Channel
               90.94        252.44    0.0300 /0.0500  Main Channel
               98.65        253.00        0.0500

    <---------------------- TRAVEL TIME TABLE ---------------------->
     DEPTH     ELEV      VOLUME    FLOW RATE    VELOCITY   TRAV.TIME
      (m)      (m)     (cu.m.)      (cms)        (m/s)      (min)
     0.10   251.15    .671E+04        4.4         0.82      25.64
     0.20   251.25    .140E+05       15.9         1.36      15.43
     0.30   251.35    .230E+05       32.9         1.80      11.67
     0.40   251.45    .315E+05       54.5         2.18       9.63
     0.49   251.55    .402E+05       80.5         2.53       8.32
     0.59   251.64    .491E+05      110.6         2.84       7.40
     0.69   251.74    .582E+05      144.6         3.13       6.71
     0.79   251.84    .676E+05      182.5         3.41       6.17
     0.89   251.94    .771E+05      224.1         3.67       5.74
     0.99   252.04    .869E+05      269.3         3.91       5.38
     1.09   252.14    .969E+05      318.2         4.15       5.07
     1.19   252.24    .107E+06      370.2         4.36       4.82
     1.29   252.34    .118E+06      425.6         4.57       4.60
     1.39   252.44    .128E+06      484.6         4.77       4.41
     1.49   252.54    .140E+06      554.9         5.02       4.19
     1.59   252.64    .151E+06      632.3         5.28       3.99
     1.69   252.75    .163E+06      714.0         5.52       3.81
     1.80   252.85    .176E+06      799.8         5.75       3.66
     1.90   252.95    .188E+06      889.9         5.97       3.52

                                  <---- hydrograph ---->   <-pipe / channel->
                                    AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                                    (ha)    (cms)   (hrs)   (mm)       (m)      (m/s)
   INFLOW : ID= 2 (  0017)  181.74     5.89    1.00  20.02      0.11      0.87
   OUTFLOW: ID= 1 (  0015)  181.74     2.61    1.33  20.02      0.06      0.82

--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT= 10.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   2.3900      1.8110
                          0.8500     1.4450   |   2.9700      1.8200
```



```
                             1.8300     1.7990   |   3.5000      1.8910
                             2.0100     1.8050   |   4.0000      1.9620
                             2.0200     1.8070   |   0.0000      0.0000

                                  AREA     QPEAK     TPEAK       R.V.
                                   (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0015)    181.740      2.605      1.33      20.02
   OUTFLOW: ID= 1 (  0020)    181.740      0.521      3.17      20.02

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 20.01
                  TIME SHIFT OF PEAK FLOW         (min)=110.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.8870

--------------------------------------------------------------------------------
--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  1421):    15.00   0.971     1.00     14.62
     + ID2= 2 (  0151):    18.20   0.134     1.33      3.17
       ==========================================================
       ID = 3 (  0003):    33.20   1.039     1.00      8.34

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ADD HYD  (  0003)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0003):    33.20   1.039     1.00      8.34
     + ID2= 2 (  0002):   182.07   0.299     1.83      0.98
       ==========================================================
       ID = 1 (  0003):   215.27   1.039     1.00      2.11

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):   215.27   1.039     1.00      2.11
     + ID2= 2 (  0020):   181.74   0.521     3.17     20.02
       ==========================================================
       ID = 3 (  0003):   397.01   1.090     1.00     10.31

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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       V    V   I    SSSSS  U   U    A    L              (v 5.2.2003)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.2\VO2\voin.dat

  Output  filename:
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  Summary filename:
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0d-1808-40dc-b610-e2d776fab5be\sce


DATE: 11/28/2019                          TIME: 10:09:35

USER:


COMMENTS: _____

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  ************************************************
  ** SIMULATION : New DesignStormChicago - 3hr  **
  ************************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1330.300
| Ptotal= 45.35 mm |                          B=   7.938
--------------------                          C=   0.855
                          used in:   INTENSITY =  A / (t + B)^C

                          Duration of storm  =  3.00 hrs
                          Storm time step    = 10.00 min
                          Time to peak ratio =  0.33

      TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
       hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
      0.17    3.43 |  1.00  112.71 |'  1.83    6.69 |  2.67    3.25
      0.33    4.38 |  1.17   36.59 |'  2.00    5.51 |  2.83    2.95
      0.50    6.09 |  1.33   17.98 |'  2.17    4.69 |  3.00    2.70
      0.67   10.04 |  1.50   11.61 |'  2.33    4.08 |
      0.83   27.27 |  1.67    8.50 |'  2.50    3.61 |

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0153)|   Area    (ha)=  91.47   Curve Number   (CN)= 69.0
|ID= 1 DT=10.0 min |   Ia      (mm)=  22.82   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.20

     Unit Hyd Qpeak  (cms)=  17.469

     PEAK FLOW       (cms)=   0.768 (i)
     TIME TO PEAK    (hrs)=   1.333
     RUNOFF VOLUME    (mm)=   3.617
     TOTAL RAINFALL   (mm)=  45.346
     RUNOFF COEFFICIENT   =   0.080

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

--------------------------------------------------------------------------------
--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1330.300
| Ptotal= 45.35 mm |                          B=   7.938
--------------------                          C=   0.855
                          used in:   INTENSITY =  A / (t + B)^C

                          Duration of storm  =  3.00 hrs
                          Storm time step    = 10.00 min
                          Time to peak ratio =  0.33

      TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
       hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
      0.17    3.43 |  1.00  112.71 |'  1.83    6.69 |  2.67    3.25
      0.33    4.38 |  1.17   36.59 |'  2.00    5.51 |  2.83    2.95
      0.50    6.09 |  1.33   17.98 |'  2.17    4.69 |  3.00    2.70
```

0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB NASHYD (0152) ID= 1 DT=10.0 min	Area (ha)= 90.60 Curve Number (CN)= 70.0 Ia (mm)= 21.77 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.20

Unit Hyd Qpeak (cms)= 17.302

PEAK FLOW (cms)= 0.887 (i)
TIME TO PEAK (hrs)= 1.333
RUNOFF VOLUME (mm)= 4.088
TOTAL RAINFALL (mm)= 45.346
RUNOFF COEFFICIENT = 0.090

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

ADD HYD (0002)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0152):	90.60	0.887	1.33	4.09
+ ID2= 2 (0153):	91.47	0.768	1.33	3.62
ID = 3 (0002):	182.07	1.656	1.33	3.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CHICAGO STORM Ptotal= 45.35 mm	IDF curve parameters: A=1330.300 B= 7.938 C= 0.855 used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB NASHYD (0151) ID= 1 DT=10.0 min	Area (ha)= 18.20 Curve Number (CN)= 68.0 Ia (mm)= 11.95 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.20

Unit Hyd Qpeak (cms)= 3.476

PEAK FLOW (cms)= 0.377 (i)
TIME TO PEAK (hrs)= 1.167
RUNOFF VOLUME (mm)= 7.103
TOTAL RAINFALL (mm)= 45.346
RUNOFF COEFFICIENT = 0.157

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

CHICAGO STORM Ptotal= 45.35 mm	IDF curve parameters: A=1330.300 B= 7.938

C= 0.855
used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB STANDHYD (1421) ID= 1 DT=10.0 min	Area (ha)= 15.00 Total Imp(%)= 30.00 Dir. Conn.(%)= 29.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.50	10.50
Dep. Storage	(mm)=	1.00	2.00
Average Slope	(%)=	1.00	3.00
Length	(m)=	258.20	40.00
Mannings n	=	0.015	0.200
Max.Eff.Inten.(mm/hr)=		112.71	28.23
over (min)		10.00	20.00
Storage Coeff. (min)=		4.69 (ii)	13.75 (ii)
Unit Hyd. Tpeak (min)=		10.00	20.00
Unit Hyd. peak (cms)=		0.15	0.07

		TOTALS
PEAK FLOW	(cms)=	1.24 0.44 1.433 (iii)
TIME TO PEAK	(hrs)=	1.00 1.17 1.00
RUNOFF VOLUME	(mm)=	44.35 12.92 22.03
TOTAL RAINFALL	(mm)=	45.35 45.35 45.35
RUNOFF COEFFICIENT	=	0.98 0.28 0.49

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 71.0 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.

CHICAGO STORM Ptotal= 45.35 mm	IDF curve parameters: A=1330.300 B= 7.938 C= 0.855 used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB STANDHYD (0142) ID= 1 DT=10.0 min	Area (ha)= 54.15 Total Imp(%)= 67.00 Dir. Conn.(%)= 64.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	36.28	17.87
Dep. Storage	(mm)=	1.00	16.04
Average Slope	(%)=	1.00	3.00
Length	(m)=	600.83	40.00
Mannings n	=	0.015	0.250
Max.Eff.Inten.(mm/hr)=		112.71	12.43
over (min)		10.00	30.00
Storage Coeff. (min)=		7.78 (ii)	22.17 (ii)
Unit Hyd. Tpeak (min)=		10.00	30.00
Unit Hyd. peak (cms)=		0.12	0.05

		TOTALS
PEAK FLOW	(cms)=	8.44 0.36 8.491 (iii)
TIME TO PEAK	(hrs)=	1.00 1.50 1.00
RUNOFF VOLUME	(mm)=	44.35 9.01 31.63
TOTAL RAINFALL	(mm)=	45.35 45.35 45.35
RUNOFF COEFFICIENT	=	0.98 0.20 0.70

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 76.0 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.

CHICAGO STORM Ptotal= 45.35 mm	IDF curve parameters: A=1330.300 B= 7.938 C= 0.855 used in: INTENSITY = A / (t + B)^C

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.00	112.71	1.83	6.69	2.67	3.25
0.33	4.38	1.17	36.59	2.00	5.51	2.83	2.95
0.50	6.09	1.33	17.98	2.17	4.69	3.00	2.70
0.67	10.04	1.50	11.61	2.33	4.08		
0.83	27.27	1.67	8.50	2.50	3.61		

CALIB STANDHYD (0022) ID= 1 DT=10.0 min	Area (ha)= 127.59 Total Imp(%)= 61.00 Dir. Conn.(%)= 49.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	77.83	49.76
Dep. Storage	(mm)=	2.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	922.28	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		112.71	28.46
over (min)		10.00	30.00
Storage Coeff. (min)=		9.24 (ii)	20.90 (ii)
Unit Hyd. Tpeak (min)=		10.00	30.00
Unit Hyd. peak (cms)=		0.11	0.05

		TOTALS
PEAK FLOW	(cms)=	14.15 2.10 14.667 (iii)
TIME TO PEAK	(hrs)=	1.00 1.33 1.00
RUNOFF VOLUME	(mm)=	43.35 13.39 28.07
TOTAL RAINFALL	(mm)=	45.35 45.35 45.35
RUNOFF COEFFICIENT	=	0.96 0.30 0.62

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 69.0 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(0019) IN= 2---> OUT= 1 DT= 10.0 min	OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.3200	3.8870
0.1600	1.7840	0.3400	4.3720
0.2000	2.7010	0.3500	4.8700
0.2600	3.2740	0.3800	6.2160

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (	0022)	127.590	14.667	1.00	28.07
OUTFLOW: ID= 1 (	0019)	127.590	0.268	3.33	28.04

PEAK FLOW REDUCTION [Qout/Qin](%)= 1.83
TIME SHIFT OF PEAK FLOW (min)=140.00
MAXIMUM STORAGE USED (ha.m.)= 3.3609

ROUTE CHN(0026) IN= 2---> OUT= 1	Routing time step (min)'= 10.00

<---- DATA FOR SECTION (1.1) ------>

Distance	Elevation	Manning	
0.00	274.12	0.0500	
5.20	273.17	0.0300	Main Channel
10.58	272.11	0.0300	Main Channel
11.50	272.00	0.0300	Main Channel
56.67	272.00	0.0300	Main Channel
64.61	272.44	0.0300	Main Channel
68.47	272.73	0.0300	Main Channel
73.75	273.06	0.0300 /0.0500	Main Channel
79.53	273.29	0.0500	

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	ELEV (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME (min)
0.07	272.07	.104E+04	0.9	0.29	19.48
0.13	272.13	.211E+04	2.8	0.46	12.41
0.20	272.20	.322E+04	5.6	0.59	9.56
0.26	272.26	.436E+04	9.1	0.71	7.96
0.33	272.33	.554E+04	13.3	0.82	6.93
0.40	272.40	.676E+04	18.2	0.91	6.19
0.46	272.46	.801E+04	23.7	1.01	5.62
0.53	272.53	.928E+04	30.0	1.09	5.16
0.60	272.60	.106E+05	36.8	1.18	4.80
0.66	272.66	.119E+05	44.2	1.26	4.49
0.73	272.73	.133E+05	52.2	1.33	4.24
0.79	272.79	.147E+05	60.7	1.40	4.03
0.86	272.86	.161E+05	69.7	1.47	3.84
0.93	272.93	.175E+05	79.3	1.54	3.68
0.99	272.99	.190E+05	89.5	1.60	3.54
1.06	273.06	.205E+05	100.3	1.66	3.41
1.14	273.14	.223E+05	114.9	1.74	3.24
1.22	273.22	.242E+05	130.7	1.83	3.09
1.29	273.29	.262E+05	147.5	1.91	2.96

		AREA (ha)	<---- hydrograph ----> QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	<-pipe / channel-> MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (	0019)	127.59	0.27	3.33	28.04	0.02	0.29
OUTFLOW: ID= 1 (	0026)	127.59	0.27	3.83	28.04	0.02	0.29

```
--------------------
| ADD HYD  (  0017)|
|   1 +  2 =  3    |
--------------------          AREA    QPEAK    TPEAK     R.V.
                               (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0142):    54.15   8.491     1.00    31.63
     + ID2= 2 (  0026):   127.59   0.266     3.83    28.04
       ================================================
       ID = 3 (  0017):   181.74   8.511     1.00    29.11

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTE CHN(  0015)|
| IN= 2---> OUT= 1 |     Routing time step (min)'= 10.00
--------------------
              <------ DATA FOR SECTION (   1.1) ------>
             Distance      Elevation        Manning
                0.00         252.95         0.0500
                3.65         252.53    0.0500 /0.0300  Main Channel
               12.66         251.31         0.0300      Main Channel
               14.58         251.05         0.0300      Main Channel
               76.79         251.08         0.0300      Main Channel
               87.59         252.17         0.0300      Main Channel
               90.94         252.44    0.0300 /0.0500  Main Channel
               98.65         253.00         0.0500

     <--------------------- TRAVEL TIME TABLE ---------------------->
      DEPTH     ELEV       VOLUME     FLOW RATE     VELOCITY    TRAV.TIME
        (m)      (m)      (cu.m.)       (cms)         (m/s)       (min)
       0.10   251.15    .671E+04         4.4          0.82       25.64
       0.20   251.25    .148E+05        15.9          1.36       15.43
       0.30   251.35    .230E+05        32.9          1.80       11.67
       0.40   251.45    .315E+05        54.5          2.18        9.63
       0.49   251.55    .402E+05        80.5          2.53        8.32
       0.59   251.64    .491E+05       110.6          2.84        7.40
       0.69   251.74    .582E+05       144.6          3.13        6.71
       0.79   251.84    .676E+05       182.5          3.41        6.17
       0.89   251.94    .771E+05       224.1          3.67        5.74
       0.99   252.04    .869E+05       269.3          3.91        5.38
       1.09   252.14    .969E+05       318.2          4.15        5.07
       1.19   252.24    .107E+06       370.2          4.36        4.82
       1.29   252.34    .118E+06       425.6          4.57        4.60
       1.39   252.44    .128E+06       484.6          4.77        4.41
       1.49   252.54    .140E+06       554.9          5.02        4.19
       1.59   252.64    .151E+06       632.3          5.28        3.99
       1.69   252.75    .163E+06       714.0          5.52        3.81
       1.80   252.85    .176E+06       799.8          5.75        3.66
       1.90   252.95    .188E+06       889.9          5.97        3.52

                                  <---- hydrograph ---->   <-pipe / channel->
                                AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                                (ha)    (cms)   (hrs)   (mm)      (m)      (m/s)
   INFLOW : ID= 2 (  0017)  181.74     8.51    1.00  29.11      0.13      0.96
   OUTFLOW: ID= 1 (  0015)  181.74     3.81    1.17  29.11      0.09      0.82


--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0020)|     OVERFLOW IS OFF
| IN= 2---> OUT= 1 |
| DT= 10.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   2.3900     1.8110
                          0.8500     1.4450   |   2.9700     1.8200
                          1.8300     1.7990   |   3.5000     1.8910
                          2.0100     1.8050   |   4.0000     1.9620
                          2.0200     1.8070   |   0.0000     0.0000

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0015)    181.740     3.811      1.17      29.11
   OUTFLOW: ID= 1 (  0020)    181.740     0.751      3.17      29.11
```



```
                PEAK   FLOW   REDUCTION [Qout/Qin](%)= 19.70
                TIME SHIFT OF PEAK FLOW          (min)=120.00
                MAXIMUM  STORAGE   USED       (ha.m.)=  1.2772

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

--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  1421):    15.00   1.433     1.00    22.03
     + ID2= 2 (  0151):    18.20   0.377     1.17     7.10
       ================================================
       ID = 3 (  0003):    33.20   1.665     1.00    13.85

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

--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0003):    33.20   1.665     1.00    13.85
     + ID2= 2 (  0002):   182.07   1.656     1.33     3.85
       ================================================
       ID = 1 (  0003):   215.27   2.644     1.33     5.39

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

--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
       ID1= 1 (  0003):   215.27   2.644     1.33     5.39
     + ID2= 2 (  0020):   181.74   0.751     3.17    29.11
       ================================================
       ID = 3 (  0003):   397.01   2.947     1.33    16.25

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

APPENDIX C

Hydraulic Analysis and Floodplain Mapping Updates

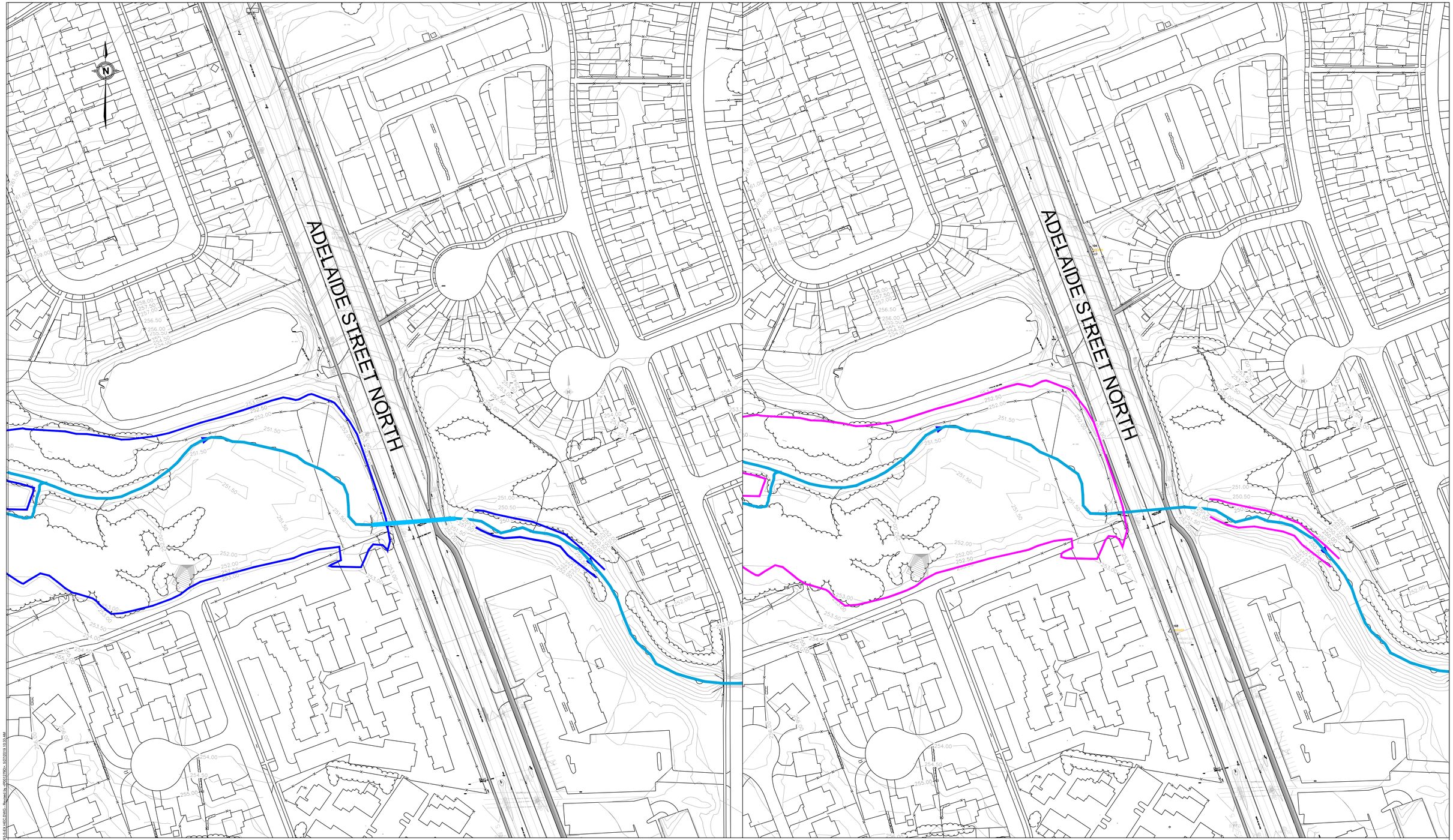
APPENDIX C: Hydraulic Analysis

Figure C.1 : Floodplain Map

HEC-RAS Result: Water Profile

Cross Sections Upstream and Downstream of the Adelaide Culvert

HEC-RAS Result Table



LEGEND

PROPERTY LINE

CREEK FLOW DIRECTION

EXISTING CULVERT

100 YEAR STORM EVENT FLOODLINE

250 YEAR REGULATORY FLOODLINE

SCALE HORIZONTAL
1:1000

5m 0m 10m 20m 30m

DATE: MAY 2019

SCALE: 1 : 1000

PARSONS

625 COCHRANE DRIVE, SUITE 500
MARKHAM, ONTARIO L3R 9R9
TEL: 905-943-0500
FAX: 905-943-0400

ADELAIDE ST N FROM SUNNINGDALE ST TO FANSHAWE PARK RD

FIGURE C.1 :FLOODPLAIN MAP - POWELL DRAIN

HEC-RAS Results

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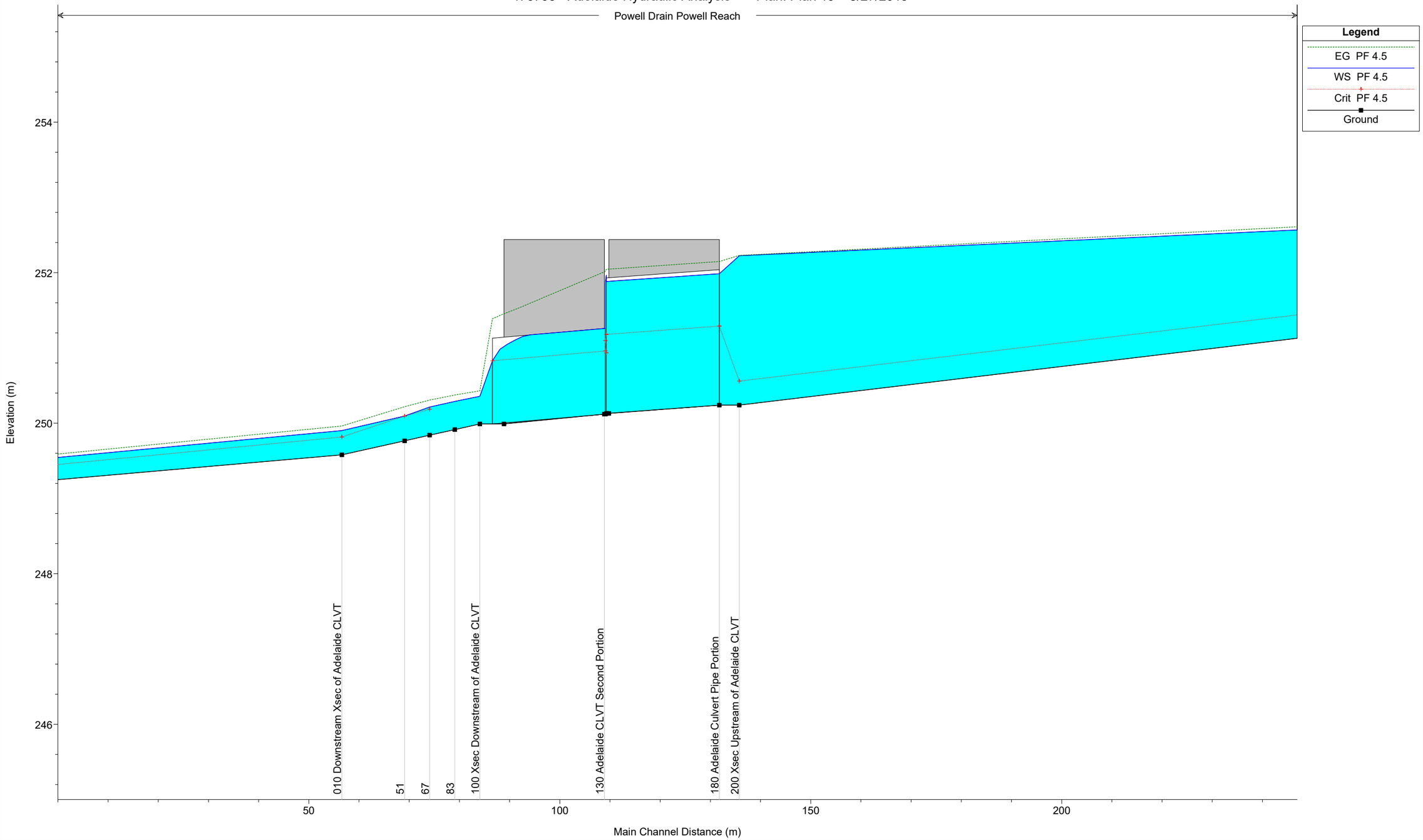
Powell Drain Powell Reach



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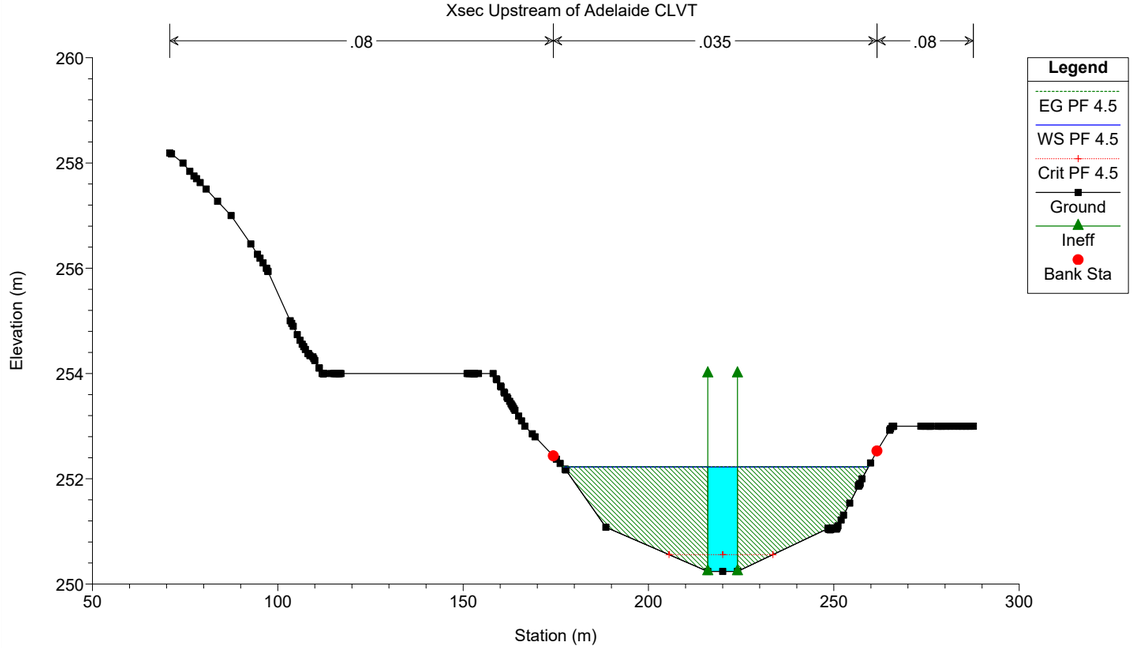
Xsec Upstream of Adelaide CLVT



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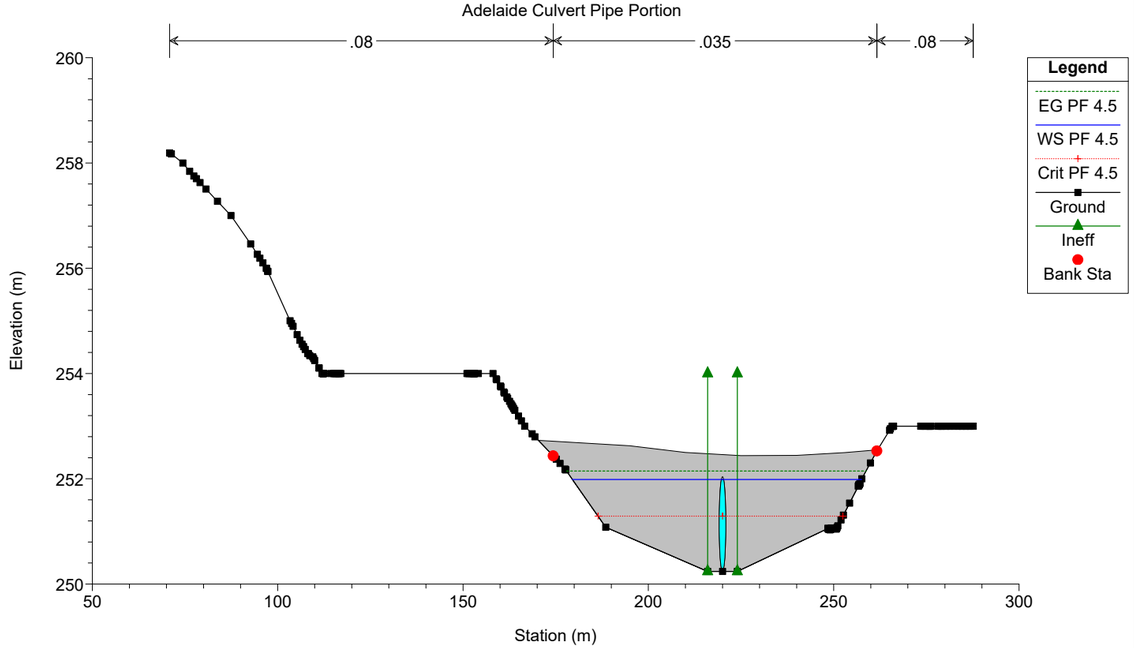
Adelaide Culvert Pipe Portion



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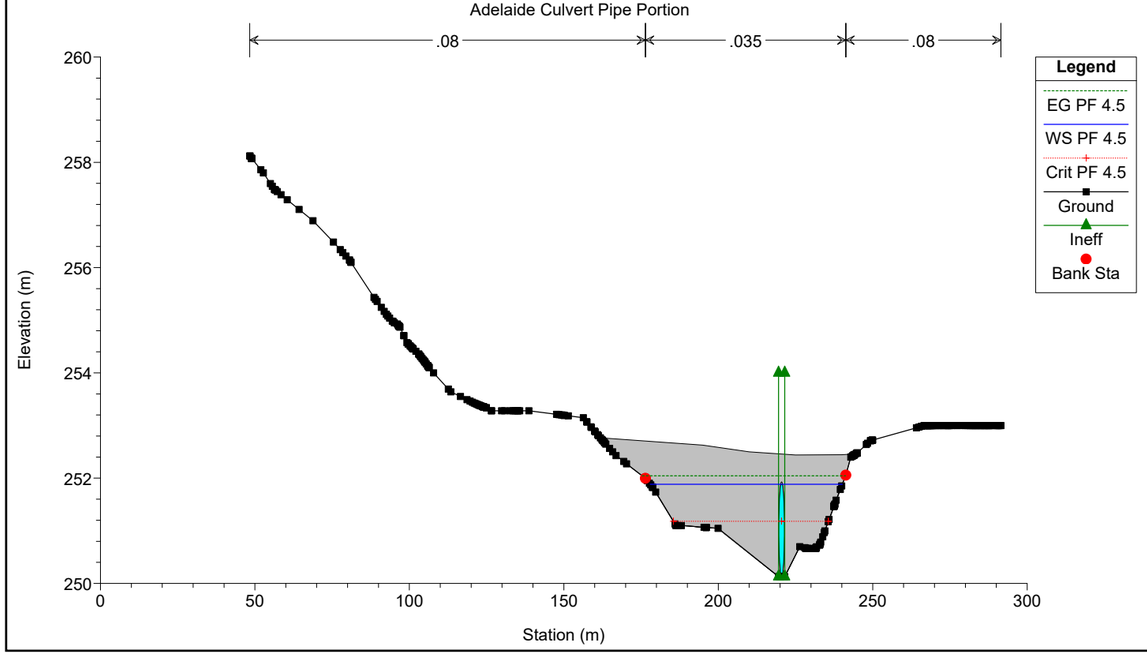
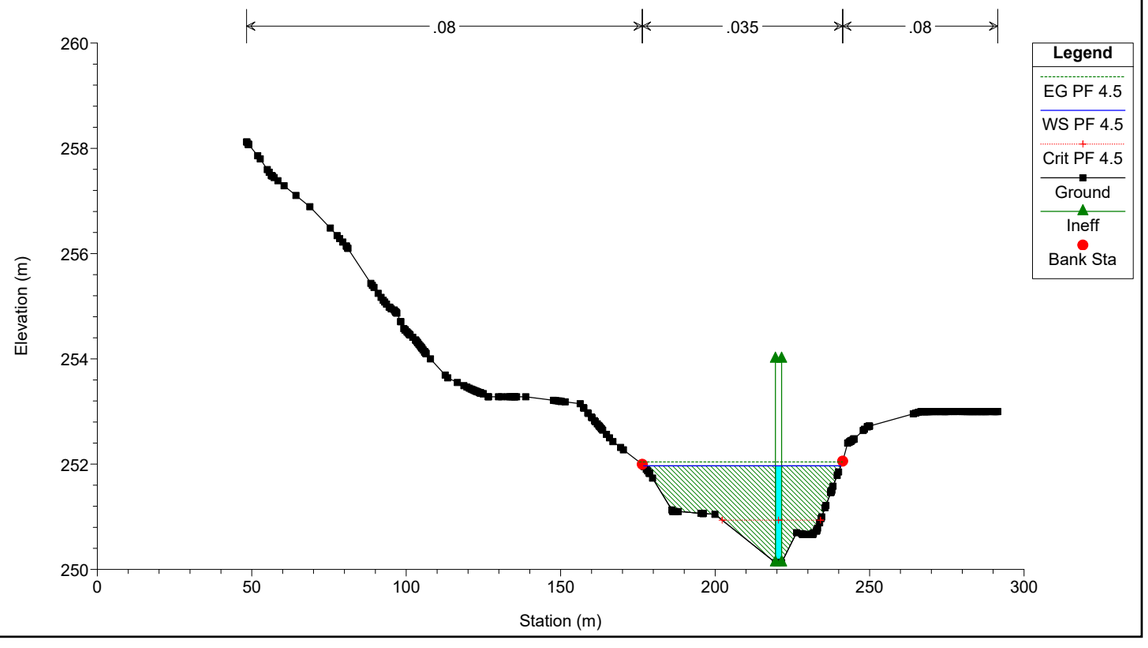
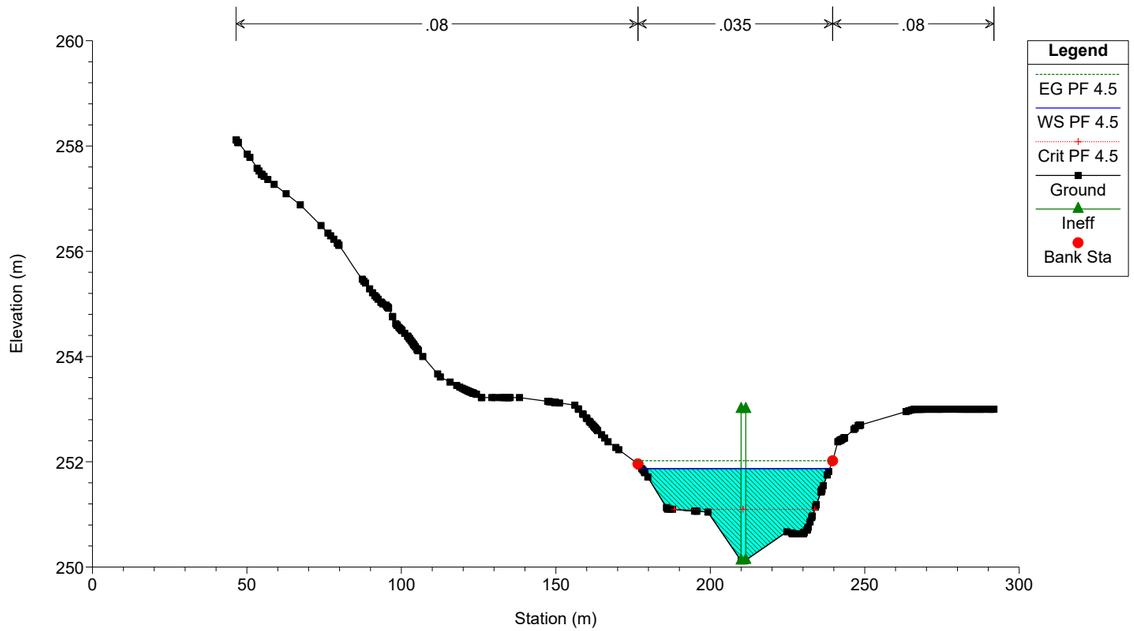
Adelaide Culvert Pipe Portion



476793 - Adelaide Hydraulic Analysis Plan: Plan 16 5/8/2019

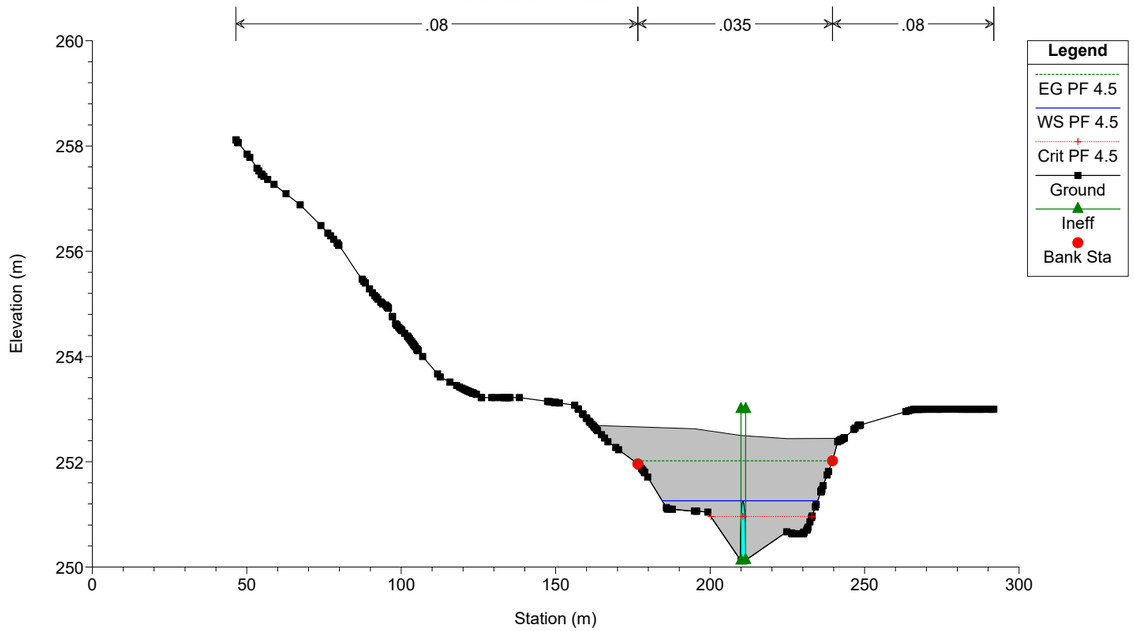


476793 - Adelaide Hydraulic Analysis Plan: Plan 16 5/8/2019



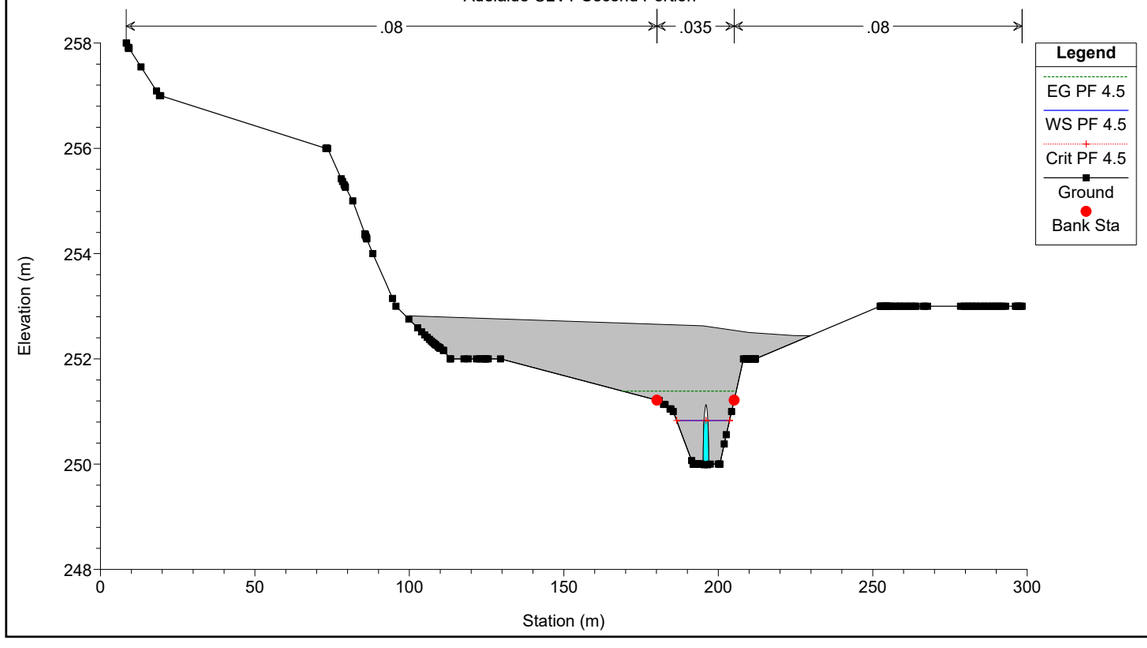
476793 - Adelaide Hydraulic Analysis Plan: Plan 16 5/8/2019

Adelaide CLVT Second Portion



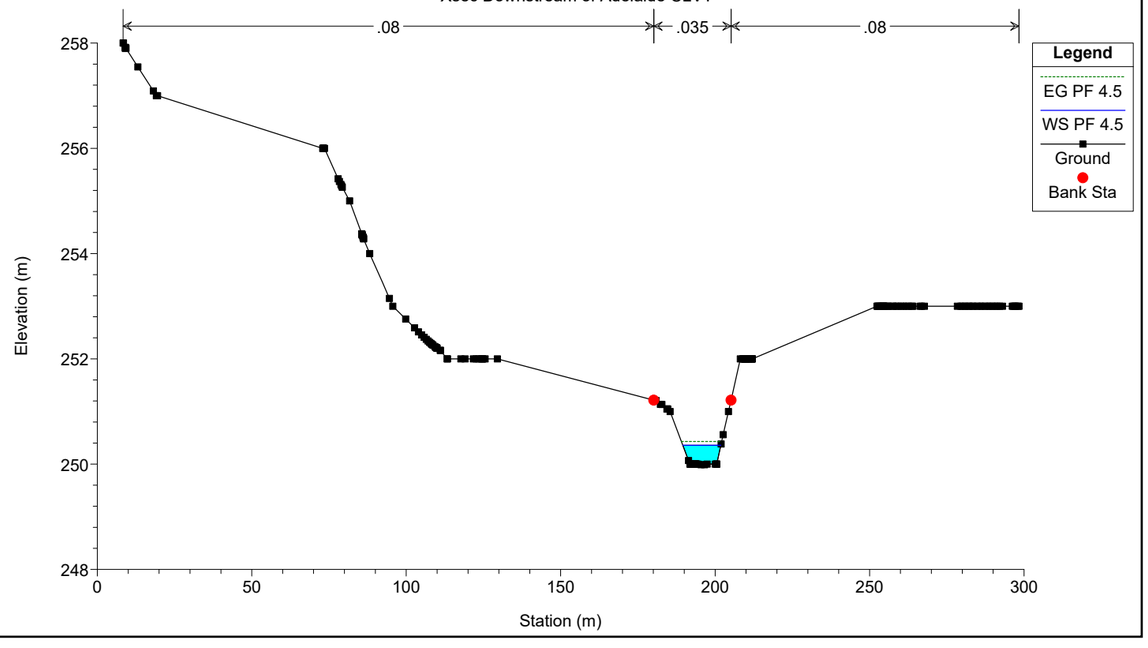
476793 - Adelaide Hydraulic Analysis Plan: Plan 16 5/8/2019

Adelaide CLVT Second Portion



476793 - Adelaide Hydraulic Analysis Plan: Plan 16 5/8/2019

Xsec Downstream of Adelaide CLVT



HEC-RAS Plan: Plan 16 Locations: User Defined Profile: PF 4.5

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Powell Drain	Powell Reach	200	PF 4.5	4.50	250.24	252.23	250.56	252.23	0.000039	0.28	15.88	82.34	0.06
Powell Drain	Powell Reach	180		Culvert									
Powell Drain	Powell Reach	160	PF 4.5	4.50	250.13	251.97	250.94	252.04	0.000817	1.23	3.67	63.86	0.29
Powell Drain	Powell Reach	150	PF 4.5	4.50	250.12	251.87	251.10	252.02	0.001709	1.71	2.62	60.85	0.41
Powell Drain	Powell Reach	130		Culvert									
Powell Drain	Powell Reach	100	PF 4.5	4.50	249.99	250.36		250.43	0.008473	1.19	3.78	12.31	0.69

HEC-RAS Plan: Plan 19 Locations: User Defined Profile: PF 4.5

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Powell Drain	Powell Reach	100	PF 4.5	4.50	249.99	250.36		250.43	0.008473	1.19	3.78	12.31	0.69
Powell Drain	Powell Reach	83	PF 4.5	4.50	249.92	250.29		250.38	0.011482	1.29	3.48	12.64	0.79
Powell Drain	Powell Reach	67	PF 4.5	4.50	249.84	250.22	250.19	250.31	0.013572	1.35	3.34	12.88	0.85
Powell Drain	Powell Reach	51	PF 4.5	4.50	249.77	250.10	250.10	250.22	0.019612	1.56	2.88	11.73	1.00
Powell Drain	Powell Reach	010	PF 4.5	4.50	249.58	249.90	249.82	249.96	0.007089	1.09	4.13	13.28	0.62
Powell Drain	Powell Reach	001	PF 4.5	4.50	249.25	249.54	249.45	249.59	0.005901	0.95	4.76	16.62	0.56

APPENDIX D

Storm Sewer Analysis

APPENDIX D: Storm Sewer Analysis

Figures:

- Figure D1: PROPOSED STORM SEWER DRAINAGE AREAS
- Figure D2: EXSITING STORM SEWER
- Figure D3: PROPOSED STORM SEWER

Tables:

- Capacity of Existing Strom Sewer Outlets
- Time of Concentration (Tc) Calculations for Existing Storm Sewer Outlets
- Conceptual Design of proposed Strom Sewers

ID
A C

SCALE
1:5000
75m 0 150m

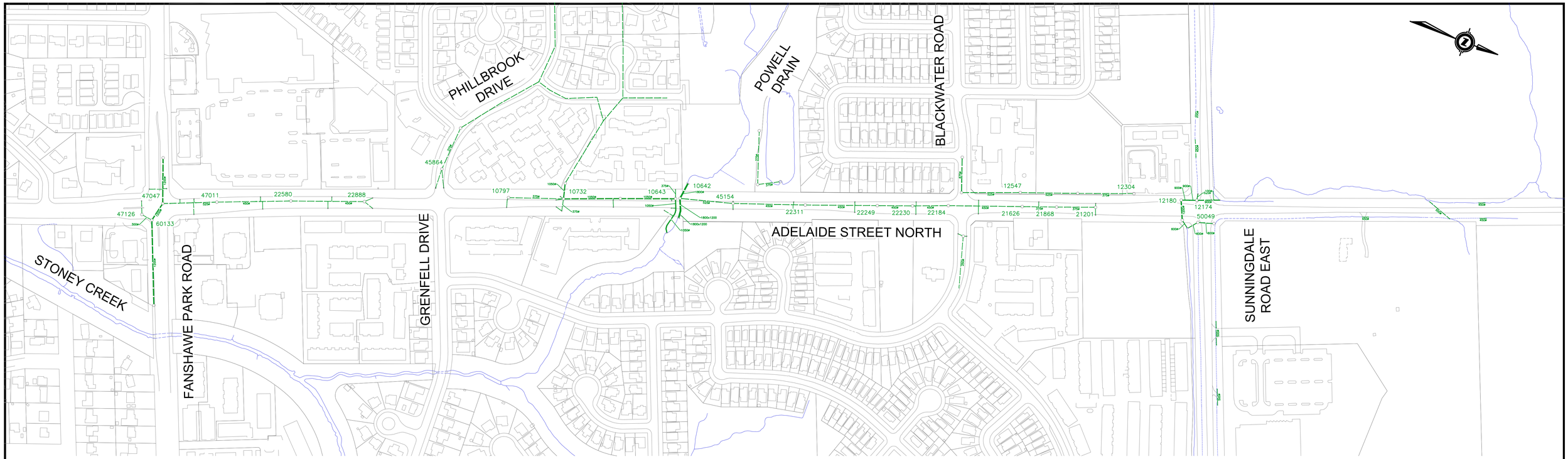
PARSONS

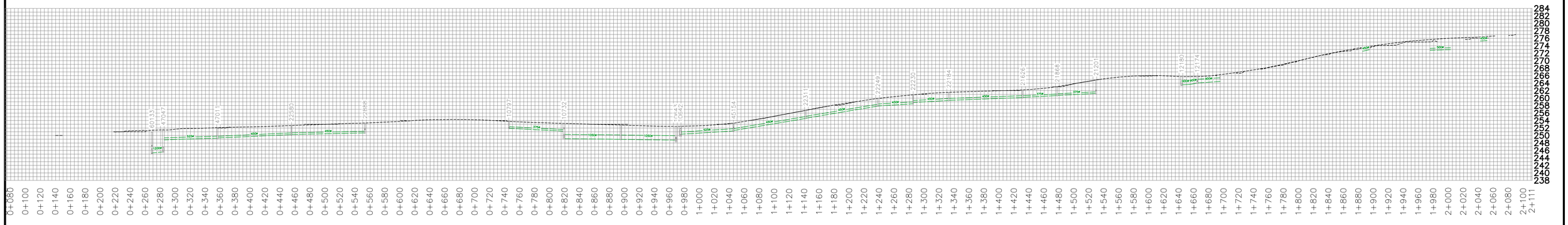
ADELAIDE STREET NORTH - SWM REPORT
(FANSHAWE ROAD TO SUNNINGDALE ROAD)
PROPOSED STORM SEWER DRAINAGE AREAS

CORPORATION OF THE CITY OF LONDON

FIGURE D-1

□□□e 19, 2019





ADELAIDE STREET NORTH PROFILE

SCALE
1:2500
40m 0 □0m

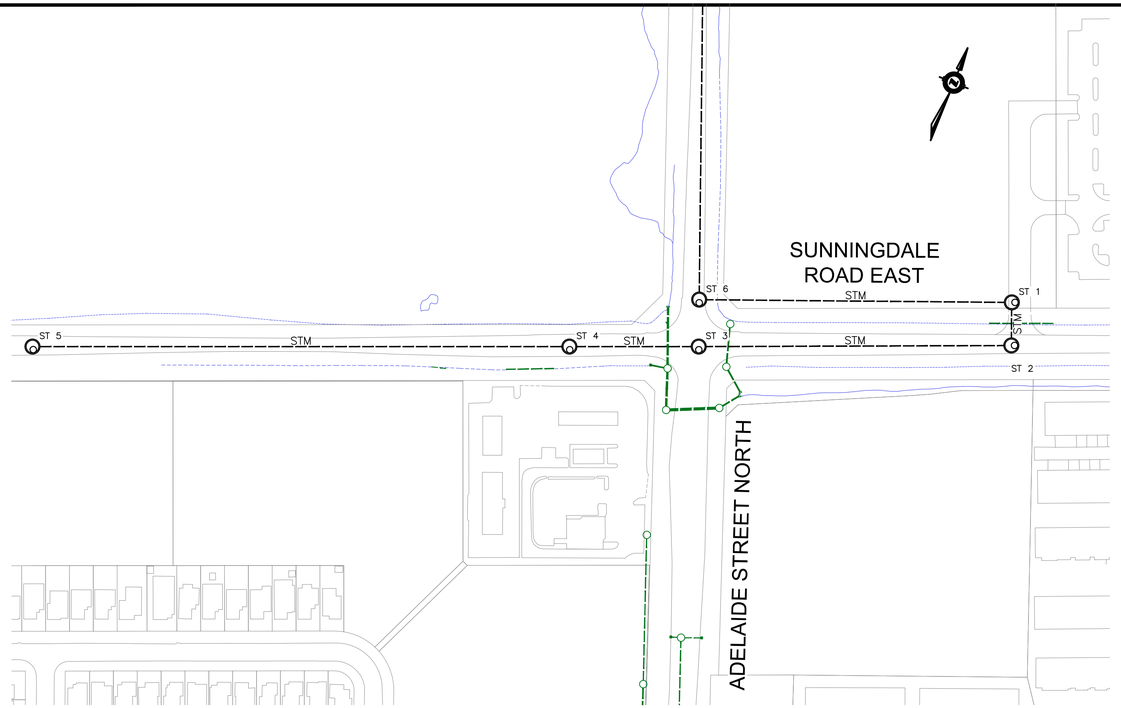
PARSONS

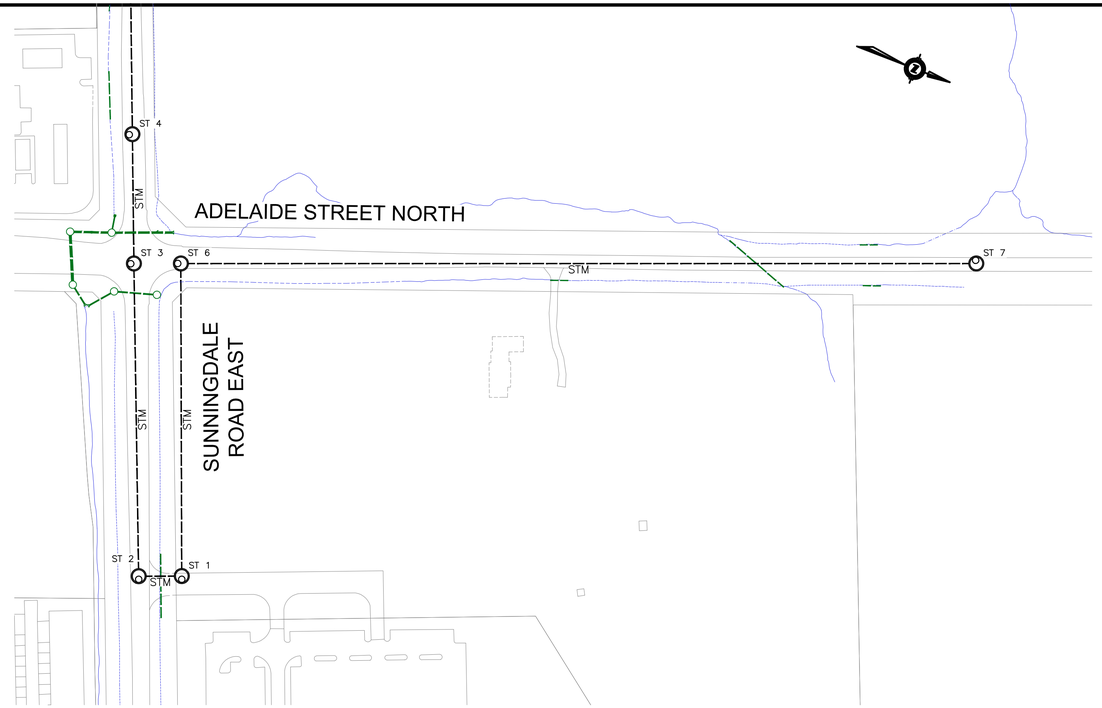
ADELAIDE STREET NORTH - SWM REPORT
(FANSHAWE ROAD TO SUNNINGDALE ROAD)
EXISTING STORM SEWER

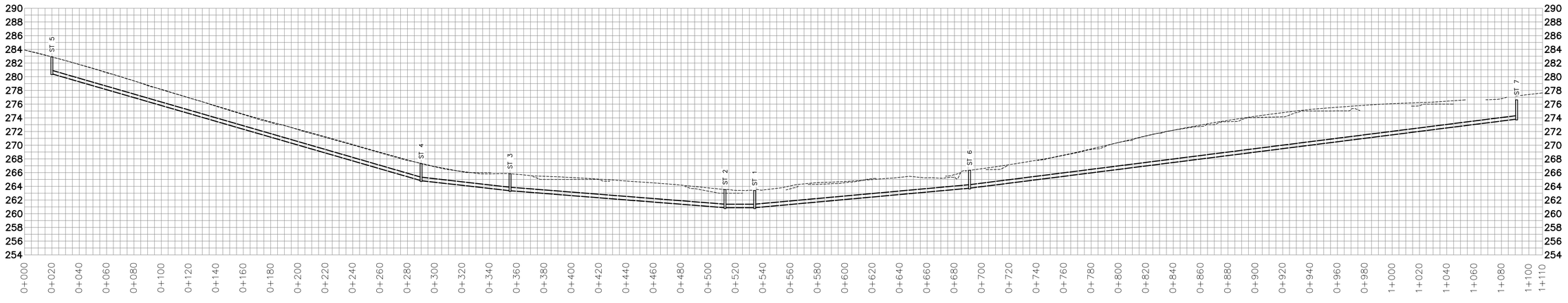
London CANADA
CORPORATION OF THE CITY OF LONDON

FIGURE D-2

□□□e 17, 2019







PROFILE ALONG PROPOSED STORM PROFILE

SCALE
1:1500
25m 0 50m

PARSONS

ADELAIDE STREET NORTH - SWM REPORT
(FANSHAWE ROAD TO SUNNINGDALE ROAD)
PROPOSED STORM SEWER

London CANADA

CORPORATION OF THE CITY OF LONDON

FIGURE D-3

□□□e 17, 2019

PARSONS

Capacity of Existing Storm Sewer Outlets

Table #1

AREA NO.	LOCATION			ACCUMULATED STORMWATER FLOWS												SEWER DESIGN								
	STREET	NODE		INCR. AREA (ha)	ACCUM. AREA (ha)	C	INCR. AxC	TOT. SECT. AxC	TOTAL LATERAL AxC	TOT. SWR AxC	TOTAL AxCx2.78	TIME OF SECT. (min)	ACCUM. TIME (min)	INTENSITY I	PEAK FLOWS (l/s)	PIPE DIA. (mm)	SLOPE %	n	CAPACITY (l/s)	VELOCITY (m/s)	LENGTH (m)	TIME (min)	LOSSES (m)	FALL IN SEWER (m)
		FROM	TO																					
OUTLET 1 - PHILBROOK DR. TO FANSHAWE PARK RD. (INFO FROM CITY AS-BUILT #15806)																								
A7	ADELAIDE STREET	Ex MH 2U-167	Ex MH 2U-163	1.580	1.580	0.83	1.311	1.311	0.000	1.311	3.646	n/a	12.85	93	339.554	525	0.62	0.013	338.632	1.564	72.80	0.78	0.000	0.451
OUTLET 2 - PHILBROOK DR. TO POWELL DRAIN (INFO FROM CITY AS-BUILTS #9893, 9901, 20027, 20028 & 20029)																								
A6a	ADELAIDE STREET	Ex MH 3V-240	Ex MH 3V-42	0.530	0.530	0.90	0.477	0.477	0.000	0.477	1.326	n/a	13.50	91	120.298	375	1.05	0.013	179.660	1.627	73.00	0.75	0.000	0.767
Ex 2	EASEMENT	Ex MH 3V-41	Ex MH 3V-42	14.260	14.260	0.50	7.130	7.607	0.000	7.607	21.147	0.75	27.17	59	1244.536	1050	0.21	0.013	1251.378	1.445	23.00	0.27	0.000	0.048
A6b	ADELAIDE STREET	Ex MH 3V-42	Ex MH 3V-44	0.570	15.360	0.90	0.513	8.120	0.000	8.120	22.574	0.27	27.43	58	1317.377	1050	0.24	0.013	1323.771	1.529	146.90	1.60	0.000	0.345
	EASEMENT	Ex MH 3V-44	Ex 3V-5004	0.000	15.360	0.90	0.000	8.120	0.000	8.120	22.574	1.60	29.03	56	1260.293	1050	0.33	0.013	1568.685	1.812	47.20	0.43	0.000	0.156
OUTLET 3 - SUNNINGDALE RD. TO POWELL DRAIN (INFO FROM CITY AS-BUILTS #20027, 20028 & 20029)																								
A5	ADELAIDE STREET	Ex MH 3V-242	Ex 3V-241	2.700	2.700	0.76	2.052	2.052	0.000	2.052	5.705	n/a	15.61	84	477.387	525	1.24	0.013	478.898	2.212	71.10	0.54	0.000	0.882

PARSONS

Time of Concentration (T_c) Calculations for Existing Storm Sewer Outlets

Table #2

LOCATION			SEWER DESIGN								
STREET	NODE		TIME OF SECT. (min)	ACCUM. TIME (min)	PIPE DIA. (mm)	SLOPE %	n	CAPACITY (l/s)	VELOCITY (m/s)	LENGTH (m)	TIME (min)
	FROM	TO									
OUTLET 1 - PHILBROOK DR. TO FANSHAWE PARK RD. (INFO FROM CITY AS-BUILT #15806)											
ADELAIDE STREET	Ex MH 2U-165	Ex MH 2U-166	n/a	10.50	450	0.44	0.013	189.118	1.189	98.70	1.38
ADELAIDE STREET	Ex MH 2U-166	Ex MH 2U-167	1.38	11.88	450	0.92	0.013	273.465	1.719	99.30	0.96
			0.96	12.85							
OUTLET 2 - PHILBROOK DR. TO POWELL DRAIN (INFO FROM CITY AS-BUILTS #9893, 9901, 20027, 20028 & 20029)											
ADELAIDE STREET	Ex MH 3V-240	Ex MH 3V-42	n/a	11.00	375	1.05	0.013	179.660	1.627	90.40	0.93
STONEBROOK CR./EASEMENT	Ex MH	Ex MH 3V-29	0.93	19.00	250	0.50	0.013	42.050	0.857	67.40	1.31
EASEMENT	Ex MH 3V-29	Ex MH 3V-30	1.31	20.31	300	0.50	0.013	68.378	0.967	69.50	1.20
EASEMENT	Ex MH 3V-30	Ex MH 3V-32	1.20	21.51	375	0.50	0.013	123.977	1.123	138.80	2.06
EASEMENT	Ex MH 3V-32	Ex MH 3V-35	2.06	23.57	450	0.50	0.013	201.601	1.268	37.00	0.49
BYBROOK CR./EASEMENT	Ex MH 3V-35	Ex MH 3V-39	0.49	24.06	525	0.50	0.013	304.100	1.405	130.30	1.55
EASEMENT	Ex MH 3V-39	Ex MH 3V-40	1.55	25.60	600	0.50	0.013	434.172	1.536	41.70	0.45
EASEMENT	Ex MH 3V-40	Ex MH 3V-41	0.45	26.05	1050	0.21	0.013	1251.378	1.445	96.50	1.11
EASEMENT	Ex MH 3V-41	Ex MH 3V-42	1.11	27.17	1050	0.25	0.013	1365.365	1.577	23.00	0.24
OUTLET 3 - SUNNINGDALE RD. TO POWELL DRAIN (INFO FROM CITY AS-BUILTS #20027, 20028 & 20029)											
ADELAIDE STREET	Ex MH 3V-151	Ex MH 3V-150	n/a	11.74	375	1.02	0.013	177.075	1.603	52.20	0.54
ADELAIDE STREET	Ex MH 3V-150	Ex MH 3V-149	0.54	12.28	375	1.02	0.013	177.075	1.603	46.00	0.48
ADELAIDE STREET	Ex MH 3V-149	Ex MH 3V-246	0.48	12.76	450	0.76	0.013	248.550	1.563	98.90	1.05
ADELAIDE STREET	Ex MH 3V-246	Ex MH 3V-245	1.05	13.82	450	1.13	0.013	303.072	1.906	48.50	0.42
ADELAIDE STREET	Ex MH 3V-245	Ex MH 3V-244	0.42	14.24	450	1.25	0.013	318.759	2.004	46.30	0.39
ADELAIDE STREET	Ex MH 3V-244	Ex MH 3V-243	0.39	14.62	450	3.35	0.013	521.831	3.281	96.60	0.49
ADELAIDE STREET	Ex MH 3V-243	Ex MH 3V-242	0.49	15.12	450	3.35	0.013	521.831	3.281	96.40	0.49
			0.49	15.61							

PARSONS

Conceptual Design of Proposed Storm Sewers

Table #3

AREA NO.	LOCATION			ACCUMULATED STORMWATER FLOWS											SEWER DESIGN									PROFILE	
	STREET	NODE		INCR. AREA (ha)	ACCUM. AREA (ha)	C	INCR. AxC	TOT. SECT. AxC	TOTAL LATERAL AxC	TOT. SWR AxC	TOTAL AxCx2.78	TIME OF SECT. (min)	ACCUM. TIME (min)	INTENSITY I	PEAK FLOWS (l/s)	PIPE DIA. (mm)	SLOPE %	n	CAPACITY (l/s)	VELOCITY (m/s)	LENGTH (m)	TIME (min)	LOSSES (m)	DROP IN NODE (m)	FALL IN SEWER (m)	INVERT ELEV. U/S	INVERT ELEV. D/S
		FROM	TO																							
A1	SUNNINGDALE ROAD	ST-5	ST-4	1.39	1.39	0.90	1.25	1.25	0.00	1.25	3.48	n/a	10.50	102	355.47	375	6.00	0.013	429.47	3.89	270.00	1.16	0.00	n/a	16.20	280.20	264.00
	SUNNINGDALE ROAD	ST-4	ST-3	0.00	1.39	0.90	0.00	1.25	1.00	2.25	6.26	n/a	11.50	98	613.78	450	1.25	0.013	318.76	2.00	65.00	0.54	0.00	0.08	0.81	263.92	263.11
A2	SUNNINGDALE ROAD	ST-3	ST-2	2.03	3.42	0.90	1.83	3.08	0.00	3.08	8.56	0.54	12.04	96	821.86	600	1.80	0.013	823.78	2.91	157.00	0.90	0.00	0.15	2.83	262.96	260.13
	SUNNINGDALE ROAD	ST-2	ST-1	0.00	3.42	0.50	0.00	3.08	0.00	3.08	8.56	0.90	12.94	93	794.01	675	1.00	0.013	840.59	2.35	21.50	0.15	0.00	0.08	0.22	260.13	259.92
A2	ADELAIDE STREET	ST-7	ST-6	2.03	2.03	0.90	1.83	1.83	0.00	1.83	5.08	n/a	23.12	66	335.51	1200	2.25	0.013	5848.11	5.17	0.00	0.00	0.00	0.00	0.00	272.13	272.13
Ex2	ADELAIDE STREET	ST-7	ST-6	33.38	35.41	0.50	16.69	18.52	0.00	18.52	51.48	0.00	23.12	66	3400.50	1200	2.25	0.013	5848.11	5.17	0.00	0.00	0.00	0.00	0.00	272.13	272.13
Ex3	ADELAIDE STREET	ST-7	ST-6	11.06	46.47	0.50	5.53	24.05	0.00	24.05	66.85	0.00	23.12	66	4416.03	1200	2.25	0.013	5848.11	5.17	400.00	1.29	0.00	0.10	9.00	272.13	263.13
Ex4	SUNNINGDALE ROAD	ST-6	ST-1	3.80	50.27	0.70	2.66	26.71	0.00	26.71	74.25	1.29	24.41	64	4722.87	1200	2.25	0.013	5848.11	5.17	0.00	0.00	0.00	0.00	0.00	263.03	263.03
Ex5	SUNNINGDALE ROAD	ST-6	ST-1	2.05	52.32	0.80	1.64	28.35	0.00	28.35	78.80	0.00	24.41	64	5012.89	1200	2.25	0.013	5848.11	5.17	157.00	0.51	0.00	0.10	3.53	263.03	259.49
Ex6	SUNNINGDALE ROAD	ST-1	Ex MH 4U-189	0.84	56.58	0.80	0.67	32.10	0.00	32.10	89.23	0.51	24.92	63	5593.18	1200	2.18	0.013	5756.42	5.09	47.90	0.16	0.00	0.53	1.04	259.39	258.35

APPENDIX E

Stormwater Management Quantity and Quality Control

APPENDIX E: Quantity and Quality Control

Bio-Swales

Stormceptor

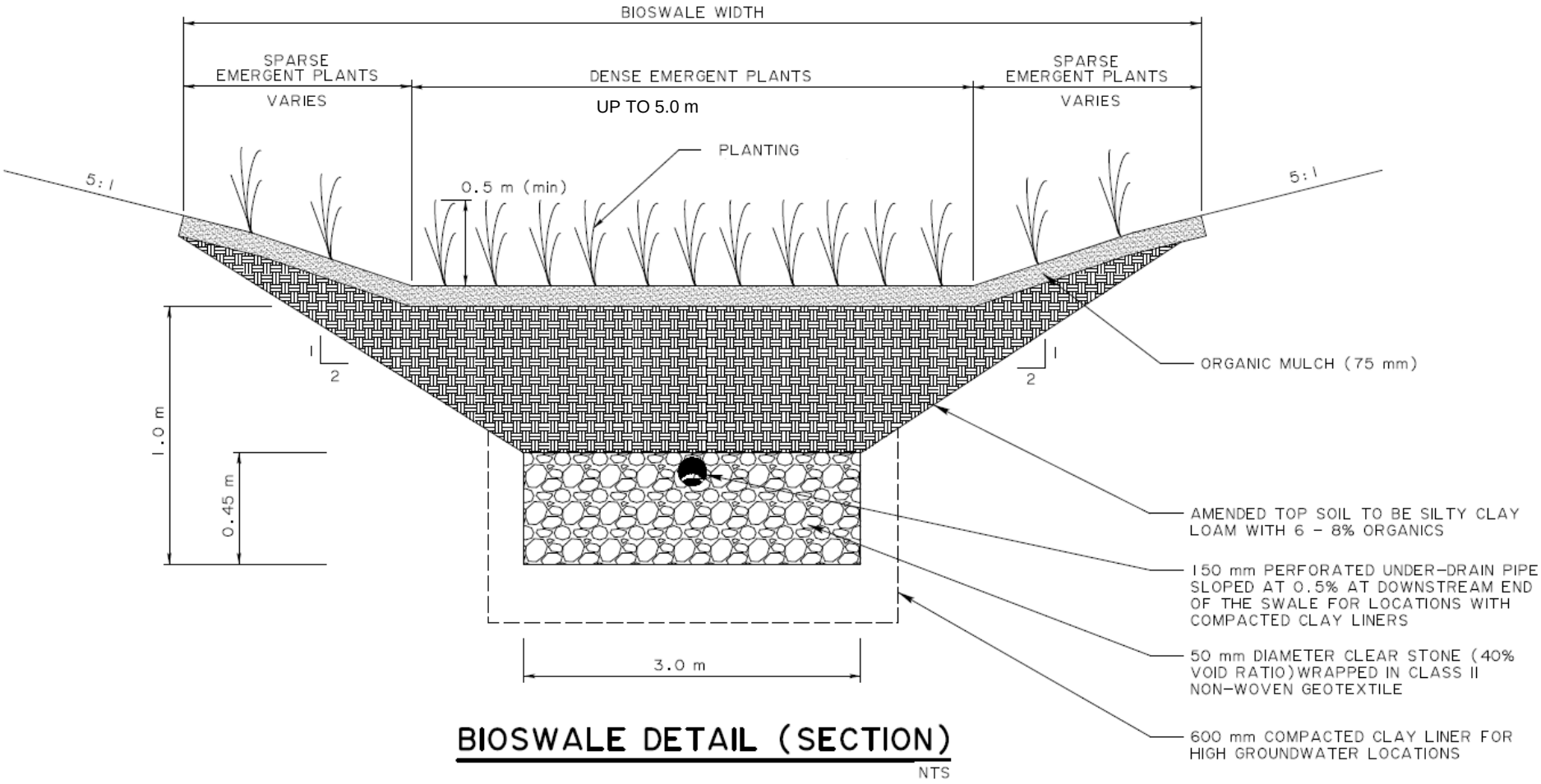
Detailed Stormceptor Sizing Report - Outlet 1
Detailed Stormceptor Sizing Report - Outlet 2
Detailed Stormceptor Sizing Report - Outlet 3
Detailed Stormceptor Sizing Report - Outlet 4

Stormceptor OSR Product Sheet

OSR 300 Drawing and Specification

OSR 750 Drawing and Specification

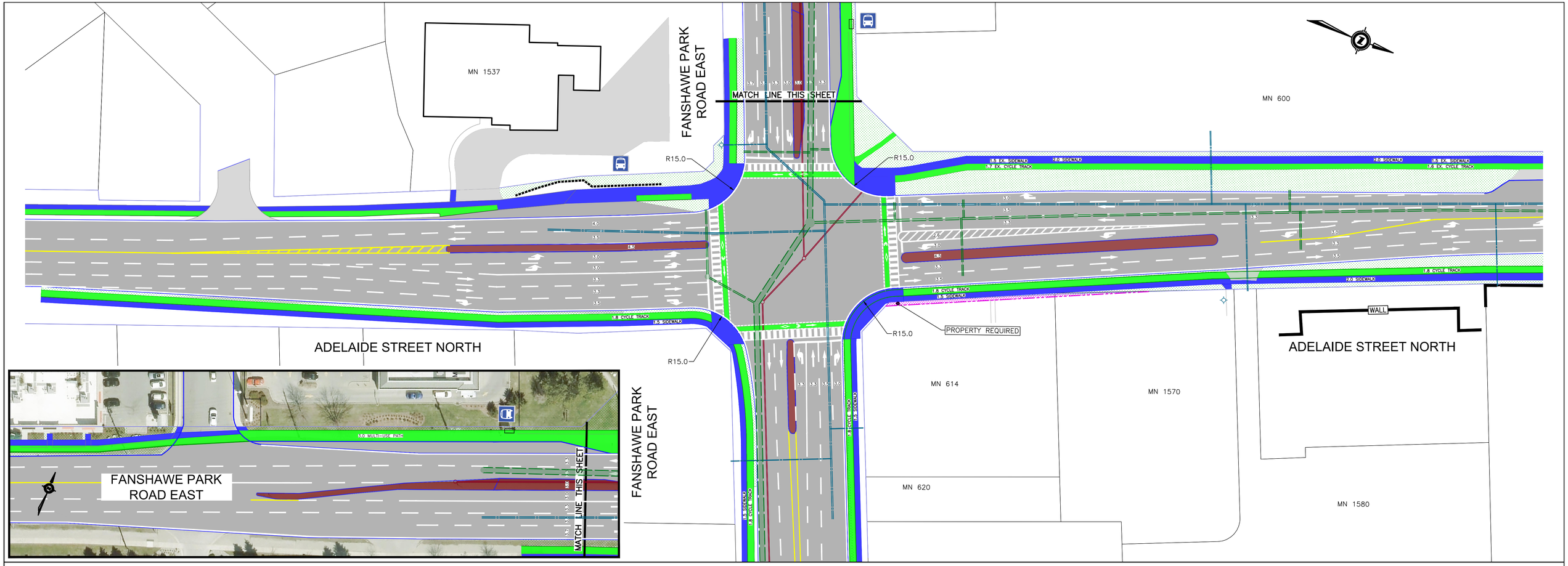
BIO-SWALES

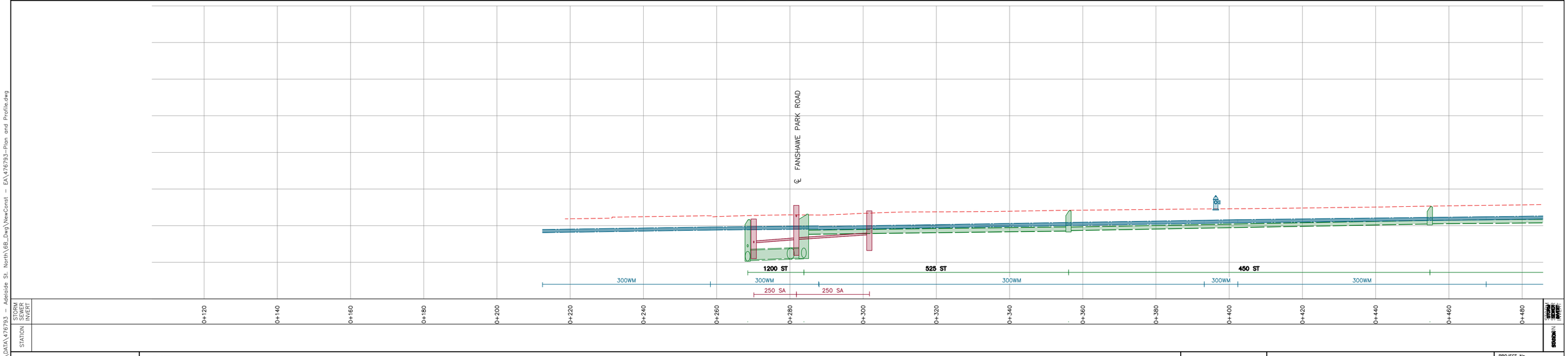


BIOSWALE DETAIL (SECTION)

NTS

TYPICAL BIO-SWALE CROSS SECTION





London CANADA

PARSONS

LEGEND

- PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- EXISTING GROUND PROFILE
- FUTURE ROAD PROFILE
- PROPERTY REQUIRED FOR ADDITIONAL RIGHT OF WAY
- EXISTING SIDEWALK
- EXISTING CYCLE TRACK
- PROPOSED ROAD
- PROPOSED BICYCLE LANE
- PROPOSED SIDEWALK
- PROPOSED CYCLE TRACK

HORIZONTAL - 1:500
5 0 10m

VERTICAL - 1:250
2.5 0 5m

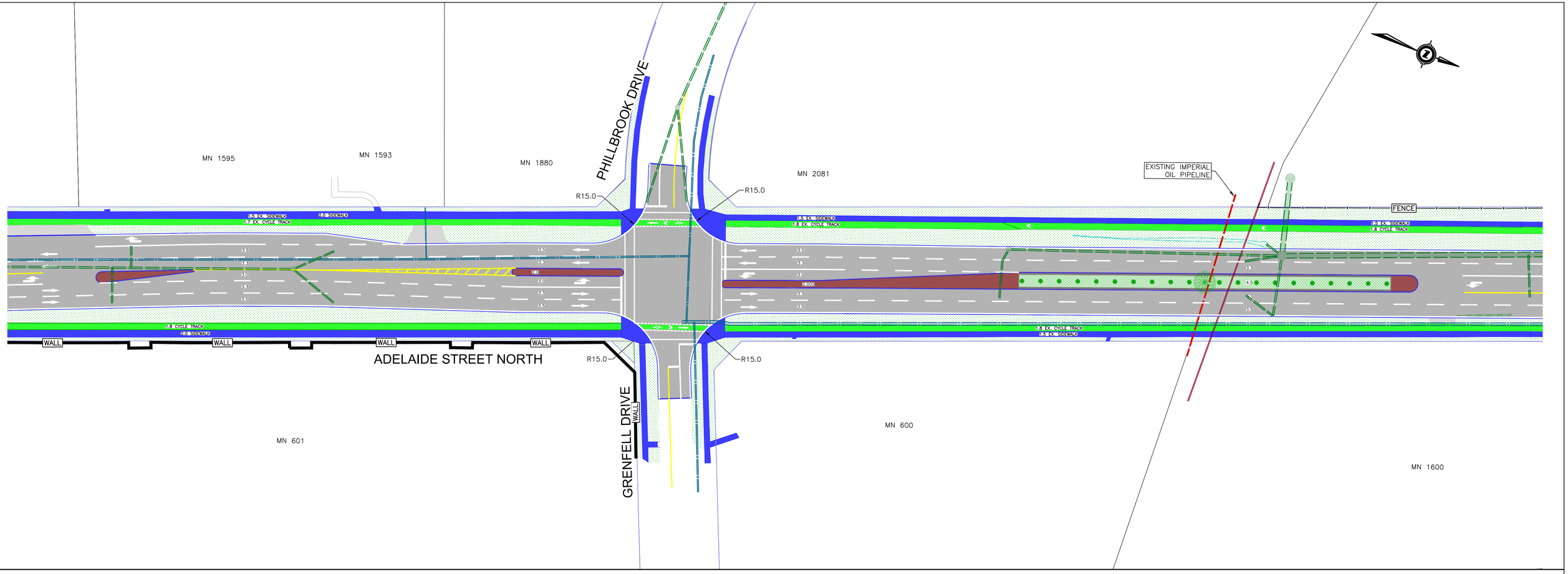
ADELAIDE STREET NORTH
FANSHAWE PARK ROAD TO SUNNINGDALE

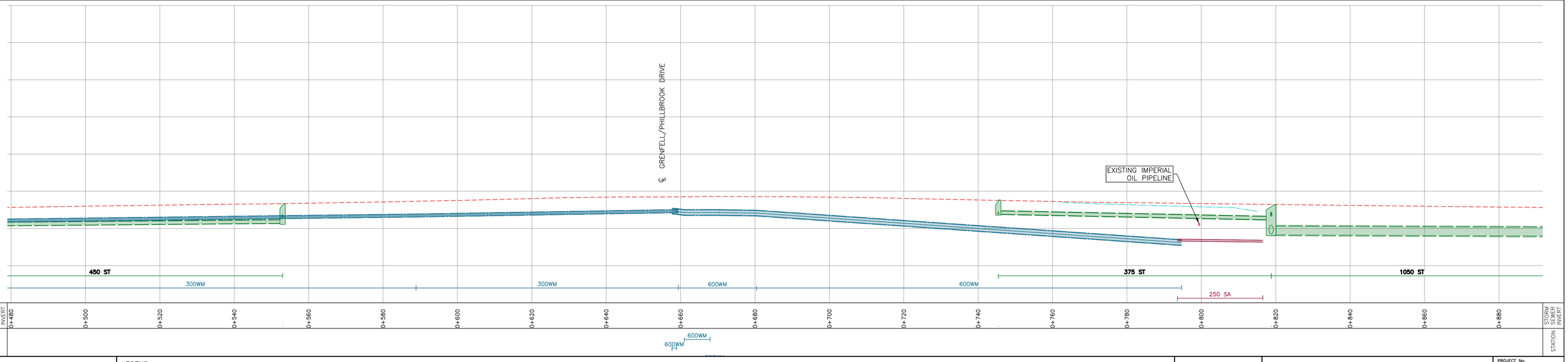
RECOMMENDED ALTERNATIVE
ADELAIDE STREET NORTH STA 0+000 TO STA 0+480

PROJECT No. ----

PLATE No. 1

Job No. ---- DWG No.1 J:\DATA\476793 - Adelaide St. North\6B_Dwg\NewConst - EA\476793-Plan and Profile.dwg





LEGEND

- PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- EXISTING GROUND PROFILE
- FUTURE ROAD PROFILE
- PROPERTY REQUIRED FOR ADDITIONAL RIGHT OF WAY
- EXISTING SIDEWALK
- EXISTING CYCLE TRACK
- PROPOSED ROAD
- PROPOSED BICYCLE LANE
- PROPOSED SIDEWALK
- PROPOSED CYCLE TRACK

London CANADA

PARSONS

HORIZONTAL - 1:500
5 0 10m

VERTICAL - 1:250
2.5 0 5m

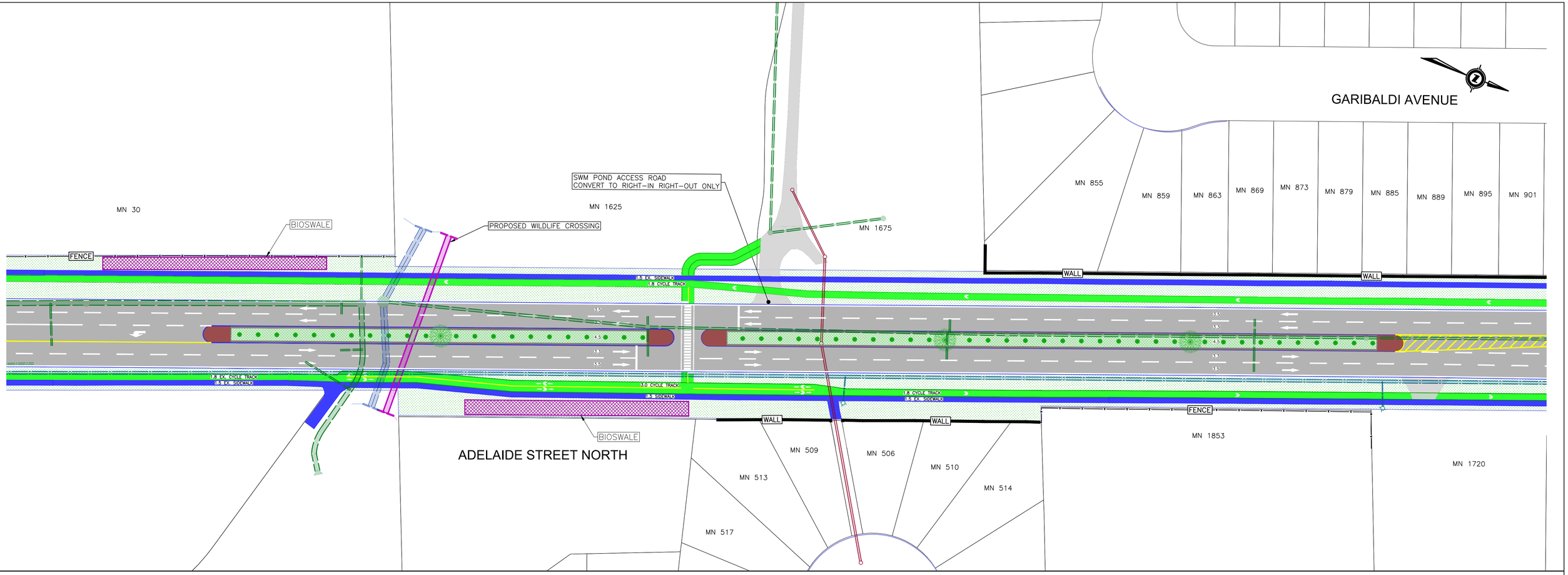
ADELAIDE STREET NORTH
FANSHAWE PARK ROAD TO SUNNINGDALE

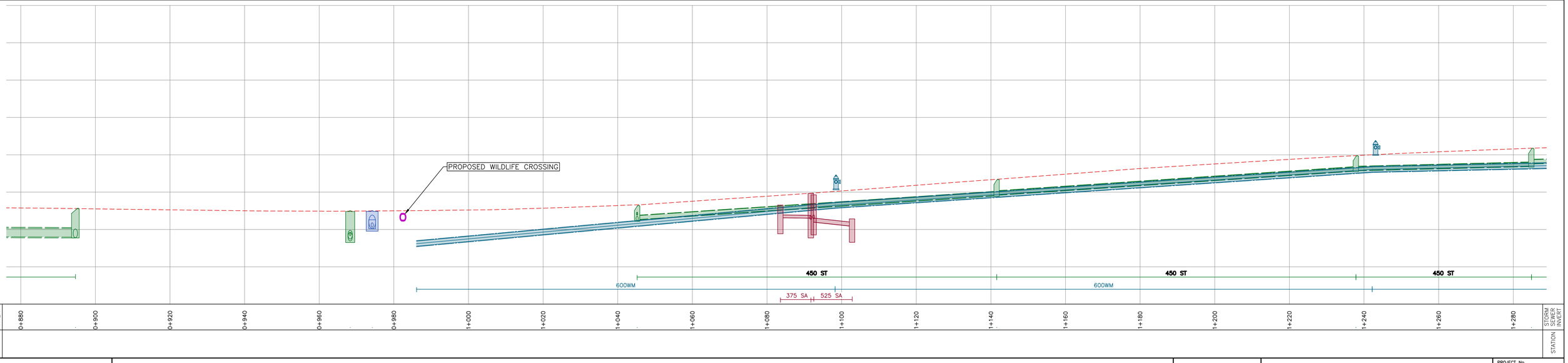
RECOMMENDED ALTERNATIVE
ADELAIDE STREET NORTH STA 0+480 TO STA 0+880

PROJECT No. ----

PLATE No. 2

Job No. ---- DWG No.2 z:\DATA\476793 - Adelaide St. North\6B_Dwg\NewConst - EA\476793-Plan and Profile.dwg





London CANADA
PARSONS

LEGEND

- PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- EXISTING GROUND PROFILE
- FUTURE ROAD PROFILE
- PROPERTY REQUIRED FOR ADDITIONAL RIGHT OF WAY
- EXISTING SIDEWALK
- EXISTING CYCLE TRACK
- PROPOSED ROAD
- PROPOSED BICYCLE LANE
- PROPOSED SIDEWALK
- PROPOSED CYCLE TRACK

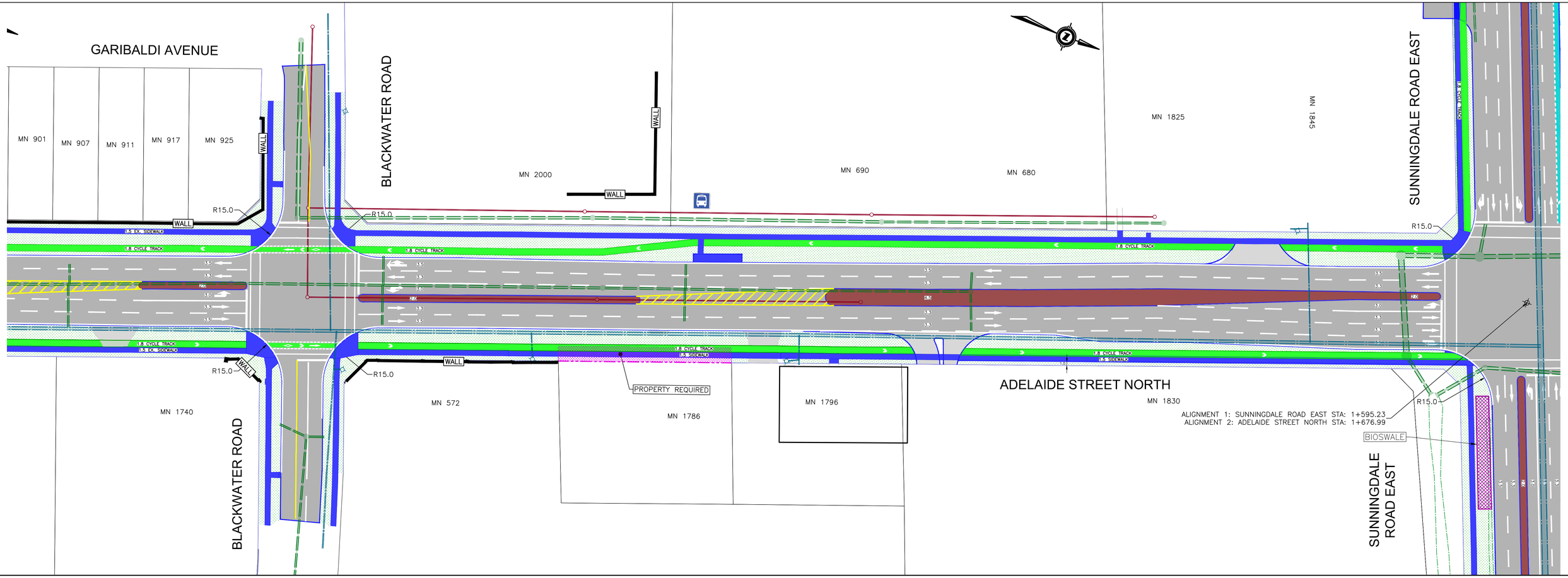
HORIZONTAL - 1:500
5 0 10m
VERTICAL - 1:250
2.5 0 5m

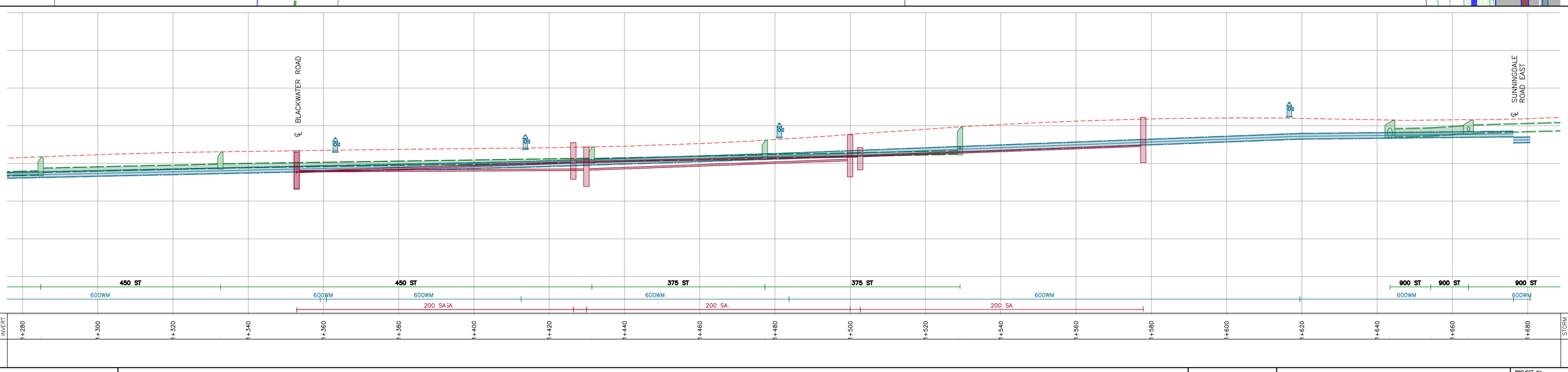
ADELAIDE STREET NORTH
FANSHAWE PARK ROAD TO SUNNINGDALE

RECOMMENDED ALTERNATIVE
ADELAIDE STREET NORTH STA 0+880 TO STA 1+280

PROJECT No. ----
PLATE No. 3

Job No. ---- DWG No.3 J:\DATA\476793 - Adelaide St. North\6B_Dwg\NewConst - EA\476793-Plan and Profile.dwg





London CANADA
PARSONS

LEGEND

- PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- EXISTING GROUND PROFILE
- FUTURE ROAD PROFILE
- PROPERTY REQUIRED FOR ADDITIONAL RIGHT OF WAY
- EXISTING SIDEWALK
- EXISTING CYCLE TRACK
- PROPOSED ROAD
- PROPOSED BICYCLE LANE
- PROPOSED SIDEWALK
- PROPOSED CYCLE TRACK

HORIZONTAL - 1:500
5 0 10m
VERTICAL - 1:250
2.5 0 5m

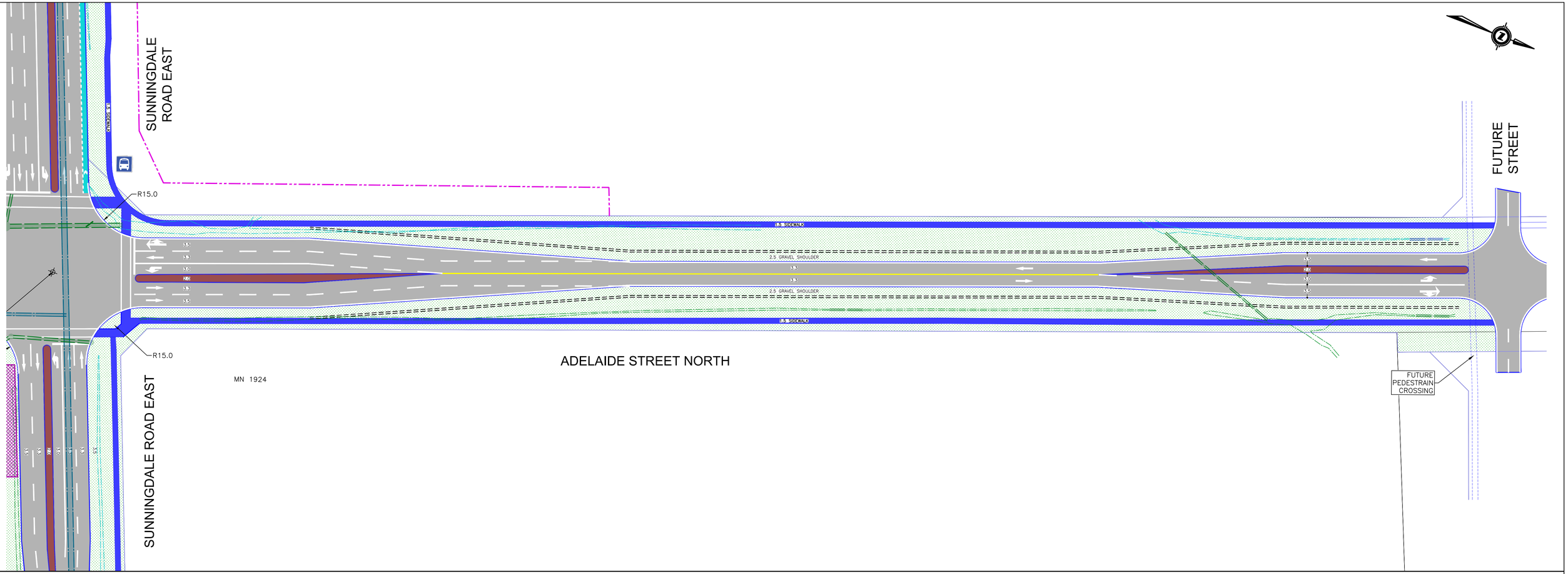
ADELAIDE STREET NORTH
FANSHAWE PARK ROAD TO SUNNINGDALE

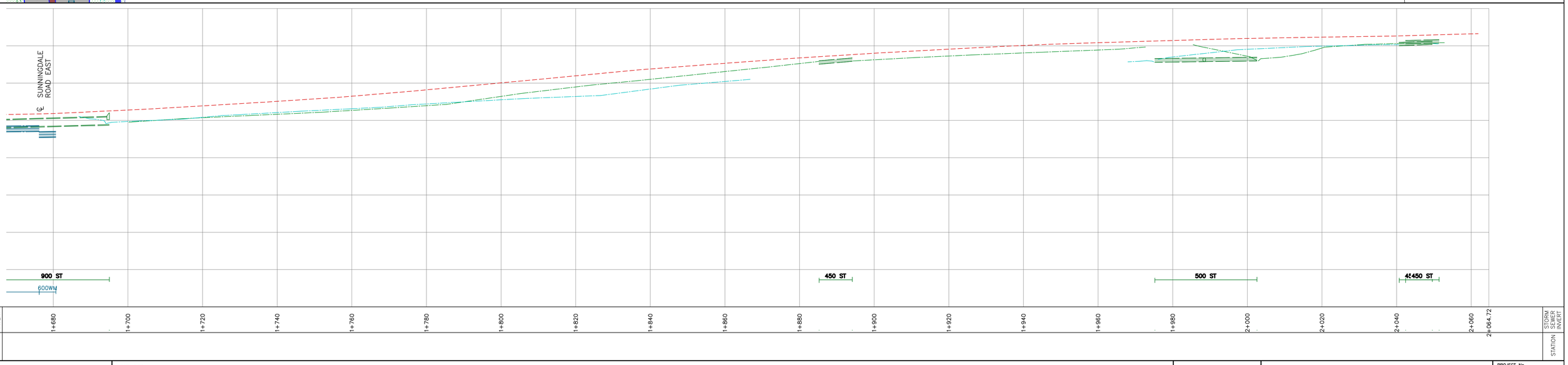
RECOMMENDED ALTERNATIVE
ADELAIDE STREET NORTH STA 1+280 TO STA 1+680

PROJECT No. ----

PLATE No. 4

Job No. ---- DWG No.4 J:\DATA\476793 - Adelaide St. North\EB_Dwg\NewConst - EA\476793-Plan and Profile.dwg





LEGEND

- PROPERTY LINE
- PROPOSED RIGHT-OF-WAY
- EXISTING GROUND PROFILE
- FUTURE ROAD PROFILE
- PROPERTY REQUIRED FOR ADDITIONAL RIGHT OF WAY
- EXISTING SIDEWALK
- EXISTING CYCLE TRACK
- PROPOSED ROAD
- PROPOSED BICYCLE LANE
- PROPOSED SIDEWALK
- PROPOSED CYCLE TRACK

London CANADA

PARSONS

HORIZONTAL - 1:500
5 0 10m

VERTICAL - 1:250
2.5 0 5m

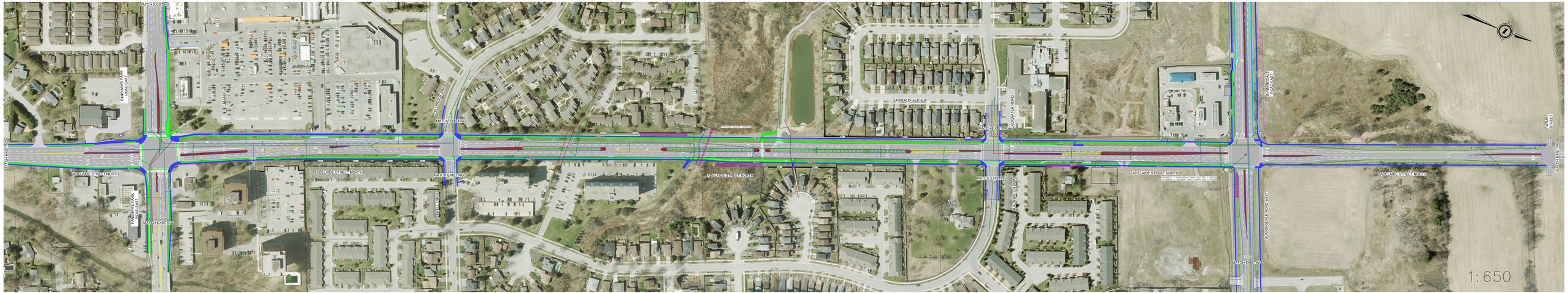
ADELAIDE STREET NORTH
FANSHAWE PARK ROAD TO SUNNINGDALE

RECOMMENDED ALTERNATIVE
ADELAIDE STREET NORTH STA 1+680 TO STA 2+065

PROJECT No. ----

PLATE No. 5

Job No. ---- DWG No.5 z:\DATA\476793 - Adelaide St. North\6B_Dwg\NewConst - EA\476793-Plan and Profile.dwg


MATCH EXISTING
FANSHAWE PARK ROAD EAST
PETERSON DRIVE
GARIBALDI AVENUE
BLACKWATER ROAD
SUNNINGDALE ROAD EAST
FUTURE STREET
ADELAIDE STREET NORTH
ADELAIDE STREET NORTH
ADELAIDE STREET NORTH
ADELAIDE STREET NORTH
ADELAIDE STREET NORTH
ADELAIDE STREET NORTH
1:650

STORMCEPTOR

Detailed Stormceptor Sizing Report – Outlet #1

Project Information & Location			
Project Name	Adelaide Street Widening	**Project Number**	476793
City	London	**State/ Province**	Ontario
Country	Canada	**Date**	5/21/2019
Designer Information		**EOR Information (optional)**	
Name	Nicanor Juan	**Name**	
Company	Parsons	**Company**	
Phone #	905-917-3290	**Phone #**	
Email	Mike.He@parsons.com	**Email**	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	Outlet #1
Recommended Stormceptor Model	OSR 300
Target TSS Removal (%)	80.0
TSS Removal (%) Provided	86
PSD	F-60 Sand
Rainfall Station	LONDON A

The recommended Stormceptor model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
OSR Model	**% TSS Removal Provided**
OSR 300	86
OSR 750	93
OSR 2000	95
OSR 4000	97
OSR 6000	98
OSR 9000	98
OSR 14000	99
StormceptorMAX	Custom

Stormceptor

The Stormceptor oil and sediment separator is sized to treat stormwater runoff by removing pollutants through gravity separation and flotation. Stormceptor's patented design generates positive TSS removal for each rainfall event, including large storms. Significant levels of pollutants such as heavy metals, free oils and nutrients are prevented from entering natural water resources and the re-suspension of previously captured sediment (scour) does not occur.
Stormceptor provides a high level of TSS removal for small frequent storm events that represent the majority of annual rainfall volume and pollutant load. Positive treatment continues for large infrequent events, however, such events have little impact on the average annual TSS removal as they represent a small percentage of the total runoff volume and pollutant load.

Design Methodology

Stormceptor is sized using PCSWMM for Stormceptor, a continuous simulation model based on US EPA SWMM. The program calculates hydrology using local historical rainfall data and specified site parameters. With US EPA SWMM's precision, every Stormceptor unit is designed to achieve a defined water quality objective. The TSS removal data presented follows US EPA guidelines to reduce the average annual TSS load. The Stormceptor's unit process for TSS removal is settling. The settling model calculates TSS removal by analyzing:

- Site parameters
- Continuous historical rainfall data, including duration, distribution, peaks & inter-event dry periods
- Particle size distribution, and associated settling velocities (Stokes Law, corrected for drag)
- TSS load
- Detention time of the system

Hydrology Analysis
PCSWMM for Stormceptor calculates annual hydrology with the US EPA SWMM and local continuous historical rainfall data. Performance calculations of Stormceptor are based on the average annual removal of TSS for the selected site parameters. The Stormceptor is engineered to capture sediment particles by treating the required average annual runoff volume, ensuring positive removal efficiency is maintained during each rainfall event, and preventing negative removal efficiency (scour). Smaller recurring storms account for the majority of rainfall events and average annual runoff volume, as observed in the historical rainfall data analyses presented in this section.

Rainfall Station			
State/Province	Ontario	**Total Number of Rainfall Events**	5513
Rainfall Station Name	LONDON A	**Total Rainfall (mm)**	28681.4
Station ID #	4475	**Average Annual Rainfall (mm)**	667.0
Coordinates	43°02'00"N, 81°09'00"W	**Total Evaporation (mm)**	1736.4
Elevation (ft)	912	**Total Infiltration (mm)**	10006.7
Years of Rainfall Data	43	**Total Rainfall that is Runoff (mm)**	16938.3

Notes
• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules. • Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed. • For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

Drainage Area	
Total Area (ha)	1.57
Imperviousness %	65.0

Up Stream Storage	
Storage (ha-m)	Discharge (cms)
0.000	0.000

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (L)	
Peak Conveyed Flow Rate (L/s)	
Water Quality Flow Rate (L/s)	

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cms)	

Design Details	
Stormceptor Inlet Invert Elev (m)	
Stormceptor Outlet Invert Elev (m)	
Stormceptor Rim Elev (m)	
Normal Water Level Elevation (m)	
Pipe Diameter (mm)	
Pipe Material	
Multiple Inlets (Y/N)	No
Grate Inlet (Y/N)	No

Particle Size Distribution (PSD)

Removing the smallest fraction of particulates from runoff ensures the majority of pollutants, such as metals, hydrocarbons and nutrients are captured. The table below identifies the Particle Size Distribution (PSD) that was selected to define TSS removal for the Stormceptor design.

F-60 Sand		
Particle Diameter (microns)	Distribution %	Specific Gravity
75.0	1.0	2.65
150.0	9.0	2.65
230.0	50.0	2.65
350.0	30.0	2.65
500.0	10.0	2.65

Site Name	Outlet #1

Site Details

Drainage Area

Total Area (ha)	1.57
Imperviousness %	65.0

Surface Characteristics

Width (m)	251.00
Slope %	2
Impervious Depression Storage (mm)	0.508
Pervious Depression Storage (mm)	5.08
Impervious Manning's n	0.015
Pervious Manning's n	0.25

Maintenance Frequency

Maintenance Frequency (months) >	12

Infiltration Parameters

Horton's equation is used to estimate infiltration

Max. Infiltration Rate (mm/hr)	61.98
Min. Infiltration Rate (mm/hr)	10.16
Decay Rate (1/sec)	0.00055
Regeneration Rate (1/sec)	0.01

Evaporation

Daily Evaporation Rate (mm/day)	2.54

Dry Weather Flow

Dry Weather Flow (lps)	0

Winter Months

Winter Infiltration	0

TSS Loading Parameters

TSS Loading Function	

Buildup/Wash-off Parameters

Target Event Mean Conc. (EMC) mg/L	
Exponential Buildup Power	
Exponential Washoff Exponent	

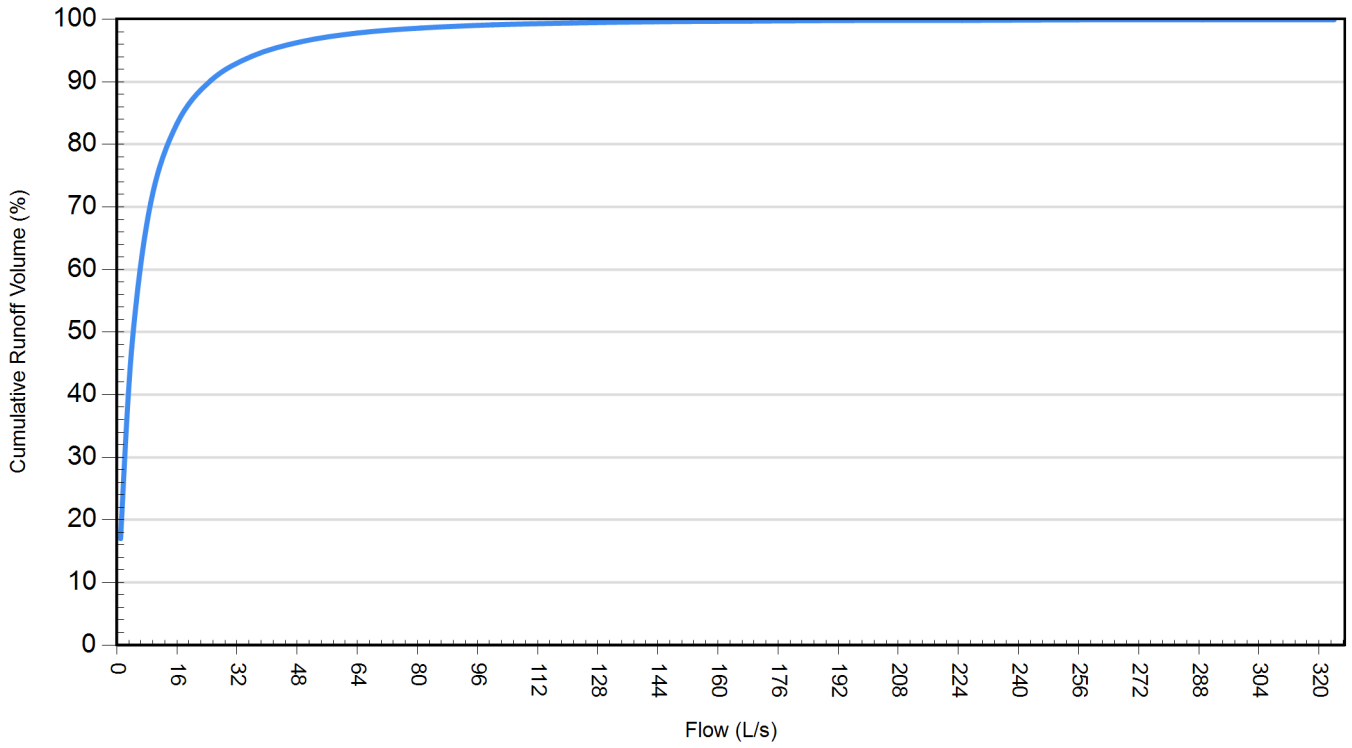
TSS Availability Parameters

Availability Constant A	
Availability Factor B	
Availability Exponent C	
Min. Particle Size Affected by Availability (micron)	

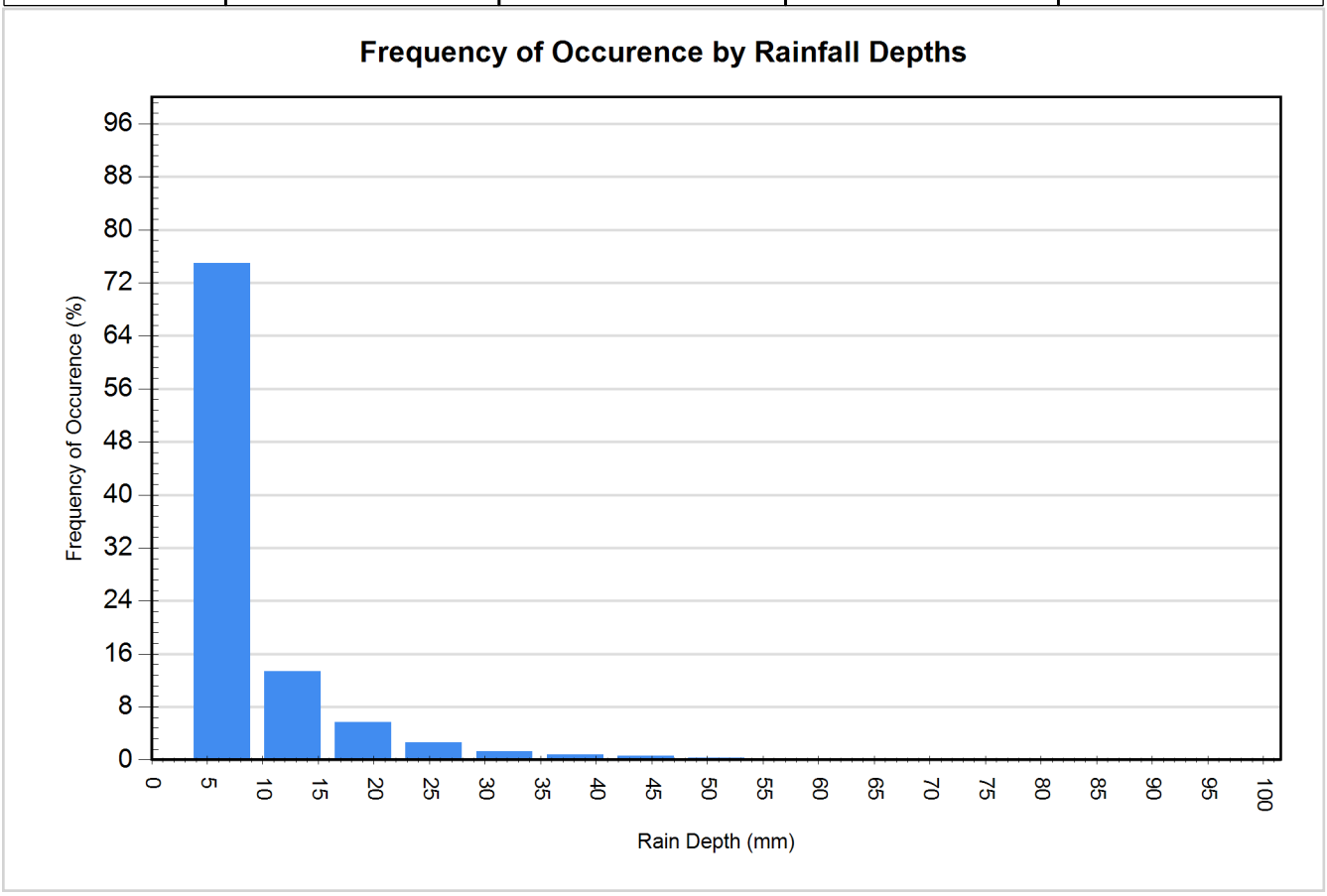
Cumulative Runoff Volume by Runoff Rate			
Runoff Rate (L/s)	**Runoff Volume (m^3)**	**Volume Over (m^3)**	**Cumulative Runoff Volume (%)**
1	45492	222305	17.0
4	127692	140122	47.7
9	189122	78745	70.6
16	222958	44853	83.3
25	241441	26383	90.2
36	251931	15880	94.1
49	258141	9673	96.4
64	261791	6020	97.8
81	264034	3778	98.6
100	265391	2421	99.1
121	266203	1608	99.4
144	266721	1090	99.6
169	266985	826	99.7
196	267171	640	99.8
225	267308	503	99.8
256	267416	395	99.9
289	267486	325	99.9
324	267538	273	99.9

Cumulative Runoff Volume by Runoff Rate

For area: 1.57(ha), imperviousness: 65.0%, rainfall station: LONDON A



Rainfall Event Analysis				
Rainfall Depth (mm)	**No. of Events**	**Percentage of Total Events (%)**	**Total Volume (mm)**	**Percentage of Annual Volume (%)**
6.35	4133	75.0	7031	24.5
12.70	739	13.4	6819	23.8
19.05	313	5.7	4859	16.9
25.40	146	2.6	3251	11.3
31.75	72	1.3	2047	7.1
38.10	42	0.8	1464	5.1
44.45	33	0.6	1353	4.7
50.80	18	0.3	850	3.0
57.15	9	0.2	488	1.7
63.50	5	0.1	303	1.1
69.85	1	0.0	65	0.2
76.20	1	0.0	70	0.2
82.55	1	0.0	83	0.3
88.90	0	0.0	0	0.0
95.25	0	0.0	0	0.0



For Stormceptor Specifications and Drawings Please Visit:
http://www.imbriumsystems.com/technical-specifications

Detailed Stormceptor Sizing Report – Outlet #2

Project Information & Location			
Project Name	Adelaide Street Widening	**Project Number**	476793
City	London	**State/ Province**	Ontario
Country	Canada	**Date**	5/21/2019
Designer Information		**EOR Information (optional)**	
Name	Nicanor Juan	**Name**	
Company	Parsons	**Company**	
Phone #	905-917-3290	**Phone #**	
Email	Mike.He@parsons.com	**Email**	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	Outlet #2
Recommended Stormceptor Model	OSR 300
Target TSS Removal (%)	80.0
TSS Removal (%) Provided	89
PSD	F-60 Sand
Rainfall Station	LONDON A

The recommended Stormceptor model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
OSR Model	**% TSS Removal Provided**
OSR 300	89
OSR 750	94
OSR 2000	96
OSR 4000	98
OSR 6000	98
OSR 9000	99
OSR 14000	99
StormceptorMAX	Custom

Stormceptor
The Stormceptor oil and sediment separator is sized to treat stormwater runoff by removing pollutants through gravity separation and flotation. Stormceptor's patented design generates positive TSS removal for each rainfall event, including large storms. Significant levels of pollutants such as heavy metals, free oils and nutrients are prevented from entering natural water resources and the re-suspension of previously captured sediment (scour) does not occur.
Stormceptor provides a high level of TSS removal for small frequent storm events that represent the majority of annual rainfall volume and pollutant load. Positive treatment continues for large infrequent events, however, such events have little impact on the average annual TSS removal as they represent a small percentage of the total runoff volume and pollutant load.

Design Methodology
Stormceptor is sized using PCSWMM for Stormceptor, a continuous simulation model based on US EPA SWMM. The program calculates hydrology using local historical rainfall data and specified site parameters. With US EPA SWMM's precision, every Stormceptor unit is designed to achieve a defined water quality objective. The TSS removal data presented follows US EPA guidelines to reduce the average annual TSS load. The Stormceptor's unit process for TSS removal is settling. The settling model calculates TSS removal by analyzing:
• Site parameters
• Continuous historical rainfall data, including duration, distribution, peaks & inter-event dry periods
• Particle size distribution, and associated settling velocities (Stokes Law, corrected for drag)
• TSS load
• Detention time of the system

Hydrology Analysis
PCSWMM for Stormceptor calculates annual hydrology with the US EPA SWMM and local continuous historical rainfall data. Performance calculations of Stormceptor are based on the average annual removal of TSS for the selected site parameters. The Stormceptor is engineered to capture sediment particles by treating the required average annual runoff volume, ensuring positive removal efficiency is maintained during each rainfall event, and preventing negative removal efficiency (scour). Smaller recurring storms account for the majority of rainfall events and average annual runoff volume, as observed in the historical rainfall data analyses presented in this section.

Rainfall Station			
State/Province	Ontario	**Total Number of Rainfall Events**	5513
Rainfall Station Name	LONDON A	**Total Rainfall (mm)**	28681.4
Station ID #	4475	**Average Annual Rainfall (mm)**	667.0
Coordinates	43°02'00"N, 81°09'00"W	**Total Evaporation (mm)**	1688.1
Elevation (ft)	912	**Total Infiltration (mm)**	10280.6
Years of Rainfall Data	43	**Total Rainfall that is Runoff (mm)**	16712.7

Notes
• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules. • Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed. • For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

Drainage Area	
Total Area (ha)	1.17
Imperviousness %	64.0

Up Stream Storage	
Storage (ha-m)	Discharge (cms)
0.000	0.000

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (L)	
Peak Conveyed Flow Rate (L/s)	
Water Quality Flow Rate (L/s)	

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cms)	

Design Details	
Stormceptor Inlet Invert Elev (m)	
Stormceptor Outlet Invert Elev (m)	
Stormceptor Rim Elev (m)	
Normal Water Level Elevation (m)	
Pipe Diameter (mm)	
Pipe Material	
Multiple Inlets (Y/N)	No
Grate Inlet (Y/N)	No

Particle Size Distribution (PSD)

Removing the smallest fraction of particulates from runoff ensures the majority of pollutants, such as metals, hydrocarbons and nutrients are captured. The table below identifies the Particle Size Distribution (PSD) that was selected to define TSS removal for the Stormceptor design.

F-60 Sand		
Particle Diameter (microns)	Distribution %	Specific Gravity
75.0	1.0	2.65
150.0	9.0	2.65
230.0	50.0	2.65
350.0	30.0	2.65
500.0	10.0	2.65

Site Name	Outlet #2

Site Details

Drainage Area

Total Area (ha)	1.17
Imperviousness %	64.0

Surface Characteristics

Width (m)	216.00
Slope %	2
Impervious Depression Storage (mm)	0.508
Pervious Depression Storage (mm)	5.08
Impervious Manning's n	0.015
Pervious Manning's n	0.25

Maintenance Frequency

Maintenance Frequency (months) >	12

Infiltration Parameters

Horton's equation is used to estimate infiltration

Max. Infiltration Rate (mm/hr)	61.98
Min. Infiltration Rate (mm/hr)	10.16
Decay Rate (1/sec)	0.00055
Regeneration Rate (1/sec)	0.01

Evaporation

Daily Evaporation Rate (mm/day)	2.54

Dry Weather Flow

Dry Weather Flow (lps)	0

Winter Months

Winter Infiltration	0

TSS Loading Parameters

TSS Loading Function	

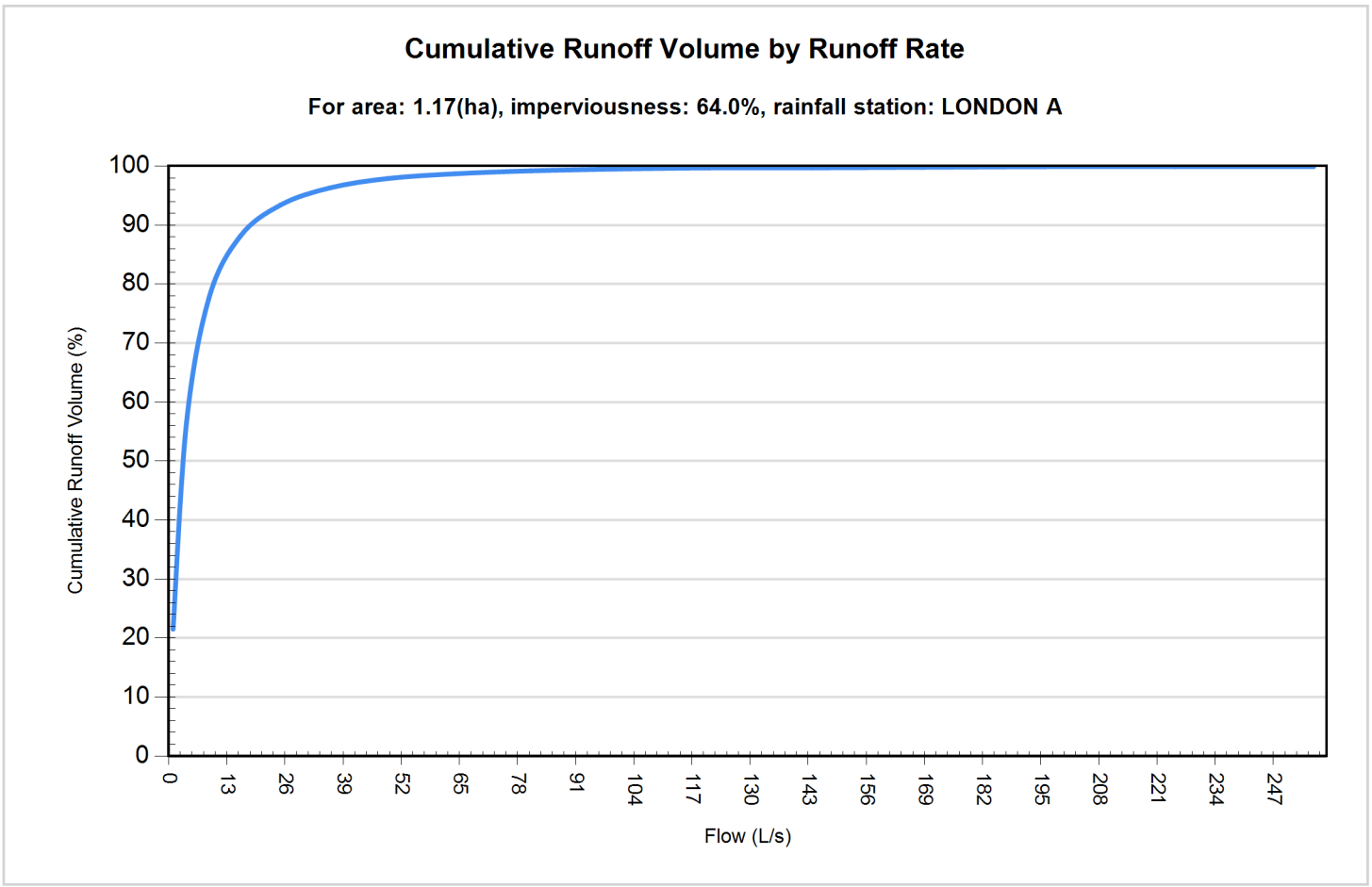
Buildup/Wash-off Parameters

Target Event Mean Conc. (EMC) mg/L	
Exponential Buildup Power	
Exponential Washoff Exponent	

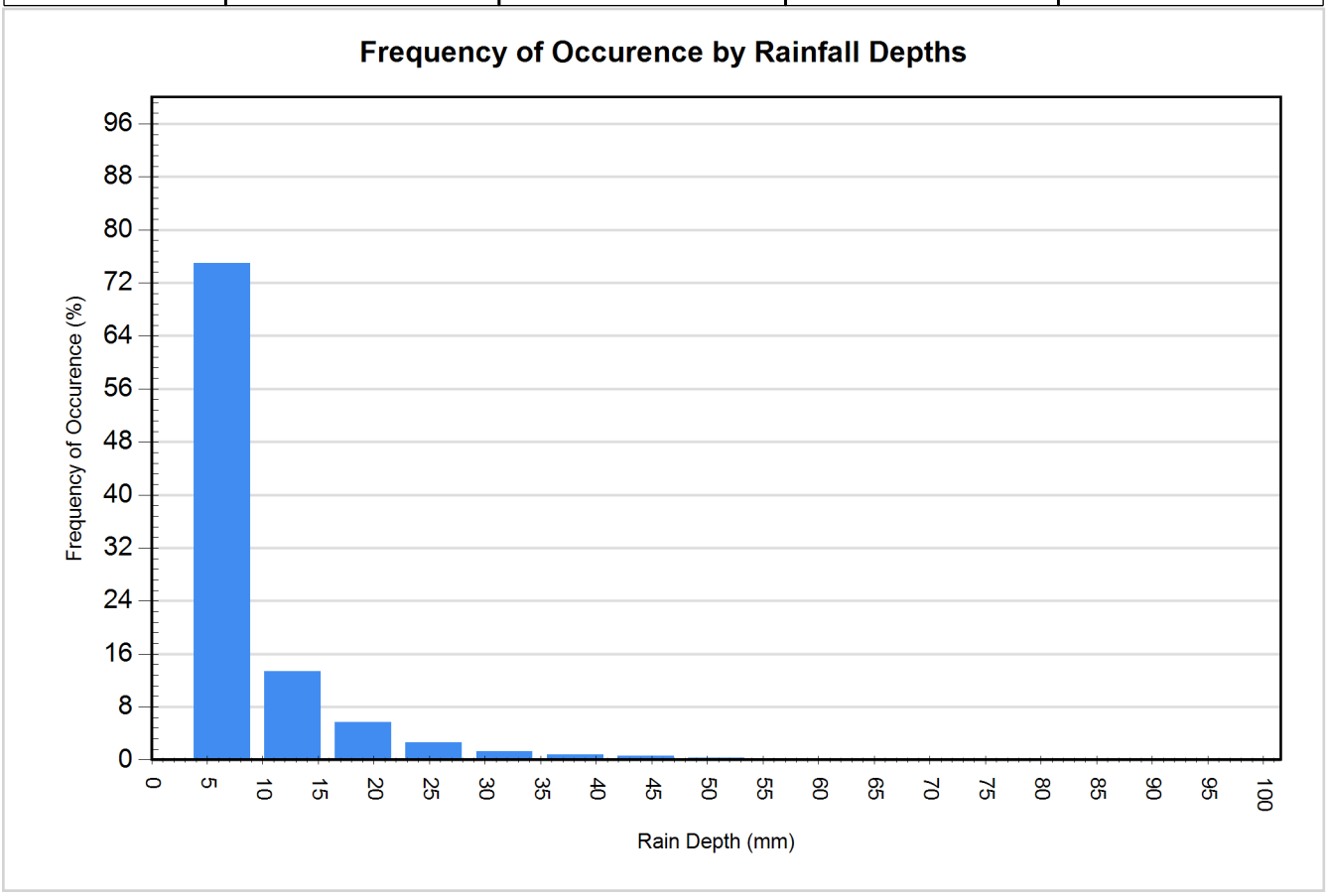
TSS Availability Parameters

Availability Constant A	
Availability Factor B	
Availability Exponent C	
Min. Particle Size Affected by Availability (micron)	

Cumulative Runoff Volume by Runoff Rate			
Runoff Rate (L/s)	**Runoff Volume (m³)**	**Volume Over (m³)**	**Cumulative Runoff Volume (%)**
1	42356	154563	21.5
4	111253	85663	56.5
9	152862	44086	77.6
16	173503	23412	88.1
25	183991	12931	93.4
36	189634	7282	96.3
49	192722	4196	97.9
64	194443	2473	98.7
81	195427	1489	99.2
100	195976	941	99.5
121	196256	661	99.7
144	196424	493	99.7
169	196544	373	99.8
196	196633	284	99.9
225	196685	231	99.9
256	196727	190	99.9



Rainfall Event Analysis				
Rainfall Depth (mm)	**No. of Events**	**Percentage of Total Events (%)**	**Total Volume (mm)**	**Percentage of Annual Volume (%)**
6.35	4133	75.0	7031	24.5
12.70	739	13.4	6819	23.8
19.05	313	5.7	4859	16.9
25.40	146	2.6	3251	11.3
31.75	72	1.3	2047	7.1
38.10	42	0.8	1464	5.1
44.45	33	0.6	1353	4.7
50.80	18	0.3	850	3.0
57.15	9	0.2	488	1.7
63.50	5	0.1	303	1.1
69.85	1	0.0	65	0.2
76.20	1	0.0	70	0.2
82.55	1	0.0	83	0.3
88.90	0	0.0	0	0.0
95.25	0	0.0	0	0.0



For Stormceptor Specifications and Drawings Please Visit:
http://www.imbriumsystems.com/technical-specifications

Detailed Stormceptor Sizing Report – Outlet #3

Project Information & Location			
Project Name	Adelaide Street Widening	**Project Number**	476793
City	London	**State/ Province**	Ontario
Country	Canada	**Date**	5/21/2019
Designer Information		**EOR Information (optional)**	
Name	Nicanor Juan	**Name**	
Company	Parsons	**Company**	
Phone #	905-917-3290	**Phone #**	
Email	Mike.He@parsons.com	**Email**	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	Outlet #3
Recommended Stormceptor Model	OSR 300
Target TSS Removal (%)	80.0
TSS Removal (%) Provided	81
PSD	F-60 Sand
Rainfall Station	LONDON A

The recommended Stormceptor model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
OSR Model	**% TSS Removal Provided**
OSR 300	81
OSR 750	89
OSR 2000	93
OSR 4000	95
OSR 6000	96
OSR 9000	97
OSR 14000	98
StormceptorMAX	Custom

Stormceptor
The Stormceptor oil and sediment separator is sized to treat stormwater runoff by removing pollutants through gravity separation and flotation. Stormceptor's patented design generates positive TSS removal for each rainfall event, including large storms. Significant levels of pollutants such as heavy metals, free oils and nutrients are prevented from entering natural water resources and the re-suspension of previously captured sediment (scour) does not occur.
Stormceptor provides a high level of TSS removal for small frequent storm events that represent the majority of annual rainfall volume and pollutant load. Positive treatment continues for large infrequent events, however, such events have little impact on the average annual TSS removal as they represent a small percentage of the total runoff volume and pollutant load.

Design Methodology
Stormceptor is sized using PCSWMM for Stormceptor, a continuous simulation model based on US EPA SWMM. The program calculates hydrology using local historical rainfall data and specified site parameters. With US EPA SWMM's precision, every Stormceptor unit is designed to achieve a defined water quality objective. The TSS removal data presented follows US EPA guidelines to reduce the average annual TSS load. The Stormceptor's unit process for TSS removal is settling. The settling model calculates TSS removal by analyzing:
• Site parameters
• Continuous historical rainfall data, including duration, distribution, peaks & inter-event dry periods
• Particle size distribution, and associated settling velocities (Stokes Law, corrected for drag)
• TSS load
• Detention time of the system

Hydrology Analysis
PCSWMM for Stormceptor calculates annual hydrology with the US EPA SWMM and local continuous historical rainfall data. Performance calculations of Stormceptor are based on the average annual removal of TSS for the selected site parameters. The Stormceptor is engineered to capture sediment particles by treating the required average annual runoff volume, ensuring positive removal efficiency is maintained during each rainfall event, and preventing negative removal efficiency (scour). Smaller recurring storms account for the majority of rainfall events and average annual runoff volume, as observed in the historical rainfall data analyses presented in this section.

Rainfall Station			
State/Province	Ontario	**Total Number of Rainfall Events**	5513
Rainfall Station Name	LONDON A	**Total Rainfall (mm)**	28681.4
Station ID #	4475	**Average Annual Rainfall (mm)**	667.0
Coordinates	43°02'00"N, 81°09'00"W	**Total Evaporation (mm)**	1636.5
Elevation (ft)	912	**Total Infiltration (mm)**	11436.1
Years of Rainfall Data	43	**Total Rainfall that is Runoff (mm)**	15608.8

Notes
• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules. • Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed. • For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

Drainage Area	
Total Area (ha)	2.65
Imperviousness %	60.0

Up Stream Storage	
Storage (ha-m)	Discharge (cms)
0.000	0.000

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (L)	
Peak Conveyed Flow Rate (L/s)	
Water Quality Flow Rate (L/s)	

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cms)	

Design Details	
Stormceptor Inlet Invert Elev (m)	
Stormceptor Outlet Invert Elev (m)	
Stormceptor Rim Elev (m)	
Normal Water Level Elevation (m)	
Pipe Diameter (mm)	
Pipe Material	
Multiple Inlets (Y/N)	No
Grate Inlet (Y/N)	No

Particle Size Distribution (PSD)

Removing the smallest fraction of particulates from runoff ensures the majority of pollutants, such as metals, hydrocarbons and nutrients are captured. The table below identifies the Particle Size Distribution (PSD) that was selected to define TSS removal for the Stormceptor design.

F-60 Sand		
Particle Diameter (microns)	Distribution %	Specific Gravity
75.0	1.0	2.65
150.0	9.0	2.65
230.0	50.0	2.65
350.0	30.0	2.65
500.0	10.0	2.65

Site Name	Outlet #3

Site Details

Drainage Area

Total Area (ha)	2.65
Imperviousness %	60.0

Surface Characteristics

Width (m)	326.00
Slope %	2
Impervious Depression Storage (mm)	0.508
Pervious Depression Storage (mm)	5.08
Impervious Manning's n	0.015
Pervious Manning's n	0.25

Maintenance Frequency

Maintenance Frequency (months) >	12

Infiltration Parameters

Horton's equation is used to estimate infiltration

Max. Infiltration Rate (mm/hr)	61.98
Min. Infiltration Rate (mm/hr)	10.16
Decay Rate (1/sec)	0.00055
Regeneration Rate (1/sec)	0.01

Evaporation

Daily Evaporation Rate (mm/day)	2.54

Dry Weather Flow

Dry Weather Flow (lps)	0

Winter Months

Winter Infiltration	0

TSS Loading Parameters

TSS Loading Function	

Buildup/Wash-off Parameters

Target Event Mean Conc. (EMC) mg/L	
Exponential Buildup Power	
Exponential Washoff Exponent	

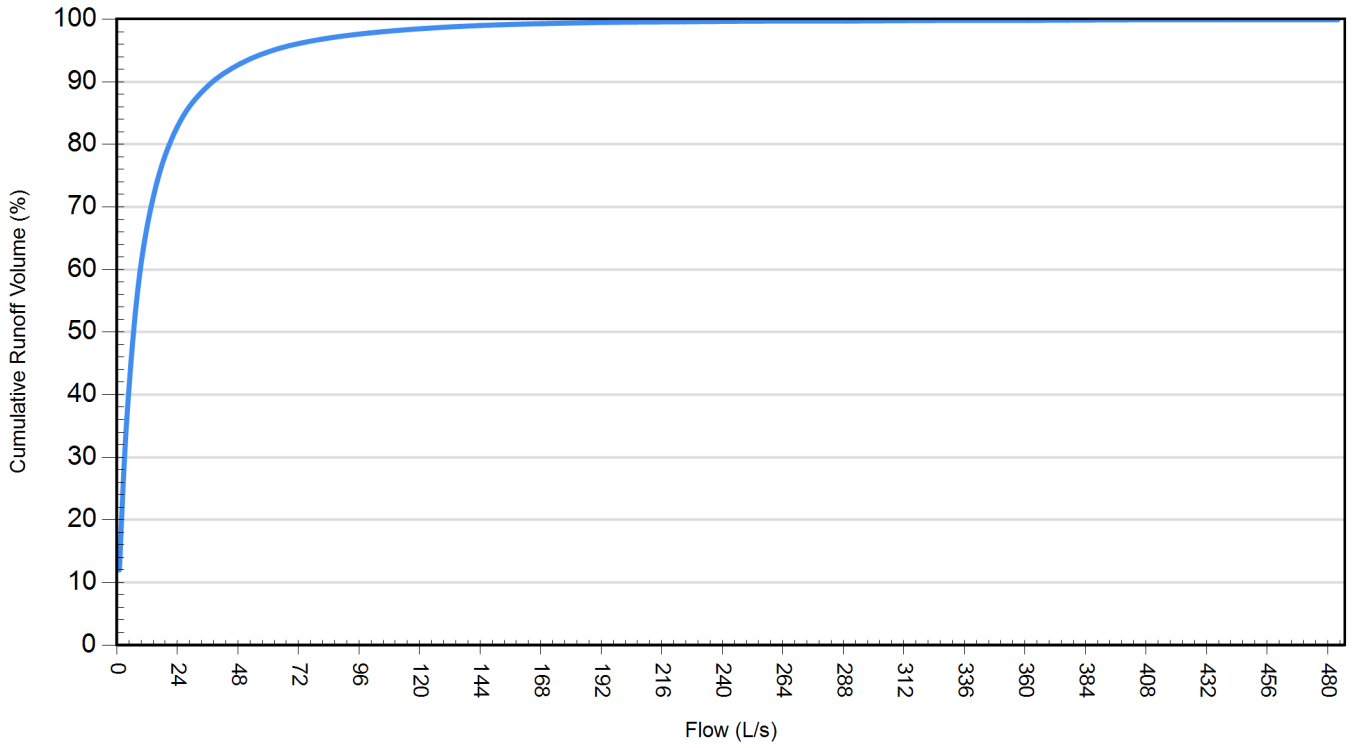
TSS Availability Parameters

Availability Constant A	
Availability Factor B	
Availability Exponent C	
Min. Particle Size Affected by Availability (micron)	

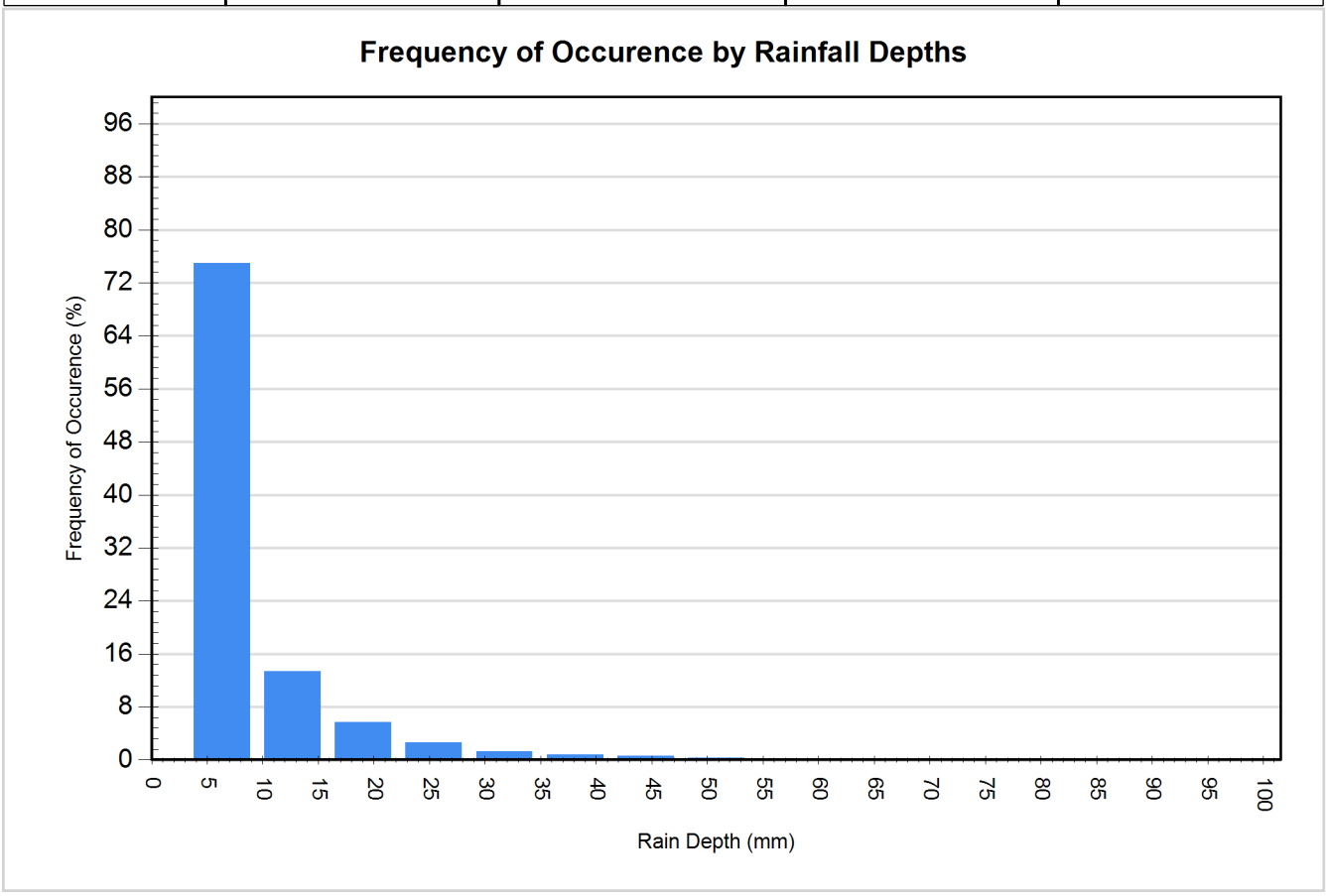
Cumulative Runoff Volume by Runoff Rate			
Runoff Rate (L/s)	**Runoff Volume (m^3)**	**Volume Over (m^3)**	**Cumulative Runoff Volume (%)**
1	50086	366356	12.0
4	151462	264943	36.4
9	245910	170601	59.1
16	308724	107656	74.1
25	347906	68461	83.6
36	371898	44495	89.3
49	386959	29407	92.9
64	396700	19670	95.3
81	403102	13265	96.8
100	407300	9071	97.8
121	410139	6229	98.5
144	412026	4343	99.0
169	413297	3071	99.3
196	414139	2229	99.5
225	414720	1648	99.6
256	415070	1298	99.7
289	415316	1051	99.7
324	415496	872	99.8
361	415647	721	99.8
400	415769	599	99.9
441	415855	513	99.9
484	415921	446	99.9

Cumulative Runoff Volume by Runoff Rate

For area: 2.65(ha), imperviousness: 60.0%, rainfall station: LONDON A



Rainfall Event Analysis				
Rainfall Depth (mm)	**No. of Events**	**Percentage of Total Events (%)**	**Total Volume (mm)**	**Percentage of Annual Volume (%)**
6.35	4133	75.0	7031	24.5
12.70	739	13.4	6819	23.8
19.05	313	5.7	4859	16.9
25.40	146	2.6	3251	11.3
31.75	72	1.3	2047	7.1
38.10	42	0.8	1464	5.1
44.45	33	0.6	1353	4.7
50.80	18	0.3	850	3.0
57.15	9	0.2	488	1.7
63.50	5	0.1	303	1.1
69.85	1	0.0	65	0.2
76.20	1	0.0	70	0.2
82.55	1	0.0	83	0.3
88.90	0	0.0	0	0.0
95.25	0	0.0	0	0.0



For Stormceptor Specifications and Drawings Please Visit:
http://www.imbriumsystems.com/technical-specifications

Detailed Stormceptor Sizing Report – Outlet #4

Project Information & Location			
Project Name	Adelaide Street Widening	**Project Number**	476793
City	London	**State/ Province**	Ontario
Country	Canada	**Date**	5/21/2019
Designer Information		**EOR Information (optional)**	
Name	Nicanor Juan	**Name**	
Company	Parsons	**Company**	
Phone #	905-917-3290	**Phone #**	
Email	Mike.He@parsons.com	**Email**	

Stormwater Treatment Recommendation

The recommended Stormceptor Model(s) which achieve or exceed the user defined water quality objective for each site within the project are listed in the below Sizing Summary table.

Site Name	Outlet #4
Recommended Stormceptor Model	OSR 750
Target TSS Removal (%)	80.0
TSS Removal (%) Provided	88
PSD	F-60 Sand
Rainfall Station	LONDON A

The recommended Stormceptor model achieves the water quality objectives based on the selected inputs, historical rainfall records and selected particle size distribution.

Stormceptor Sizing Summary	
OSR Model	**% TSS Removal Provided**
OSR 300	77
OSR 750	88
OSR 2000	91
OSR 4000	94
OSR 6000	96
OSR 9000	97
OSR 14000	98
StormceptorMAX	Custom

Stormceptor
The Stormceptor oil and sediment separator is sized to treat stormwater runoff by removing pollutants through gravity separation and flotation. Stormceptor's patented design generates positive TSS removal for each rainfall event, including large storms. Significant levels of pollutants such as heavy metals, free oils and nutrients are prevented from entering natural water resources and the re-suspension of previously captured sediment (scour) does not occur.
Stormceptor provides a high level of TSS removal for small frequent storm events that represent the majority of annual rainfall volume and pollutant load. Positive treatment continues for large infrequent events, however, such events have little impact on the average annual TSS removal as they represent a small percentage of the total runoff volume and pollutant load.

Design Methodology
Stormceptor is sized using PCSWMM for Stormceptor, a continuous simulation model based on US EPA SWMM. The program calculates hydrology using local historical rainfall data and specified site parameters. With US EPA SWMM's precision, every Stormceptor unit is designed to achieve a defined water quality objective. The TSS removal data presented follows US EPA guidelines to reduce the average annual TSS load. The Stormceptor's unit process for TSS removal is settling. The settling model calculates TSS removal by analyzing:
• Site parameters
• Continuous historical rainfall data, including duration, distribution, peaks & inter-event dry periods
• Particle size distribution, and associated settling velocities (Stokes Law, corrected for drag)
• TSS load
• Detention time of the system

Hydrology Analysis
PCSWMM for Stormceptor calculates annual hydrology with the US EPA SWMM and local continuous historical rainfall data. Performance calculations of Stormceptor are based on the average annual removal of TSS for the selected site parameters. The Stormceptor is engineered to capture sediment particles by treating the required average annual runoff volume, ensuring positive removal efficiency is maintained during each rainfall event, and preventing negative removal efficiency (scour). Smaller recurring storms account for the majority of rainfall events and average annual runoff volume, as observed in the historical rainfall data analyses presented in this section.

Rainfall Station			
State/Province	Ontario	**Total Number of Rainfall Events**	5513
Rainfall Station Name	LONDON A	**Total Rainfall (mm)**	28681.4
Station ID #	4475	**Average Annual Rainfall (mm)**	667.0
Coordinates	43°02'00"N, 81°09'00"W	**Total Evaporation (mm)**	1357.2
Elevation (ft)	912	**Total Infiltration (mm)**	14296.9
Years of Rainfall Data	43	**Total Rainfall that is Runoff (mm)**	13027.3

Notes
• Stormceptor performance estimates are based on simulations using PCSWMM for Stormceptor, which uses the EPA Rainfall and Runoff modules. • Design estimates listed are only representative of specific project requirements based on total suspended solids (TSS) removal defined by the selected PSD, and based on stable site conditions only, after construction is completed. • For submerged applications or sites specific to spill control, please contact your local Stormceptor representative for further design assistance.

Drainage Area	
Total Area (ha)	3.9
Imperviousness %	50.0

Up Stream Storage	
Storage (ha-m)	Discharge (cms)
0.000	0.000

Water Quality Objective	
TSS Removal (%)	80.0
Runoff Volume Capture (%)	
Oil Spill Capture Volume (L)	
Peak Conveyed Flow Rate (L/s)	
Water Quality Flow Rate (L/s)	

Up Stream Flow Diversion	
Max. Flow to Stormceptor (cms)	

Design Details	
Stormceptor Inlet Invert Elev (m)	
Stormceptor Outlet Invert Elev (m)	
Stormceptor Rim Elev (m)	
Normal Water Level Elevation (m)	
Pipe Diameter (mm)	
Pipe Material	
Multiple Inlets (Y/N)	No
Grate Inlet (Y/N)	No

Particle Size Distribution (PSD)

Removing the smallest fraction of particulates from runoff ensures the majority of pollutants, such as metals, hydrocarbons and nutrients are captured. The table below identifies the Particle Size Distribution (PSD) that was selected to define TSS removal for the Stormceptor design.

F-60 Sand		
Particle Diameter (microns)	Distribution %	Specific Gravity
75.0	1.0	2.65
150.0	9.0	2.65
230.0	50.0	2.65
350.0	30.0	2.65
500.0	10.0	2.65

Site Name	Outlet #4

Site Details

Drainage Area

Total Area (ha)	3.9
Imperviousness %	50.0

Surface Characteristics

Width (m)	395.00
Slope %	2
Impervious Depression Storage (mm)	0.508
Pervious Depression Storage (mm)	5.08
Impervious Manning's n	0.015
Pervious Manning's n	0.25

Maintenance Frequency

Maintenance Frequency (months) >	12

Infiltration Parameters

Horton's equation is used to estimate infiltration

Max. Infiltration Rate (mm/hr)	61.98
Min. Infiltration Rate (mm/hr)	10.16
Decay Rate (1/sec)	0.00055
Regeneration Rate (1/sec)	0.01

Evaporation

Daily Evaporation Rate (mm/day)	2.54

Dry Weather Flow

Dry Weather Flow (lps)	0

Winter Months

Winter Infiltration	0

TSS Loading Parameters

TSS Loading Function	

Buildup/Wash-off Parameters

Target Event Mean Conc. (EMC) mg/L	
Exponential Buildup Power	
Exponential Washoff Exponent	

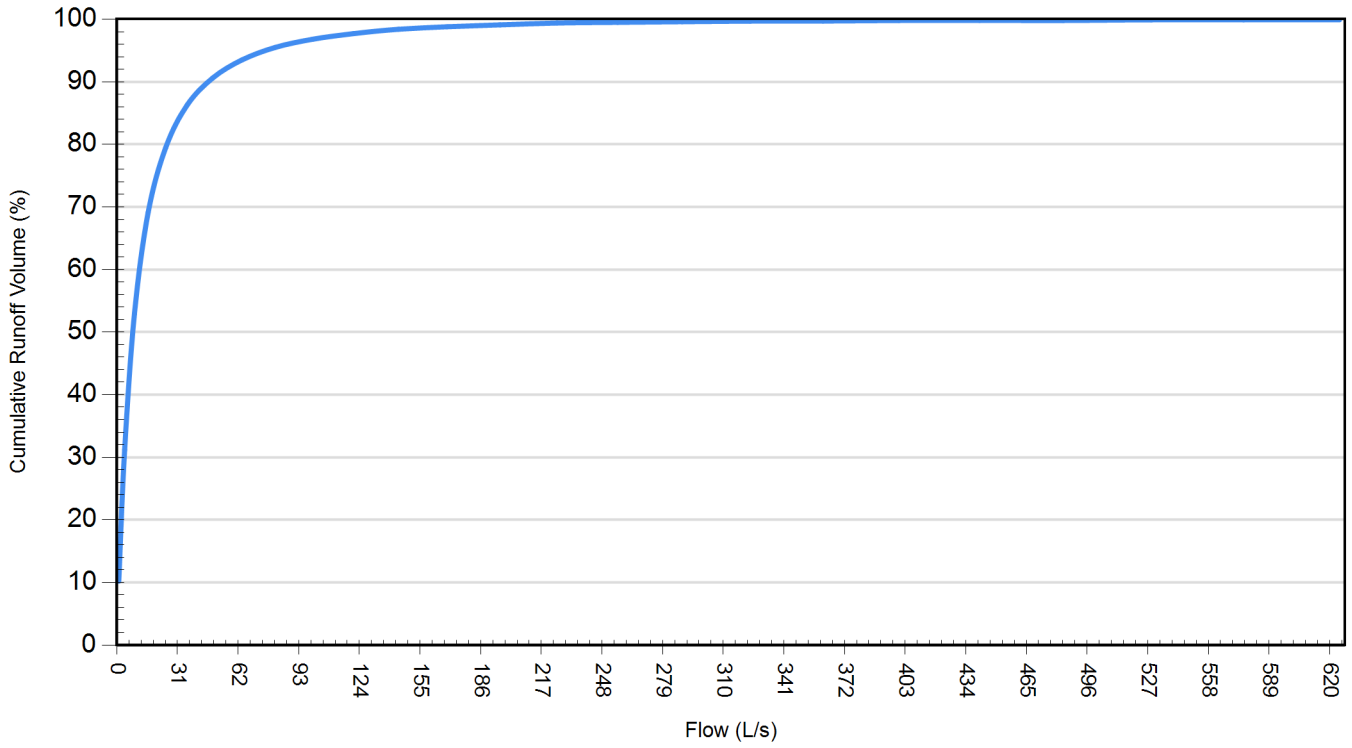
TSS Availability Parameters

Availability Constant A	
Availability Factor B	
Availability Exponent C	
Min. Particle Size Affected by Availability (micron)	

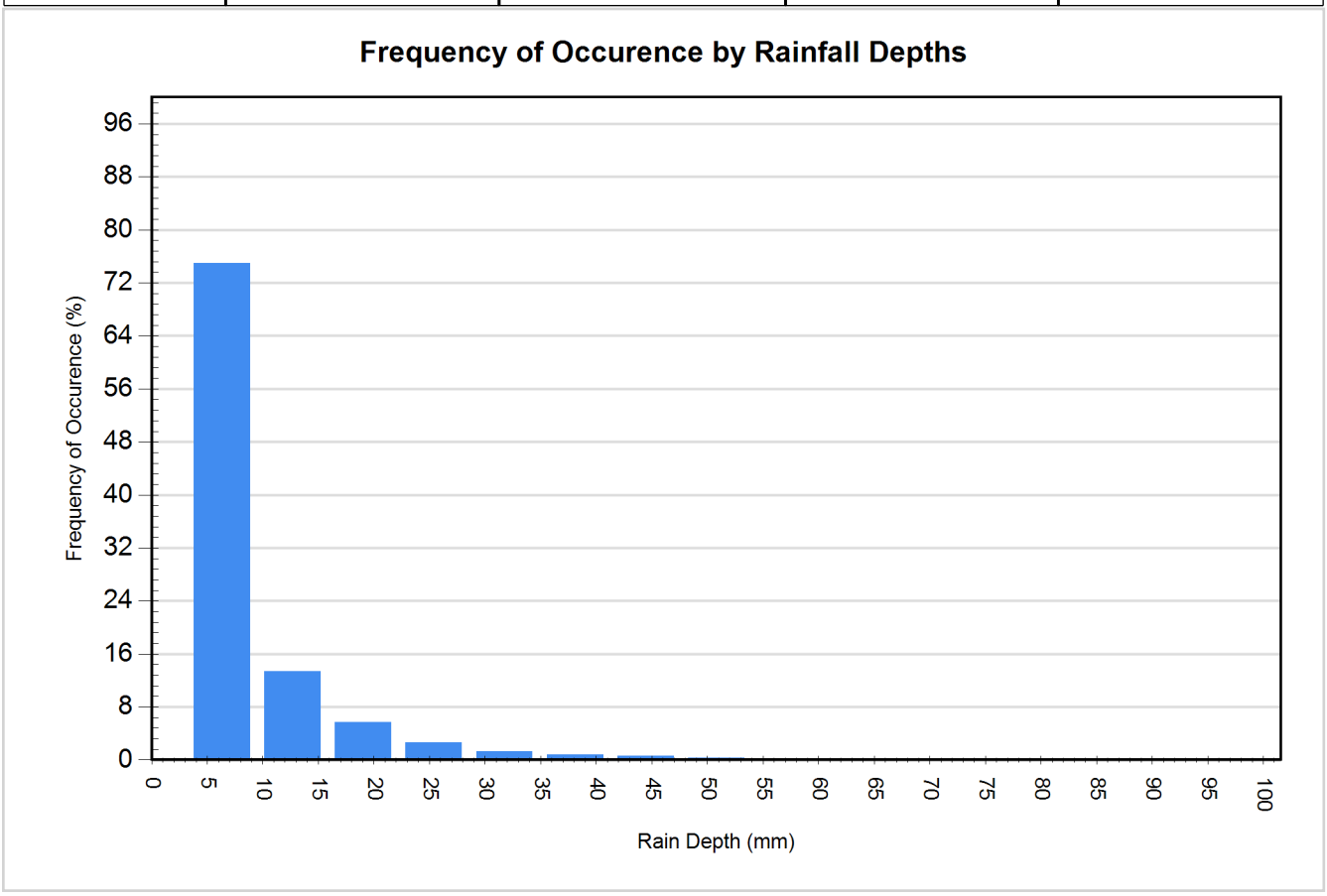
Cumulative Runoff Volume by Runoff Rate			
Runoff Rate (L/s)	**Runoff Volume (m^3)**	**Volume Over (m^3)**	**Cumulative Runoff Volume (%)**
1	51883	459146	10.2
4	159310	351722	31.2
9	270287	240904	52.9
16	353246	157757	69.1
25	406409	104549	79.5
36	440808	70228	86.3
49	462971	48003	90.6
64	477753	33238	93.5
81	487786	23196	95.5
100	494665	16328	96.8
121	499344	11641	97.7
144	502666	8322	98.4
169	504976	6010	98.8
196	506591	4396	99.1
225	507671	3315	99.4
256	508489	2498	99.5
289	509030	1956	99.6
324	509426	1561	99.7
361	509698	1288	99.7
400	509894	1092	99.8
441	510060	926	99.8
484	510198	788	99.8
529	510302	684	99.9
576	510378	608	99.9
625	510446	540	99.9

Cumulative Runoff Volume by Runoff Rate

For area: 3.9(ha), imperviousness: 50.0%, rainfall station: LONDON A



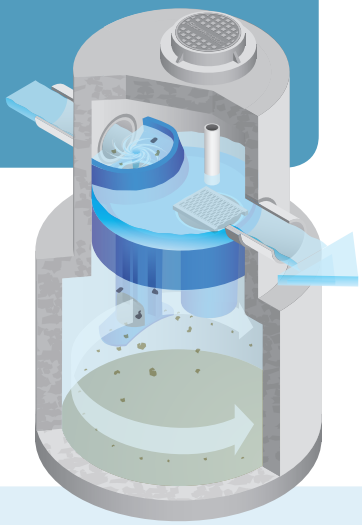
Rainfall Event Analysis				
Rainfall Depth (mm)	**No. of Events**	**Percentage of Total Events (%)**	**Total Volume (mm)**	**Percentage of Annual Volume (%)**
6.35	4133	75.0	7031	24.5
12.70	739	13.4	6819	23.8
19.05	313	5.7	4859	16.9
25.40	146	2.6	3251	11.3
31.75	72	1.3	2047	7.1
38.10	42	0.8	1464	5.1
44.45	33	0.6	1353	4.7
50.80	18	0.3	850	3.0
57.15	9	0.2	488	1.7
63.50	5	0.1	303	1.1
69.85	1	0.0	65	0.2
76.20	1	0.0	70	0.2
82.55	1	0.0	83	0.3
88.90	0	0.0	0	0.0
95.25	0	0.0	0	0.0



For Stormceptor Specifications and Drawings Please Visit:
http://www.imbriumsystems.com/technical-specifications

Drawings & Specifications

Stormceptor® OSR



STORMCEPTOR® OSR

The Stormceptor OSR is optimized to remove oil and sediment from stormwater runoff. Recommended applications include pretreatment and redevelopment/retrofit projects to meet your water quality objectives.

Product Overview

- Patented design is optimized for fine sand-sized particle removal and increased hydraulic capacity
- Typically designed for removal of 50 micron particles and greater
- Easily and flexibly sized to meet your site's needs
- Hydrocarbon spill protection in wet and dry weather conditions

Proven performance

- Independent third-party tested
- Independent verification by New Jersey Corporation for Advanced Technology (NJCAT)

Flexible and versatile

- Easy installation – small footprint saves time and money with limited site disruption
- Minimal drop between inlet and outlet; 1-inch (25mm) or 3-inch (75mm)
- Can be used as a bend structure
- Low head loss from inlet to outlet makes it a compatible with existing infrastructure
- Ideal for new developments, redevelopment and retrofit applications

Essential part of a stormwater treatment train

- Seamless support with pretreatment of existing BMPs (wet/dry ponds, filtration and infiltration devices)
- Improves water quality, extends BMP maintenance life and minimizes costs

Maintenance made easy

- Maintenance is convenient and trouble-free, with virtually no site disruption
- Easy unit entrance from surface access cover – no confined space entry needed

With over 40,000 units operating worldwide, Stormceptor performs and protects every day, in every storm.

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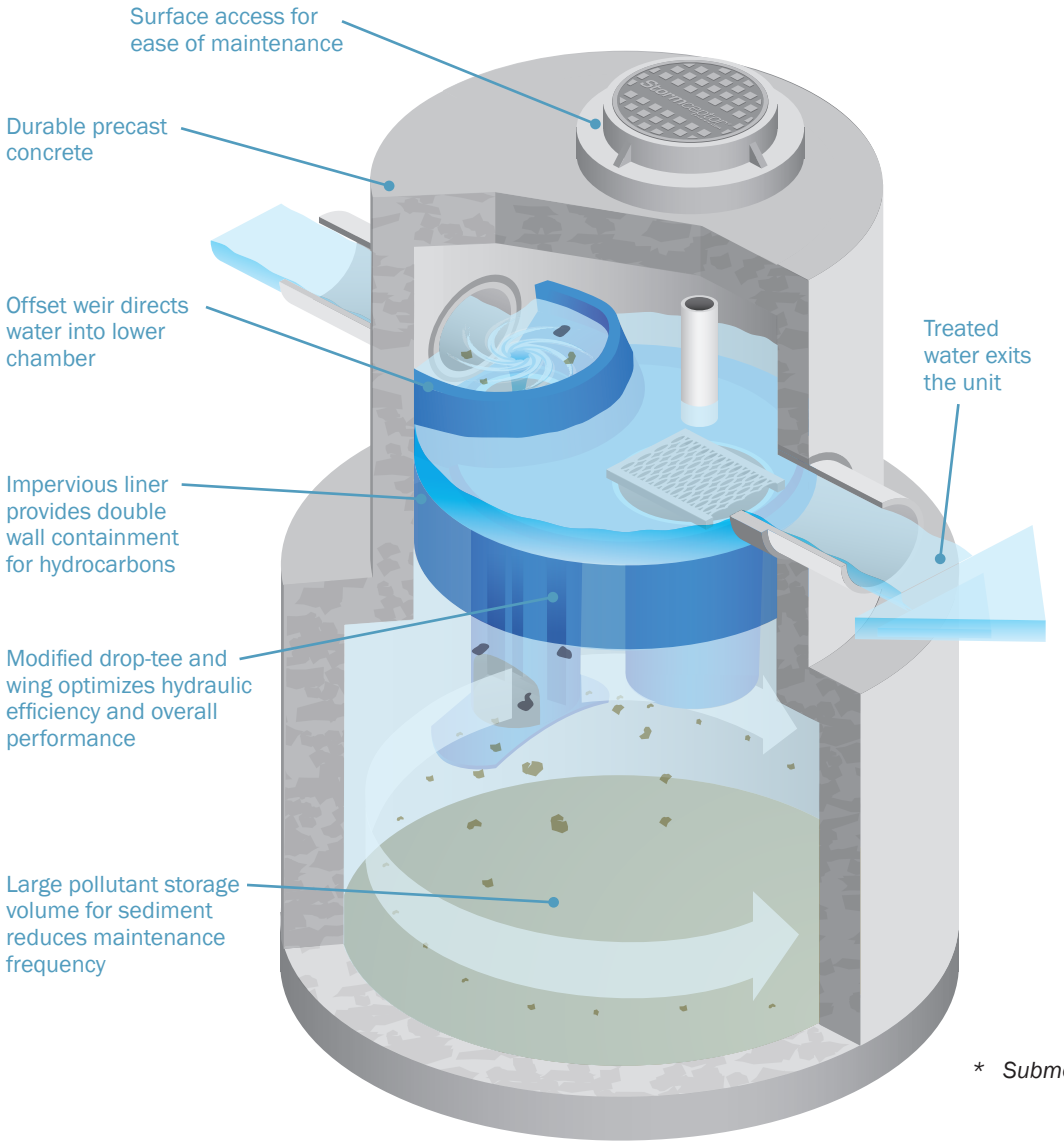
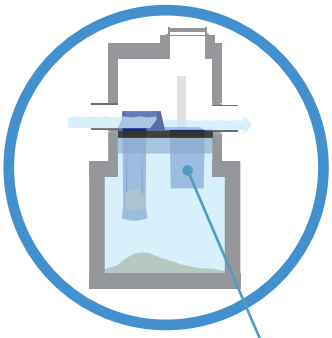
Stormceptor® OSR

Oil & Sediment Removal



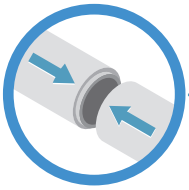


Stormceptor OSR Models		
Model	**US**	**CAD**
Inlet OSR	065	300
In-line OSR	140	750
	250	2000
	390	4000
	560	6000
Series OSR	780	9000
	1125	14000

** Submerged conditions can be accommodated*
*** Fiberglass units are available*

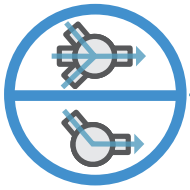
Easy to install

Small footprint saves time and money with limited disruption to your site.



Seamless

Minimal drop between inlet and outlet pipes makes Stormceptor ideal for retro-fits and new development projects.



Flexible

Inlet OSR can connect multiple inlet pipes.

Can be used as a bend structure.

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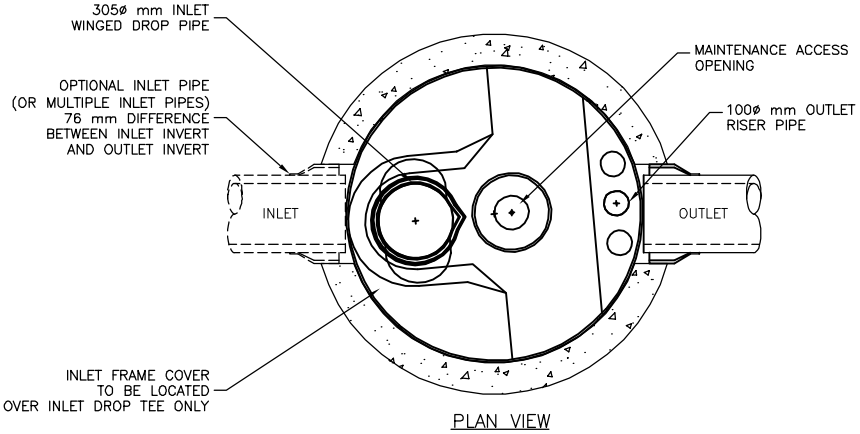
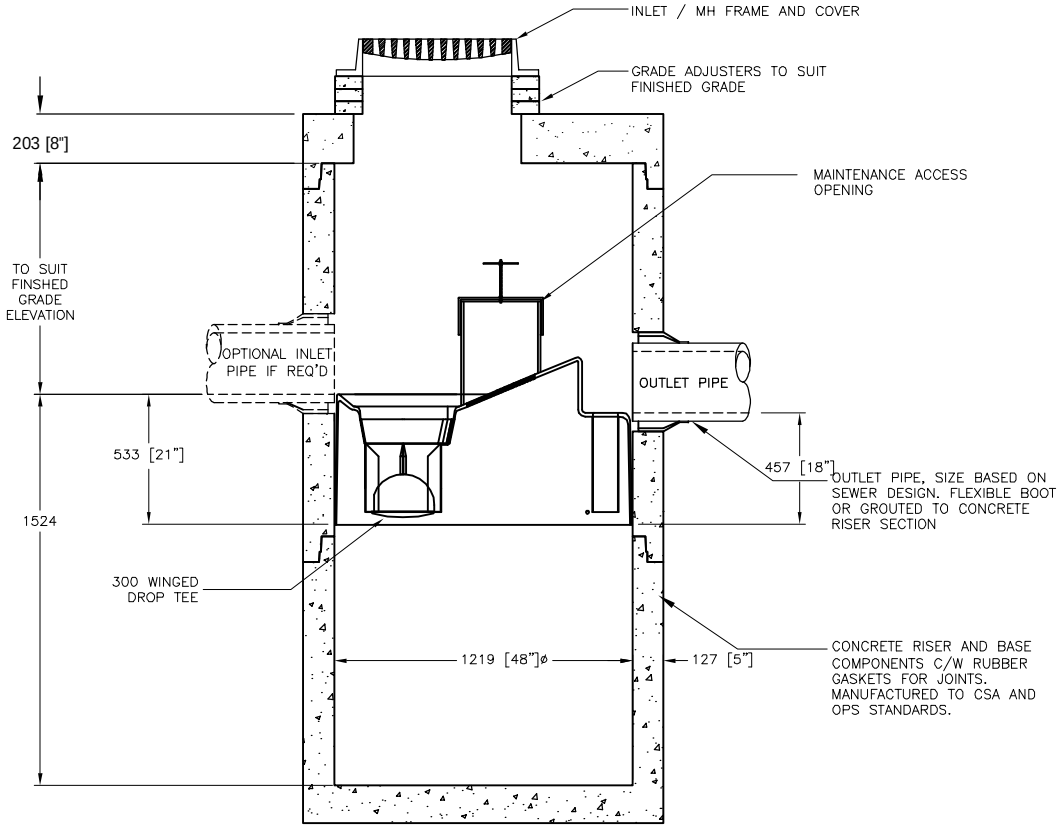
DRAWING NOT TO BE USED FOR CONSTRUCTION

THE STORMCEPTOR SYSTEM IS PROTECTED BY ONE OR MORE OF THE FOLLOWING PATENTS:
United States Patent No. 5,753,115 • 5,849,181 • 6,068,765 • 6,371,690 • 7,582,216 • 7,666,303 | Australia Patent No. 693,164 • 707,133 • 729,096 • 779,401 • 289,647 • 2008,279,378 • 2008,288,900 |
Canadian Patent No. 2,009,280 • 2,137,942 • 2,175,277 • 2,180,305 • 2,180,383 • 2,206,338 • 2,327,768 | Indonesian Patent No. 007058 | Japan Patent No. 3581233 • 9-11476 |
Korea Patent No. 10-1451593 • 0519212 | Malaysia Patent No. 118987 | New Zealand Patent No. 314,646 • 583,583 • 583,008 | South African Patent No. 2010/00683 • 2010/01796 |



PLAN VIEW



SECTION VIEW

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OSR 300i
STANDARD MODEL

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REV #	DATE	REVISION DESCRIPTION	BY

SHEET NUMBER 1 OF 1

DATE:######## | SCALE: 30 | PROJECT No.: ##### | DRAWN: ### | CHECKED: ###

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DRAWING NOT TO BE USED FOR CONSTRUCTION

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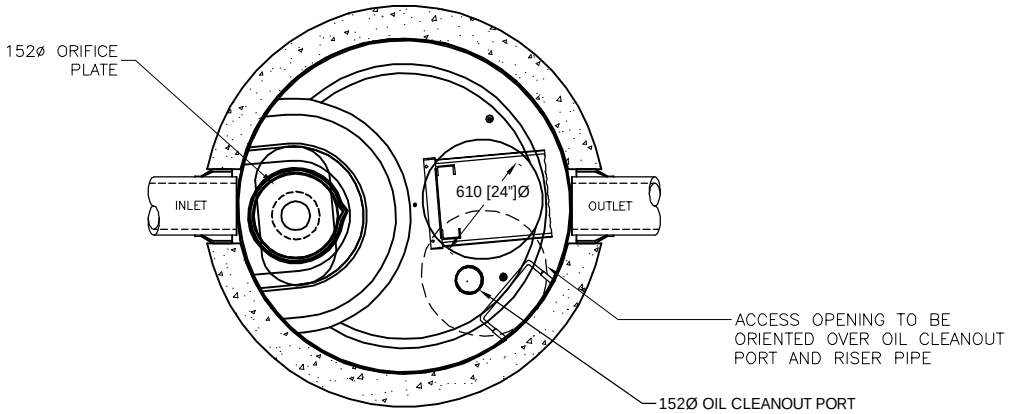
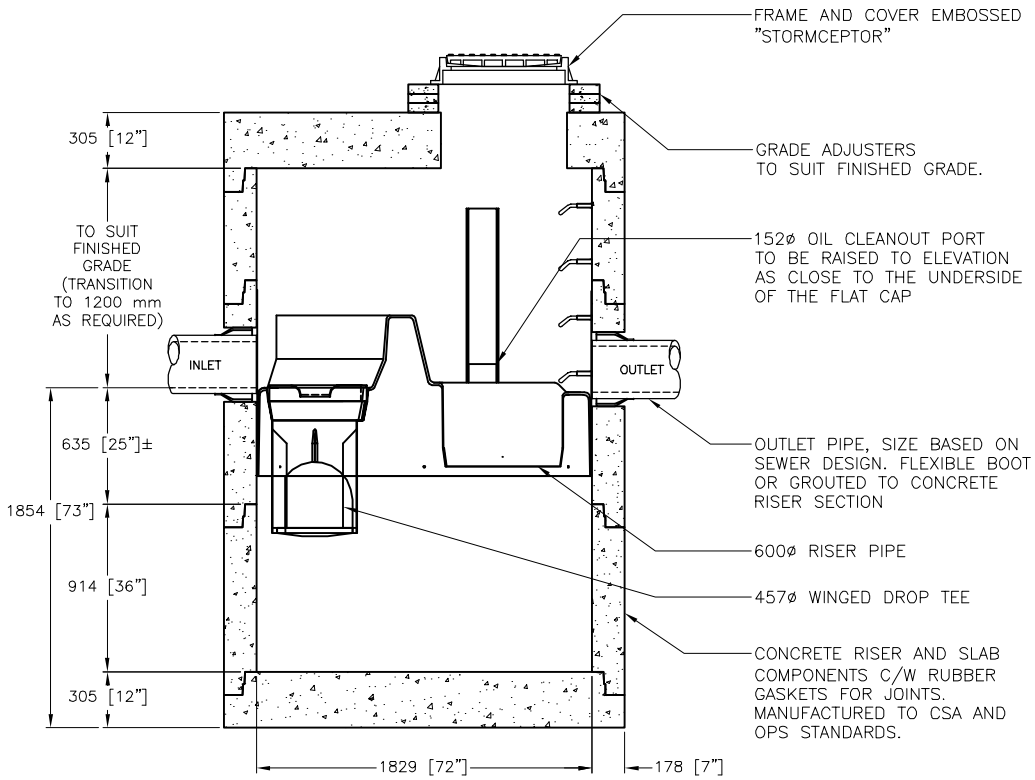


PLAN VIEW



SECTION VIEW

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