Hedley Battery Energy Storage System

Stormwater Management Report

Stantec

Prepared for:
Aypa Power

April 4, 2025

Prepared by:
Stantec Consulting Ltd.

Project/File:
160901104.902

Stantec Consulting Ltd.

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1 Introduction

This report has been prepared to document detail the stormwater management (SWM) design for the Hedley Battery Energy Storage System (BESS), located northeast of the town of Jarvis in Haldimand County, Ontario. The site location is illustrated by **Figure 1**. This report summarizes the water quantity, water quality and erosion and sediment control for the site to mitigate impacts of surface water runoff to downstream receivers.

The subject site is bounded by Concession 9 Walpole to the north, hydro lines to the west and agricultural lands to the south and east. The proposed development is a 211 MW BESS facility complete with batteries, access road, substation, screening berm and a SWM facility (SWMF).

1.1 Reference Documents

The following data sources, background reports and technical guidelines were referenced while preparing this report and should be read in conjunction with this report.

- *Detailed On-Site Groundwater Assessment, 750 Concession 9 Walpole, Jarvis ON*, Egis Canada Ltd., December 2024.
- *Engineering Consulting Services Geotechnical Investigation Report 750 Concession 9 Walpole, Jarvis, Ontario*, Egis Canada Ltd., December 2024.
- *Stormwater Management and Drainage Manual,* Haldimand County Design Criteria, 2015.
- *Stormwater Management Planning and Design Manual (SWMPD),* Ministry of the Environment, Conservation and Parks (MECP), March 2003.
- *MTO Drainage Management Manual*, Ministry of Transportation (MTO), 1997.

2 Stormwater Management Criteria

The proposed facility must meet the requirements of the Haldimand County Stormwater Management and Drainage Manual. The following stormwater management criteria are required for the site:

Water Quality – Enhanced level of water quality control (80% total suspended solids removal).

Water Quantity – Control post-development peak flow rates to pre-development flow rates for the 2-year through 100-year storm events.

Oil Containment – Provide sufficient containment for the oil within the transformer and the runoff volume from a 100-year storm.

Erosion and Sediment Control – Provide an erosion and sediment control plan to mitigate migration of sediment to downstream receivers during construction.

3 Existing Drainage Conditions

Under existing conditions, the property consists of undeveloped cultivated agricultural lands with surface water draining overland in an easterly direction to a drainage draw location crossing through the site. This drainage draw drains southeasterly and ultimately discharges to a tributary of Sandusk Creek located approximately 900 m south of the site. Delineation of the drainage catchments under existing conditions are illustrated in **Figure 2**. A summary of the individual catchments that compromise the site in existing conditions are as follows:

Catchment 101 – 2.05 ha of cultivated lands draining east to drainage draws, ultimately to the tributary of Sandusk Creek.

Catchment 102 – 2.11 ha of cultivated lands draining to the east drainage draw.

Catchment 103 – 0.30 ha of cultivated lands draining south.

Catchment 104 – 0.55 ha of cultivated lands draining south.

A summary of the external catchments contributing to the site in existing conditions are as follows:

Catchment 100 – 12.86 ha of cultivated lands draining east to drainage draws, ultimately to the tributary of Sandusk Creek.

Catchment 105 – 1.69 ha of cultivated lands draining to the east drainage draw.

Catchment 106 – 0.40 ha of cultivated lands draining to the east drainage draw.

3.1 Existing Geotechnical Conditions

Based on the results of the geotechnical investigation prepared by Egis Canada Ltd. in 2024, site soils consisted of topsoil underlain by a fill soil layer, native lean clay and bedrock. The topsoil / ploughed soil layer has an approximate thickness of 0.3 to 0.6 m. The fill soil layer was generally compromised of lean clay ranging from 0.3 to 0.6 m in thickness. The native lean clay underlying the fill was generally compromised of silt and clay. The thickness of this layer ranged from 0.8 to 1.4 m. Bedrock was encountered at depths ranging from 2.4 to 3.6 m below ground surface (mbgs).

3.2 Existing Hydrogeological Conditions

The hydrogeological investigation prepared by Egis Canada Ltd. in 2024, noted two monitoring wells were installed toward the east end of the site. On November 28th, 2024, groundwater was measured at 0.15 and 0.2 mbgs at elevations of 210.8 and 221.4 masl. The report notes the elevation of the groundwater

table is likely to vary throughout the year depending on the amount of precipitation, runoff, evaporation, and percolation in the area.

4 Proposed Drainage Conditions

Under proposed conditions most of the site is proposed to be covered in granular material. Surface water will be conveyed to an onsite SWM facility (SWMF) located on the east edge of site. The SWMF is proposed to be a dry pond, providing water quantity and quality control prior to discharging to the existing drainage draw at the east of the site.

Grassed swales are proposed along the western edge of the site to convey external flows around the site and toward the proposed SWMF. Surface water from the external drainage areas will be conveyed through the SWMF prior to release to the drainage draw at the east of the site. Delineation of the drainage catchments under proposed conditions are illustrated in **Figure 3**. A summary of the individual catchments that compromise the site in proposed conditions are as follows:

Catchment 202 – 3.44 ha of BESS facility draining east to the proposed SWMF.

Catchment 203 – 0.49 ha of BESS facility draining west towards grassed swale with discharge to the proposed SWMF.

Catchment 204 – 0.68 ha of BESS facility draining west towards grassed swale with discharge to the proposed SWMF.

Catchment 205 – 0.29 ha of cultivated lands draining south.

A summary of the external catchments contributing to the site in proposed conditions are as follows:

Catchment 200 – 10.78 ha of cultivated lands draining east to proposed grassed swale with discharge to the proposed SWMF.

Catchment 201 – 1.90 ha of cultivated lands draining south to proposed grassed swale with discharge to the proposed SWMF.

Catchment 206 – 1.61 ha of cultivated lands draining east to proposed grassed swale with discharge to the proposed SWMF.

Catchment 207 – 0.40 ha of cultivated lands draining east to proposed grassed swale with discharge to the proposed SWMF.

Catchment 208 – 0.37 ha of BESS facility lands draining internally towards grassed swale with discharge to the proposed SWMF.

5 Hydrological Model

Visual OTTHYMO version 6.2 (VO6) hydrological modelling software was used to model the existing and proposed drainage conditions. The Intensity-Duration-Frequency parameters for rainfall data from the Haldimand County Stormwater Management and Drainage Manual (2015) were used and are summarized in **Table 1** below. The Chicago design storm distribution, 3-hour duration and time of peak ration of 0.48 were used. VO6 modelling results are provided in **Appendix A.**

Table 1: Rainfall Events - Haldimand County

	IDF Storm Parameters			
Storm Event/ Return Period	**a**	**b**	**c**	**Total Depth**
25-mm	507	5	0.801	25
2-yr	646	6	0.781	32.7
5-yr	1049.5	8	0.803	47.0
10-yr	1343.7	9	0.814	56.5
25-yr	1719.5	10	0.823	68.7
50-yr	1954.8	10	0.826	76.9
100-yr	2317.4	11	0.836	86.1

A summary of the modelling parameters used are summarized in **Appendix B**.

6 Stormwater Management Strategy

The proposed SWM strategy has been designed to meet the SWM objectives outlined by reviewing agencies and relevant technical guidelines. Due to no known legal outlet at the south of the site, a reduction of flows to the south is expected as these lands are anticipated to be graded toward the east outlet. The proceeding sections demonstrate the functionality and effectiveness of the SWM strategy to mitigate impacts to the downstream systems.

6.1 Stormwater Management Facility

The proposed dry pond is designed to provide quantity control for 2-yr through to 100-yr events, quality control and erosion control (i.e. detain runoff from 25 mm rainfall event for at least 24 hours). Drainage will enter the SWMF via overland flow, the two grassed swales conveying external flows and drainage tiles within the granular layer of the BESS facility. The SWMF is proposed to have a depth of 1.56 m with 3:1 side slopes, providing a total volume of approximately 5000 m^3. The bottom of the SWMF is proposed as 210.04 masl and provides 0.3 m of freeboard above the 100-year design storm event storage volume elevation. The outlet structure for low flows is proposed to be a Hickenbottom® drain inlet riser complete with a 120 mm diameter orifice and discharging to the existing drainage draw east of the site. A

landscaped weir is proposed to be constructed along the eastern edge of the SWMF with a depth of 0.7 m, bottom width of 2 m and side slopes of 5% to provide maintenance access to the outlet structure. A riprap apron is proposed to be installed at the outlet to the existing drainage draw to dissipate the flow rates. The proposed SWMF and operating characteristics are detailed in **Table 2** and **Table 3**, respectively, below. The stage storge discharge curve and supporting stormwater management design calculations are provided in **Appendix B.**

Table 2: SWMF Design Characteristics

Parameter	SWMF Characteristics	Units
Total Contributing Drainage Area (all lands excluding catchment 205)	19.67	ha
Imperviousness (Total Area to SWMF)	18	%
Bottom Elevation of SWMF	210.04	m
Top Elevation of SWMF	211.42	m
High Water Level (100-year Storm Event)	211.09	m
Freeboard Provided Above the High-Water Level	0.33	m
Water Quality Control		
Extended Detention Volume Required ($39m^3$/ha) / Provided	787 / 1323	m^3
Outlet Details		
Low Flow Orifice Diameter / Elevation	170 / 210.04	mm / m
Spillway Width / Elevation	2 / 210.72	m / m

Table 3: SWMF Routing Performance Summary

Design Storm	Peak Inflow (m^3/s)	Peak Outflow (m^3/s)	Max. Live Storage Volume (m^3)	Max. WSE (m)	Drawdown Time (hrs.)
25-mm	0.613	0.037	1,242	210.47	24.6
2-year	1.043	0.048	2,144	210.69	30.5
5-year	1.840	0.473	2,905	210.87	32.3
10-year	2.419	0.949	3,235	210.94	32.4
25-year	3.183	1.730	3,578	211.01	32.5
50-year	3.762	2.235	3,797	211.05	32.5
100-year	4.362	2.954	4,003	211.09	32.6

6.1.1 Shut-off Valve

A shut-off valve has been provided at the outlet of the SWMF, prior to discharge to the downstream watercourse. The shutoff valve can be closed in the event of a spill on site, to mitigate the potential for any deleterious substances from migrating downstream. In the event that the shutoff valve has been closed, the pond can contain 2261 m^3 of runoff before discharging through the emergency overflow weir. This volume is approximately equivalent of the runoff from a 2-year event.

6.2 Spill Containment

The transformer containment pit (designed by others) has been designed to contain the volume of oil in the proposed transformer and the runoff from a 100-year storm event. The containment pit has been lined with a Sorbweb™ membrane to prevent oils from migrating downstream in the event of a leak. The containment pit is filled with quenching stone to mitigate the risk of a fire. Detailed design calculations are provided under separate cover.

Runoff from the transformer containment pit is accounted for within the SWM design. Drainage from this area will drain westerly towards grassed swales that will convey flow around the site and to the proposed SWMF. Grassed swales and the SWMF will be lined, and the SWMF is to be equipped with an outlet valve in case of spill.

6.3 Water Quantity Controls

As discussed, in **Section 4**, Catchment 202, 203, and 204 will be directed to the proposed SWMF. Catchment 205 will remain in existing conditions and flow uncontrolled to the south. External catchments 200, 201, 206, and 207 will be conveyed to the SWMF through grassed swales prior to release to the existing drainage draw east of the site. A comparison of the existing and proposed peak flow rates for the 100-yr design storm is provided by **Table 4,** below.

Table 4: Comparison of Peak Flow Rates at Outlets

	Pre-Development Conditions (m^3/s)	Post-Development Conditions (m^3/s)	Percent Difference
To Eastern Outlet			
2-year	0.741	0.048	-94%
5-year	1.463	0.473	-68%
10-year	2.007	0.949	-53%
25-year	2.737	1.730	-37%
50-year	3.285	2.235	-32%
100-year	3.869	2.954	-24%
To Southern Outlet			
2-year	0.025	0.000	-100%
5-year	0.048	0.000	-100%
10-year	0.066	0.001	-98%
25-year	0.089	0.001	-99%
50-year	0.107	0.001	-99%
100-year	0.125	0.001	-99%

Based on the above, the proposed SWMF provides sufficient volume to meet the pre-development flow rates for the 2- through 100-year design storm events.

6.4 Water Quality Controls

Water quality controls will be provided by the dry stormwater management facility. Per the *Ministry of Environment Conservation and Parks Stormwater Management Planning and Design Manual, 2003* dry stormwater management facilities only provide 60% TSS removal, which does not meet the site target of 80% TSS removal. No additional formal SWM water quality controls are proposed for the following reasons:

- Additional filtration of sediments will be provided in the vegetated conveyance swales proposed to convey some site drainage and the external drainage.
- Site traffic and use will be limited to maintenance and routine inspections, which minimize the opportunity for sediment build-up and wash off cycles.
- The conversion of lands from agricultural land with repeatedly disturbed soil, to a BESS yard stabilized by granular materials will improve the site's ability to mitigate erosion and retain site soils in-situ.
- The Sorbweb™ member within the transformer containment pit will mitigate the potential for oil to migrate to downstream receivers. A valve will also be installed on the SWMF outlet.

Based on the points above, the intent for the provision of water quality controls will be met by the proposed stormwater management strategy. Design calculations for water quality are provided in **Appendix B**.

6.5 Diversion Swale and Culvert Sizing

As described in Section 3, a drainage draw with multiple tributaries flows through the site in existing conditions. This drainage draw drains external lands to the west through the site. In proposed conditions, grassed swales are proposed along the west of the site to capture and convey external flows around the site and into the proposed SWMF. A culvert will be required at the north of the site to convey these flows below the access road and to the proposed SWMF. FlowMaster was used to size the swales, and the culvert was sized using VO6. FlowMaster modelling results are provided in **Appendix C. Table 5**, below, provides a summary of the swale and culvert sizing required. Swales have been sized to convey the 100-year storm event with 0.3 m of freeboard above the depth of flow. Culverts have been designed to convey the 25-year storm event, in accordance with the Haldimand County's Design Criteria (2015).

Table 5: Summary of Swales and Culvert Characteristics

ID	Contributing Catchments	100-Year Peak Flow (m^3/s)	Bottom Width (m)	Depth of Flow (mm)	Diameter (mm)
Swale S2	207, 204	0.376	0.7	301	-
Swale N	203, 206	0.385	0.6	303	-
Culvert 1	203, 206, 200	2.155	-	-	2 x 750
Swale E1	203, 206, 200, 208	2.226	2	527	-
Culvert 2	203, 206, 200, 208	2.226			2 x 825
Swale E2	201	0.438	0.5	350	-
Swale S1	200	1.982	2	497	-

Due to potential space constraints and cover issues two smaller culverts are provided in place of one larger culvert.

7 Erosion and Sediment Control

Construction activities required to develop the site include excavation, grading, infrastructure installation and general construction traffic. These activities will result in disturbance of surface soils, exposure of underlying soils and the potential for erosion and sediment transport. In all instances where the potential for erosion is identified, a series of control measures should be implemented, including, but not limited to:

- Prior to commencing site grading activities, erect silt fences downslope of the area to be graded to protect downstream areas from potential sediment transport caused by entrainment in overland flows.

- Direct runoff through swales and erosion control berms (where necessary) to sediment control measures, minimizing risk of untreated runoff from discharged from the site.
- Install temporary rock check dams, sediment traps, straw bale barriers and/or filter cloth barriers in swales (where appropriate) to help attenuate flows, reduce erosive velocities, and encourage sediment deposition.
- Stockpile materials in designated areas.
- Provide a construction entrance “mud mat” feature at the site construction entrance.
- Stabilize all disturbed areas not subject to construction activities within 30 days, per Ontario Provincial Standard Specification 804.

In order to ensure the effectiveness of the various erosion and sediment control measures, a routine program should be implemented which includes the inspection of the erosion and sediment controls after each significant rainfall event or weekly, whichever is more frequent, and immediate repair of any deficiencies.

A detailed ESC plan including notes, details, implementation schedule and monitoring/maintenance requirements will be developed concurrently with the detailed grading design of the site. The ESC plan will be consistent with the guidelines provided in the *Erosion and Sediment Control Guide for Urban Construction* (Toronto and Region Conservation Authority, 2019)

8 Operational Monitoring

A robust monitoring and maintenance program is essential to the long-term effectiveness of the SWM strategy. The sections below outline maintenance requirements for each SWM feature onsite.

8.1 Dry Pond

Inspection, operational, and maintenance activities can be generally limited to:

- Routine observations as to the presence of trash/debris within the swale that could be conveyed downstream and/or affect the conveyance capacity of the system and removal of same as needed.
- A semi-annual walking inspection should be completed to identify areas of bare soil and/or the formation of erosive gullies within or downstream of site facilities. Remediation efforts would typically involve re-grading the area and/or re-vegetating with sod or appropriate seed mix, with fertilizer and water applied as necessary to ensure germination and stabilization.
- Concurrent with the walking inspections, a visual assessment of any areas of isolated ponding or sediment build-up should be identified. Minor areas of ponding can be resolved with re-grading / re-stabilization if the magnitude of associated nuisance warrants such action. From a stormwater management perspective, there are no functional concerns associated with ponding and, therefore,

remediation is not strictly required. Excessive sedimentation is an issue requiring attention if it remains in a non-vegetated condition and is, therefore, prone to re-suspension and transport downstream, if it creates an isolated ponding area as described above, or if it occurs to an extent that it impacts on the conveyance capacity of the swale or retention volumes in the pond (reduction of 10% of pond volume). If any such condition occurs, the sediment should be removed and the area re-stabilized.

- Vegetation management is not a strict requirement in that excess growth will serve to improve water quality treatment benefits. If the density of vegetation reaches a level where conveyance capacity is impacted, a cutting operation should be undertaken. A minimum vegetation height of 0.15 m (6") should be maintained.

- Regular visual inspection for damage to facility structures including headwalls, pipes, berms, maintenance accesses, etc. Maintenance requirements in this regard should be performed on an as-required basis.

8.1.1 Water Quality Grab Sampling

The following water quality grab sampling program has been developed to confirm the site stormwater management features are performing as intended. Grab sampling will consist of samples taken at the mid point of the grassed swale, the inlet of the pond and the outlet of the pond. Samples will be tested for and analyzed against the following parameters and targets:

Parameter	Exceedance Target
TSS	80% Removal
Oil and Grease	15 mg/L
Phenols	20 µg/L
pH	6.5-8.5

Grab sampling will be completed quarterly following the construction of the SWMF. Grab sampling should be completed quarterly after a significant rainfall event (10-15 mm in 24 hours) to ensure sufficient flows to sample. Of the of the quarterly samples should be completed during the spring freshet if possible. Following three years of monitoring a request can be made to the MECP to reduce the required frequency of grab samples.

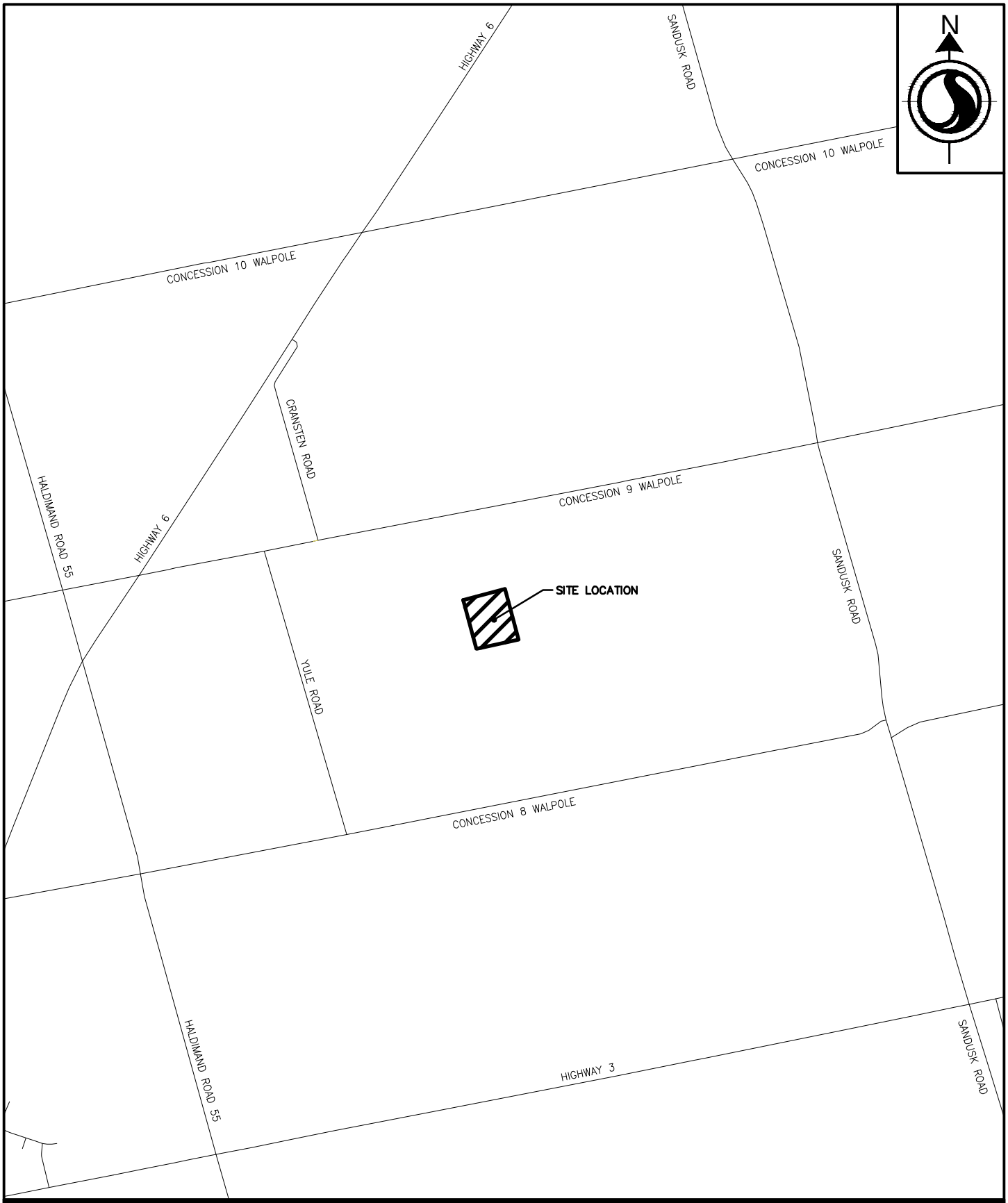
9 Conclusions

Based on the preceding report, it is concluded that:

- Water quantity is proposed to be provided through a dry pond along the eastern edge of the site. The dry pond will provide peak flow control, meeting pre-development flow rates for the 2- through 100-year design storm events.

- Water quality will be provided through the implementation of a dry pond to provide minimum 24-hour drawdown time of the 25-mm storm event. In addition, the proposed grassed swales will provide further filtration of the stormwater. By converting the lands from agricultural lands with repeatedly disturbed soil to a stabilized BESS yard with granular material and minimal traffic, the soils will be further stabilized compared to existing conditions.
- An ESC plan is proposed to minimize impact of construction activities on downstream receivers.
- A monitoring program has been established to ensure the long-term effectiveness of the stormwater management facility and confirm that the facility is functioning as intended.

Figures



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Client/Project
AYPA POWER CANADA DEVELOPMENT LP

PROPOSED BATTERY STORAGE SITE

Project No.
160901104

Title
SITE LOCATION PLAN

HALDIMAND, ON

Date
2025.03.15

Figure No.
1.0

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Legend

- 103 / A=4.52 — EXISTING SUBCATCHMENT ID / AREA (ha)
- DRAINAGE BOUNDARY
- 320.0 — EXISTING CONTOURS
- MAJOR OVERLAND FLOW ROUTE

1:2000 — 0 20 60 100m

Client/Project
AYPA POWER CANADA DEVELOPMENT

HALDIMAND, ON

Project No.
160901104

Title
PRE-DEVELOPMENT CATCHMENT PALN

Revision

Date
2025.03.15

Reference Sheet

Figure No.
2.0

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Legend

206
A=1.19
SUBCATCHMENT ID
AREA (ha)

DRAINAGE BOUNDARY

320.0
EXISTING CONTOURS

1:2000

0 20 60 100m

Client/Project
AYPA POWER CANADA DEVELOPMENT

HALDIMAND, ON

Project No.
160901104

Title
POST-DEVELOPMENT CATCHMENT PLAN

Revision

Date
2025.04.04

Reference Sheet

Figure No.
3.0

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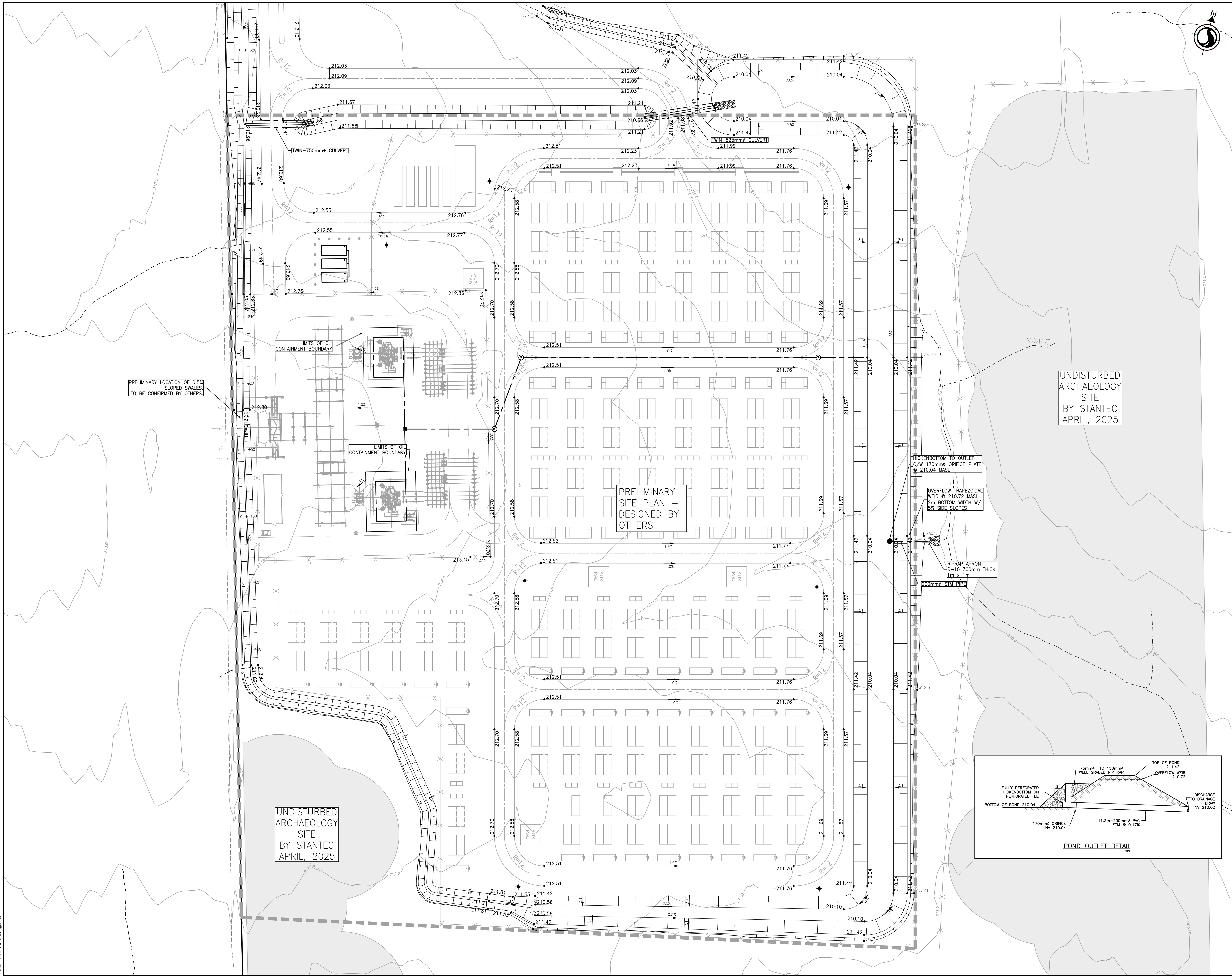

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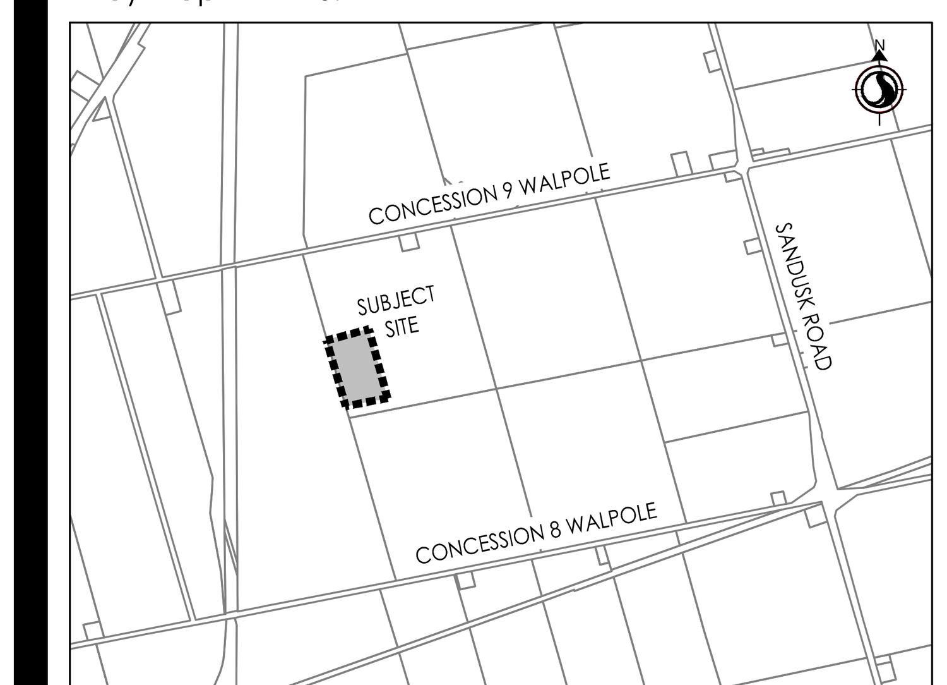
Notes

1. ELEV'S ARE REFERRED TO THE CANADIAN GEODETIC VERTICAL DATUM (CGVD-1928:1978) BM1: N:4751728.850 E:575138.486 ELEV: 211.49 (TOP OF SIB)
2. SITE PLAN PREPARED BY STANTEC CONSULTING LTD., DATED DECEMBER, 2024.
3. TOPOGRAPHICAL SURVEY PREPARED BY STANTEC CONSULTING LTD., DATED APRIL, 2024.

Key Map NTS.



Legend

STAGE LIMIT / PHASE LIMIT
352.82 EXISTING ELEVATION
352.92 PROPOSED ELEVATION
5.0% 2.0% FLOW DIRECTION
RIPRAP APRON
PROPOSED DRAINAGE SWALE
349.00 EXISTING CONTOUR
PROPOSED SLOPE (3:1 UNLESS NOTED OTHERWISE)

0.	SPA FIRST SUBMISSION	BWM	JL	2025.04.04
Revision		By	Appd	YYYY.MM.DD

File Name: 160901104_C-800HX	BWM	BWM	JL	2025.04.04
	Dwn.	Dsgn.	Chkd.	YYYY.MM.DD

Permit-Seal

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Client/Project

AYPA POWER CANADA DEVELOPMENT LP

PROPOSED BATTERY STORAGE SITE

HALDIMAND, ON

Title

PRELIMINARY STORMWATER MANAGEMENT PLAN

Project No. 160901104

Scale 1:500 0 5 15 25m

Revision 0 Sheet of

Drawing No. C-800

ORIGINAL SHEET - ARCH D

Appendix A VO Modelling Output

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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2017)
       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 6.2\VO2\voin.dat

  Output  filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\d47c
c9e6-bb86-4111-8b2e-44d92a369870\scen
  Summary filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\d47c
c9e6-bb86-4111-8b2e-44d92a369870\scen


DATE: 04/04/2025                          TIME: 09:33:28

USER:



COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------
------------------------
  ********************************************
  ** SIMULATION : 1                          **
  ********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 507.000
| Ptotal= 24.74 mm |                          B=   5.000
--------------------                          C=   0.801
```

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

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.48

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	1.39	1.00	2.80	2.00	15.35	3.00	2.21
0.17	1.51	1.17	3.45	2.17	7.28	3.17	1.96
0.33	1.65	1.33	4.56	2.33	4.86	3.33	1.77
0.50	1.83	1.50	6.86	2.50	3.69	3.50	1.61
0.67	2.07	1.67	14.88	2.67	3.00	3.67	1.48
0.83	2.37	1.83	57.94	2.83	2.54	3.83	1.38

CALIB			
NASHYD (0100)	Area (ha)= 12.86	Curve Number (CN)= 85.0	
ID= 1 DT=10.0 min	Ia (mm)= 4.48	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.19		

Unit Hyd Qpeak (cms)= 2.585

PEAK FLOW (cms)= 0.285 (i)
TIME TO PEAK (hrs)= 2.167
RUNOFF VOLUME (mm)= 6.108
TOTAL RAINFALL (mm)= 24.737
RUNOFF COEFFICIENT = 0.247

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

CALIB			
NASHYD (0105)	Area (ha)= 1.69	Curve Number (CN)= 84.0	
ID= 1 DT=10.0 min	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.13		

Unit Hyd Qpeak (cms)= 0.497

PEAK FLOW (cms)= 0.042 (i)
TIME TO PEAK (hrs)= 2.000
RUNOFF VOLUME (mm)= 5.153
TOTAL RAINFALL (mm)= 24.737
RUNOFF COEFFICIENT = 0.208

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

```
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0101)|   Area    (ha)=   2.05   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.14

     Unit Hyd Qpeak  (cms)=   0.559

     PEAK FLOW       (cms)=   0.050 (i)
     TIME TO PEAK    (hrs)=   2.000
     RUNOFF VOLUME    (mm)=   5.288
     TOTAL RAINFALL   (mm)=  24.737
     RUNOFF COEFFICIENT   =   0.214

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

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

--------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0100):    12.86   0.285     2.17     6.11
      + ID2= 2 (  0101):     2.05   0.050     2.00     5.29
        ================================================
        ID = 3 (  0001):    14.91   0.325     2.17     6.00

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

--------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0001):    14.91   0.325     2.17     6.00
      + ID2= 2 (  0105):     1.69   0.042     2.00     5.15
        ================================================
        ID = 1 (  0001):    16.60   0.356     2.00     5.91

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0106)|   Area    (ha)=   0.40   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.05

     Unit Hyd Qpeak  (cms)=   0.306
```

```
     PEAK FLOW       (cms)=   0.003 (i)
     TIME TO PEAK    (hrs)=   2.000
     RUNOFF VOLUME    (mm)=   1.099
     TOTAL RAINFALL   (mm)=  24.737
     RUNOFF COEFFICIENT   =   0.044

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

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0102)|   Area    (ha)=   2.11   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.14

     Unit Hyd Qpeak  (cms)=   0.576

     PEAK FLOW       (cms)=   0.051 (i)
     TIME TO PEAK    (hrs)=   2.000
     RUNOFF VOLUME    (mm)=   5.288
     TOTAL RAINFALL   (mm)=  24.737
     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 (  0001):    16.60   0.356     2.00     5.91
      + ID2= 2 (  0102):     2.11   0.051     2.00     5.29
        ================================================
        ID = 3 (  0002):    18.71   0.408     2.00     5.84

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

--------------------
| ADD HYD  (  0002)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0002):    18.71   0.408     2.00     5.84
      + ID2= 2 (  0106):     0.40   0.003     2.00     1.10
        ================================================
        ID = 1 (  0002):    19.11   0.410     2.00     5.74

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

```
--------------------
| CALIB            |
| NASHYD   (  0103)|   Area    (ha)=   0.30   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.05

     Unit Hyd Qpeak  (cms)=   0.229

     PEAK FLOW       (cms)=   0.002 (i)
     TIME TO PEAK    (hrs)=   2.000
     RUNOFF VOLUME    (mm)=   1.099
     TOTAL RAINFALL   (mm)=  24.737
     RUNOFF COEFFICIENT   =   0.044

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

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0104)|   Area    (ha)=   0.55   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.08

     Unit Hyd Qpeak  (cms)=   0.263

     PEAK FLOW       (cms)=   0.012 (i)
     TIME TO PEAK    (hrs)=   2.000
     RUNOFF VOLUME    (mm)=   3.460
     TOTAL RAINFALL   (mm)=  24.737
     RUNOFF COEFFICIENT   =   0.140

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

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

--------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0103):     0.30   0.002     2.00     1.10
      + ID2= 2 (  0104):     0.55   0.012     2.00     3.46
        ================================================
        ID = 3 (  0003):     0.85   0.014     2.00     2.63

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

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========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2017)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


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

  Output  filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\05f5
db6d-046d-4684-9047-08a96abd87b3\scen
  Summary filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\05f5
db6d-046d-4684-9047-08a96abd87b3\scen


DATE: 04/04/2025                          TIME: 09:33:27

USER:



COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------
------------------------
  ********************************************
  ** SIMULATION : 2                          **
  ********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 646.000
| Ptotal= 32.72 mm |                          B=   6.000
--------------------                          C=   0.781
```

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.48

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	2.85	0.83	6.94	1.67	10.93	2.50	3.42
0.17	3.21	1.00	10.33	1.83	7.39	2.67	3.05
0.33	3.67	1.17	21.61	2.00	5.65	2.83	2.75
0.50	4.32	1.33	74.10	2.17	4.61		
0.67	5.30	1.50	22.27	2.33	3.92		

CALIB NASHYD (0100) ID= 1 DT=10.0 min	Area (ha)= 12.86	Curve Number (CN)= 85.0
	Ia (mm)= 4.48	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.19	

Unit Hyd Qpeak (cms)= 2.585

PEAK FLOW (cms)= 0.510 (i)
TIME TO PEAK (hrs)= 1.667
RUNOFF VOLUME (mm)= 10.576
TOTAL RAINFALL (mm)= 32.723
RUNOFF COEFFICIENT = 0.323

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

CALIB NASHYD (0105) ID= 1 DT=10.0 min	Area (ha)= 1.69	Curve Number (CN)= 84.0
	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.13	

Unit Hyd Qpeak (cms)= 0.497

PEAK FLOW (cms)= 0.077 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 9.060
TOTAL RAINFALL (mm)= 32.723
RUNOFF COEFFICIENT = 0.277

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

```
--------------------
| CALIB            |
| NASHYD   (  0101)|   Area    (ha)=   2.05   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.14

     Unit Hyd Qpeak  (cms)=   0.559

     PEAK FLOW       (cms)=   0.090 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   9.297
     TOTAL RAINFALL   (mm)=  32.723
     RUNOFF COEFFICIENT   =   0.284

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

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

--------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0100):    12.86   0.510     1.67    10.58
      + ID2= 2 (  0101):     2.05   0.090     1.50     9.30
        ================================================
        ID = 3 (  0001):    14.91   0.581     1.67    10.40

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

--------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0001):    14.91   0.581     1.67    10.40
      + ID2= 2 (  0105):     1.69   0.077     1.50     9.06
        ================================================
        ID = 1 (  0001):    16.60   0.643     1.50    10.26

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0106)|   Area    (ha)=   0.40   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.05

     Unit Hyd Qpeak  (cms)=   0.306

     PEAK FLOW       (cms)=   0.005 (i)
```

```
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   1.932
     TOTAL RAINFALL   (mm)=  32.723
     RUNOFF COEFFICIENT   =   0.059

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

-------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0102)|   Area    (ha)=   2.11   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.14

     Unit Hyd Qpeak  (cms)=   0.576

     PEAK FLOW       (cms)=   0.093 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   9.297
     TOTAL RAINFALL   (mm)=  32.723
     RUNOFF COEFFICIENT   =   0.284

     (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 (  0001):    16.60   0.643     1.50    10.26
      + ID2= 2 (  0102):     2.11   0.093     1.50     9.30
        ================================================
        ID = 3 (  0002):    18.71   0.736     1.50    10.15

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

--------------------
| ADD HYD  (  0002)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0002):    18.71   0.736     1.50    10.15
      + ID2= 2 (  0106):     0.40   0.005     1.50     1.93
        ================================================
        ID = 1 (  0002):    19.11   0.741     1.50     9.98

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

```
| CALIB            |
| NASHYD   (  0103)|   Area    (ha)=   0.30   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.05

     Unit Hyd Qpeak  (cms)=   0.229

     PEAK FLOW       (cms)=   0.004 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   1.932
     TOTAL RAINFALL   (mm)=  32.723
     RUNOFF COEFFICIENT   =   0.059

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

--------------------------------------------------------------------------------
-------------------
| CALIB            |
| NASHYD   (  0104)|   Area    (ha)=   0.55   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.08

     Unit Hyd Qpeak  (cms)=   0.263

     PEAK FLOW       (cms)=   0.021 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   6.083
     TOTAL RAINFALL   (mm)=  32.723
     RUNOFF COEFFICIENT   =   0.186

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

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

-------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0103):     0.30   0.004     1.50     1.93
      + ID2= 2 (  0104):     0.55   0.021     1.50     6.08
        ================================================
        ID = 3 (  0003):     0.85   0.025     1.50     4.62

     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 6.2.2017)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


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

  Output  filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\ce62
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C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\ce62
c8e3-c9de-4147-acb9-8e9354785a87\scen


DATE: 04/04/2025                          TIME: 09:33:27

USER:



COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------
------------------------
  ********************************************
  ** SIMULATION : 3                          **
  ********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1049.500
| Ptotal= 46.98 mm |                          B=   8.000
--------------------                          C=   0.803
```

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.48

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	3.90	0.83	10.08	1.67	16.31	2.50	4.73
0.17	4.41	1.00	15.37	1.83	10.77	2.67	4.18
0.33	5.10	1.17	32.79	2.00	8.09	2.83	3.75
0.50	6.07	1.33	103.04	2.17	6.51		
0.67	7.55	1.50	33.80	2.33	5.47		

CALIB NASHYD (0100) ID= 1 DT=10.0 min	Area (ha)= 12.86	Curve Number (CN)= 85.0
	Ia (mm)= 4.48	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.19	

Unit Hyd Qpeak (cms)= 2.585

PEAK FLOW (cms)= 0.978 (i)
TIME TO PEAK (hrs)= 1.667
RUNOFF VOLUME (mm)= 20.041
TOTAL RAINFALL (mm)= 46.983
RUNOFF COEFFICIENT = 0.427

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

CALIB NASHYD (0105) ID= 1 DT=10.0 min	Area (ha)= 1.69	Curve Number (CN)= 84.0
	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.13	

Unit Hyd Qpeak (cms)= 0.497

PEAK FLOW (cms)= 0.151 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 17.437
TOTAL RAINFALL (mm)= 46.983
RUNOFF COEFFICIENT = 0.371

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

```
--------------------
| CALIB            |
| NASHYD   (  0101)|   Area    (ha)=   2.05   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.14

     Unit Hyd Qpeak  (cms)=   0.559

     PEAK FLOW       (cms)=   0.178 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  17.893
     TOTAL RAINFALL   (mm)=  46.983
     RUNOFF COEFFICIENT   =   0.381

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

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

--------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0100):    12.86   0.978     1.67    20.04
      + ID2= 2 (  0101):     2.05   0.178     1.50    17.89
        ================================================
        ID = 3 (  0001):    14.91   1.118     1.50    19.75

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

--------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0001):    14.91   1.118     1.50    19.75
      + ID2= 2 (  0105):     1.69   0.151     1.50    17.44
        ================================================
        ID = 1 (  0001):    16.60   1.269     1.50    19.51

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0106)|   Area    (ha)=   0.40   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.05

     Unit Hyd Qpeak  (cms)=   0.306

     PEAK FLOW       (cms)=   0.010 (i)
```

```
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   3.717
     TOTAL RAINFALL   (mm)=  46.983
     RUNOFF COEFFICIENT   =   0.079

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

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0102)|   Area    (ha)=   2.11   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.14

     Unit Hyd Qpeak  (cms)=   0.576

     PEAK FLOW       (cms)=   0.183 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  17.893
     TOTAL RAINFALL   (mm)=  46.983
     RUNOFF COEFFICIENT   =   0.381

     (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 (  0001):    16.60   1.269     1.50    19.51
      + ID2= 2 (  0102):     2.11   0.183     1.50    17.89
        ================================================
        ID = 3 (  0002):    18.71   1.453     1.50    19.33

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

--------------------
| ADD HYD  (  0002)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0002):    18.71   1.453     1.50    19.33
      + ID2= 2 (  0106):     0.40   0.010     1.50     3.72
        ================================================
        ID = 1 (  0002):    19.11   1.463     1.50    19.00

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

```
| CALIB            |
| NASHYD   (  0103)|   Area    (ha)=   0.30   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.05

     Unit Hyd Qpeak  (cms)=   0.229

     PEAK FLOW       (cms)=   0.007 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   3.717
     TOTAL RAINFALL   (mm)=  46.983
     RUNOFF COEFFICIENT   =   0.079

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

--------------------------------------------------------------------------------
-------------------
| CALIB            |
| NASHYD   (  0104)|   Area    (ha)=   0.55   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.08

     Unit Hyd Qpeak  (cms)=   0.263

     PEAK FLOW       (cms)=   0.041 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  11.708
     TOTAL RAINFALL   (mm)=  46.983
     RUNOFF COEFFICIENT   =   0.249

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

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

-------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0103):     0.30   0.007     1.50     3.72
      + ID2= 2 (  0104):     0.55   0.041     1.50    11.71
        ================================================
        ID = 3 (  0003):     0.85   0.048     1.50     8.89

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

```
================================================================================
========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2017)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


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

  Output  filename:
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0262-b460-42e0-bcfe-b6d7977a062e\scen
  Summary filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\b3ea
0262-b460-42e0-bcfe-b6d7977a062e\scen


DATE: 04/04/2025                          TIME: 09:33:27

USER:



COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------
------------------------
  ********************************************
  ** SIMULATION : 4                          **
  ********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1343.700
| Ptotal= 56.54 mm |                          B=   9.000
--------------------                          C=   0.814
```

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.48

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	4.57	0.83	12.20	1.67	19.98	2.50	5.58
0.17	5.20	1.00	18.80	1.83	13.06	2.67	4.91
0.33	6.04	1.17	40.37	2.00	9.72	2.83	4.39
0.50	7.23	1.33	122.29	2.17	7.76		
0.67	9.06	1.50	41.62	2.33	6.48		

CALIB NASHYD (0100) ID= 1 DT=10.0 min	Area (ha)= 12.86	Curve Number (CN)= 85.0
	Ia (mm)= 4.48	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.19	

Unit Hyd Qpeak (cms)= 2.585

PEAK FLOW (cms)= 1.326 (i)
TIME TO PEAK (hrs)= 1.667
RUNOFF VOLUME (mm)= 27.103
TOTAL RAINFALL (mm)= 56.542
RUNOFF COEFFICIENT = 0.479

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

CALIB NASHYD (0105) ID= 1 DT=10.0 min	Area (ha)= 1.69	Curve Number (CN)= 84.0
	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.13	

Unit Hyd Qpeak (cms)= 0.497

PEAK FLOW (cms)= 0.207 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 23.738
TOTAL RAINFALL (mm)= 56.542
RUNOFF COEFFICIENT = 0.420

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

```
--------------------
| CALIB            |
| NASHYD   (  0101)|   Area    (ha)=   2.05   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.14

     Unit Hyd Qpeak  (cms)=   0.559

     PEAK FLOW       (cms)=   0.244 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  24.358
     TOTAL RAINFALL   (mm)=  56.542
     RUNOFF COEFFICIENT   =   0.431

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

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

--------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0100):    12.86   1.326     1.67    27.10
      + ID2= 2 (  0101):     2.05   0.244     1.50    24.36
        ================================================
        ID = 3 (  0001):    14.91   1.534     1.50    26.73

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

--------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0001):    14.91   1.534     1.50    26.73
      + ID2= 2 (  0105):     1.69   0.207     1.50    23.74
        ================================================
        ID = 1 (  0001):    16.60   1.741     1.50    26.42

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0106)|   Area    (ha)=   0.40   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.05

     Unit Hyd Qpeak  (cms)=   0.306

     PEAK FLOW       (cms)=   0.013 (i)
```

```
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   5.061
     TOTAL RAINFALL   (mm)=  56.542
     RUNOFF COEFFICIENT   =   0.090

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

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0102)|   Area    (ha)=   2.11   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.14

     Unit Hyd Qpeak  (cms)=   0.576

     PEAK FLOW       (cms)=   0.252 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  24.358
     TOTAL RAINFALL   (mm)=  56.542
     RUNOFF COEFFICIENT   =   0.431

     (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 (  0001):    16.60   1.741     1.50    26.42
      + ID2= 2 (  0102):     2.11   0.252     1.50    24.36
        ================================================
        ID = 3 (  0002):    18.71   1.993     1.50    26.19

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

--------------------
| ADD HYD  (  0002)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0002):    18.71   1.993     1.50    26.19
      + ID2= 2 (  0106):     0.40   0.013     1.50     5.06
        ================================================
        ID = 1 (  0002):    19.11   2.007     1.50    25.75

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

```
| CALIB            |
| NASHYD   (  0103)|   Area    (ha)=   0.30   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.05

     Unit Hyd Qpeak  (cms)=   0.229

     PEAK FLOW       (cms)=   0.010 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   5.061
     TOTAL RAINFALL   (mm)=  56.542
     RUNOFF COEFFICIENT   =   0.090

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

--------------------------------------------------------------------------------
-------------------
| CALIB            |
| NASHYD   (  0104)|   Area    (ha)=   0.55   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.08

     Unit Hyd Qpeak  (cms)=   0.263

     PEAK FLOW       (cms)=   0.056 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  15.938
     TOTAL RAINFALL   (mm)=  56.542
     RUNOFF COEFFICIENT   =   0.282

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

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

-------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0103):     0.30   0.010     1.50     5.06
      + ID2= 2 (  0104):     0.55   0.056     1.50    15.94
        ================================================
        ID = 3 (  0003):     0.85   0.066     1.50    12.10

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

```
================================================================================
========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2017)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


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

  Output  filename:
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2008-3784-4b86-8358-b4cadd68fe8a\scen
  Summary filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\e0d5
2008-3784-4b86-8358-b4cadd68fe8a\scen


DATE: 04/04/2025                          TIME: 09:33:28

USER:



COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------
------------------------
  ********************************************
  ** SIMULATION : 5                          **
  ********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1719.500
| Ptotal= 68.72 mm |                          B=  10.000
--------------------                          C=   0.823
```

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.48

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	5.46	0.83	14.96	1.67	24.74	2.50	6.70
0.17	6.23	1.00	23.26	1.83	16.04	2.67	5.87
0.33	7.26	1.17	50.04	2.00	11.85	2.83	5.24
0.50	8.74	1.33	146.10	2.17	9.41		
0.67	11.02	1.50	51.58	2.33	7.82		

CALIB NASHYD (0100) ID= 1 DT=10.0 min	Area (ha)= 12.86	Curve Number (CN)= 85.0
	Ia (mm)= 4.48	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.19	

Unit Hyd Qpeak (cms)= 2.585

PEAK FLOW (cms)= 1.788 (i)
TIME TO PEAK (hrs)= 1.667
RUNOFF VOLUME (mm)= 36.659
TOTAL RAINFALL (mm)= 68.722
RUNOFF COEFFICIENT = 0.533

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

CALIB NASHYD (0105) ID= 1 DT=10.0 min	Area (ha)= 1.69	Curve Number (CN)= 84.0
	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.13	

Unit Hyd Qpeak (cms)= 0.497

PEAK FLOW (cms)= 0.282 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 32.308
TOTAL RAINFALL (mm)= 68.722
RUNOFF COEFFICIENT = 0.470

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

```
--------------------
| CALIB            |
| NASHYD   (  0101)|   Area    (ha)=   2.05   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.14

     Unit Hyd Qpeak  (cms)=   0.559

     PEAK FLOW       (cms)=   0.333 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  33.153
     TOTAL RAINFALL   (mm)=  68.722
     RUNOFF COEFFICIENT   =   0.482

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

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

--------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0100):    12.86   1.788     1.67    36.66
      + ID2= 2 (  0101):     2.05   0.333     1.50    33.15
        ================================================
        ID = 3 (  0001):    14.91   2.094     1.50    36.18

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

--------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0001):    14.91   2.094     1.50    36.18
      + ID2= 2 (  0105):     1.69   0.282     1.50    32.31
        ================================================
        ID = 1 (  0001):    16.60   2.376     1.50    35.78

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0106)|   Area    (ha)=   0.40   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.05

     Unit Hyd Qpeak  (cms)=   0.306

     PEAK FLOW       (cms)=   0.018 (i)
```

```
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   6.888
     TOTAL RAINFALL   (mm)=  68.722
     RUNOFF COEFFICIENT   =   0.100

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

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0102)|   Area    (ha)=   2.11   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.14

     Unit Hyd Qpeak  (cms)=   0.576

     PEAK FLOW       (cms)=   0.343 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  33.153
     TOTAL RAINFALL   (mm)=  68.722
     RUNOFF COEFFICIENT   =   0.482

     (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 (  0001):    16.60   2.376     1.50    35.78
      + ID2= 2 (  0102):     2.11   0.343     1.50    33.15
        ================================================
        ID = 3 (  0002):    18.71   2.719     1.50    35.49

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

--------------------
| ADD HYD  (  0002)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0002):    18.71   2.719     1.50    35.49
      + ID2= 2 (  0106):     0.40   0.018     1.50     6.89
        ================================================
        ID = 1 (  0002):    19.11   2.737     1.50    34.89

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

```
| CALIB            |
| NASHYD   (  0103)|   Area    (ha)=   0.30   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.05

     Unit Hyd Qpeak  (cms)=   0.229

     PEAK FLOW       (cms)=   0.014 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   6.888
     TOTAL RAINFALL   (mm)=  68.722
     RUNOFF COEFFICIENT   =   0.100

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

--------------------------------------------------------------------------------
-------------------
| CALIB            |
| NASHYD   (  0104)|   Area    (ha)=   0.55   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.08

     Unit Hyd Qpeak  (cms)=   0.263

     PEAK FLOW       (cms)=   0.075 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  21.693
     TOTAL RAINFALL   (mm)=  68.722
     RUNOFF COEFFICIENT   =   0.316

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

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

-------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0103):     0.30   0.014     1.50     6.89
      + ID2= 2 (  0104):     0.55   0.075     1.50    21.69
        ================================================
        ID = 3 (  0003):     0.85   0.089     1.50    16.47

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

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================================================================================
========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2017)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


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

  Output  filename:
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  Summary filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\7aeb
a6f9-0425-42f7-9c75-9ba17f2a1bd5\scen


DATE: 04/04/2025                          TIME: 09:33:27

USER:



COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------
------------------------
  ********************************************
  ** SIMULATION : 6                          **
  ********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1954.800
| Ptotal= 76.91 mm |                          B=  10.000
--------------------                          C=   0.826
```

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.48

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	6.03	0.83	16.65	1.67	27.61	2.50	7.42
0.17	6.89	1.00	25.95	1.83	17.85	2.67	6.49
0.33	8.04	1.17	56.09	2.00	13.16	2.83	5.79
0.50	9.69	1.33	164.61	2.17	10.44		
0.67	12.24	1.50	57.82	2.33	8.66		

CALIB NASHYD (0100) ID= 1 DT=10.0 min	Area (ha)= 12.86	Curve Number (CN)= 85.0
	Ia (mm)= 4.48	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.19	

Unit Hyd Qpeak (cms)= 2.585

PEAK FLOW (cms)= 2.120 (i)
TIME TO PEAK (hrs)= 1.667
RUNOFF VOLUME (mm)= 43.342
TOTAL RAINFALL (mm)= 76.906
RUNOFF COEFFICIENT = 0.564

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

CALIB NASHYD (0105) ID= 1 DT=10.0 min	Area (ha)= 1.69	Curve Number (CN)= 84.0
	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.13	

Unit Hyd Qpeak (cms)= 0.497

PEAK FLOW (cms)= 0.339 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 38.322
TOTAL RAINFALL (mm)= 76.906
RUNOFF COEFFICIENT = 0.498

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

```
--------------------
| CALIB            |
| NASHYD   (  0101)|   Area    (ha)=   2.05   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.14

     Unit Hyd Qpeak  (cms)=   0.559

     PEAK FLOW       (cms)=   0.400 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  39.324
     TOTAL RAINFALL   (mm)=  76.906
     RUNOFF COEFFICIENT   =   0.511

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

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

--------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0100):    12.86   2.120     1.67    43.34
      + ID2= 2 (  0101):     2.05   0.400     1.50    39.32
        ====================================================
        ID = 3 (  0001):    14.91   2.513     1.50    42.79

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

--------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0001):    14.91   2.513     1.50    42.79
      + ID2= 2 (  0105):     1.69   0.339     1.50    38.32
        ====================================================
        ID = 1 (  0001):    16.60   2.851     1.50    42.33

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0106)|   Area    (ha)=   0.40   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.05

     Unit Hyd Qpeak  (cms)=   0.306

     PEAK FLOW       (cms)=   0.022 (i)
```

```
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   8.170
     TOTAL RAINFALL   (mm)=  76.906
     RUNOFF COEFFICIENT   =   0.106

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

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0102)|   Area    (ha)=   2.11   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.14

     Unit Hyd Qpeak  (cms)=   0.576

     PEAK FLOW       (cms)=   0.412 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  39.324
     TOTAL RAINFALL   (mm)=  76.906
     RUNOFF COEFFICIENT   =   0.511

     (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 (  0001):    16.60   2.851     1.50    42.33
      + ID2= 2 (  0102):     2.11   0.412     1.50    39.32
        ================================================
        ID = 3 (  0002):    18.71   3.263     1.50    42.00

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

--------------------
| ADD HYD  (  0002)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0002):    18.71   3.263     1.50    42.00
      + ID2= 2 (  0106):     0.40   0.022     1.50     8.17
        ================================================
        ID = 1 (  0002):    19.11   3.285     1.50    41.29

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

```
| CALIB            |
| NASHYD   (  0103)|   Area    (ha)=   0.30   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.05

     Unit Hyd Qpeak  (cms)=   0.229

     PEAK FLOW       (cms)=   0.016 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   8.170
     TOTAL RAINFALL   (mm)=  76.906
     RUNOFF COEFFICIENT   =   0.106

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

--------------------------------------------------------------------------------
-------------------
| CALIB            |
| NASHYD   (  0104)|   Area    (ha)=   0.55   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.08

     Unit Hyd Qpeak  (cms)=   0.263

     PEAK FLOW       (cms)=   0.090 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  25.731
     TOTAL RAINFALL   (mm)=  76.906
     RUNOFF COEFFICIENT   =   0.335

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

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

-------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0103):     0.30   0.016     1.50     8.17
      + ID2= 2 (  0104):     0.55   0.090     1.50    25.73
        ================================================
        ID = 3 (  0003):     0.85   0.107     1.50    19.53

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

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================================================================================
========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2017)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


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

  Output  filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\f289
e78a-eba1-4ca2-ba78-3ee31c855046\scen
  Summary filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\f289
e78a-eba1-4ca2-ba78-3ee31c855046\scen


DATE: 04/04/2025                          TIME: 09:33:28

USER:



COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------
------------------------
  ********************************************
  ** SIMULATION : 7                          **
  ********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=2317.400
| Ptotal= 86.13 mm |                          B=  11.000
--------------------                          C=   0.836
```

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.48

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	6.61	0.83	18.78	1.67	31.44	2.50	8.17
0.17	7.57	1.00	29.53	1.83	20.17	2.67	7.13
0.33	8.89	1.17	63.97	2.00	14.76	2.83	6.33
0.50	10.77	1.33	181.81	2.17	11.62		
0.67	13.69	1.50	65.94	2.33	9.59		

CALIB NASHYD (0100) ID= 1 DT=10.0 min	Area (ha)= 12.86	Curve Number (CN)= 85.0
	Ia (mm)= 4.48	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.19	

Unit Hyd Qpeak (cms)= 2.585

PEAK FLOW (cms)= 2.491 (i)
TIME TO PEAK (hrs)= 1.667
RUNOFF VOLUME (mm)= 51.069
TOTAL RAINFALL (mm)= 86.132
RUNOFF COEFFICIENT = 0.593

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

CALIB NASHYD (0105) ID= 1 DT=10.0 min	Area (ha)= 1.69	Curve Number (CN)= 84.0
	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.13	

Unit Hyd Qpeak (cms)= 0.497

PEAK FLOW (cms)= 0.398 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 45.293
TOTAL RAINFALL (mm)= 86.132
RUNOFF COEFFICIENT = 0.526

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

```
--------------------
| CALIB            |
| NASHYD   (  0101)|   Area    (ha)=   2.05   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.14

     Unit Hyd Qpeak  (cms)=   0.559

     PEAK FLOW       (cms)=   0.471 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  46.478
     TOTAL RAINFALL   (mm)=  86.132
     RUNOFF COEFFICIENT   =   0.540

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

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

--------------------
| ADD HYD  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0100):    12.86   2.491     1.67    51.07
      + ID2= 2 (  0101):     2.05   0.471     1.50    46.48
        ====================================================
        ID = 3 (  0001):    14.91   2.961     1.50    50.44

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

--------------------
| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0001):    14.91   2.961     1.50    50.44
      + ID2= 2 (  0105):     1.69   0.398     1.50    45.29
        ====================================================
        ID = 1 (  0001):    16.60   3.358     1.50    49.91

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0106)|   Area    (ha)=   0.40   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.05

     Unit Hyd Qpeak  (cms)=   0.306

     PEAK FLOW       (cms)=   0.025 (i)
```

```
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   9.656
     TOTAL RAINFALL   (mm)=  86.132
     RUNOFF COEFFICIENT   =   0.112

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

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0102)|   Area    (ha)=   2.11   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.14

     Unit Hyd Qpeak  (cms)=   0.576

     PEAK FLOW       (cms)=   0.485 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  46.478
     TOTAL RAINFALL   (mm)=  86.132
     RUNOFF COEFFICIENT   =   0.540

     (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 (  0001):    16.60   3.358     1.50    49.91
      + ID2= 2 (  0102):     2.11   0.485     1.50    46.48
        ================================================
        ID = 3 (  0002):    18.71   3.843     1.50    49.53

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

--------------------
| ADD HYD  (  0002)|
|   3 +  2 =  1    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0002):    18.71   3.843     1.50    49.53
      + ID2= 2 (  0106):     0.40   0.025     1.50     9.66
        ================================================
        ID = 1 (  0002):    19.11   3.869     1.50    48.69

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

```
| CALIB            |
| NASHYD   (  0103)|   Area    (ha)=   0.30   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.05

     Unit Hyd Qpeak  (cms)=   0.229

     PEAK FLOW       (cms)=   0.019 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   9.656
     TOTAL RAINFALL   (mm)=  86.132
     RUNOFF COEFFICIENT   =   0.112

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

--------------------------------------------------------------------------------
-------------------
| CALIB            |
| NASHYD   (  0104)|   Area    (ha)=   0.55   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
-------------------   U.H. Tp(hrs)=   0.08

     Unit Hyd Qpeak  (cms)=   0.263

     PEAK FLOW       (cms)=   0.106 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  30.413
     TOTAL RAINFALL   (mm)=  86.132
     RUNOFF COEFFICIENT   =   0.353

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

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

-------------------
| ADD HYD  (  0003)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
-------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0103):     0.30   0.019     1.50     9.66
      + ID2= 2 (  0104):     0.55   0.106     1.50    30.41
        ================================================
        ID = 3 (  0003):     0.85   0.125     1.50    23.09

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

```
================================================================================
========================

       V    V   I    SSSSS  U   U    A    L             (v 6.2.2017)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


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

  Output  filename:
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  Summary filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\a285
2eab-20e7-4be4-a04e-dddbefe01d07\scen


DATE: 04/04/2025                          TIME: 09:33:28

USER:



COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------
------------------------
  **********************************************
  ** SIMULATION : 8                           **
  **********************************************


--------------------
|    READ STORM    |    Filename: C:\Users\msauder\AppD
|                  |              ata\Local\Temp\
```

| | b0809575-cc70-48f4-94ff-666913502c21\7ec33e63
| Ptotal=284.50 mm | Comments: 48 hr Hurricane Hazel

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.00	12.00	2.00	24.00	2.00	36.00	6.00
0.25	2.00	12.25	2.00	24.25	2.00	36.25	6.00
0.50	2.00	12.50	2.00	24.50	2.00	36.50	6.00
0.75	2.00	12.75	2.00	24.75	2.00	36.75	6.00
1.00	2.00	13.00	2.00	25.00	2.00	37.00	4.00
1.25	2.00	13.25	2.00	25.25	2.00	37.25	4.00
1.50	2.00	13.50	2.00	25.50	2.00	37.50	4.00
1.75	2.00	13.75	2.00	25.75	2.00	37.75	4.00
2.00	2.00	14.00	2.00	26.00	2.00	38.00	6.00
2.25	2.00	14.25	2.00	26.25	2.00	38.25	6.00
2.50	2.00	14.50	2.00	26.50	2.00	38.50	6.00
2.75	2.00	14.75	2.00	26.75	2.00	38.75	6.00
3.00	2.00	15.00	2.00	27.00	2.00	39.00	13.00
3.25	2.00	15.25	2.00	27.25	2.00	39.25	13.00
3.50	2.00	15.50	2.00	27.50	2.00	39.50	13.00
3.75	2.00	15.75	2.00	27.75	2.00	39.75	13.00
4.00	2.00	16.00	2.00	28.00	2.00	40.00	17.00
4.25	2.00	16.25	2.00	28.25	2.00	40.25	17.00
4.50	2.00	16.50	2.00	28.50	2.00	40.50	17.00
4.75	2.00	16.75	2.00	28.75	2.00	40.75	17.00
5.00	2.00	17.00	2.00	29.00	2.00	41.00	13.00
5.25	2.00	17.25	2.00	29.25	2.00	41.25	13.00
5.50	2.00	17.50	2.00	29.50	2.00	41.50	13.00
5.75	2.00	17.75	2.00	29.75	2.00	41.75	13.00
6.00	2.00	18.00	2.00	30.00	2.00	42.00	23.00
6.25	2.00	18.25	2.00	30.25	2.00	42.25	23.00
6.50	2.00	18.50	2.00	30.50	2.00	42.50	23.00
6.75	2.00	18.75	2.00	30.75	2.00	42.75	23.00
7.00	2.00	19.00	2.00	31.00	2.00	43.00	13.00
7.25	2.00	19.25	2.00	31.25	2.00	43.25	13.00
7.50	2.00	19.50	2.00	31.50	2.00	43.50	13.00
7.75	2.00	19.75	2.00	31.75	2.00	43.75	13.00
8.00	2.00	20.00	2.00	32.00	2.00	44.00	13.00
8.25	2.00	20.25	2.00	32.25	2.00	44.25	13.00
8.50	2.00	20.50	2.00	32.50	2.00	44.50	13.00
8.75	2.00	20.75	2.00	32.75	2.00	44.75	13.00
9.00	2.00	21.00	2.00	33.00	2.00	45.00	53.00
9.25	2.00	21.25	2.00	33.25	2.00	45.25	53.00
9.50	2.00	21.50	2.00	33.50	2.00	45.50	53.00
9.75	2.00	21.75	2.00	33.75	2.00	45.75	53.00
10.00	2.00	22.00	2.00	34.00	2.00	46.00	38.00
10.25	2.00	22.25	2.00	34.25	2.00	46.25	38.00
10.50	2.00	22.50	2.00	34.50	2.00	46.50	38.00
10.75	2.00	22.75	2.00	34.75	2.00	46.75	38.00
11.00	2.00	23.00	2.00	35.00	3.00	47.00	13.00

11.25	2.00	23.25	2.00	35.25	3.00	47.25	13.00
11.50	2.00	23.50	2.00	35.50	3.00	47.50	13.00
11.75	2.00	23.75	2.00	35.75	3.00	47.75	13.00

CALIB NASHYD (0100) ID= 1 DT=10.0 min			
	Area (ha)=	12.86	Curve Number (CN)= 85.0
	Ia (mm)=	4.48	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.19	

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	0.00	12.167	2.00	24.167	2.00	36.17	6.00
0.333	1.00	12.333	2.00	24.333	2.00	36.33	6.00
0.500	2.00	12.500	2.00	24.500	2.00	36.50	6.00
0.667	2.00	12.667	2.00	24.667	2.00	36.67	6.00
0.833	2.00	12.833	2.00	24.833	2.00	36.83	6.00
1.000	2.00	13.000	2.00	25.000	2.00	37.00	6.00
1.167	2.00	13.167	2.00	25.167	2.00	37.17	4.00
1.333	2.00	13.333	2.00	25.333	2.00	37.33	4.00
1.500	2.00	13.500	2.00	25.500	2.00	37.50	4.00
1.667	2.00	13.667	2.00	25.667	2.00	37.67	4.00
1.833	2.00	13.833	2.00	25.833	2.00	37.83	4.00
2.000	2.00	14.000	2.00	26.000	2.00	38.00	4.00
2.167	2.00	14.167	2.00	26.167	2.00	38.17	6.00
2.333	2.00	14.333	2.00	26.333	2.00	38.33	6.00
2.500	2.00	14.500	2.00	26.500	2.00	38.50	6.00
2.667	2.00	14.667	2.00	26.667	2.00	38.67	6.00
2.833	2.00	14.833	2.00	26.833	2.00	38.83	6.00
3.000	2.00	15.000	2.00	27.000	2.00	39.00	6.00
3.167	2.00	15.167	2.00	27.167	2.00	39.17	13.00
3.333	2.00	15.333	2.00	27.333	2.00	39.33	13.00
3.500	2.00	15.500	2.00	27.500	2.00	39.50	13.00
3.667	2.00	15.667	2.00	27.667	2.00	39.67	13.00
3.833	2.00	15.833	2.00	27.833	2.00	39.83	13.00
4.000	2.00	16.000	2.00	28.000	2.00	40.00	13.00
4.167	2.00	16.167	2.00	28.167	2.00	40.17	17.00
4.333	2.00	16.333	2.00	28.333	2.00	40.33	17.00
4.500	2.00	16.500	2.00	28.500	2.00	40.50	17.00
4.667	2.00	16.667	2.00	28.667	2.00	40.67	17.00
4.833	2.00	16.833	2.00	28.833	2.00	40.83	17.00
5.000	2.00	17.000	2.00	29.000	2.00	41.00	17.00
5.167	2.00	17.167	2.00	29.167	2.00	41.17	13.00
5.333	2.00	17.333	2.00	29.333	2.00	41.33	13.00

5.500	2.00	17.500	2.00	29.500	2.00	41.50	13.00
5.667	2.00	17.667	2.00	29.667	2.00	41.67	13.00
5.833	2.00	17.833	2.00	29.833	2.00	41.83	13.00
6.000	2.00	18.000	2.00	30.000	2.00	42.00	13.00
6.167	2.00	18.167	2.00	30.167	2.00	42.17	23.00
6.333	2.00	18.333	2.00	30.333	2.00	42.33	23.00
6.500	2.00	18.500	2.00	30.500	2.00	42.50	23.00
6.667	2.00	18.667	2.00	30.667	2.00	42.67	23.00
6.833	2.00	18.833	2.00	30.833	2.00	42.83	23.00
7.000	2.00	19.000	2.00	31.000	2.00	43.00	23.00
7.167	2.00	19.167	2.00	31.167	2.00	43.17	13.00
7.333	2.00	19.333	2.00	31.333	2.00	43.33	13.00
7.500	2.00	19.500	2.00	31.500	2.00	43.50	13.00
7.667	2.00	19.667	2.00	31.667	2.00	43.67	13.00
7.833	2.00	19.833	2.00	31.833	2.00	43.83	13.00
8.000	2.00	20.000	2.00	32.000	2.00	44.00	13.00
8.167	2.00	20.167	2.00	32.167	2.00	44.17	13.00
8.333	2.00	20.333	2.00	32.333	2.00	44.33	13.00
8.500	2.00	20.500	2.00	32.500	2.00	44.50	13.00
8.667	2.00	20.667	2.00	32.667	2.00	44.67	13.00
8.833	2.00	20.833	2.00	32.833	2.00	44.83	13.00
9.000	2.00	21.000	2.00	33.000	2.00	45.00	13.01
9.167	2.00	21.167	2.00	33.167	2.00	45.17	53.00
9.333	2.00	21.333	2.00	33.333	2.00	45.33	53.00
9.500	2.00	21.500	2.00	33.500	2.00	45.50	53.00
9.667	2.00	21.667	2.00	33.667	2.00	45.67	53.00
9.833	2.00	21.833	2.00	33.833	2.00	45.83	53.00
10.000	2.00	22.000	2.00	34.000	2.00	46.00	53.00
10.167	2.00	22.167	2.00	34.167	2.00	46.17	38.00
10.333	2.00	22.333	2.00	34.333	2.00	46.33	38.00
10.500	2.00	22.500	2.00	34.500	2.00	46.50	38.00
10.667	2.00	22.667	2.00	34.667	2.00	46.67	38.00
10.833	2.00	22.833	2.00	34.833	2.00	46.83	38.00
11.000	2.00	23.000	2.00	35.000	2.00	47.00	37.99
11.167	2.00	23.167	2.00	35.167	3.00	47.17	13.00
11.333	2.00	23.333	2.00	35.333	3.00	47.33	13.00
11.500	2.00	23.500	2.00	35.500	3.00	47.50	13.00
11.667	2.00	23.667	2.00	35.667	3.00	47.67	13.00
11.833	2.00	23.833	2.00	35.833	3.00	47.83	13.00
12.000	2.00	24.000	2.00	36.000	3.00	48.00	12.99

Unit Hyd Qpeak (cms)= 2.585

PEAK FLOW (cms)= 1.779 (i)
TIME TO PEAK (hrs)= 46.000
RUNOFF VOLUME (mm)= 233.849
TOTAL RAINFALL (mm)= 284.499
RUNOFF COEFFICIENT = 0.822

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

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| CALIB            |
| NASHYD   (  0105)|   Area    (ha)=   1.69   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.13

         NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 MIN. TIME STEP.
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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	0.00	12.167	2.00	24.167	2.00	36.17	6.00
0.333	1.00	12.333	2.00	24.333	2.00	36.33	6.00
0.500	2.00	12.500	2.00	24.500	2.00	36.50	6.00
0.667	2.00	12.667	2.00	24.667	2.00	36.67	6.00
0.833	2.00	12.833	2.00	24.833	2.00	36.83	6.00
1.000	2.00	13.000	2.00	25.000	2.00	37.00	6.00
1.167	2.00	13.167	2.00	25.167	2.00	37.17	4.00
1.333	2.00	13.333	2.00	25.333	2.00	37.33	4.00
1.500	2.00	13.500	2.00	25.500	2.00	37.50	4.00
1.667	2.00	13.667	2.00	25.667	2.00	37.67	4.00
1.833	2.00	13.833	2.00	25.833	2.00	37.83	4.00
2.000	2.00	14.000	2.00	26.000	2.00	38.00	4.00
2.167	2.00	14.167	2.00	26.167	2.00	38.17	6.00
2.333	2.00	14.333	2.00	26.333	2.00	38.33	6.00
2.500	2.00	14.500	2.00	26.500	2.00	38.50	6.00
2.667	2.00	14.667	2.00	26.667	2.00	38.67	6.00
2.833	2.00	14.833	2.00	26.833	2.00	38.83	6.00
3.000	2.00	15.000	2.00	27.000	2.00	39.00	6.00
3.167	2.00	15.167	2.00	27.167	2.00	39.17	13.00
3.333	2.00	15.333	2.00	27.333	2.00	39.33	13.00
3.500	2.00	15.500	2.00	27.500	2.00	39.50	13.00
3.667	2.00	15.667	2.00	27.667	2.00	39.67	13.00
3.833	2.00	15.833	2.00	27.833	2.00	39.83	13.00
4.000	2.00	16.000	2.00	28.000	2.00	40.00	13.00
4.167	2.00	16.167	2.00	28.167	2.00	40.17	17.00
4.333	2.00	16.333	2.00	28.333	2.00	40.33	17.00
4.500	2.00	16.500	2.00	28.500	2.00	40.50	17.00
4.667	2.00	16.667	2.00	28.667	2.00	40.67	17.00
4.833	2.00	16.833	2.00	28.833	2.00	40.83	17.00
5.000	2.00	17.000	2.00	29.000	2.00	41.00	17.00
5.167	2.00	17.167	2.00	29.167	2.00	41.17	13.00
5.333	2.00	17.333	2.00	29.333	2.00	41.33	13.00
5.500	2.00	17.500	2.00	29.500	2.00	41.50	13.00
5.667	2.00	17.667	2.00	29.667	2.00	41.67	13.00
5.833	2.00	17.833	2.00	29.833	2.00	41.83	13.00
6.000	2.00	18.000	2.00	30.000	2.00	42.00	13.00

6.167	2.00	18.167	2.00	30.167	2.00	42.17	23.00
6.333	2.00	18.333	2.00	30.333	2.00	42.33	23.00
6.500	2.00	18.500	2.00	30.500	2.00	42.50	23.00
6.667	2.00	18.667	2.00	30.667	2.00	42.67	23.00
6.833	2.00	18.833	2.00	30.833	2.00	42.83	23.00
7.000	2.00	19.000	2.00	31.000	2.00	43.00	23.00
7.167	2.00	19.167	2.00	31.167	2.00	43.17	13.00
7.333	2.00	19.333	2.00	31.333	2.00	43.33	13.00
7.500	2.00	19.500	2.00	31.500	2.00	43.50	13.00
7.667	2.00	19.667	2.00	31.667	2.00	43.67	13.00
7.833	2.00	19.833	2.00	31.833	2.00	43.83	13.00
8.000	2.00	20.000	2.00	32.000	2.00	44.00	13.00
8.167	2.00	20.167	2.00	32.167	2.00	44.17	13.00
8.333	2.00	20.333	2.00	32.333	2.00	44.33	13.00
8.500	2.00	20.500	2.00	32.500	2.00	44.50	13.00
8.667	2.00	20.667	2.00	32.667	2.00	44.67	13.00
8.833	2.00	20.833	2.00	32.833	2.00	44.83	13.00
9.000	2.00	21.000	2.00	33.000	2.00	45.00	13.01
9.167	2.00	21.167	2.00	33.167	2.00	45.17	53.00
9.333	2.00	21.333	2.00	33.333	2.00	45.33	53.00
9.500	2.00	21.500	2.00	33.500	2.00	45.50	53.00
9.667	2.00	21.667	2.00	33.667	2.00	45.67	53.00
9.833	2.00	21.833	2.00	33.833	2.00	45.83	53.00
10.000	2.00	22.000	2.00	34.000	2.00	46.00	53.00
10.167	2.00	22.167	2.00	34.167	2.00	46.17	38.00
10.333	2.00	22.333	2.00	34.333	2.00	46.33	38.00
10.500	2.00	22.500	2.00	34.500	2.00	46.50	38.00
10.667	2.00	22.667	2.00	34.667	2.00	46.67	38.00
10.833	2.00	22.833	2.00	34.833	2.00	46.83	38.00
11.000	2.00	23.000	2.00	35.000	2.00	47.00	37.99
11.167	2.00	23.167	2.00	35.167	3.00	47.17	13.00
11.333	2.00	23.333	2.00	35.333	3.00	47.33	13.00
11.500	2.00	23.500	2.00	35.500	3.00	47.50	13.00
11.667	2.00	23.667	2.00	35.667	3.00	47.67	13.00
11.833	2.00	23.833	2.00	35.833	3.00	47.83	13.00
12.000	2.00	24.000	2.00	36.000	3.00	48.00	12.99

Unit Hyd Qpeak (cms)= 0.497

PEAK FLOW (cms)= 0.214 (i)
TIME TO PEAK (hrs)= 46.000
RUNOFF VOLUME (mm)= 211.895
TOTAL RAINFALL (mm)= 284.499
RUNOFF COEFFICIENT = 0.745

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

CALIB

| NASHYD (0101)| Area (ha)= 2.05 Curve Number (CN)= 84.0
|ID= 1 DT=10.0 min | Ia (mm)= 4.84 # of Linear Res.(N)= 3.00
--- U.H. Tp(hrs)= 0.14

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	0.00	12.167	2.00	24.167	2.00	36.17	6.00
0.333	1.00	12.333	2.00	24.333	2.00	36.33	6.00
0.500	2.00	12.500	2.00	24.500	2.00	36.50	6.00
0.667	2.00	12.667	2.00	24.667	2.00	36.67	6.00
0.833	2.00	12.833	2.00	24.833	2.00	36.83	6.00
1.000	2.00	13.000	2.00	25.000	2.00	37.00	6.00
1.167	2.00	13.167	2.00	25.167	2.00	37.17	4.00
1.333	2.00	13.333	2.00	25.333	2.00	37.33	4.00
1.500	2.00	13.500	2.00	25.500	2.00	37.50	4.00
1.667	2.00	13.667	2.00	25.667	2.00	37.67	4.00
1.833	2.00	13.833	2.00	25.833	2.00	37.83	4.00
2.000	2.00	14.000	2.00	26.000	2.00	38.00	4.00
2.167	2.00	14.167	2.00	26.167	2.00	38.17	6.00
2.333	2.00	14.333	2.00	26.333	2.00	38.33	6.00
2.500	2.00	14.500	2.00	26.500	2.00	38.50	6.00
2.667	2.00	14.667	2.00	26.667	2.00	38.67	6.00
2.833	2.00	14.833	2.00	26.833	2.00	38.83	6.00
3.000	2.00	15.000	2.00	27.000	2.00	39.00	6.00
3.167	2.00	15.167	2.00	27.167	2.00	39.17	13.00
3.333	2.00	15.333	2.00	27.333	2.00	39.33	13.00
3.500	2.00	15.500	2.00	27.500	2.00	39.50	13.00
3.667	2.00	15.667	2.00	27.667	2.00	39.67	13.00
3.833	2.00	15.833	2.00	27.833	2.00	39.83	13.00
4.000	2.00	16.000	2.00	28.000	2.00	40.00	13.00
4.167	2.00	16.167	2.00	28.167	2.00	40.17	17.00
4.333	2.00	16.333	2.00	28.333	2.00	40.33	17.00
4.500	2.00	16.500	2.00	28.500	2.00	40.50	17.00
4.667	2.00	16.667	2.00	28.667	2.00	40.67	17.00
4.833	2.00	16.833	2.00	28.833	2.00	40.83	17.00
5.000	2.00	17.000	2.00	29.000	2.00	41.00	17.00
5.167	2.00	17.167	2.00	29.167	2.00	41.17	13.00
5.333	2.00	17.333	2.00	29.333	2.00	41.33	13.00
5.500	2.00	17.500	2.00	29.500	2.00	41.50	13.00
5.667	2.00	17.667	2.00	29.667	2.00	41.67	13.00
5.833	2.00	17.833	2.00	29.833	2.00	41.83	13.00
6.000	2.00	18.000	2.00	30.000	2.00	42.00	13.00
6.167	2.00	18.167	2.00	30.167	2.00	42.17	23.00
6.333	2.00	18.333	2.00	30.333	2.00	42.33	23.00
6.500	2.00	18.500	2.00	30.500	2.00	42.50	23.00
6.667	2.00	18.667	2.00	30.667	2.00	42.67	23.00

6.833	2.00	18.833	2.00	30.833	2.00	42.83	23.00
7.000	2.00	19.000	2.00	31.000	2.00	43.00	23.00
7.167	2.00	19.167	2.00	31.167	2.00	43.17	13.00
7.333	2.00	19.333	2.00	31.333	2.00	43.33	13.00
7.500	2.00	19.500	2.00	31.500	2.00	43.50	13.00
7.667	2.00	19.667	2.00	31.667	2.00	43.67	13.00
7.833	2.00	19.833	2.00	31.833	2.00	43.83	13.00
8.000	2.00	20.000	2.00	32.000	2.00	44.00	13.00
8.167	2.00	20.167	2.00	32.167	2.00	44.17	13.00
8.333	2.00	20.333	2.00	32.333	2.00	44.33	13.00
8.500	2.00	20.500	2.00	32.500	2.00	44.50	13.00
8.667	2.00	20.667	2.00	32.667	2.00	44.67	13.00
8.833	2.00	20.833	2.00	32.833	2.00	44.83	13.00
9.000	2.00	21.000	2.00	33.000	2.00	45.00	13.01
9.167	2.00	21.167	2.00	33.167	2.00	45.17	53.00
9.333	2.00	21.333	2.00	33.333	2.00	45.33	53.00
9.500	2.00	21.500	2.00	33.500	2.00	45.50	53.00
9.667	2.00	21.667	2.00	33.667	2.00	45.67	53.00
9.833	2.00	21.833	2.00	33.833	2.00	45.83	53.00
10.000	2.00	22.000	2.00	34.000	2.00	46.00	53.00
10.167	2.00	22.167	2.00	34.167	2.00	46.17	38.00
10.333	2.00	22.333	2.00	34.333	2.00	46.33	38.00
10.500	2.00	22.500	2.00	34.500	2.00	46.50	38.00
10.667	2.00	22.667	2.00	34.667	2.00	46.67	38.00
10.833	2.00	22.833	2.00	34.833	2.00	46.83	38.00
11.000	2.00	23.000	2.00	35.000	2.00	47.00	37.99
11.167	2.00	23.167	2.00	35.167	3.00	47.17	13.00
11.333	2.00	23.333	2.00	35.333	3.00	47.33	13.00
11.500	2.00	23.500	2.00	35.500	3.00	47.50	13.00
11.667	2.00	23.667	2.00	35.667	3.00	47.67	13.00
11.833	2.00	23.833	2.00	35.833	3.00	47.83	13.00
12.000	2.00	24.000	2.00	36.000	3.00	48.00	12.99

Unit Hyd Qpeak (cms)= 0.559

PEAK FLOW (cms)= 0.266 (i)
TIME TO PEAK (hrs)= 46.000
RUNOFF VOLUME (mm)= 217.436
TOTAL RAINFALL (mm)= 284.499
RUNOFF COEFFICIENT = 0.764

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

ADD HYD (0001)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0100):	12.86	1.779	46.00	233.85

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      + ID2= 2 (  0101):     2.05   0.266    46.00   217.44
        ================================================
        ID = 3 (  0001):    14.91   2.046    46.00   231.59

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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| ADD HYD  (  0001)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0001):    14.91   2.046    46.00   231.59
      + ID2= 2 (  0105):     1.69   0.214    46.00   211.90
        ================================================
        ID = 1 (  0001):    16.60   2.260    46.00   229.59

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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| CALIB            |
| NASHYD   (  0106)|   Area    (ha)=   0.40   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.05

         NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 MIN. TIME STEP.
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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	0.00	12.167	2.00	24.167	2.00	36.17	6.00
0.333	1.00	12.333	2.00	24.333	2.00	36.33	6.00
0.500	2.00	12.500	2.00	24.500	2.00	36.50	6.00
0.667	2.00	12.667	2.00	24.667	2.00	36.67	6.00
0.833	2.00	12.833	2.00	24.833	2.00	36.83	6.00
1.000	2.00	13.000	2.00	25.000	2.00	37.00	6.00
1.167	2.00	13.167	2.00	25.167	2.00	37.17	4.00
1.333	2.00	13.333	2.00	25.333	2.00	37.33	4.00
1.500	2.00	13.500	2.00	25.500	2.00	37.50	4.00
1.667	2.00	13.667	2.00	25.667	2.00	37.67	4.00
1.833	2.00	13.833	2.00	25.833	2.00	37.83	4.00
2.000	2.00	14.000	2.00	26.000	2.00	38.00	4.00
2.167	2.00	14.167	2.00	26.167	2.00	38.17	6.00
2.333	2.00	14.333	2.00	26.333	2.00	38.33	6.00
2.500	2.00	14.500	2.00	26.500	2.00	38.50	6.00
2.667	2.00	14.667	2.00	26.667	2.00	38.67	6.00
2.833	2.00	14.833	2.00	26.833	2.00	38.83	6.00
3.000	2.00	15.000	2.00	27.000	2.00	39.00	6.00
3.167	2.00	15.167	2.00	27.167	2.00	39.17	13.00
3.333	2.00	15.333	2.00	27.333	2.00	39.33	13.00

3.500	2.00	15.500	2.00	27.500	2.00	39.50	13.00
3.667	2.00	15.667	2.00	27.667	2.00	39.67	13.00
3.833	2.00	15.833	2.00	27.833	2.00	39.83	13.00
4.000	2.00	16.000	2.00	28.000	2.00	40.00	13.00
4.167	2.00	16.167	2.00	28.167	2.00	40.17	17.00
4.333	2.00	16.333	2.00	28.333	2.00	40.33	17.00
4.500	2.00	16.500	2.00	28.500	2.00	40.50	17.00
4.667	2.00	16.667	2.00	28.667	2.00	40.67	17.00
4.833	2.00	16.833	2.00	28.833	2.00	40.83	17.00
5.000	2.00	17.000	2.00	29.000	2.00	41.00	17.00
5.167	2.00	17.167	2.00	29.167	2.00	41.17	13.00
5.333	2.00	17.333	2.00	29.333	2.00	41.33	13.00
5.500	2.00	17.500	2.00	29.500	2.00	41.50	13.00
5.667	2.00	17.667	2.00	29.667	2.00	41.67	13.00
5.833	2.00	17.833	2.00	29.833	2.00	41.83	13.00
6.000	2.00	18.000	2.00	30.000	2.00	42.00	13.00
6.167	2.00	18.167	2.00	30.167	2.00	42.17	23.00
6.333	2.00	18.333	2.00	30.333	2.00	42.33	23.00
6.500	2.00	18.500	2.00	30.500	2.00	42.50	23.00
6.667	2.00	18.667	2.00	30.667	2.00	42.67	23.00
6.833	2.00	18.833	2.00	30.833	2.00	42.83	23.00
7.000	2.00	19.000	2.00	31.000	2.00	43.00	23.00
7.167	2.00	19.167	2.00	31.167	2.00	43.17	13.00
7.333	2.00	19.333	2.00	31.333	2.00	43.33	13.00
7.500	2.00	19.500	2.00	31.500	2.00	43.50	13.00
7.667	2.00	19.667	2.00	31.667	2.00	43.67	13.00
7.833	2.00	19.833	2.00	31.833	2.00	43.83	13.00
8.000	2.00	20.000	2.00	32.000	2.00	44.00	13.00
8.167	2.00	20.167	2.00	32.167	2.00	44.17	13.00
8.333	2.00	20.333	2.00	32.333	2.00	44.33	13.00
8.500	2.00	20.500	2.00	32.500	2.00	44.50	13.00
8.667	2.00	20.667	2.00	32.667	2.00	44.67	13.00
8.833	2.00	20.833	2.00	32.833	2.00	44.83	13.00
9.000	2.00	21.000	2.00	33.000	2.00	45.00	13.01
9.167	2.00	21.167	2.00	33.167	2.00	45.17	53.00
9.333	2.00	21.333	2.00	33.333	2.00	45.33	53.00
9.500	2.00	21.500	2.00	33.500	2.00	45.50	53.00
9.667	2.00	21.667	2.00	33.667	2.00	45.67	53.00
9.833	2.00	21.833	2.00	33.833	2.00	45.83	53.00
10.000	2.00	22.000	2.00	34.000	2.00	46.00	53.00
10.167	2.00	22.167	2.00	34.167	2.00	46.17	38.00
10.333	2.00	22.333	2.00	34.333	2.00	46.33	38.00
10.500	2.00	22.500	2.00	34.500	2.00	46.50	38.00
10.667	2.00	22.667	2.00	34.667	2.00	46.67	38.00
10.833	2.00	22.833	2.00	34.833	2.00	46.83	38.00
11.000	2.00	23.000	2.00	35.000	2.00	47.00	37.99
11.167	2.00	23.167	2.00	35.167	3.00	47.17	13.00
11.333	2.00	23.333	2.00	35.333	3.00	47.33	13.00
11.500	2.00	23.500	2.00	35.500	3.00	47.50	13.00
11.667	2.00	23.667	2.00	35.667	3.00	47.67	13.00

11.833	2.00	23.833	2.00	35.833	3.00	47.83	13.00
12.000	2.00	24.000	2.00	36.000	3.00	48.00	12.99

Unit Hyd Qpeak (cms)= 0.306

PEAK FLOW (cms)= 0.011 (i)
TIME TO PEAK (hrs)= 46.000
RUNOFF VOLUME (mm)= 45.180
TOTAL RAINFALL (mm)= 284.499
RUNOFF COEFFICIENT = 0.159

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

CALIB					
NASHYD (0102)	Area (ha)=	2.11	Curve Number (CN)=	84.0	
ID= 1 DT=10.0 min	Ia (mm)=	4.84	# of Linear Res.(N)=	3.00	
	U.H. Tp(hrs)=	0.14			

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	0.00	12.167	2.00	24.167	2.00	36.17	6.00
0.333	1.00	12.333	2.00	24.333	2.00	36.33	6.00
0.500	2.00	12.500	2.00	24.500	2.00	36.50	6.00
0.667	2.00	12.667	2.00	24.667	2.00	36.67	6.00
0.833	2.00	12.833	2.00	24.833	2.00	36.83	6.00
1.000	2.00	13.000	2.00	25.000	2.00	37.00	6.00
1.167	2.00	13.167	2.00	25.167	2.00	37.17	4.00
1.333	2.00	13.333	2.00	25.333	2.00	37.33	4.00
1.500	2.00	13.500	2.00	25.500	2.00	37.50	4.00
1.667	2.00	13.667	2.00	25.667	2.00	37.67	4.00
1.833	2.00	13.833	2.00	25.833	2.00	37.83	4.00
2.000	2.00	14.000	2.00	26.000	2.00	38.00	4.00
2.167	2.00	14.167	2.00	26.167	2.00	38.17	6.00
2.333	2.00	14.333	2.00	26.333	2.00	38.33	6.00
2.500	2.00	14.500	2.00	26.500	2.00	38.50	6.00
2.667	2.00	14.667	2.00	26.667	2.00	38.67	6.00
2.833	2.00	14.833	2.00	26.833	2.00	38.83	6.00
3.000	2.00	15.000	2.00	27.000	2.00	39.00	6.00
3.167	2.00	15.167	2.00	27.167	2.00	39.17	13.00
3.333	2.00	15.333	2.00	27.333	2.00	39.33	13.00
3.500	2.00	15.500	2.00	27.500	2.00	39.50	13.00
3.667	2.00	15.667	2.00	27.667	2.00	39.67	13.00
3.833	2.00	15.833	2.00	27.833	2.00	39.83	13.00
4.000	2.00	16.000	2.00	28.000	2.00	40.00	13.00

4.167	2.00	16.167	2.00	28.167	2.00	40.17	17.00
4.333	2.00	16.333	2.00	28.333	2.00	40.33	17.00
4.500	2.00	16.500	2.00	28.500	2.00	40.50	17.00
4.667	2.00	16.667	2.00	28.667	2.00	40.67	17.00
4.833	2.00	16.833	2.00	28.833	2.00	40.83	17.00
5.000	2.00	17.000	2.00	29.000	2.00	41.00	17.00
5.167	2.00	17.167	2.00	29.167	2.00	41.17	13.00
5.333	2.00	17.333	2.00	29.333	2.00	41.33	13.00
5.500	2.00	17.500	2.00	29.500	2.00	41.50	13.00
5.667	2.00	17.667	2.00	29.667	2.00	41.67	13.00
5.833	2.00	17.833	2.00	29.833	2.00	41.83	13.00
6.000	2.00	18.000	2.00	30.000	2.00	42.00	13.00
6.167	2.00	18.167	2.00	30.167	2.00	42.17	23.00
6.333	2.00	18.333	2.00	30.333	2.00	42.33	23.00
6.500	2.00	18.500	2.00	30.500	2.00	42.50	23.00
6.667	2.00	18.667	2.00	30.667	2.00	42.67	23.00
6.833	2.00	18.833	2.00	30.833	2.00	42.83	23.00
7.000	2.00	19.000	2.00	31.000	2.00	43.00	23.00
7.167	2.00	19.167	2.00	31.167	2.00	43.17	13.00
7.333	2.00	19.333	2.00	31.333	2.00	43.33	13.00
7.500	2.00	19.500	2.00	31.500	2.00	43.50	13.00
7.667	2.00	19.667	2.00	31.667	2.00	43.67	13.00
7.833	2.00	19.833	2.00	31.833	2.00	43.83	13.00
8.000	2.00	20.000	2.00	32.000	2.00	44.00	13.00
8.167	2.00	20.167	2.00	32.167	2.00	44.17	13.00
8.333	2.00	20.333	2.00	32.333	2.00	44.33	13.00
8.500	2.00	20.500	2.00	32.500	2.00	44.50	13.00
8.667	2.00	20.667	2.00	32.667	2.00	44.67	13.00
8.833	2.00	20.833	2.00	32.833	2.00	44.83	13.00
9.000	2.00	21.000	2.00	33.000	2.00	45.00	13.01
9.167	2.00	21.167	2.00	33.167	2.00	45.17	53.00
9.333	2.00	21.333	2.00	33.333	2.00	45.33	53.00
9.500	2.00	21.500	2.00	33.500	2.00	45.50	53.00
9.667	2.00	21.667	2.00	33.667	2.00	45.67	53.00
9.833	2.00	21.833	2.00	33.833	2.00	45.83	53.00
10.000	2.00	22.000	2.00	34.000	2.00	46.00	53.00
10.167	2.00	22.167	2.00	34.167	2.00	46.17	38.00
10.333	2.00	22.333	2.00	34.333	2.00	46.33	38.00
10.500	2.00	22.500	2.00	34.500	2.00	46.50	38.00
10.667	2.00	22.667	2.00	34.667	2.00	46.67	38.00
10.833	2.00	22.833	2.00	34.833	2.00	46.83	38.00
11.000	2.00	23.000	2.00	35.000	2.00	47.00	37.99
11.167	2.00	23.167	2.00	35.167	3.00	47.17	13.00
11.333	2.00	23.333	2.00	35.333	3.00	47.33	13.00
11.500	2.00	23.500	2.00	35.500	3.00	47.50	13.00
11.667	2.00	23.667	2.00	35.667	3.00	47.67	13.00
11.833	2.00	23.833	2.00	35.833	3.00	47.83	13.00
12.000	2.00	24.000	2.00	36.000	3.00	48.00	12.99

Unit Hyd Qpeak (cms)= 0.576

```
     PEAK FLOW       (cms)=   0.274 (i)
     TIME TO PEAK    (hrs)=  46.000
     RUNOFF VOLUME    (mm)= 217.436
     TOTAL RAINFALL   (mm)= 284.499
     RUNOFF COEFFICIENT   =   0.764

     (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 (  0001):    16.60   2.260    46.00   229.59
      + ID2= 2 (  0102):     2.11   0.274    46.00   217.44
        ================================================
        ID = 3 (  0002):    18.71   2.534    46.00   228.22

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| ADD HYD  (  0002)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0002):    18.71   2.534    46.00   228.22
      + ID2= 2 (  0106):     0.40   0.011    46.00    45.18
        ================================================
        ID = 1 (  0002):    19.11   2.545    46.00   224.39

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| CALIB            |
| NASHYD   (  0103)|   Area    (ha)=   0.30   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.05

         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    0.00 |12.167    2.00 |24.167    2.00 | 36.17    6.00
              0.333    1.00 |12.333    2.00 |24.333    2.00 | 36.33    6.00
              0.500    2.00 |12.500    2.00 |24.500    2.00 | 36.50    6.00
              0.667    2.00 |12.667    2.00 |24.667    2.00 | 36.67    6.00
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0.833	2.00	12.833	2.00	24.833	2.00	36.83	6.00
1.000	2.00	13.000	2.00	25.000	2.00	37.00	6.00
1.167	2.00	13.167	2.00	25.167	2.00	37.17	4.00
1.333	2.00	13.333	2.00	25.333	2.00	37.33	4.00
1.500	2.00	13.500	2.00	25.500	2.00	37.50	4.00
1.667	2.00	13.667	2.00	25.667	2.00	37.67	4.00
1.833	2.00	13.833	2.00	25.833	2.00	37.83	4.00
2.000	2.00	14.000	2.00	26.000	2.00	38.00	4.00
2.167	2.00	14.167	2.00	26.167	2.00	38.17	6.00
2.333	2.00	14.333	2.00	26.333	2.00	38.33	6.00
2.500	2.00	14.500	2.00	26.500	2.00	38.50	6.00
2.667	2.00	14.667	2.00	26.667	2.00	38.67	6.00
2.833	2.00	14.833	2.00	26.833	2.00	38.83	6.00
3.000	2.00	15.000	2.00	27.000	2.00	39.00	6.00
3.167	2.00	15.167	2.00	27.167	2.00	39.17	13.00
3.333	2.00	15.333	2.00	27.333	2.00	39.33	13.00
3.500	2.00	15.500	2.00	27.500	2.00	39.50	13.00
3.667	2.00	15.667	2.00	27.667	2.00	39.67	13.00
3.833	2.00	15.833	2.00	27.833	2.00	39.83	13.00
4.000	2.00	16.000	2.00	28.000	2.00	40.00	13.00
4.167	2.00	16.167	2.00	28.167	2.00	40.17	17.00
4.333	2.00	16.333	2.00	28.333	2.00	40.33	17.00
4.500	2.00	16.500	2.00	28.500	2.00	40.50	17.00
4.667	2.00	16.667	2.00	28.667	2.00	40.67	17.00
4.833	2.00	16.833	2.00	28.833	2.00	40.83	17.00
5.000	2.00	17.000	2.00	29.000	2.00	41.00	17.00
5.167	2.00	17.167	2.00	29.167	2.00	41.17	13.00
5.333	2.00	17.333	2.00	29.333	2.00	41.33	13.00
5.500	2.00	17.500	2.00	29.500	2.00	41.50	13.00
5.667	2.00	17.667	2.00	29.667	2.00	41.67	13.00
5.833	2.00	17.833	2.00	29.833	2.00	41.83	13.00
6.000	2.00	18.000	2.00	30.000	2.00	42.00	13.00
6.167	2.00	18.167	2.00	30.167	2.00	42.17	23.00
6.333	2.00	18.333	2.00	30.333	2.00	42.33	23.00
6.500	2.00	18.500	2.00	30.500	2.00	42.50	23.00
6.667	2.00	18.667	2.00	30.667	2.00	42.67	23.00
6.833	2.00	18.833	2.00	30.833	2.00	42.83	23.00
7.000	2.00	19.000	2.00	31.000	2.00	43.00	23.00
7.167	2.00	19.167	2.00	31.167	2.00	43.17	13.00
7.333	2.00	19.333	2.00	31.333	2.00	43.33	13.00
7.500	2.00	19.500	2.00	31.500	2.00	43.50	13.00
7.667	2.00	19.667	2.00	31.667	2.00	43.67	13.00
7.833	2.00	19.833	2.00	31.833	2.00	43.83	13.00
8.000	2.00	20.000	2.00	32.000	2.00	44.00	13.00
8.167	2.00	20.167	2.00	32.167	2.00	44.17	13.00
8.333	2.00	20.333	2.00	32.333	2.00	44.33	13.00
8.500	2.00	20.500	2.00	32.500	2.00	44.50	13.00
8.667	2.00	20.667	2.00	32.667	2.00	44.67	13.00
8.833	2.00	20.833	2.00	32.833	2.00	44.83	13.00
9.000	2.00	21.000	2.00	33.000	2.00	45.00	13.01

9.167	2.00	21.167	2.00	33.167	2.00	45.17	53.00
9.333	2.00	21.333	2.00	33.333	2.00	45.33	53.00
9.500	2.00	21.500	2.00	33.500	2.00	45.50	53.00
9.667	2.00	21.667	2.00	33.667	2.00	45.67	53.00
9.833	2.00	21.833	2.00	33.833	2.00	45.83	53.00
10.000	2.00	22.000	2.00	34.000	2.00	46.00	53.00
10.167	2.00	22.167	2.00	34.167	2.00	46.17	38.00
10.333	2.00	22.333	2.00	34.333	2.00	46.33	38.00
10.500	2.00	22.500	2.00	34.500	2.00	46.50	38.00
10.667	2.00	22.667	2.00	34.667	2.00	46.67	38.00
10.833	2.00	22.833	2.00	34.833	2.00	46.83	38.00
11.000	2.00	23.000	2.00	35.000	2.00	47.00	37.99
11.167	2.00	23.167	2.00	35.167	3.00	47.17	13.00
11.333	2.00	23.333	2.00	35.333	3.00	47.33	13.00
11.500	2.00	23.500	2.00	35.500	3.00	47.50	13.00
11.667	2.00	23.667	2.00	35.667	3.00	47.67	13.00
11.833	2.00	23.833	2.00	35.833	3.00	47.83	13.00
12.000	2.00	24.000	2.00	36.000	3.00	48.00	12.99

Unit Hyd Qpeak (cms)= 0.229

PEAK FLOW (cms)= 0.008 (i)
TIME TO PEAK (hrs)= 46.000
RUNOFF VOLUME (mm)= 45.180
TOTAL RAINFALL (mm)= 284.499
RUNOFF COEFFICIENT = 0.159

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

CALIB NASHYD (0104) ID= 1 DT=10.0 min	Area (ha)= 0.55	Curve Number (CN)= 84.0
	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.08	

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	0.00	12.167	2.00	24.167	2.00	36.17	6.00
0.333	1.00	12.333	2.00	24.333	2.00	36.33	6.00
0.500	2.00	12.500	2.00	24.500	2.00	36.50	6.00
0.667	2.00	12.667	2.00	24.667	2.00	36.67	6.00
0.833	2.00	12.833	2.00	24.833	2.00	36.83	6.00
1.000	2.00	13.000	2.00	25.000	2.00	37.00	6.00
1.167	2.00	13.167	2.00	25.167	2.00	37.17	4.00
1.333	2.00	13.333	2.00	25.333	2.00	37.33	4.00

1.500	2.00	13.500	2.00	25.500	2.00	37.50	4.00
1.667	2.00	13.667	2.00	25.667	2.00	37.67	4.00
1.833	2.00	13.833	2.00	25.833	2.00	37.83	4.00
2.000	2.00	14.000	2.00	26.000	2.00	38.00	4.00
2.167	2.00	14.167	2.00	26.167	2.00	38.17	6.00
2.333	2.00	14.333	2.00	26.333	2.00	38.33	6.00
2.500	2.00	14.500	2.00	26.500	2.00	38.50	6.00
2.667	2.00	14.667	2.00	26.667	2.00	38.67	6.00
2.833	2.00	14.833	2.00	26.833	2.00	38.83	6.00
3.000	2.00	15.000	2.00	27.000	2.00	39.00	6.00
3.167	2.00	15.167	2.00	27.167	2.00	39.17	13.00
3.333	2.00	15.333	2.00	27.333	2.00	39.33	13.00
3.500	2.00	15.500	2.00	27.500	2.00	39.50	13.00
3.667	2.00	15.667	2.00	27.667	2.00	39.67	13.00
3.833	2.00	15.833	2.00	27.833	2.00	39.83	13.00
4.000	2.00	16.000	2.00	28.000	2.00	40.00	13.00
4.167	2.00	16.167	2.00	28.167	2.00	40.17	17.00
4.333	2.00	16.333	2.00	28.333	2.00	40.33	17.00
4.500	2.00	16.500	2.00	28.500	2.00	40.50	17.00
4.667	2.00	16.667	2.00	28.667	2.00	40.67	17.00
4.833	2.00	16.833	2.00	28.833	2.00	40.83	17.00
5.000	2.00	17.000	2.00	29.000	2.00	41.00	17.00
5.167	2.00	17.167	2.00	29.167	2.00	41.17	13.00
5.333	2.00	17.333	2.00	29.333	2.00	41.33	13.00
5.500	2.00	17.500	2.00	29.500	2.00	41.50	13.00
5.667	2.00	17.667	2.00	29.667	2.00	41.67	13.00
5.833	2.00	17.833	2.00	29.833	2.00	41.83	13.00
6.000	2.00	18.000	2.00	30.000	2.00	42.00	13.00
6.167	2.00	18.167	2.00	30.167	2.00	42.17	23.00
6.333	2.00	18.333	2.00	30.333	2.00	42.33	23.00
6.500	2.00	18.500	2.00	30.500	2.00	42.50	23.00
6.667	2.00	18.667	2.00	30.667	2.00	42.67	23.00
6.833	2.00	18.833	2.00	30.833	2.00	42.83	23.00
7.000	2.00	19.000	2.00	31.000	2.00	43.00	23.00
7.167	2.00	19.167	2.00	31.167	2.00	43.17	13.00
7.333	2.00	19.333	2.00	31.333	2.00	43.33	13.00
7.500	2.00	19.500	2.00	31.500	2.00	43.50	13.00
7.667	2.00	19.667	2.00	31.667	2.00	43.67	13.00
7.833	2.00	19.833	2.00	31.833	2.00	43.83	13.00
8.000	2.00	20.000	2.00	32.000	2.00	44.00	13.00
8.167	2.00	20.167	2.00	32.167	2.00	44.17	13.00
8.333	2.00	20.333	2.00	32.333	2.00	44.33	13.00
8.500	2.00	20.500	2.00	32.500	2.00	44.50	13.00
8.667	2.00	20.667	2.00	32.667	2.00	44.67	13.00
8.833	2.00	20.833	2.00	32.833	2.00	44.83	13.00
9.000	2.00	21.000	2.00	33.000	2.00	45.00	13.01
9.167	2.00	21.167	2.00	33.167	2.00	45.17	53.00
9.333	2.00	21.333	2.00	33.333	2.00	45.33	53.00
9.500	2.00	21.500	2.00	33.500	2.00	45.50	53.00
9.667	2.00	21.667	2.00	33.667	2.00	45.67	53.00

9.833	2.00	21.833	2.00	33.833	2.00	45.83	53.00
10.000	2.00	22.000	2.00	34.000	2.00	46.00	53.00
10.167	2.00	22.167	2.00	34.167	2.00	46.17	38.00
10.333	2.00	22.333	2.00	34.333	2.00	46.33	38.00
10.500	2.00	22.500	2.00	34.500	2.00	46.50	38.00
10.667	2.00	22.667	2.00	34.667	2.00	46.67	38.00
10.833	2.00	22.833	2.00	34.833	2.00	46.83	38.00
11.000	2.00	23.000	2.00	35.000	2.00	47.00	37.99
11.167	2.00	23.167	2.00	35.167	3.00	47.17	13.00
11.333	2.00	23.333	2.00	35.333	3.00	47.33	13.00
11.500	2.00	23.500	2.00	35.500	3.00	47.50	13.00
11.667	2.00	23.667	2.00	35.667	3.00	47.67	13.00
11.833	2.00	23.833	2.00	35.833	3.00	47.83	13.00
12.000	2.00	24.000	2.00	36.000	3.00	48.00	12.99

Unit Hyd Qpeak (cms)= 0.263

PEAK FLOW (cms)= 0.047 (i)
TIME TO PEAK (hrs)= 46.000
RUNOFF VOLUME (mm)= 142.281
TOTAL RAINFALL (mm)= 284.499
RUNOFF COEFFICIENT = 0.500

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

ADD HYD (0003)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0103):	0.30	0.008	46.00	45.18
+ ID2= 2 (0104):	0.55	0.047	46.00	142.28
ID = 3 (0003):	0.85	0.055	46.00	108.01

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

FINISH

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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2017)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


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

  Output  filename:
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e4df-aa96-4efa-b02c-ab7bb5d5e790\scen
  Summary filename:
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e4df-aa96-4efa-b02c-ab7bb5d5e790\scen


DATE: 04/04/2025                          TIME: 09:37:10

USER:



COMMENTS: _____________________________________________________________


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  ********************************************
  ** SIMULATION : 1                          **
  ********************************************

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| CHICAGO STORM    |    IDF curve parameters: A= 507.000
| Ptotal= 24.74 mm |                          B=   5.000
--------------------                          C=   0.801
```

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

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.48

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	1.39	1.00	2.80	2.00	15.35	3.00	2.21
0.17	1.51	1.17	3.45	2.17	7.28	3.17	1.96
0.33	1.65	1.33	4.56	2.33	4.86	3.33	1.77
0.50	1.83	1.50	6.86	2.50	3.69	3.50	1.61
0.67	2.07	1.67	14.88	2.67	3.00	3.67	1.48
0.83	2.37	1.83	57.94	2.83	2.54	3.83	1.38

CALIB NASHYD (0205) ID= 1 DT=10.0 min	Area (ha)= 0.29	Curve Number (CN)= 84.0
	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.03	

Unit Hyd Qpeak (cms)= 0.369

PEAK FLOW (cms)= 0.000 (i)
TIME TO PEAK (hrs)= 2.000
RUNOFF VOLUME (mm)= 0.049
TOTAL RAINFALL (mm)= 24.737
RUNOFF COEFFICIENT = 0.002

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

Junction Command(0006)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2(0205)	0.29	0.00	2.00	0.05
OUTFLOW: ID= 2(0006)	0.29	0.00	2.00	0.05

CALIB NASHYD (0200) ID= 1 DT=10.0 min	Area (ha)= 10.78	Curve Number (CN)= 85.0
	Ia (mm)= 4.48	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.24	

```
     Unit Hyd Qpeak  (cms)=   1.716

     PEAK FLOW       (cms)=   0.220 (i)
     TIME TO PEAK    (hrs)=   2.167
     RUNOFF VOLUME    (mm)=   6.221
     TOTAL RAINFALL   (mm)=  24.737
     RUNOFF COEFFICIENT   =   0.251

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

------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0206)|   Area    (ha)=   1.61   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.06

     Unit Hyd Qpeak  (cms)=   1.025

     PEAK FLOW       (cms)=   0.020 (i)
     TIME TO PEAK    (hrs)=   2.000
     RUNOFF VOLUME    (mm)=   1.952
     TOTAL RAINFALL   (mm)=  24.737
     RUNOFF COEFFICIENT   =   0.079

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

------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0203)|   Area    (ha)=   0.49
|ID= 1 DT=10.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  35.00
--------------------

                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.37         0.12
     Dep. Storage     (mm)=       2.00         1.50
     Average Slope     (%)=       0.50         0.50
     Length            (m)=      20.00        20.00
     Mannings n           =      0.015        0.250

     Max.Eff.Inten.(mm/hr)=      57.94        71.95
               over (min)        10.00        10.00
     Storage Coeff.  (min)=       1.62 (ii)    9.67 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.11
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.03         0.02          0.044 (iii)
     TIME TO PEAK    (hrs)=       2.00         2.00           2.00
     RUNOFF VOLUME    (mm)=      22.74        10.94          15.06
```

```
     TOTAL RAINFALL   (mm)=      24.74        24.74          24.74
     RUNOFF COEFFICIENT   =       0.92         0.44           0.61

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0203):     0.49   0.044     2.00    15.06
      + ID2= 2 (  0206):     1.61   0.020     2.00     1.95
        ================================================
        ID = 3 (  0002):     2.10   0.065     2.00     5.01

     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 (  0002):     2.10   0.065     2.00     5.01
      + ID2= 2 (  0200):    10.78   0.220     2.17     6.22
        ================================================
        ID = 3 (  0003):    12.88   0.248     2.17     6.02

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTEPIPE(  0064)|     PIPE Number     =   1.00
| IN= 2---> OUT= 1 |     Diameter    (mm)=1050.00
| DT=  5.0 min     |     Length       (m)=  17.90
--------------------     Slope      (m/m)=  0.005
                         Manning n       =  0.013

     <----------------- TRAVEL TIME TABLE -------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
        (m)      (cu.m.)      (cms)        (m/s)        min
       0.06     .313E+00       0.0          0.59         0.50
       0.11     .870E+00       0.0          0.92         0.32
       0.17     .157E+01       0.1          1.19         0.25
       0.22     .237E+01       0.2          1.41         0.21
```

0.28	.326E+01	0.3	1.61	0.19
0.33	.420E+01	0.4	1.78	0.17
0.39	.518E+01	0.6	1.93	0.15
0.44	.620E+01	0.7	2.06	0.14
0.50	.723E+01	0.9	2.18	0.14
0.55	.827E+01	1.1	2.28	0.13
0.61	.930E+01	1.2	2.36	0.13
0.66	.103E+02	1.4	2.43	0.12
0.72	.113E+02	1.6	2.49	0.12
0.77	.122E+02	1.7	2.52	0.12
0.83	.131E+02	1.9	2.54	0.12
0.88	.139E+02	2.0	2.54	0.12
0.94	.146E+02	2.1	2.51	0.12
0.99	.152E+02	2.1	2.45	0.12
1.05	.155E+02	1.9	2.23	0.13

	<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (0003)	12.88	0.25	2.17	6.02	0.25	1.52
OUTFLOW: ID= 1 (0064)	12.88	0.25	2.17	6.02	0.25	1.53

CALIB	
STANDHYD (0208)	Area (ha)= 0.37
ID= 1 DT=10.0 min	Total Imp(%)= 40.00 Dir. Conn.(%)= 10.00

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.15	0.22	
Dep. Storage	(mm)=	2.00	1.50	
Average Slope	(%)=	1.00	1.00	
Length	(m)=	40.00	30.00	
Mannings n	=	0.015	0.250	
Max.Eff.Inten.(mm/hr)	=	57.94	19.10	
over (min)		10.00	20.00	
Storage Coeff. (min)	=	2.00 (ii)	16.17 (ii)	
Unit Hyd. Tpeak (min)	=	10.00	20.00	
Unit Hyd. peak (cms)	=	0.17	0.06	
			TOTALS	
PEAK FLOW	(cms)=	0.01	0.01	0.010 (iii)
TIME TO PEAK	(hrs)=	2.00	2.17	2.00
RUNOFF VOLUME	(mm)=	22.74	7.58	9.06
TOTAL RAINFALL	(mm)=	24.74	24.74	24.74
RUNOFF COEFFICIENT	=	0.92	0.31	0.37

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%

YOU SHOULD CONSIDER SPLITTING THE AREA.

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 77.0 Ia = Dep. 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 (0004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0208):		0.37	0.010	2.00	9.06
+ ID2= 2 (0064):		12.88	0.251	2.17	6.02
ID = 3 (0004):		13.25	0.261	2.17	6.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ROUTEPIPE(0066)			
IN= 2---> OUT= 1	Diameter	(mm)=	1050.00
DT= 5.0 min	Length	(m)=	21.80
	Slope	(m/m)=	0.005
	Manning n	=	0.013

<---------- TRAVEL TIME TABLE ---------->

DEPTH (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME min
0.06	.381E+00	0.0	0.59	0.61
0.11	.106E+01	0.0	0.92	0.39
0.17	.191E+01	0.1	1.19	0.31
0.22	.289E+01	0.2	1.41	0.26
0.28	.397E+01	0.3	1.61	0.23
0.33	.511E+01	0.4	1.78	0.20
0.39	.631E+01	0.6	1.93	0.19
0.44	.755E+01	0.7	2.06	0.18
0.50	.881E+01	0.9	2.18	0.17
0.55	.101E+02	1.1	2.28	0.16
0.61	.113E+02	1.2	2.36	0.15
0.66	.126E+02	1.4	2.43	0.15
0.72	.138E+02	1.6	2.49	0.15
0.77	.149E+02	1.7	2.52	0.14
0.83	.160E+02	1.9	2.54	0.14
0.88	.170E+02	2.0	2.54	0.14
0.94	.178E+02	2.1	2.51	0.14
0.99	.185E+02	2.1	2.45	0.15
1.05	.189E+02	1.9	2.23	0.16

```
                                    <---- hydrograph ---->   <-pipe / channel->
                                AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                                (ha)    (cms)   (hrs)   (mm)      (m)      (m/s)
   INFLOW : ID= 2 (  0004)   13.25     0.26    2.17   6.11      0.26      1.55
   OUTFLOW: ID= 1 (  0066)   13.25     0.26    2.17   6.11      0.26      1.54



--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0201)|   Area    (ha)=   1.90   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.10

     Unit Hyd Qpeak  (cms)=   0.726

     PEAK FLOW       (cms)=   0.048 (i)
     TIME TO PEAK    (hrs)=   2.000
     RUNOFF VOLUME    (mm)=   4.424
     TOTAL RAINFALL   (mm)=  24.737
     RUNOFF COEFFICIENT   =   0.179

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

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--------------------
| CALIB            |
| NASHYD   (  0207)|   Area    (ha)=   0.40   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.14

     Unit Hyd Qpeak  (cms)=   0.109

     PEAK FLOW       (cms)=   0.010 (i)
     TIME TO PEAK    (hrs)=   2.000
     RUNOFF VOLUME    (mm)=   5.287
     TOTAL RAINFALL   (mm)=  24.737
     RUNOFF COEFFICIENT   =   0.214

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

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0204)|   Area    (ha)=   0.68
|ID= 1 DT=10.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  35.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.51         0.17
```

```
     Dep. Storage     (mm)=       2.00         1.50
     Average Slope     (%)=       0.50         0.50
     Length            (m)=      20.00        20.00
     Mannings n           =      0.015        0.250

     Max.Eff.Inten.(mm/hr)=      57.94        71.95
               over (min)        10.00        10.00
     Storage Coeff.  (min)=       1.62 (ii)    9.67 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.11
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.04         0.02          0.062 (iii)
     TIME TO PEAK    (hrs)=       2.00         2.00           2.00
     RUNOFF VOLUME    (mm)=      22.74        10.94          15.06
     TOTAL RAINFALL   (mm)=      24.74        24.74          24.74
     RUNOFF COEFFICIENT   =       0.92         0.44           0.61

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.68   0.062     2.00    15.06
      + ID2= 2 (  0207):     0.40   0.010     2.00     5.29
        ================================================
        ID = 3 (  0001):     1.08   0.071     2.00    11.44

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0202)|   Area    (ha)=   3.44
|ID= 1 DT=10.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  35.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       2.58         0.86
     Dep. Storage     (mm)=       2.00         1.50
     Average Slope     (%)=       1.00         1.00
     Length            (m)=      40.00        30.00
     Mannings n           =      0.015        0.250
```

```
     Max.Eff.Inten.(mm/hr)=      57.94        71.95
               over (min)       10.00        20.00
     Storage Coeff.  (min)=       2.00 (ii)   10.34 (ii)
     Unit Hyd. Tpeak (min)=      10.00        20.00
     Unit Hyd. peak  (cms)=       0.17         0.08
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.19         0.10          0.248 (iii)
     TIME TO PEAK    (hrs)=       2.00         2.17           2.00
     RUNOFF VOLUME    (mm)=      22.74        10.94          15.07
     TOTAL RAINFALL   (mm)=      24.74        24.74          24.74
     RUNOFF COEFFICIENT   =       0.92         0.44           0.61

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.08   0.071     2.00    11.44
      + ID2= 2 (  0201):     1.90   0.048     2.00     4.42
        ================================================
        ID = 3 (  0005):     2.98   0.119     2.00     6.97

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

--------------------
| ADD HYD  (  0005)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0005):     2.98   0.119     2.00     6.97
      + ID2= 2 (  0202):     3.44   0.248     2.00    15.07
        ================================================
        ID = 1 (  0005):     6.42   0.367     2.00    11.31

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

--------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
```

```
        ID1= 1 (  0005):     6.42   0.367     2.00    11.31
      + ID2= 2 (  0066):    13.25   0.260     2.17     6.11
        ================================================
        ID = 3 (  0005):    19.67   0.613     2.00     7.80

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0007)|     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   |    0.0714      0.2390
                          0.0039      0.0080   |    0.3650      0.2830
                          0.0250      0.0360   |    1.0693      0.3300
                          0.0320      0.0670   |    2.2806      0.3790
                          0.0332      0.1000   |    4.0807      0.4300
                          0.0388      0.1360   |    6.5420      0.4840
                          0.0437      0.1760   |    9.7294      0.5410
                          0.0480      0.2170   |   12.4249      0.5820

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)     19.670      0.613      2.00       7.80
   OUTFLOW: ID= 1 (  0007)     19.670      0.037      4.08       7.78

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  6.03
                  TIME SHIFT OF PEAK FLOW         (min)=125.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.1242

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

```
================================================================================
========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2017)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


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

  Output  filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\2600
602c-333c-4afc-8b9d-e7de960d4cb5\scen
  Summary filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\2600
602c-333c-4afc-8b9d-e7de960d4cb5\scen


DATE: 04/04/2025                          TIME: 09:37:10

USER:



COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------
------------------------
  ********************************************
  ** SIMULATION : 2                          **
  ********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 646.000
| Ptotal= 32.72 mm |                          B=   6.000
--------------------                          C=   0.781
```

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.48

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	2.85	0.83	6.94	1.67	10.93	2.50	3.42
0.17	3.21	1.00	10.33	1.83	7.39	2.67	3.05
0.33	3.67	1.17	21.61	2.00	5.65	2.83	2.75
0.50	4.32	1.33	74.10	2.17	4.61		
0.67	5.30	1.50	22.27	2.33	3.92		

CALIB NASHYD (0205)	Area (ha)= 0.29	Curve Number (CN)= 84.0
ID= 1 DT=10.0 min	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.03	

Unit Hyd Qpeak (cms)= 0.369

PEAK FLOW (cms)= 0.000 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 0.105
TOTAL RAINFALL (mm)= 32.723
RUNOFF COEFFICIENT = 0.003

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

Junction Command(0006)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2(0205)	0.29	0.00	1.50	0.10
OUTFLOW: ID= 2(0006)	0.29	0.00	1.50	0.10

CALIB NASHYD (0200)	Area (ha)= 10.78	Curve Number (CN)= 85.0
ID= 1 DT=10.0 min	Ia (mm)= 4.48	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.24	

```
     Unit Hyd Qpeak  (cms)=   1.716

     PEAK FLOW       (cms)=   0.395 (i)
     TIME TO PEAK    (hrs)=   1.667
     RUNOFF VOLUME    (mm)=  10.771
     TOTAL RAINFALL   (mm)=  32.723
     RUNOFF COEFFICIENT   =   0.329

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

-------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0206)|   Area    (ha)=   1.61   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.06

     Unit Hyd Qpeak  (cms)=   1.025

     PEAK FLOW       (cms)=   0.036 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   3.431
     TOTAL RAINFALL   (mm)=  32.723
     RUNOFF COEFFICIENT   =   0.105

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

-------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0203)|   Area    (ha)=   0.49
|ID= 1 DT=10.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  35.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.37         0.12
     Dep. Storage     (mm)=       2.00         1.50
     Average Slope     (%)=       0.50         0.50
     Length            (m)=      20.00        20.00
     Mannings n           =      0.015        0.250

     Max.Eff.Inten.(mm/hr)=      74.10       108.14
               over (min)        10.00        10.00
     Storage Coeff.  (min)=       1.47 (ii)    8.31 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.12
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.04         0.03          0.063 (iii)
     TIME TO PEAK    (hrs)=       1.50         1.50           1.50
     RUNOFF VOLUME    (mm)=      30.72        16.85          21.70
     TOTAL RAINFALL   (mm)=      32.72        32.72          32.72
```

```
     RUNOFF COEFFICIENT   =       0.94         0.51          0.66

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0203):     0.49   0.063     1.50    21.70
      + ID2= 2 (  0206):     1.61   0.036     1.50     3.43
        ================================================
        ID = 3 (  0002):     2.10   0.099     1.50     7.69

     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 (  0002):     2.10   0.099     1.50     7.69
      + ID2= 2 (  0200):    10.78   0.395     1.67    10.77
        ================================================
        ID = 3 (  0003):    12.88   0.440     1.67    10.27

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTEPIPE(  0064)|     PIPE Number     =   1.00
| IN= 2---> OUT= 1 |     Diameter    (mm)=1050.00
| DT=  5.0 min     |     Length       (m)=  17.90
--------------------     Slope      (m/m)=  0.005
                         Manning n       =  0.013

     <----------------- TRAVEL TIME TABLE ---------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
        (m)      (cu.m.)      (cms)        (m/s)        min
       0.06     .313E+00       0.0          0.59         0.50
       0.11     .870E+00       0.0          0.92         0.32
       0.17     .157E+01       0.1          1.19         0.25
       0.22     .237E+01       0.2          1.41         0.21
       0.28     .326E+01       0.3          1.61         0.19
```

0.33	.420E+01	0.4	1.78	0.17
0.39	.518E+01	0.6	1.93	0.15
0.44	.620E+01	0.7	2.06	0.14
0.50	.723E+01	0.9	2.18	0.14
0.55	.827E+01	1.1	2.28	0.13
0.61	.930E+01	1.2	2.36	0.13
0.66	.103E+02	1.4	2.43	0.12
0.72	.113E+02	1.6	2.49	0.12
0.77	.122E+02	1.7	2.52	0.12
0.83	.131E+02	1.9	2.54	0.12
0.88	.139E+02	2.0	2.54	0.12
0.94	.146E+02	2.1	2.51	0.12
0.99	.152E+02	2.1	2.45	0.12
1.05	.155E+02	1.9	2.23	0.13

	<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (0003)	12.88	0.44	1.67	10.27	0.34	1.80
OUTFLOW: ID= 1 (0064)	12.88	0.44	1.67	10.27	0.34	1.81

CALIB STANDHYD (0208) ID= 1 DT=10.0 min	Area (ha)= 0.37 Total Imp(%)= 40.00 Dir. Conn.(%)= 10.00

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.15	0.22	
Dep. Storage	(mm)=	2.00	1.50	
Average Slope	(%)=	1.00	1.00	
Length	(m)=	40.00	30.00	
Mannings n	=	0.015	0.250	
Max.Eff.Inten.(mm/hr)	=	74.10	30.89	
over (min)		10.00	20.00	
Storage Coeff. (min)	=	1.81 (ii)	13.51 (ii)	
Unit Hyd. Tpeak (min)	=	10.00	20.00	
Unit Hyd. peak (cms)	=	0.17	0.07	
				TOTALS
PEAK FLOW	(cms)=	0.01	0.01	0.017 (iii)
TIME TO PEAK	(hrs)=	1.50	1.67	1.67
RUNOFF VOLUME	(mm)=	30.72	12.23	14.05
TOTAL RAINFALL	(mm)=	32.72	32.72	32.72
RUNOFF COEFFICIENT	=	0.94	0.37	0.43

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

```
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0208):     0.37   0.017     1.67    14.05
      + ID2= 2 (  0064):    12.88   0.443     1.67    10.27
        ================================================
        ID = 3 (  0004):    13.25   0.460     1.67    10.37

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTEPIPE(  0066)|     PIPE Number     =   1.00
| IN= 2---> OUT= 1 |     Diameter    (mm)=1050.00
| DT=  5.0 min     |     Length       (m)=  21.80
--------------------     Slope      (m/m)=  0.005
                         Manning n       =  0.013

     <----------------- TRAVEL TIME TABLE ---------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
        (m)      (cu.m.)      (cms)        (m/s)        min
       0.06     .381E+00       0.0          0.59         0.61
       0.11     .106E+01       0.0          0.92         0.39
       0.17     .191E+01       0.1          1.19         0.31
       0.22     .289E+01       0.2          1.41         0.26
       0.28     .397E+01       0.3          1.61         0.23
       0.33     .511E+01       0.4          1.78         0.20
       0.39     .631E+01       0.6          1.93         0.19
       0.44     .755E+01       0.7          2.06         0.18
       0.50     .881E+01       0.9          2.18         0.17
       0.55     .101E+02       1.1          2.28         0.16
       0.61     .113E+02       1.2          2.36         0.15
       0.66     .126E+02       1.4          2.43         0.15
       0.72     .138E+02       1.6          2.49         0.15
       0.77     .149E+02       1.7          2.52         0.14
       0.83     .160E+02       1.9          2.54         0.14
       0.88     .170E+02       2.0          2.54         0.14
       0.94     .178E+02       2.1          2.51         0.14
       0.99     .185E+02       2.1          2.45         0.15
       1.05     .189E+02       1.9          2.23         0.16
                                    <---- hydrograph ---->   <-pipe / channel->
```

```
                              AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                              (ha)    (cms)   (hrs)   (mm)      (m)      (m/s)
   INFLOW : ID= 2 (  0004)   13.25     0.46    1.67  10.37      0.35      1.82
   OUTFLOW: ID= 1 (  0066)   13.25     0.46    1.67  10.37      0.35      1.82



--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0201)|   Area    (ha)=   1.90   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.10

     Unit Hyd Qpeak  (cms)=   0.726

     PEAK FLOW       (cms)=   0.086 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   7.778
     TOTAL RAINFALL   (mm)=  32.723
     RUNOFF COEFFICIENT   =   0.238

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

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0207)|   Area    (ha)=   0.40   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.14

     Unit Hyd Qpeak  (cms)=   0.109

     PEAK FLOW       (cms)=   0.018 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   9.297
     TOTAL RAINFALL   (mm)=  32.723
     RUNOFF COEFFICIENT   =   0.284

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

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0204)|   Area    (ha)=   0.68
|ID= 1 DT=10.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  35.00
--------------------

                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.51         0.17
     Dep. Storage     (mm)=       2.00         1.50
```

```
     Average Slope     (%)=       0.50         0.50
     Length            (m)=      20.00        20.00
     Mannings n           =      0.015        0.250

     Max.Eff.Inten.(mm/hr)=      74.10       108.14
               over (min)        10.00        10.00
     Storage Coeff.  (min)=       1.47 (ii)    8.31 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.12
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.05         0.04          0.087 (iii)
     TIME TO PEAK    (hrs)=       1.50         1.50           1.50
     RUNOFF VOLUME    (mm)=      30.72        16.85          21.70
     TOTAL RAINFALL   (mm)=      32.72        32.72          32.72
     RUNOFF COEFFICIENT   =       0.94         0.51           0.66

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.68   0.087     1.50    21.70
      + ID2= 2 (  0207):     0.40   0.018     1.50     9.30
        ================================================
        ID = 3 (  0001):     1.08   0.105     1.50    17.10

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0202)|   Area    (ha)=   3.44
|ID= 1 DT=10.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  35.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       2.58         0.86
     Dep. Storage     (mm)=       2.00         1.50
     Average Slope     (%)=       1.00         1.00
     Length            (m)=      40.00        30.00
     Mannings n           =      0.015        0.250

     Max.Eff.Inten.(mm/hr)=      74.10       108.14
```

```
                over (min)       10.00        10.00
     Storage Coeff.  (min)=       1.81 (ii)    8.90 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.11
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.25         0.19         0.433 (iii)
     TIME TO PEAK    (hrs)=       1.50         1.50          1.50
     RUNOFF VOLUME    (mm)=      30.72        16.85         21.70
     TOTAL RAINFALL   (mm)=      32.72        32.72         32.72
     RUNOFF COEFFICIENT   =       0.94         0.51          0.66

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.08   0.105     1.50    17.10
      + ID2= 2 (  0201):     1.90   0.086     1.50     7.78
        ================================================
        ID = 3 (  0005):     2.98   0.191     1.50    11.16

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

--------------------
| ADD HYD  (  0005)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0005):     2.98   0.191     1.50    11.16
      + ID2= 2 (  0202):     3.44   0.433     1.50    21.70
        ================================================
        ID = 1 (  0005):     6.42   0.624     1.50    16.81

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

--------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0005):     6.42   0.624     1.50    16.81
```

```
      + ID2= 2 (  0066):    13.25   0.459     1.67    10.37
        ================================================
        ID = 3 (  0005):    19.67   1.043     1.50    12.47

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0007)|     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   |    0.0714      0.2390
                          0.0039      0.0080   |    0.3650      0.2830
                          0.0250      0.0360   |    1.0693      0.3300
                          0.0320      0.0670   |    2.2806      0.3790
                          0.0332      0.1000   |    4.0807      0.4300
                          0.0388      0.1360   |    6.5420      0.4840
                          0.0437      0.1760   |    9.7294      0.5410
                          0.0480      0.2170   |   12.4249      0.5820

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)     19.670      1.043      1.50      12.47
   OUTFLOW: ID= 1 (  0007)     19.670      0.048      3.17      12.45

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  4.57
                  TIME SHIFT OF PEAK FLOW         (min)=100.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.2144

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

```
================================================================================
========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2017)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


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

  Output  filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\3b56
d6f5-76b1-43d8-a603-4a5d66084559\scen
  Summary filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\3b56
d6f5-76b1-43d8-a603-4a5d66084559\scen


DATE: 04/04/2025                          TIME: 09:37:10

USER:



COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------
------------------------
  ********************************************
  ** SIMULATION : 3                          **
  ********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1049.500
| Ptotal= 46.98 mm |                          B=   8.000
--------------------                          C=   0.803
```

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.48

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	3.90	0.83	10.08	1.67	16.31	2.50	4.73
0.17	4.41	1.00	15.37	1.83	10.77	2.67	4.18
0.33	5.10	1.17	32.79	2.00	8.09	2.83	3.75
0.50	6.07	1.33	103.04	2.17	6.51		
0.67	7.55	1.50	33.80	2.33	5.47		

CALIB NASHYD (0205)	Area (ha)= 0.29	Curve Number (CN)= 84.0
ID= 1 DT=10.0 min	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.03	

Unit Hyd Qpeak (cms)= 0.369

PEAK FLOW (cms)= 0.000 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 0.201
TOTAL RAINFALL (mm)= 46.983
RUNOFF COEFFICIENT = 0.004

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

Junction Command(0006)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2(0205)	0.29	0.00	1.50	0.20
OUTFLOW: ID= 2(0006)	0.29	0.00	1.50	0.20

CALIB NASHYD (0200)	Area (ha)= 10.78	Curve Number (CN)= 85.0
ID= 1 DT=10.0 min	Ia (mm)= 4.48	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.24	

```
     Unit Hyd Qpeak  (cms)=   1.716

     PEAK FLOW       (cms)=   0.767 (i)
     TIME TO PEAK    (hrs)=   1.667
     RUNOFF VOLUME    (mm)=  20.411
     TOTAL RAINFALL   (mm)=  46.983
     RUNOFF COEFFICIENT   =   0.434

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

-------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0206)|   Area    (ha)=   1.61   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.06

     Unit Hyd Qpeak  (cms)=   1.025

     PEAK FLOW       (cms)=   0.070 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=   6.604
     TOTAL RAINFALL   (mm)=  46.983
     RUNOFF COEFFICIENT   =   0.141

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

-------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0203)|   Area    (ha)=   0.49
|ID= 1 DT=10.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  35.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.37         0.12
     Dep. Storage     (mm)=       2.00         1.50
     Average Slope     (%)=       0.50         0.50
     Length            (m)=      20.00        20.00
     Mannings n             =     0.015        0.250

     Max.Eff.Inten.(mm/hr)=     103.04       179.08
               over (min)       10.00        10.00
     Storage Coeff.  (min)=       1.29 (ii)    6.88 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.13
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.05         0.05          0.098 (iii)
     TIME TO PEAK    (hrs)=       1.50         1.50           1.50
     RUNOFF VOLUME    (mm)=      44.98        28.49          34.26
     TOTAL RAINFALL   (mm)=      46.98        46.98          46.98
```

```
     RUNOFF COEFFICIENT   =       0.96         0.61           0.73

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0002)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0203):     0.49   0.098     1.50    34.26
      + ID2= 2 (  0206):     1.61   0.070     1.50     6.60
        ================================================
        ID = 3 (  0002):     2.10   0.169     1.50    13.06

     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 (  0002):     2.10   0.169     1.50    13.06
      + ID2= 2 (  0200):    10.78   0.767     1.67    20.41
        ================================================
        ID = 3 (  0003):    12.88   0.844     1.67    19.21

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTEPIPE(  0064)|     PIPE Number     =   1.00
| IN= 2---> OUT= 1 |     Diameter    (mm)=1050.00
| DT=  5.0 min     |     Length       (m)=  17.90
--------------------     Slope      (m/m)=  0.005
                         Manning n       =  0.013

     <----------------- TRAVEL TIME TABLE ---------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
        (m)      (cu.m.)      (cms)        (m/s)        min
       0.06     .313E+00       0.0          0.59         0.50
       0.11     .870E+00       0.0          0.92         0.32
       0.17     .157E+01       0.1          1.19         0.25
       0.22     .237E+01       0.2          1.41         0.21
       0.28     .326E+01       0.3          1.61         0.19
```

0.33	.420E+01	0.4	1.78	0.17
0.39	.518E+01	0.6	1.93	0.15
0.44	.620E+01	0.7	2.06	0.14
0.50	.723E+01	0.9	2.18	0.14
0.55	.827E+01	1.1	2.28	0.13
0.61	.930E+01	1.2	2.36	0.13
0.66	.103E+02	1.4	2.43	0.12
0.72	.113E+02	1.6	2.49	0.12
0.77	.122E+02	1.7	2.52	0.12
0.83	.131E+02	1.9	2.54	0.12
0.88	.139E+02	2.0	2.54	0.12
0.94	.146E+02	2.1	2.51	0.12
0.99	.152E+02	2.1	2.45	0.12
1.05	.155E+02	1.9	2.23	0.13

	<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (0003)	12.88	0.84	1.67	19.21	0.49	2.15
OUTFLOW: ID= 1 (0064)	12.88	0.85	1.67	19.21	0.49	2.16

CALIB	
STANDHYD (0208)	Area (ha)= 0.37
ID= 1 DT=10.0 min	Total Imp(%)= 40.00 Dir. Conn.(%)= 10.00

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.15	0.22	
Dep. Storage	(mm)=	2.00	1.50	
Average Slope	(%)=	1.00	1.00	
Length	(m)=	40.00	30.00	
Mannings n	=	0.015	0.250	
Max.Eff.Inten.	(mm/hr)=	103.04	78.00	
over	(min)	10.00	10.00	
Storage Coeff.	(min)=	1.59 (ii)	9.66 (ii)	
Unit Hyd. Tpeak	(min)=	10.00	10.00	
Unit Hyd. peak	(cms)=	0.17	0.11	
				TOTALS
PEAK FLOW	(cms)=	0.01	0.03	0.044 (iii)
TIME TO PEAK	(hrs)=	1.50	1.50	1.50
RUNOFF VOLUME	(mm)=	44.98	21.90	24.19
TOTAL RAINFALL	(mm)=	46.98	46.98	46.98
RUNOFF COEFFICIENT	=	0.96	0.47	0.51

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

```
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0208):     0.37   0.044     1.50    24.19
      + ID2= 2 (  0064):    12.88   0.848     1.67    19.21
        ================================================
        ID = 3 (  0004):    13.25   0.877     1.67    19.35

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTEPIPE(  0066)|     PIPE Number     =   1.00
| IN= 2---> OUT= 1 |     Diameter    (mm)=1050.00
| DT=  5.0 min     |     Length       (m)=  21.80
--------------------     Slope      (m/m)=  0.005
                         Manning n       =  0.013

     <----------------- TRAVEL TIME TABLE ---------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
        (m)      (cu.m.)      (cms)        (m/s)        min
       0.06     .381E+00       0.0          0.59         0.61
       0.11     .106E+01       0.0          0.92         0.39
       0.17     .191E+01       0.1          1.19         0.31
       0.22     .289E+01       0.2          1.41         0.26
       0.28     .397E+01       0.3          1.61         0.23
       0.33     .511E+01       0.4          1.78         0.20
       0.39     .631E+01       0.6          1.93         0.19
       0.44     .755E+01       0.7          2.06         0.18
       0.50     .881E+01       0.9          2.18         0.17
       0.55     .101E+02       1.1          2.28         0.16
       0.61     .113E+02       1.2          2.36         0.15
       0.66     .126E+02       1.4          2.43         0.15
       0.72     .138E+02       1.6          2.49         0.15
       0.77     .149E+02       1.7          2.52         0.14
       0.83     .160E+02       1.9          2.54         0.14
       0.88     .170E+02       2.0          2.54         0.14
       0.94     .178E+02       2.1          2.51         0.14
       0.99     .185E+02       2.1          2.45         0.15
       1.05     .189E+02       1.9          2.23         0.16
                                    <---- hydrograph ---->   <-pipe / channel->
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (0004)	13.25	0.88	1.67	19.35	0.50	2.18
OUTFLOW: ID= 1 (0066)	13.25	0.87	1.67	19.35	0.50	2.18

CALIB			
NASHYD (0201)	Area (ha)= 1.90	Curve Number (CN)= 84.0	
ID= 1 DT=10.0 min	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.10		

Unit Hyd Qpeak (cms)= 0.726

PEAK FLOW (cms)= 0.169 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 14.969
TOTAL RAINFALL (mm)= 46.983
RUNOFF COEFFICIENT = 0.319

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

CALIB			
NASHYD (0207)	Area (ha)= 0.40	Curve Number (CN)= 84.0	
ID= 1 DT=10.0 min	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.14		

Unit Hyd Qpeak (cms)= 0.109

PEAK FLOW (cms)= 0.035 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 17.892
TOTAL RAINFALL (mm)= 46.983
RUNOFF COEFFICIENT = 0.381

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

CALIB			
STANDHYD (0204)	Area (ha)= 0.68		
ID= 1 DT=10.0 min	Total Imp(%)= 75.00	Dir. Conn.(%)= 35.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.51	0.17
Dep. Storage (mm)=	2.00	1.50

```
     Average Slope     (%)=       0.50         0.50
     Length            (m)=      20.00        20.00
     Mannings n           =      0.015        0.250

     Max.Eff.Inten.(mm/hr)=     103.04       179.08
               over (min)       10.00        10.00
     Storage Coeff.  (min)=       1.29 (ii)    6.88 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.13
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.07         0.07         0.137 (iii)
     TIME TO PEAK    (hrs)=       1.50         1.50          1.50
     RUNOFF VOLUME    (mm)=      44.98        28.49         34.26
     TOTAL RAINFALL   (mm)=      46.98        46.98         46.98
     RUNOFF COEFFICIENT   =       0.96         0.61          0.73

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.68   0.137     1.50    34.26
      + ID2= 2 (  0207):     0.40   0.035     1.50    17.89
        ================================================
        ID = 3 (  0001):     1.08   0.171     1.50    28.20

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0202)|   Area    (ha)=   3.44
|ID= 1 DT=10.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  35.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       2.58         0.86
     Dep. Storage     (mm)=       2.00         1.50
     Average Slope     (%)=       1.00         1.00
     Length            (m)=      40.00        30.00
     Mannings n           =      0.015        0.250

     Max.Eff.Inten.(mm/hr)=     103.04       179.08
```

```
                over (min)       10.00        10.00
     Storage Coeff.  (min)=       1.59 (ii)    7.38 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.13
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.34         0.34          0.682 (iii)
     TIME TO PEAK    (hrs)=       1.50         1.50           1.50
     RUNOFF VOLUME    (mm)=      44.98        28.49          34.26
     TOTAL RAINFALL   (mm)=      46.98        46.98          46.98
     RUNOFF COEFFICIENT   =       0.96         0.61           0.73

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.08   0.171     1.50    28.20
      + ID2= 2 (  0201):     1.90   0.169     1.50    14.97
        ================================================
        ID = 3 (  0005):     2.98   0.340     1.50    19.76

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

--------------------
| ADD HYD  (  0005)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0005):     2.98   0.340     1.50    19.76
      + ID2= 2 (  0202):     3.44   0.682     1.50    34.26
        ================================================
        ID = 1 (  0005):     6.42   1.022     1.50    27.53

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

--------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0005):     6.42   1.022     1.50    27.53
```

```
      + ID2= 2 (  0066):    13.25   0.875     1.67    19.35
        ================================================
        ID = 3 (  0005):    19.67   1.840     1.50    22.02

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0007)|     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   |    0.0714      0.2390
                           0.0039      0.0080   |    0.3650      0.2830
                           0.0250      0.0360   |    1.0693      0.3300
                           0.0320      0.0670   |    2.2806      0.3790
                           0.0332      0.1000   |    4.0807      0.4300
                           0.0388      0.1360   |    6.5420      0.4840
                           0.0437      0.1760   |    9.7294      0.5410
                           0.0480      0.2170   |   12.4249      0.5820

                                 AREA     QPEAK     TPEAK       R.V.
                                 (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)     19.670      1.840      1.50      22.02
   OUTFLOW: ID= 1 (  0007)     19.670      0.473      2.17      21.99

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 25.68
                  TIME SHIFT OF PEAK FLOW         (min)= 40.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.2905

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

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================================================================================
========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2017)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


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

  Output  filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\20c6
0fa8-f830-465f-a2f1-1cedb445048a\scen
  Summary filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\20c6
0fa8-f830-465f-a2f1-1cedb445048a\scen


DATE: 04/04/2025                          TIME: 09:37:09

USER:



COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------
------------------------
  ********************************************
  ** SIMULATION : 5                          **
  ********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1719.500
| Ptotal= 68.72 mm |                          B=  10.000
--------------------                          C=   0.823
```

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.48

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	5.46	0.83	14.96	1.67	24.74	2.50	6.70
0.17	6.23	1.00	23.26	1.83	16.04	2.67	5.87
0.33	7.26	1.17	50.04	2.00	11.85	2.83	5.24
0.50	8.74	1.33	146.10	2.17	9.41		
0.67	11.02	1.50	51.58	2.33	7.82		

CALIB NASHYD (0205)	Area (ha)= 0.29	Curve Number (CN)= 84.0
ID= 1 DT=10.0 min	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.03	

Unit Hyd Qpeak (cms)= 0.369

PEAK FLOW (cms)= 0.001 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 0.373
TOTAL RAINFALL (mm)= 68.722
RUNOFF COEFFICIENT = 0.005

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

Junction Command(0006)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2(0205)	0.29	0.00	1.50	0.37
OUTFLOW: ID= 2(0006)	0.29	0.00	1.50	0.37

CALIB NASHYD (0200)	Area (ha)= 10.78	Curve Number (CN)= 85.0
ID= 1 DT=10.0 min	Ia (mm)= 4.48	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.24	

```
     Unit Hyd Qpeak  (cms)=   1.716

     PEAK FLOW       (cms)=   1.415 (i)
     TIME TO PEAK    (hrs)=   1.667
     RUNOFF VOLUME    (mm)=  37.334
     TOTAL RAINFALL   (mm)=  68.722
     RUNOFF COEFFICIENT   =   0.543

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

-------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0206)|   Area    (ha)=   1.61   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.06

     Unit Hyd Qpeak  (cms)=   1.025

     PEAK FLOW       (cms)=   0.129 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  12.236
     TOTAL RAINFALL   (mm)=  68.722
     RUNOFF COEFFICIENT   =   0.178

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

-------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0203)|   Area    (ha)=   0.49
|ID= 1 DT=10.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  35.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.37         0.12
     Dep. Storage     (mm)=       2.00         1.50
     Average Slope     (%)=       0.50         0.50
     Length            (m)=      20.00        20.00
     Mannings n             =     0.015        0.250

     Max.Eff.Inten.(mm/hr)=     146.10       292.17
               over (min)       10.00        10.00
     Storage Coeff.  (min)=       1.12 (ii)    5.72 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.14
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.07         0.09         0.156 (iii)
     TIME TO PEAK    (hrs)=       1.50         1.50          1.50
     RUNOFF VOLUME    (mm)=      66.72        47.71         54.36
     TOTAL RAINFALL   (mm)=      68.72        68.72         68.72
```

```
     RUNOFF COEFFICIENT   =       0.97         0.69          0.79

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0203):     0.49   0.156     1.50    54.36
      + ID2= 2 (  0206):     1.61   0.129     1.50    12.24
        ================================================
        ID = 3 (  0002):     2.10   0.285     1.50    22.07

     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 (  0002):     2.10   0.285     1.50    22.07
      + ID2= 2 (  0200):    10.78   1.415     1.67    37.33
        ================================================
        ID = 3 (  0003):    12.88   1.545     1.67    34.84

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTEPIPE(  0064)|     PIPE Number     =   1.00
| IN= 2---> OUT= 1 |     Diameter    (mm)=1050.00
| DT=  5.0 min     |     Length       (m)=  17.90
--------------------     Slope      (m/m)=  0.005
                         Manning n       =  0.013

     <----------------- TRAVEL TIME TABLE -------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
        (m)      (cu.m.)      (cms)        (m/s)        min
       0.06     .313E+00       0.0          0.59         0.50
       0.11     .870E+00       0.0          0.92         0.32
       0.17     .157E+01       0.1          1.19         0.25
       0.22     .237E+01       0.2          1.41         0.21
       0.28     .326E+01       0.3          1.61         0.19
```

0.33	.420E+01	0.4	1.78	0.17
0.39	.518E+01	0.6	1.93	0.15
0.44	.620E+01	0.7	2.06	0.14
0.50	.723E+01	0.9	2.18	0.14
0.55	.827E+01	1.1	2.28	0.13
0.61	.930E+01	1.2	2.36	0.13
0.66	.103E+02	1.4	2.43	0.12
0.72	.113E+02	1.6	2.49	0.12
0.77	.122E+02	1.7	2.52	0.12
0.83	.131E+02	1.9	2.54	0.12
0.88	.139E+02	2.0	2.54	0.12
0.94	.146E+02	2.1	2.51	0.12
0.99	.152E+02	2.1	2.45	0.12
1.05	.155E+02	1.9	2.23	0.13

	<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (0003)	12.88	1.54	1.67	34.84	0.71	2.48
OUTFLOW: ID= 1 (0064)	12.88	1.55	1.67	34.84	0.71	2.48

CALIB STANDHYD (0208) ID= 1 DT=10.0 min	Area (ha)= 0.37 Total Imp(%)= 40.00 Dir. Conn.(%)= 10.00

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.15	0.22	
Dep. Storage	(mm)=	2.00	1.50	
Average Slope	(%)=	1.00	1.00	
Length	(m)=	40.00	30.00	
Mannings n	=	0.015	0.250	
Max.Eff.Inten.(mm/hr)	=	146.10	135.81	
over (min)		10.00	10.00	
Storage Coeff. (min)	=	1.38 (ii)	7.85 (ii)	
Unit Hyd. Tpeak (min)	=	10.00	10.00	
Unit Hyd. peak (cms)	=	0.17	0.12	
				TOTALS
PEAK FLOW	(cms)=	0.02	0.06	0.080 (iii)
TIME TO PEAK	(hrs)=	1.50	1.50	1.50
RUNOFF VOLUME	(mm)=	66.72	38.77	41.54
TOTAL RAINFALL	(mm)=	68.72	68.72	68.72
RUNOFF COEFFICIENT	=	0.97	0.56	0.60

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

```
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0208):     0.37   0.080     1.50    41.54
      + ID2= 2 (  0064):    12.88   1.549     1.67    34.84
        ================================================
        ID = 3 (  0004):    13.25   1.598     1.67    35.03

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTEPIPE(  0066)|     PIPE Number     =   1.00
| IN= 2---> OUT= 1 |     Diameter    (mm)=1050.00
| DT=  5.0 min     |     Length       (m)=  21.80
--------------------     Slope      (m/m)=  0.005
                         Manning n       =  0.013

     <----------------- TRAVEL TIME TABLE ---------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
        (m)      (cu.m.)      (cms)        (m/s)        min
       0.06     .381E+00       0.0          0.59         0.61
       0.11     .106E+01       0.0          0.92         0.39
       0.17     .191E+01       0.1          1.19         0.31
       0.22     .289E+01       0.2          1.41         0.26
       0.28     .397E+01       0.3          1.61         0.23
       0.33     .511E+01       0.4          1.78         0.20
       0.39     .631E+01       0.6          1.93         0.19
       0.44     .755E+01       0.7          2.06         0.18
       0.50     .881E+01       0.9          2.18         0.17
       0.55     .101E+02       1.1          2.28         0.16
       0.61     .113E+02       1.2          2.36         0.15
       0.66     .126E+02       1.4          2.43         0.15
       0.72     .138E+02       1.6          2.49         0.15
       0.77     .149E+02       1.7          2.52         0.14
       0.83     .160E+02       1.9          2.54         0.14
       0.88     .170E+02       2.0          2.54         0.14
       0.94     .178E+02       2.1          2.51         0.14
       0.99     .185E+02       2.1          2.45         0.15
       1.05     .189E+02       1.9          2.23         0.16
                                    <---- hydrograph ---->   <-pipe / channel->
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (0004)	13.25	1.60	1.67	35.03	0.73	2.49
OUTFLOW: ID= 1 (0066)	13.25	1.60	1.67	35.03	0.73	2.49

CALIB			
NASHYD (0201)	Area (ha)= 1.90	Curve Number (CN)= 84.0	
ID= 1 DT=10.0 min	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.10		

Unit Hyd Qpeak (cms)= 0.726

PEAK FLOW (cms)= 0.312 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 27.735
TOTAL RAINFALL (mm)= 68.722
RUNOFF COEFFICIENT = 0.404

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

CALIB			
NASHYD (0207)	Area (ha)= 0.40	Curve Number (CN)= 84.0	
ID= 1 DT=10.0 min	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.14		

Unit Hyd Qpeak (cms)= 0.109

PEAK FLOW (cms)= 0.065 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 33.152
TOTAL RAINFALL (mm)= 68.722
RUNOFF COEFFICIENT = 0.482

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

CALIB			
STANDHYD (0204)	Area (ha)= 0.68		
ID= 1 DT=10.0 min	Total Imp(%)= 75.00	Dir. Conn.(%)= 35.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.51	0.17
Dep. Storage (mm)=	2.00	1.50

```
     Average Slope     (%)=       0.50         0.50
     Length            (m)=      20.00        20.00
     Mannings n           =      0.015        0.250

     Max.Eff.Inten.(mm/hr)=     146.10       292.17
               over (min)       10.00        10.00
     Storage Coeff.  (min)=       1.12 (ii)    5.72 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.14
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.10         0.12          0.216 (iii)
     TIME TO PEAK    (hrs)=       1.50         1.50           1.50
     RUNOFF VOLUME    (mm)=      66.72        47.71          54.36
     TOTAL RAINFALL   (mm)=      68.72        68.72          68.72
     RUNOFF COEFFICIENT   =       0.97         0.69           0.79

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.68   0.216     1.50    54.36
      + ID2= 2 (  0207):     0.40   0.065     1.50    33.15
        ================================================
        ID = 3 (  0001):     1.08   0.281     1.50    46.51

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0202)|   Area    (ha)=   3.44
|ID= 1 DT=10.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  35.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       2.58         0.86
     Dep. Storage     (mm)=       2.00         1.50
     Average Slope     (%)=       1.00         1.00
     Length            (m)=      40.00        30.00
     Mannings n           =      0.015        0.250

     Max.Eff.Inten.(mm/hr)=     146.10       292.17
```

```
                over (min)       10.00        10.00
     Storage Coeff.  (min)=       1.38 (ii)    6.14 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.14
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.49         0.59          1.080 (iii)
     TIME TO PEAK    (hrs)=       1.50         1.50           1.50
     RUNOFF VOLUME    (mm)=      66.72        47.71          54.37
     TOTAL RAINFALL   (mm)=      68.72        68.72          68.72
     RUNOFF COEFFICIENT   =       0.97         0.69           0.79

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.08   0.281     1.50    46.51
      + ID2= 2 (  0201):     1.90   0.312     1.50    27.73
        ================================================
        ID = 3 (  0005):     2.98   0.593     1.50    34.54

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

--------------------
| ADD HYD  (  0005)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0005):     2.98   0.593     1.50    34.54
      + ID2= 2 (  0202):     3.44   1.080     1.50    54.37
        ================================================
        ID = 1 (  0005):     6.42   1.673     1.50    45.16

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

--------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0005):     6.42   1.673     1.50    45.16
```

```
      + ID2= 2 (  0066):    13.25   1.596     1.67    35.03
        ================================================
        ID = 3 (  0005):    19.67   3.183     1.50    38.34

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0007)|     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   |    0.0714      0.2390
                           0.0039      0.0080   |    0.3650      0.2830
                           0.0250      0.0360   |    1.0693      0.3300
                           0.0320      0.0670   |    2.2806      0.3790
                           0.0332      0.1000   |    4.0807      0.4300
                           0.0388      0.1360   |    6.5420      0.4840
                           0.0437      0.1760   |    9.7294      0.5410
                           0.0480      0.2170   |   12.4249      0.5820

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)     19.670      3.183      1.50      38.34
   OUTFLOW: ID= 1 (  0007)     19.670      1.730      1.83      38.31

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 54.36
                  TIME SHIFT OF PEAK FLOW         (min)= 20.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.3578

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

```
================================================================================
========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2017)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


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

  Output  filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\20c6
0fa8-f830-465f-a2f1-1cedb445048a\scen
  Summary filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\20c6
0fa8-f830-465f-a2f1-1cedb445048a\scen


DATE: 04/04/2025                          TIME: 09:37:09

USER:



COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------
------------------------
  ********************************************
  ** SIMULATION : 5                          **
  ********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1719.500
| Ptotal= 68.72 mm |                          B=  10.000
--------------------                          C=   0.823
```

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.48

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	5.46	0.83	14.96	1.67	24.74	2.50	6.70
0.17	6.23	1.00	23.26	1.83	16.04	2.67	5.87
0.33	7.26	1.17	50.04	2.00	11.85	2.83	5.24
0.50	8.74	1.33	146.10	2.17	9.41		
0.67	11.02	1.50	51.58	2.33	7.82		

CALIB NASHYD (0205)	Area (ha)= 0.29	Curve Number (CN)= 84.0
ID= 1 DT=10.0 min	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.03	

Unit Hyd Qpeak (cms)= 0.369

PEAK FLOW (cms)= 0.001 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 0.373
TOTAL RAINFALL (mm)= 68.722
RUNOFF COEFFICIENT = 0.005

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

Junction Command(0006)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2(0205)	0.29	0.00	1.50	0.37
OUTFLOW: ID= 2(0006)	0.29	0.00	1.50	0.37

CALIB NASHYD (0200)	Area (ha)= 10.78	Curve Number (CN)= 85.0
ID= 1 DT=10.0 min	Ia (mm)= 4.48	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.24	

```
     Unit Hyd Qpeak  (cms)=   1.716

     PEAK FLOW       (cms)=   1.415 (i)
     TIME TO PEAK    (hrs)=   1.667
     RUNOFF VOLUME    (mm)=  37.334
     TOTAL RAINFALL   (mm)=  68.722
     RUNOFF COEFFICIENT   =   0.543

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

-------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0206)|   Area    (ha)=   1.61   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.06

     Unit Hyd Qpeak  (cms)=   1.025

     PEAK FLOW       (cms)=   0.129 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  12.236
     TOTAL RAINFALL   (mm)=  68.722
     RUNOFF COEFFICIENT   =   0.178

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

-------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0203)|   Area    (ha)=   0.49
|ID= 1 DT=10.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  35.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.37         0.12
     Dep. Storage     (mm)=       2.00         1.50
     Average Slope     (%)=       0.50         0.50
     Length            (m)=      20.00        20.00
     Mannings n             =     0.015        0.250

     Max.Eff.Inten.(mm/hr)=     146.10       292.17
               over (min)       10.00        10.00
     Storage Coeff.  (min)=       1.12 (ii)    5.72 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.14
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.07         0.09         0.156 (iii)
     TIME TO PEAK    (hrs)=       1.50         1.50          1.50
     RUNOFF VOLUME    (mm)=      66.72        47.71         54.36
     TOTAL RAINFALL   (mm)=      68.72        68.72         68.72
```

```
     RUNOFF COEFFICIENT   =       0.97         0.69          0.79

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0203):     0.49   0.156     1.50    54.36
      + ID2= 2 (  0206):     1.61   0.129     1.50    12.24
        ================================================
        ID = 3 (  0002):     2.10   0.285     1.50    22.07

     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 (  0002):     2.10   0.285     1.50    22.07
      + ID2= 2 (  0200):    10.78   1.415     1.67    37.33
        ================================================
        ID = 3 (  0003):    12.88   1.545     1.67    34.84

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTEPIPE(  0064)|     PIPE Number     =   1.00
| IN= 2---> OUT= 1 |     Diameter    (mm)=1050.00
| DT=  5.0 min     |     Length       (m)=  17.90
--------------------     Slope      (m/m)=  0.005
                         Manning n       =  0.013

     <----------------- TRAVEL TIME TABLE -------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
        (m)      (cu.m.)      (cms)        (m/s)        min
       0.06     .313E+00       0.0          0.59         0.50
       0.11     .870E+00       0.0          0.92         0.32
       0.17     .157E+01       0.1          1.19         0.25
       0.22     .237E+01       0.2          1.41         0.21
       0.28     .326E+01       0.3          1.61         0.19
```

0.33	.420E+01	0.4	1.78	0.17
0.39	.518E+01	0.6	1.93	0.15
0.44	.620E+01	0.7	2.06	0.14
0.50	.723E+01	0.9	2.18	0.14
0.55	.827E+01	1.1	2.28	0.13
0.61	.930E+01	1.2	2.36	0.13
0.66	.103E+02	1.4	2.43	0.12
0.72	.113E+02	1.6	2.49	0.12
0.77	.122E+02	1.7	2.52	0.12
0.83	.131E+02	1.9	2.54	0.12
0.88	.139E+02	2.0	2.54	0.12
0.94	.146E+02	2.1	2.51	0.12
0.99	.152E+02	2.1	2.45	0.12
1.05	.155E+02	1.9	2.23	0.13

	<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (0003)	12.88	1.54	1.67	34.84	0.71	2.48
OUTFLOW: ID= 1 (0064)	12.88	1.55	1.67	34.84	0.71	2.48

CALIB STANDHYD (0208) ID= 1 DT=10.0 min	Area (ha)= 0.37 Total Imp(%)= 40.00 Dir. Conn.(%)= 10.00

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.15	0.22	
Dep. Storage	(mm)=	2.00	1.50	
Average Slope	(%)=	1.00	1.00	
Length	(m)=	40.00	30.00	
Mannings n	=	0.015	0.250	
Max.Eff.Inten.(mm/hr)	=	146.10	135.81	
over (min)		10.00	10.00	
Storage Coeff. (min)	=	1.38 (ii)	7.85 (ii)	
Unit Hyd. Tpeak (min)	=	10.00	10.00	
Unit Hyd. peak (cms)	=	0.17	0.12	
				TOTALS
PEAK FLOW	(cms)=	0.02	0.06	0.080 (iii)
TIME TO PEAK	(hrs)=	1.50	1.50	1.50
RUNOFF VOLUME	(mm)=	66.72	38.77	41.54
TOTAL RAINFALL	(mm)=	68.72	68.72	68.72
RUNOFF COEFFICIENT	=	0.97	0.56	0.60

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

```
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0208):     0.37   0.080     1.50    41.54
      + ID2= 2 (  0064):    12.88   1.549     1.67    34.84
        ================================================
        ID = 3 (  0004):    13.25   1.598     1.67    35.03

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTEPIPE(  0066)|     PIPE Number     =   1.00
| IN= 2---> OUT= 1 |     Diameter    (mm)=1050.00
| DT=  5.0 min     |     Length       (m)=  21.80
--------------------     Slope      (m/m)=  0.005
                         Manning n       =  0.013

     <----------------- TRAVEL TIME TABLE ---------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
        (m)      (cu.m.)      (cms)        (m/s)        min
       0.06     .381E+00       0.0          0.59         0.61
       0.11     .106E+01       0.0          0.92         0.39
       0.17     .191E+01       0.1          1.19         0.31
       0.22     .289E+01       0.2          1.41         0.26
       0.28     .397E+01       0.3          1.61         0.23
       0.33     .511E+01       0.4          1.78         0.20
       0.39     .631E+01       0.6          1.93         0.19
       0.44     .755E+01       0.7          2.06         0.18
       0.50     .881E+01       0.9          2.18         0.17
       0.55     .101E+02       1.1          2.28         0.16
       0.61     .113E+02       1.2          2.36         0.15
       0.66     .126E+02       1.4          2.43         0.15
       0.72     .138E+02       1.6          2.49         0.15
       0.77     .149E+02       1.7          2.52         0.14
       0.83     .160E+02       1.9          2.54         0.14
       0.88     .170E+02       2.0          2.54         0.14
       0.94     .178E+02       2.1          2.51         0.14
       0.99     .185E+02       2.1          2.45         0.15
       1.05     .189E+02       1.9          2.23         0.16
                                    <---- hydrograph ---->   <-pipe / channel->
```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (0004)	13.25	1.60	1.67	35.03	0.73	2.49
OUTFLOW: ID= 1 (0066)	13.25	1.60	1.67	35.03	0.73	2.49

CALIB			
NASHYD (0201)	Area (ha)= 1.90	Curve Number (CN)= 84.0	
ID= 1 DT=10.0 min	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.10		

Unit Hyd Qpeak (cms)= 0.726

PEAK FLOW (cms)= 0.312 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 27.735
TOTAL RAINFALL (mm)= 68.722
RUNOFF COEFFICIENT = 0.404

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

CALIB			
NASHYD (0207)	Area (ha)= 0.40	Curve Number (CN)= 84.0	
ID= 1 DT=10.0 min	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.14		

Unit Hyd Qpeak (cms)= 0.109

PEAK FLOW (cms)= 0.065 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 33.152
TOTAL RAINFALL (mm)= 68.722
RUNOFF COEFFICIENT = 0.482

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

CALIB			
STANDHYD (0204)	Area (ha)= 0.68		
ID= 1 DT=10.0 min	Total Imp(%)= 75.00	Dir. Conn.(%)= 35.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.51	0.17
Dep. Storage (mm)=	2.00	1.50

```
     Average Slope     (%)=       0.50         0.50
     Length            (m)=      20.00        20.00
     Mannings n           =      0.015        0.250

     Max.Eff.Inten.(mm/hr)=     146.10       292.17
               over (min)       10.00        10.00
     Storage Coeff.  (min)=       1.12 (ii)    5.72 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.14
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.10         0.12          0.216 (iii)
     TIME TO PEAK    (hrs)=       1.50         1.50           1.50
     RUNOFF VOLUME    (mm)=      66.72        47.71          54.36
     TOTAL RAINFALL   (mm)=      68.72        68.72          68.72
     RUNOFF COEFFICIENT   =       0.97         0.69           0.79

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.68   0.216     1.50    54.36
      + ID2= 2 (  0207):     0.40   0.065     1.50    33.15
        ================================================
        ID = 3 (  0001):     1.08   0.281     1.50    46.51

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0202)|   Area    (ha)=   3.44
|ID= 1 DT=10.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  35.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       2.58         0.86
     Dep. Storage     (mm)=       2.00         1.50
     Average Slope     (%)=       1.00         1.00
     Length            (m)=      40.00        30.00
     Mannings n           =      0.015        0.250

     Max.Eff.Inten.(mm/hr)=     146.10       292.17
```

```
                over (min)       10.00        10.00
     Storage Coeff.  (min)=       1.38 (ii)    6.14 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.14
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.49         0.59          1.080 (iii)
     TIME TO PEAK    (hrs)=       1.50         1.50           1.50
     RUNOFF VOLUME    (mm)=      66.72        47.71          54.37
     TOTAL RAINFALL   (mm)=      68.72        68.72          68.72
     RUNOFF COEFFICIENT   =       0.97         0.69           0.79

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.08   0.281     1.50    46.51
      + ID2= 2 (  0201):     1.90   0.312     1.50    27.73
        ================================================
        ID = 3 (  0005):     2.98   0.593     1.50    34.54

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

--------------------
| ADD HYD  (  0005)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0005):     2.98   0.593     1.50    34.54
      + ID2= 2 (  0202):     3.44   1.080     1.50    54.37
        ================================================
        ID = 1 (  0005):     6.42   1.673     1.50    45.16

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

--------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0005):     6.42   1.673     1.50    45.16
```

```
      + ID2= 2 (  0066):    13.25   1.596     1.67    35.03
        ================================================
        ID = 3 (  0005):    19.67   3.183     1.50    38.34

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0007)|     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   |    0.0714      0.2390
                           0.0039      0.0080   |    0.3650      0.2830
                           0.0250      0.0360   |    1.0693      0.3300
                           0.0320      0.0670   |    2.2806      0.3790
                           0.0332      0.1000   |    4.0807      0.4300
                           0.0388      0.1360   |    6.5420      0.4840
                           0.0437      0.1760   |    9.7294      0.5410
                           0.0480      0.2170   |   12.4249      0.5820

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)     19.670      3.183      1.50      38.34
   OUTFLOW: ID= 1 (  0007)     19.670      1.730      1.83      38.31

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 54.36
                  TIME SHIFT OF PEAK FLOW         (min)= 20.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.3578

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

```
================================================================================
========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2017)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


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

  Output  filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\25a4
038a-f22d-4a8a-813d-73daa409ecb1\scen
  Summary filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\25a4
038a-f22d-4a8a-813d-73daa409ecb1\scen


DATE: 04/04/2025                          TIME: 09:37:10

USER:



COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------
------------------------
  ********************************************
  ** SIMULATION : 6                          **
  ********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1954.800
| Ptotal= 76.91 mm |                          B=  10.000
--------------------                          C=   0.826
```

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.48

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	6.03	0.83	16.65	1.67	27.61	2.50	7.42
0.17	6.89	1.00	25.95	1.83	17.85	2.67	6.49
0.33	8.04	1.17	56.09	2.00	13.16	2.83	5.79
0.50	9.69	1.33	164.61	2.17	10.44		
0.67	12.24	1.50	57.82	2.33	8.66		

CALIB NASHYD (0205)	Area (ha)= 0.29	Curve Number (CN)= 84.0
ID= 1 DT=10.0 min	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.03	

Unit Hyd Qpeak (cms)= 0.369

PEAK FLOW (cms)= 0.001 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 0.442
TOTAL RAINFALL (mm)= 76.906
RUNOFF COEFFICIENT = 0.006

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

Junction Command(0006)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2(0205)	0.29	0.00	1.50	0.44
OUTFLOW: ID= 2(0006)	0.29	0.00	1.50	0.44

CALIB NASHYD (0200)	Area (ha)= 10.78	Curve Number (CN)= 85.0
ID= 1 DT=10.0 min	Ia (mm)= 4.48	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.24	

```
     Unit Hyd Qpeak  (cms)=   1.716

     PEAK FLOW       (cms)=   1.683 (i)
     TIME TO PEAK    (hrs)=   1.667
     RUNOFF VOLUME    (mm)=  44.140
     TOTAL RAINFALL   (mm)=  76.906
     RUNOFF COEFFICIENT   =   0.574

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

-------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0206)|   Area    (ha)=   1.61   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.06

     Unit Hyd Qpeak  (cms)=   1.025

     PEAK FLOW       (cms)=   0.155 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  14.514
     TOTAL RAINFALL   (mm)=  76.906
     RUNOFF COEFFICIENT   =   0.189

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

-------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0203)|   Area    (ha)=   0.49
|ID= 1 DT=10.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  35.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.37         0.12
     Dep. Storage     (mm)=       2.00         1.50
     Average Slope     (%)=       0.50         0.50
     Length            (m)=      20.00        20.00
     Mannings n             =     0.015        0.250

     Max.Eff.Inten.(mm/hr)=     164.61       340.32
               over (min)       10.00        10.00
     Storage Coeff.  (min)=      1.07 (ii)    5.39 (ii)
     Unit Hyd. Tpeak (min)=     10.00        10.00
     Unit Hyd. peak  (cms)=      0.17         0.14
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.08         0.10         0.180 (iii)
     TIME TO PEAK    (hrs)=      1.50         1.50          1.50
     RUNOFF VOLUME    (mm)=     74.91        55.22         62.11
     TOTAL RAINFALL   (mm)=     76.91        76.91         76.91
```

```
     RUNOFF COEFFICIENT   =       0.97         0.72          0.81

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0203):     0.49   0.180     1.50    62.11
      + ID2= 2 (  0206):     1.61   0.155     1.50    14.51
        ================================================
        ID = 3 (  0002):     2.10   0.335     1.50    25.62

     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 (  0002):     2.10   0.335     1.50    25.62
      + ID2= 2 (  0200):    10.78   1.683     1.67    44.14
        ================================================
        ID = 3 (  0003):    12.88   1.833     1.67    41.12

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTEPIPE(  0064)|     PIPE Number     =   1.00
| IN= 2---> OUT= 1 |     Diameter    (mm)=1050.00
| DT=  5.0 min     |     Length       (m)=  17.90
--------------------     Slope      (m/m)=  0.005
                         Manning n       =  0.013

     <----------------- TRAVEL TIME TABLE -------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
        (m)      (cu.m.)      (cms)        (m/s)        min
       0.06     .313E+00       0.0          0.59         0.50
       0.11     .870E+00       0.0          0.92         0.32
       0.17     .157E+01       0.1          1.19         0.25
       0.22     .237E+01       0.2          1.41         0.21
       0.28     .326E+01       0.3          1.61         0.19
```

0.33	.420E+01	0.4	1.78	0.17
0.39	.518E+01	0.6	1.93	0.15
0.44	.620E+01	0.7	2.06	0.14
0.50	.723E+01	0.9	2.18	0.14
0.55	.827E+01	1.1	2.28	0.13
0.61	.930E+01	1.2	2.36	0.13
0.66	.103E+02	1.4	2.43	0.12
0.72	.113E+02	1.6	2.49	0.12
0.77	.122E+02	1.7	2.52	0.12
0.83	.131E+02	1.9	2.54	0.12
0.88	.139E+02	2.0	2.54	0.12
0.94	.146E+02	2.1	2.51	0.12
0.99	.152E+02	2.1	2.45	0.12
1.05	.155E+02	1.9	2.23	0.13

	<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (0003)	12.88	1.83	1.67	41.12	0.82	2.54
OUTFLOW: ID= 1 (0064)	12.88	1.84	1.67	41.12	0.82	2.54

CALIB STANDHYD (0208) ID= 1 DT=10.0 min	Area (ha)= 0.37 Total Imp(%)= 40.00 Dir. Conn.(%)= 10.00

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.15	0.22	
Dep. Storage	(mm)=	2.00	1.50	
Average Slope	(%)=	1.00	1.00	
Length	(m)=	40.00	30.00	
Mannings n	=	0.015	0.250	
Max.Eff.Inten.(mm/hr)	=	164.61	161.11	
over (min)		10.00	10.00	
Storage Coeff. (min)	=	1.32 (ii)	7.36 (ii)	
Unit Hyd. Tpeak (min)	=	10.00	10.00	
Unit Hyd. peak (cms)	=	0.17	0.13	
				TOTALS
PEAK FLOW	(cms)=	0.02	0.08	0.096 (iii)
TIME TO PEAK	(hrs)=	1.50	1.50	1.50
RUNOFF VOLUME	(mm)=	74.91	45.55	48.47
TOTAL RAINFALL	(mm)=	76.91	76.91	76.91
RUNOFF COEFFICIENT	=	0.97	0.59	0.63

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

```
       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0004)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0208):     0.37   0.096     1.50    48.47
      + ID2= 2 (  0064):    12.88   1.837     1.67    41.12
        ================================================
        ID = 3 (  0004):    13.25   1.894     1.67    41.32

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTEPIPE(  0066)|     PIPE Number     =   1.00
| IN= 2---> OUT= 1 |     Diameter    (mm)=1050.00
| DT=  5.0 min     |     Length       (m)=  21.80
--------------------     Slope      (m/m)=  0.005
                         Manning n       =  0.013

     <----------------- TRAVEL TIME TABLE ---------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
        (m)      (cu.m.)      (cms)        (m/s)        min
       0.06     .381E+00       0.0          0.59         0.61
       0.11     .106E+01       0.0          0.92         0.39
       0.17     .191E+01       0.1          1.19         0.31
       0.22     .289E+01       0.2          1.41         0.26
       0.28     .397E+01       0.3          1.61         0.23
       0.33     .511E+01       0.4          1.78         0.20
       0.39     .631E+01       0.6          1.93         0.19
       0.44     .755E+01       0.7          2.06         0.18
       0.50     .881E+01       0.9          2.18         0.17
       0.55     .101E+02       1.1          2.28         0.16
       0.61     .113E+02       1.2          2.36         0.15
       0.66     .126E+02       1.4          2.43         0.15
       0.72     .138E+02       1.6          2.49         0.15
       0.77     .149E+02       1.7          2.52         0.14
       0.83     .160E+02       1.9          2.54         0.14
       0.88     .170E+02       2.0          2.54         0.14
       0.94     .178E+02       2.1          2.51         0.14
       0.99     .185E+02       2.1          2.45         0.15
       1.05     .189E+02       1.9          2.23         0.16
                                    <---- hydrograph ---->   <-pipe / channel->
```

```
                              AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                              (ha)    (cms)   (hrs)   (mm)      (m)      (m/s)
   INFLOW : ID= 2 (  0004)   13.25     1.89    1.67  41.32      0.84      2.54
   OUTFLOW: ID= 1 (  0066)   13.25     1.89    1.67  41.32      0.85      2.54


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0201)|   Area    (ha)=   1.90   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.10

     Unit Hyd Qpeak  (cms)=   0.726

     PEAK FLOW       (cms)=   0.374 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  32.898
     TOTAL RAINFALL   (mm)=  76.906
     RUNOFF COEFFICIENT   =   0.428

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

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0207)|   Area    (ha)=   0.40   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.14

     Unit Hyd Qpeak  (cms)=   0.109

     PEAK FLOW       (cms)=   0.078 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  39.323
     TOTAL RAINFALL   (mm)=  76.906
     RUNOFF COEFFICIENT   =   0.511

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

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0204)|   Area    (ha)=   0.68
|ID= 1 DT=10.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  35.00
--------------------

                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.51         0.17
     Dep. Storage     (mm)=       2.00         1.50
```

```
     Average Slope     (%)=       0.50         0.50
     Length            (m)=      20.00        20.00
     Mannings n           =      0.015        0.250

     Max.Eff.Inten.(mm/hr)=     164.61       340.32
               over (min)       10.00        10.00
     Storage Coeff.  (min)=       1.07 (ii)    5.39 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.14
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.11         0.14         0.250 (iii)
     TIME TO PEAK    (hrs)=       1.50         1.50          1.50
     RUNOFF VOLUME    (mm)=      74.91        55.22         62.11
     TOTAL RAINFALL   (mm)=      76.91        76.91         76.91
     RUNOFF COEFFICIENT   =       0.97         0.72          0.81

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.68   0.250     1.50    62.11
      + ID2= 2 (  0207):     0.40   0.078     1.50    39.32
        ================================================
        ID = 3 (  0001):     1.08   0.328     1.50    53.67

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0202)|   Area    (ha)=   3.44
|ID= 1 DT=10.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  35.00
--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       2.58         0.86
     Dep. Storage     (mm)=       2.00         1.50
     Average Slope     (%)=       1.00         1.00
     Length            (m)=      40.00        30.00
     Mannings n           =      0.015        0.250

     Max.Eff.Inten.(mm/hr)=     164.61       340.32
```

```
                over (min)       10.00        10.00
     Storage Coeff.  (min)=       1.32 (ii)    5.80 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.14
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.55         0.70          1.252 (iii)
     TIME TO PEAK    (hrs)=       1.50         1.50           1.50
     RUNOFF VOLUME    (mm)=      74.91        55.22          62.11
     TOTAL RAINFALL   (mm)=      76.91        76.91          76.91
     RUNOFF COEFFICIENT   =       0.97         0.72           0.81

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.08   0.328     1.50    53.67
      + ID2= 2 (  0201):     1.90   0.374     1.50    32.90
        ================================================
        ID = 3 (  0005):     2.98   0.702     1.50    40.43

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

--------------------
| ADD HYD  (  0005)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0005):     2.98   0.702     1.50    40.43
      + ID2= 2 (  0202):     3.44   1.252     1.50    62.11
        ================================================
        ID = 1 (  0005):     6.42   1.955     1.50    52.04

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

--------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0005):     6.42   1.955     1.50    52.04
```

```
      + ID2= 2 (  0066):    13.25   1.892     1.67    41.32
        ================================================
        ID = 3 (  0005):    19.67   3.762     1.50    44.82

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0007)|     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   |    0.0714      0.2390
                           0.0039      0.0080   |    0.3650      0.2830
                           0.0250      0.0360   |    1.0693      0.3300
                           0.0320      0.0670   |    2.2806      0.3790
                           0.0332      0.1000   |    4.0807      0.4300
                           0.0388      0.1360   |    6.5420      0.4840
                           0.0437      0.1760   |    9.7294      0.5410
                           0.0480      0.2170   |   12.4249      0.5820

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)     19.670      3.762      1.50      44.82
   OUTFLOW: ID= 1 (  0007)     19.670      2.235      1.75      44.80

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 59.41
                  TIME SHIFT OF PEAK FLOW         (min)= 15.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.3797

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

```
================================================================================
========================

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2017)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


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

  Output  filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\5590
85d7-4ab6-4c4f-a911-4af9adb39dd9\scen
  Summary filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\5590
85d7-4ab6-4c4f-a911-4af9adb39dd9\scen


DATE: 04/04/2025                          TIME: 09:37:10

USER:



COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------
------------------------
  ********************************************
  ** SIMULATION : 7                          **
  ********************************************

--------------------
| CHICAGO STORM    |    IDF curve parameters: A=2317.400
| Ptotal= 86.13 mm |                          B=  11.000
--------------------                          C=   0.836
```

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

Duration of storm = 3.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.48

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	6.61	0.83	18.78	1.67	31.44	2.50	8.17
0.17	7.57	1.00	29.53	1.83	20.17	2.67	7.13
0.33	8.89	1.17	63.97	2.00	14.76	2.83	6.33
0.50	10.77	1.33	181.81	2.17	11.62		
0.67	13.69	1.50	65.94	2.33	9.59		

CALIB NASHYD (0205)	Area (ha)= 0.29	Curve Number (CN)= 84.0
ID= 1 DT=10.0 min	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.03	

Unit Hyd Qpeak (cms)= 0.369

PEAK FLOW (cms)= 0.001 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 0.522
TOTAL RAINFALL (mm)= 86.132
RUNOFF COEFFICIENT = 0.006

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

Junction Command(0006)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2(0205)	0.29	0.00	1.50	0.52
OUTFLOW: ID= 2(0006)	0.29	0.00	1.50	0.52

CALIB NASHYD (0200)	Area (ha)= 10.78	Curve Number (CN)= 85.0
ID= 1 DT=10.0 min	Ia (mm)= 4.48	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.24	

```
     Unit Hyd Qpeak  (cms)=   1.716

     PEAK FLOW       (cms)=   1.982 (i)
     TIME TO PEAK    (hrs)=   1.667
     RUNOFF VOLUME    (mm)=  52.010
     TOTAL RAINFALL   (mm)=  86.132
     RUNOFF COEFFICIENT   =   0.604

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

-------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0206)|   Area    (ha)=   1.61   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.06

     Unit Hyd Qpeak  (cms)=   1.025

     PEAK FLOW       (cms)=   0.181 (i)
     TIME TO PEAK    (hrs)=   1.500
     RUNOFF VOLUME    (mm)=  17.154
     TOTAL RAINFALL   (mm)=  86.132
     RUNOFF COEFFICIENT   =   0.199

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

-------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0203)|   Area    (ha)=   0.49
|ID= 1 DT=10.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  35.00
--------------------
                            IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.37         0.12
     Dep. Storage     (mm)=       2.00         1.50
     Average Slope     (%)=       0.50         0.50
     Length            (m)=      20.00        20.00
     Mannings n           =      0.015        0.250

     Max.Eff.Inten.(mm/hr)=     181.81       387.53
               over (min)       10.00        10.00
     Storage Coeff.  (min)=       1.03 (ii)    5.13 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.15
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.09         0.12          0.204 (iii)
     TIME TO PEAK    (hrs)=       1.50         1.50           1.50
     RUNOFF VOLUME    (mm)=      84.13        63.80          70.91
     TOTAL RAINFALL   (mm)=      86.13        86.13          86.13
```

```
     RUNOFF COEFFICIENT   =       0.98         0.74           0.82

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0002)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK     R.V.
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0203):     0.49   0.204     1.50    70.91
      + ID2= 2 (  0206):     1.61   0.181     1.50    17.15
        ================================================
        ID = 3 (  0002):     2.10   0.385     1.50    29.70

     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 (  0002):     2.10   0.385     1.50    29.70
      + ID2= 2 (  0200):    10.78   1.982     1.67    52.01
        ================================================
        ID = 3 (  0003):    12.88   2.155     1.67    48.37

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTEPIPE(  0064)|     PIPE Number     =   1.00
| IN= 2---> OUT= 1 |     Diameter    (mm)=1050.00
| DT=  5.0 min     |     Length       (m)=  17.90
--------------------     Slope      (m/m)=  0.005
                         Manning n       =  0.013

     **** WARNING: MINIMUM PIPE SIZE REQUIRED =  1094.14   (mm)FOR FREE FLOW.
                   THIS SIZE WAS USED IN THE ROUTING.
                   THE CAPACITY OF THIS PIPE  =     2.16  (cms)

     <----------------- TRAVEL TIME TABLE -------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
        (m)      (cu.m.)      (cms)        (m/s)        min
       0.06     .339E+00       0.0          0.61         0.49
```

0.12	.944E+00	0.1	0.95	0.31
0.17	.171E+01	0.1	1.22	0.24
0.23	.258E+01	0.2	1.45	0.21
0.29	.354E+01	0.3	1.65	0.18
0.35	.456E+01	0.5	1.83	0.16
0.40	.563E+01	0.6	1.99	0.15
0.46	.673E+01	0.8	2.12	0.14
0.52	.785E+01	1.0	2.24	0.13
0.58	.898E+01	1.2	2.34	0.13
0.63	.101E+02	1.4	2.43	0.12
0.69	.112E+02	1.6	2.50	0.12
0.75	.123E+02	1.8	2.56	0.12
0.81	.133E+02	1.9	2.59	0.12
0.86	.143E+02	2.1	2.61	0.11
0.92	.151E+02	2.2	2.61	0.11
0.98	.159E+02	2.3	2.58	0.12
1.04	.165E+02	2.3	2.52	0.12
1.09	.168E+02	2.2	2.29	0.13

	<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (0003)	12.88	2.16	1.67	48.37	0.90	2.61
OUTFLOW: ID= 1 (0064)	12.88	2.16	1.67	48.37	0.90	2.61

**** WARNING: COMPUTATIONS FAILED TO CONVERGE.

CALIB STANDHYD (0208) ID= 1 DT=10.0 min	Area (ha)= 0.37 Total Imp(%)= 40.00 Dir. Conn.(%)= 10.00

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.15	0.22	
Dep. Storage	(mm)=	2.00	1.50	
Average Slope	(%)=	1.00	1.00	
Length	(m)=	40.00	30.00	
Mannings n	=	0.015	0.250	
Max.Eff.Inten.(mm/hr)	=	181.81	186.78	
over (min)		10.00	10.00	
Storage Coeff. (min)	=	1.26 (ii)	6.96 (ii)	
Unit Hyd. Tpeak (min)	=	10.00	10.00	
Unit Hyd. peak (cms)	=	0.17	0.13	
				TOTALS
PEAK FLOW	(cms)=	0.02	0.09	0.112 (iii)
TIME TO PEAK	(hrs)=	1.50	1.50	1.50
RUNOFF VOLUME	(mm)=	84.13	53.40	56.46
TOTAL RAINFALL	(mm)=	86.13	86.13	86.13

```
     RUNOFF COEFFICIENT   =       0.98         0.62          0.66

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
              YOU SHOULD CONSIDER SPLITTING THE AREA.

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0004)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0208):     0.37   0.112     1.50    56.46
      + ID2= 2 (  0064):    12.88   2.160     1.67    48.37
        ================================================
        ID = 3 (  0004):    13.25   2.226     1.67    48.60

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTEPIPE(  0066)|     PIPE Number     =   1.00
| IN= 2---> OUT= 1 |     Diameter    (mm)=1050.00
| DT=  5.0 min     |     Length       (m)=  21.80
--------------------     Slope      (m/m)=  0.005
                         Manning n       =  0.013

     **** WARNING: MINIMUM PIPE SIZE REQUIRED =  1107.42   (mm)FOR FREE FLOW.
                   THIS SIZE WAS USED IN THE ROUTING.
                   THE CAPACITY OF THIS PIPE  =     2.23  (cms)

     <----------------- TRAVEL TIME TABLE -------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
        (m)      (cu.m.)      (cms)        (m/s)        min
       0.06     .424E+00       0.0          0.61         0.59
       0.12     .118E+01       0.1          0.96         0.38
       0.17     .213E+01       0.1          1.23         0.29
       0.23     .322E+01       0.2          1.47         0.25
       0.29     .441E+01       0.3          1.67         0.22
       0.35     .569E+01       0.5          1.85         0.20
       0.41     .702E+01       0.6          2.00         0.18
       0.47     .840E+01       0.8          2.14         0.17
       0.52     .980E+01       1.0          2.26         0.16
       0.58     .112E+02       1.2          2.36         0.15
       0.64     .126E+02       1.4          2.45         0.15
```

0.70	.140E+02	1.6	2.52	0.14
0.76	.153E+02	1.8	2.58	0.14
0.82	.166E+02	2.0	2.61	0.14
0.87	.178E+02	2.1	2.63	0.14
0.93	.189E+02	2.3	2.63	0.14
0.99	.198E+02	2.4	2.60	0.14
1.05	.206E+02	2.4	2.54	0.14
1.11	.210E+02	2.2	2.31	0.16

	<---- hydrograph ---->			<-pipe / channel->	
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (0004)	13.25	2.23	1.67	48.60	0.91	2.63
OUTFLOW: ID= 1 (0066)	13.25	2.22	1.67	48.60	0.91	2.63

CALIB					
NASHYD (0201)	Area (ha)=	1.90	Curve Number (CN)=	84.0
ID= 1 DT=10.0 min	Ia (mm)=	4.84	# of Linear Res.(N)=	3.00
	U.H. Tp(hrs)=	0.10		

Unit Hyd Qpeak (cms)= 0.726

PEAK FLOW (cms)= 0.438 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 38.882
TOTAL RAINFALL (mm)= 86.132
RUNOFF COEFFICIENT = 0.451

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

CALIB					
NASHYD (0207)	Area (ha)=	0.40	Curve Number (CN)=	84.0
ID= 1 DT=10.0 min	Ia (mm)=	4.84	# of Linear Res.(N)=	3.00
	U.H. Tp(hrs)=	0.14		

Unit Hyd Qpeak (cms)= 0.109

PEAK FLOW (cms)= 0.092 (i)
TIME TO PEAK (hrs)= 1.500
RUNOFF VOLUME (mm)= 46.476
TOTAL RAINFALL (mm)= 86.132
RUNOFF COEFFICIENT = 0.540

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

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--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0204)|   Area    (ha)=   0.68
|ID= 1 DT=10.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  35.00
--------------------
                             IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       0.51         0.17
     Dep. Storage     (mm)=       2.00         1.50
     Average Slope     (%)=       0.50         0.50
     Length            (m)=      20.00        20.00
     Mannings n           =      0.015        0.250

     Max.Eff.Inten.(mm/hr)=     181.81       387.53
               over (min)       10.00        10.00
     Storage Coeff.  (min)=       1.03 (ii)    5.13 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.15
                                                        *TOTALS*
     PEAK FLOW       (cms)=       0.12         0.16          0.284 (iii)
     TIME TO PEAK    (hrs)=       1.50         1.50           1.50
     RUNOFF VOLUME    (mm)=      84.13        63.80          70.91
     TOTAL RAINFALL   (mm)=      86.13        86.13          86.13
     RUNOFF COEFFICIENT   =       0.98         0.74           0.82

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0001)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0204):     0.68   0.284     1.50    70.91
      + ID2= 2 (  0207):     0.40   0.092     1.50    46.48
        ================================================
        ID = 3 (  0001):     1.08   0.376     1.50    61.86

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0202)|   Area    (ha)=   3.44
|ID= 1 DT=10.0 min |   Total Imp(%)=  75.00   Dir. Conn.(%)=  35.00
```

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--------------------
                              IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=       2.58         0.86
     Dep. Storage     (mm)=       2.00         1.50
     Average Slope     (%)=       1.00         1.00
     Length            (m)=      40.00        30.00
     Mannings n           =      0.015        0.250

     Max.Eff.Inten.(mm/hr)=     181.81       387.53
               over (min)       10.00        10.00
     Storage Coeff.  (min)=       1.26 (ii)    5.52 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.14
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.61         0.81          1.420 (iii)
     TIME TO PEAK    (hrs)=       1.50         1.50           1.50
     RUNOFF VOLUME    (mm)=      84.13        63.80          70.91
     TOTAL RAINFALL   (mm)=      86.13        86.13          86.13
     RUNOFF COEFFICIENT   =       0.98         0.74           0.82

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.08   0.376     1.50    61.86
      + ID2= 2 (  0201):     1.90   0.438     1.50    38.88
        ================================================
        ID = 3 (  0005):     2.98   0.813     1.50    47.21

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

--------------------
| ADD HYD  (  0005)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0005):     2.98   0.813     1.50    47.21
      + ID2= 2 (  0202):     3.44   1.420     1.50    70.91
        ================================================
        ID = 1 (  0005):     6.42   2.234     1.50    59.91
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0005)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0005):	6.42	2.234	1.50	59.91
	+ ID2= 2 (0066):	13.25	2.223	1.67	48.60
	ID = 3 (0005):	19.67	4.362	1.50	52.29

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0007)	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	0.0714	0.2390
	0.0039	0.0080	0.3650	0.2830
	0.0250	0.0360	1.0693	0.3300
	0.0320	0.0670	2.2806	0.3790
	0.0332	0.1000	4.0807	0.4300
	0.0388	0.1360	6.5420	0.4840
	0.0437	0.1760	9.7294	0.5410
	0.0480	0.2170	12.4249	0.5820

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0005)	19.670	4.362	1.50	52.29
OUTFLOW: ID= 1 (0007)	19.670	2.954	1.75	52.26

PEAK FLOW REDUCTION [Qout/Qin](%)= 67.72
TIME SHIFT OF PEAK FLOW (min)= 15.00
MAXIMUM STORAGE USED (ha.m.)= 0.4003

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================================================================================
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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2017)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


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

  Output  filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\a43c
3dbd-d677-446a-97bd-cf9de0d95ee9\scen
  Summary filename:
C:\Users\msauder\AppData\Local\Civica\VH5\66c87b4e-6def-4eb5-ad6f-2a14809f2e40\a43c
3dbd-d677-446a-97bd-cf9de0d95ee9\scen


DATE: 04/04/2025                          TIME: 09:37:11

USER:



COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------
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  ********************************************
  ** SIMULATION : 8                          **
  ********************************************


--------------------
|    READ STORM    |    Filename: C:\Users\msauder\AppD
|                  |              ata\Local\Temp\
```

| | 488a7055-6ec2-4461-b3f8-d2e376a88fb0\7ec33e63
| Ptotal=284.50 mm | Comments: 48 hr Hurricane Hazel

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.00	12.00	2.00	24.00	2.00	36.00	6.00
0.25	2.00	12.25	2.00	24.25	2.00	36.25	6.00
0.50	2.00	12.50	2.00	24.50	2.00	36.50	6.00
0.75	2.00	12.75	2.00	24.75	2.00	36.75	6.00
1.00	2.00	13.00	2.00	25.00	2.00	37.00	4.00
1.25	2.00	13.25	2.00	25.25	2.00	37.25	4.00
1.50	2.00	13.50	2.00	25.50	2.00	37.50	4.00
1.75	2.00	13.75	2.00	25.75	2.00	37.75	4.00
2.00	2.00	14.00	2.00	26.00	2.00	38.00	6.00
2.25	2.00	14.25	2.00	26.25	2.00	38.25	6.00
2.50	2.00	14.50	2.00	26.50	2.00	38.50	6.00
2.75	2.00	14.75	2.00	26.75	2.00	38.75	6.00
3.00	2.00	15.00	2.00	27.00	2.00	39.00	13.00
3.25	2.00	15.25	2.00	27.25	2.00	39.25	13.00
3.50	2.00	15.50	2.00	27.50	2.00	39.50	13.00
3.75	2.00	15.75	2.00	27.75	2.00	39.75	13.00
4.00	2.00	16.00	2.00	28.00	2.00	40.00	17.00
4.25	2.00	16.25	2.00	28.25	2.00	40.25	17.00
4.50	2.00	16.50	2.00	28.50	2.00	40.50	17.00
4.75	2.00	16.75	2.00	28.75	2.00	40.75	17.00
5.00	2.00	17.00	2.00	29.00	2.00	41.00	13.00
5.25	2.00	17.25	2.00	29.25	2.00	41.25	13.00
5.50	2.00	17.50	2.00	29.50	2.00	41.50	13.00
5.75	2.00	17.75	2.00	29.75	2.00	41.75	13.00
6.00	2.00	18.00	2.00	30.00	2.00	42.00	23.00
6.25	2.00	18.25	2.00	30.25	2.00	42.25	23.00
6.50	2.00	18.50	2.00	30.50	2.00	42.50	23.00
6.75	2.00	18.75	2.00	30.75	2.00	42.75	23.00
7.00	2.00	19.00	2.00	31.00	2.00	43.00	13.00
7.25	2.00	19.25	2.00	31.25	2.00	43.25	13.00
7.50	2.00	19.50	2.00	31.50	2.00	43.50	13.00
7.75	2.00	19.75	2.00	31.75	2.00	43.75	13.00
8.00	2.00	20.00	2.00	32.00	2.00	44.00	13.00
8.25	2.00	20.25	2.00	32.25	2.00	44.25	13.00
8.50	2.00	20.50	2.00	32.50	2.00	44.50	13.00
8.75	2.00	20.75	2.00	32.75	2.00	44.75	13.00
9.00	2.00	21.00	2.00	33.00	2.00	45.00	53.00
9.25	2.00	21.25	2.00	33.25	2.00	45.25	53.00
9.50	2.00	21.50	2.00	33.50	2.00	45.50	53.00
9.75	2.00	21.75	2.00	33.75	2.00	45.75	53.00
10.00	2.00	22.00	2.00	34.00	2.00	46.00	38.00
10.25	2.00	22.25	2.00	34.25	2.00	46.25	38.00
10.50	2.00	22.50	2.00	34.50	2.00	46.50	38.00
10.75	2.00	22.75	2.00	34.75	2.00	46.75	38.00
11.00	2.00	23.00	2.00	35.00	3.00	47.00	13.00

11.25	2.00	23.25	2.00	35.25	3.00	47.25	13.00
11.50	2.00	23.50	2.00	35.50	3.00	47.50	13.00
11.75	2.00	23.75	2.00	35.75	3.00	47.75	13.00

CALIB NASHYD (0205) ID= 1 DT=10.0 min			
	Area (ha)=	0.29	Curve Number (CN)= 84.0
	Ia (mm)=	4.84	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.03	

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	0.00	12.167	2.00	24.167	2.00	36.17	6.00
0.333	1.00	12.333	2.00	24.333	2.00	36.33	6.00
0.500	2.00	12.500	2.00	24.500	2.00	36.50	6.00
0.667	2.00	12.667	2.00	24.667	2.00	36.67	6.00
0.833	2.00	12.833	2.00	24.833	2.00	36.83	6.00
1.000	2.00	13.000	2.00	25.000	2.00	37.00	6.00
1.167	2.00	13.167	2.00	25.167	2.00	37.17	4.00
1.333	2.00	13.333	2.00	25.333	2.00	37.33	4.00
1.500	2.00	13.500	2.00	25.500	2.00	37.50	4.00
1.667	2.00	13.667	2.00	25.667	2.00	37.67	4.00
1.833	2.00	13.833	2.00	25.833	2.00	37.83	4.00
2.000	2.00	14.000	2.00	26.000	2.00	38.00	4.00
2.167	2.00	14.167	2.00	26.167	2.00	38.17	6.00
2.333	2.00	14.333	2.00	26.333	2.00	38.33	6.00
2.500	2.00	14.500	2.00	26.500	2.00	38.50	6.00
2.667	2.00	14.667	2.00	26.667	2.00	38.67	6.00
2.833	2.00	14.833	2.00	26.833	2.00	38.83	6.00
3.000	2.00	15.000	2.00	27.000	2.00	39.00	6.00
3.167	2.00	15.167	2.00	27.167	2.00	39.17	13.00
3.333	2.00	15.333	2.00	27.333	2.00	39.33	13.00
3.500	2.00	15.500	2.00	27.500	2.00	39.50	13.00
3.667	2.00	15.667	2.00	27.667	2.00	39.67	13.00
3.833	2.00	15.833	2.00	27.833	2.00	39.83	13.00
4.000	2.00	16.000	2.00	28.000	2.00	40.00	13.00
4.167	2.00	16.167	2.00	28.167	2.00	40.17	17.00
4.333	2.00	16.333	2.00	28.333	2.00	40.33	17.00
4.500	2.00	16.500	2.00	28.500	2.00	40.50	17.00
4.667	2.00	16.667	2.00	28.667	2.00	40.67	17.00
4.833	2.00	16.833	2.00	28.833	2.00	40.83	17.00
5.000	2.00	17.000	2.00	29.000	2.00	41.00	17.00
5.167	2.00	17.167	2.00	29.167	2.00	41.17	13.00
5.333	2.00	17.333	2.00	29.333	2.00	41.33	13.00

5.500	2.00	17.500	2.00	29.500	2.00	41.50	13.00
5.667	2.00	17.667	2.00	29.667	2.00	41.67	13.00
5.833	2.00	17.833	2.00	29.833	2.00	41.83	13.00
6.000	2.00	18.000	2.00	30.000	2.00	42.00	13.00
6.167	2.00	18.167	2.00	30.167	2.00	42.17	23.00
6.333	2.00	18.333	2.00	30.333	2.00	42.33	23.00
6.500	2.00	18.500	2.00	30.500	2.00	42.50	23.00
6.667	2.00	18.667	2.00	30.667	2.00	42.67	23.00
6.833	2.00	18.833	2.00	30.833	2.00	42.83	23.00
7.000	2.00	19.000	2.00	31.000	2.00	43.00	23.00
7.167	2.00	19.167	2.00	31.167	2.00	43.17	13.00
7.333	2.00	19.333	2.00	31.333	2.00	43.33	13.00
7.500	2.00	19.500	2.00	31.500	2.00	43.50	13.00
7.667	2.00	19.667	2.00	31.667	2.00	43.67	13.00
7.833	2.00	19.833	2.00	31.833	2.00	43.83	13.00
8.000	2.00	20.000	2.00	32.000	2.00	44.00	13.00
8.167	2.00	20.167	2.00	32.167	2.00	44.17	13.00
8.333	2.00	20.333	2.00	32.333	2.00	44.33	13.00
8.500	2.00	20.500	2.00	32.500	2.00	44.50	13.00
8.667	2.00	20.667	2.00	32.667	2.00	44.67	13.00
8.833	2.00	20.833	2.00	32.833	2.00	44.83	13.00
9.000	2.00	21.000	2.00	33.000	2.00	45.00	13.01
9.167	2.00	21.167	2.00	33.167	2.00	45.17	53.00
9.333	2.00	21.333	2.00	33.333	2.00	45.33	53.00
9.500	2.00	21.500	2.00	33.500	2.00	45.50	53.00
9.667	2.00	21.667	2.00	33.667	2.00	45.67	53.00
9.833	2.00	21.833	2.00	33.833	2.00	45.83	53.00
10.000	2.00	22.000	2.00	34.000	2.00	46.00	53.00
10.167	2.00	22.167	2.00	34.167	2.00	46.17	38.00
10.333	2.00	22.333	2.00	34.333	2.00	46.33	38.00
10.500	2.00	22.500	2.00	34.500	2.00	46.50	38.00
10.667	2.00	22.667	2.00	34.667	2.00	46.67	38.00
10.833	2.00	22.833	2.00	34.833	2.00	46.83	38.00
11.000	2.00	23.000	2.00	35.000	2.00	47.00	37.99
11.167	2.00	23.167	2.00	35.167	3.00	47.17	13.00
11.333	2.00	23.333	2.00	35.333	3.00	47.33	13.00
11.500	2.00	23.500	2.00	35.500	3.00	47.50	13.00
11.667	2.00	23.667	2.00	35.667	3.00	47.67	13.00
11.833	2.00	23.833	2.00	35.833	3.00	47.83	13.00
12.000	2.00	24.000	2.00	36.000	3.00	48.00	12.99

Unit Hyd Qpeak (cms)= 0.369

PEAK FLOW (cms)= 0.000 (i)
TIME TO PEAK (hrs)= 46.000
RUNOFF VOLUME (mm)= 2.444
TOTAL RAINFALL (mm)= 284.499
RUNOFF COEFFICIENT = 0.009

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

Junction Command(0006)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2(0205)	0.29	0.00	46.00	2.44
OUTFLOW: ID= 2(0006)	0.29	0.00	46.00	2.44

CALIB NASHYD (0200) ID= 1 DT=10.0 min	Area (ha)= 10.78	Curve Number (CN)= 85.0	Ia (mm)= 4.48	# of Linear Res.(N)= 3.00	U.H. Tp(hrs)= 0.24

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	0.00	12.167	2.00	24.167	2.00	36.17	6.00
0.333	1.00	12.333	2.00	24.333	2.00	36.33	6.00
0.500	2.00	12.500	2.00	24.500	2.00	36.50	6.00
0.667	2.00	12.667	2.00	24.667	2.00	36.67	6.00
0.833	2.00	12.833	2.00	24.833	2.00	36.83	6.00
1.000	2.00	13.000	2.00	25.000	2.00	37.00	6.00
1.167	2.00	13.167	2.00	25.167	2.00	37.17	4.00
1.333	2.00	13.333	2.00	25.333	2.00	37.33	4.00
1.500	2.00	13.500	2.00	25.500	2.00	37.50	4.00
1.667	2.00	13.667	2.00	25.667	2.00	37.67	4.00
1.833	2.00	13.833	2.00	25.833	2.00	37.83	4.00
2.000	2.00	14.000	2.00	26.000	2.00	38.00	4.00
2.167	2.00	14.167	2.00	26.167	2.00	38.17	6.00
2.333	2.00	14.333	2.00	26.333	2.00	38.33	6.00
2.500	2.00	14.500	2.00	26.500	2.00	38.50	6.00
2.667	2.00	14.667	2.00	26.667	2.00	38.67	6.00
2.833	2.00	14.833	2.00	26.833	2.00	38.83	6.00
3.000	2.00	15.000	2.00	27.000	2.00	39.00	6.00
3.167	2.00	15.167	2.00	27.167	2.00	39.17	13.00
3.333	2.00	15.333	2.00	27.333	2.00	39.33	13.00
3.500	2.00	15.500	2.00	27.500	2.00	39.50	13.00
3.667	2.00	15.667	2.00	27.667	2.00	39.67	13.00
3.833	2.00	15.833	2.00	27.833	2.00	39.83	13.00
4.000	2.00	16.000	2.00	28.000	2.00	40.00	13.00
4.167	2.00	16.167	2.00	28.167	2.00	40.17	17.00

4.333	2.00	16.333	2.00	28.333	2.00	40.33	17.00
4.500	2.00	16.500	2.00	28.500	2.00	40.50	17.00
4.667	2.00	16.667	2.00	28.667	2.00	40.67	17.00
4.833	2.00	16.833	2.00	28.833	2.00	40.83	17.00
5.000	2.00	17.000	2.00	29.000	2.00	41.00	17.00
5.167	2.00	17.167	2.00	29.167	2.00	41.17	13.00
5.333	2.00	17.333	2.00	29.333	2.00	41.33	13.00
5.500	2.00	17.500	2.00	29.500	2.00	41.50	13.00
5.667	2.00	17.667	2.00	29.667	2.00	41.67	13.00
5.833	2.00	17.833	2.00	29.833	2.00	41.83	13.00
6.000	2.00	18.000	2.00	30.000	2.00	42.00	13.00
6.167	2.00	18.167	2.00	30.167	2.00	42.17	23.00
6.333	2.00	18.333	2.00	30.333	2.00	42.33	23.00
6.500	2.00	18.500	2.00	30.500	2.00	42.50	23.00
6.667	2.00	18.667	2.00	30.667	2.00	42.67	23.00
6.833	2.00	18.833	2.00	30.833	2.00	42.83	23.00
7.000	2.00	19.000	2.00	31.000	2.00	43.00	23.00
7.167	2.00	19.167	2.00	31.167	2.00	43.17	13.00
7.333	2.00	19.333	2.00	31.333	2.00	43.33	13.00
7.500	2.00	19.500	2.00	31.500	2.00	43.50	13.00
7.667	2.00	19.667	2.00	31.667	2.00	43.67	13.00
7.833	2.00	19.833	2.00	31.833	2.00	43.83	13.00
8.000	2.00	20.000	2.00	32.000	2.00	44.00	13.00
8.167	2.00	20.167	2.00	32.167	2.00	44.17	13.00
8.333	2.00	20.333	2.00	32.333	2.00	44.33	13.00
8.500	2.00	20.500	2.00	32.500	2.00	44.50	13.00
8.667	2.00	20.667	2.00	32.667	2.00	44.67	13.00
8.833	2.00	20.833	2.00	32.833	2.00	44.83	13.00
9.000	2.00	21.000	2.00	33.000	2.00	45.00	13.01
9.167	2.00	21.167	2.00	33.167	2.00	45.17	53.00
9.333	2.00	21.333	2.00	33.333	2.00	45.33	53.00
9.500	2.00	21.500	2.00	33.500	2.00	45.50	53.00
9.667	2.00	21.667	2.00	33.667	2.00	45.67	53.00
9.833	2.00	21.833	2.00	33.833	2.00	45.83	53.00
10.000	2.00	22.000	2.00	34.000	2.00	46.00	53.00
10.167	2.00	22.167	2.00	34.167	2.00	46.17	38.00
10.333	2.00	22.333	2.00	34.333	2.00	46.33	38.00
10.500	2.00	22.500	2.00	34.500	2.00	46.50	38.00
10.667	2.00	22.667	2.00	34.667	2.00	46.67	38.00
10.833	2.00	22.833	2.00	34.833	2.00	46.83	38.00
11.000	2.00	23.000	2.00	35.000	2.00	47.00	37.99
11.167	2.00	23.167	2.00	35.167	3.00	47.17	13.00
11.333	2.00	23.333	2.00	35.333	3.00	47.33	13.00
11.500	2.00	23.500	2.00	35.500	3.00	47.50	13.00
11.667	2.00	23.667	2.00	35.667	3.00	47.67	13.00
11.833	2.00	23.833	2.00	35.833	3.00	47.83	13.00
12.000	2.00	24.000	2.00	36.000	3.00	48.00	12.99

Unit Hyd Qpeak (cms)= 1.716

PEAK FLOW (cms)= 1.512 (i)
TIME TO PEAK (hrs)= 46.000
RUNOFF VOLUME (mm)= 238.158
TOTAL RAINFALL (mm)= 284.499
RUNOFF COEFFICIENT = 0.837

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

CALIB			
NASHYD (0206)	Area (ha)= 1.61	Curve Number (CN)= 84.0	
ID= 1 DT=10.0 min	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.06		

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	0.00	12.167	2.00	24.167	2.00	36.17	6.00
0.333	1.00	12.333	2.00	24.333	2.00	36.33	6.00
0.500	2.00	12.500	2.00	24.500	2.00	36.50	6.00
0.667	2.00	12.667	2.00	24.667	2.00	36.67	6.00
0.833	2.00	12.833	2.00	24.833	2.00	36.83	6.00
1.000	2.00	13.000	2.00	25.000	2.00	37.00	6.00
1.167	2.00	13.167	2.00	25.167	2.00	37.17	4.00
1.333	2.00	13.333	2.00	25.333	2.00	37.33	4.00
1.500	2.00	13.500	2.00	25.500	2.00	37.50	4.00
1.667	2.00	13.667	2.00	25.667	2.00	37.67	4.00
1.833	2.00	13.833	2.00	25.833	2.00	37.83	4.00
2.000	2.00	14.000	2.00	26.000	2.00	38.00	4.00
2.167	2.00	14.167	2.00	26.167	2.00	38.17	6.00
2.333	2.00	14.333	2.00	26.333	2.00	38.33	6.00
2.500	2.00	14.500	2.00	26.500	2.00	38.50	6.00
2.667	2.00	14.667	2.00	26.667	2.00	38.67	6.00
2.833	2.00	14.833	2.00	26.833	2.00	38.83	6.00
3.000	2.00	15.000	2.00	27.000	2.00	39.00	6.00
3.167	2.00	15.167	2.00	27.167	2.00	39.17	13.00
3.333	2.00	15.333	2.00	27.333	2.00	39.33	13.00
3.500	2.00	15.500	2.00	27.500	2.00	39.50	13.00
3.667	2.00	15.667	2.00	27.667	2.00	39.67	13.00
3.833	2.00	15.833	2.00	27.833	2.00	39.83	13.00
4.000	2.00	16.000	2.00	28.000	2.00	40.00	13.00
4.167	2.00	16.167	2.00	28.167	2.00	40.17	17.00
4.333	2.00	16.333	2.00	28.333	2.00	40.33	17.00
4.500	2.00	16.500	2.00	28.500	2.00	40.50	17.00
4.667	2.00	16.667	2.00	28.667	2.00	40.67	17.00
4.833	2.00	16.833	2.00	28.833	2.00	40.83	17.00

5.000	2.00	17.000	2.00	29.000	2.00	41.00	17.00
5.167	2.00	17.167	2.00	29.167	2.00	41.17	13.00
5.333	2.00	17.333	2.00	29.333	2.00	41.33	13.00
5.500	2.00	17.500	2.00	29.500	2.00	41.50	13.00
5.667	2.00	17.667	2.00	29.667	2.00	41.67	13.00
5.833	2.00	17.833	2.00	29.833	2.00	41.83	13.00
6.000	2.00	18.000	2.00	30.000	2.00	42.00	13.00
6.167	2.00	18.167	2.00	30.167	2.00	42.17	23.00
6.333	2.00	18.333	2.00	30.333	2.00	42.33	23.00
6.500	2.00	18.500	2.00	30.500	2.00	42.50	23.00
6.667	2.00	18.667	2.00	30.667	2.00	42.67	23.00
6.833	2.00	18.833	2.00	30.833	2.00	42.83	23.00
7.000	2.00	19.000	2.00	31.000	2.00	43.00	23.00
7.167	2.00	19.167	2.00	31.167	2.00	43.17	13.00
7.333	2.00	19.333	2.00	31.333	2.00	43.33	13.00
7.500	2.00	19.500	2.00	31.500	2.00	43.50	13.00
7.667	2.00	19.667	2.00	31.667	2.00	43.67	13.00
7.833	2.00	19.833	2.00	31.833	2.00	43.83	13.00
8.000	2.00	20.000	2.00	32.000	2.00	44.00	13.00
8.167	2.00	20.167	2.00	32.167	2.00	44.17	13.00
8.333	2.00	20.333	2.00	32.333	2.00	44.33	13.00
8.500	2.00	20.500	2.00	32.500	2.00	44.50	13.00
8.667	2.00	20.667	2.00	32.667	2.00	44.67	13.00
8.833	2.00	20.833	2.00	32.833	2.00	44.83	13.00
9.000	2.00	21.000	2.00	33.000	2.00	45.00	13.01
9.167	2.00	21.167	2.00	33.167	2.00	45.17	53.00
9.333	2.00	21.333	2.00	33.333	2.00	45.33	53.00
9.500	2.00	21.500	2.00	33.500	2.00	45.50	53.00
9.667	2.00	21.667	2.00	33.667	2.00	45.67	53.00
9.833	2.00	21.833	2.00	33.833	2.00	45.83	53.00
10.000	2.00	22.000	2.00	34.000	2.00	46.00	53.00
10.167	2.00	22.167	2.00	34.167	2.00	46.17	38.00
10.333	2.00	22.333	2.00	34.333	2.00	46.33	38.00
10.500	2.00	22.500	2.00	34.500	2.00	46.50	38.00
10.667	2.00	22.667	2.00	34.667	2.00	46.67	38.00
10.833	2.00	22.833	2.00	34.833	2.00	46.83	38.00
11.000	2.00	23.000	2.00	35.000	2.00	47.00	37.99
11.167	2.00	23.167	2.00	35.167	3.00	47.17	13.00
11.333	2.00	23.333	2.00	35.333	3.00	47.33	13.00
11.500	2.00	23.500	2.00	35.500	3.00	47.50	13.00
11.667	2.00	23.667	2.00	35.667	3.00	47.67	13.00
11.833	2.00	23.833	2.00	35.833	3.00	47.83	13.00
12.000	2.00	24.000	2.00	36.000	3.00	48.00	12.99

Unit Hyd Qpeak (cms)= 1.025

PEAK FLOW (cms)= 0.077 (i)
TIME TO PEAK (hrs)= 46.000
RUNOFF VOLUME (mm)= 80.252
TOTAL RAINFALL (mm)= 284.499

RUNOFF COEFFICIENT = 0.282

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

CALIB			
STANDHYD (0203)	Area (ha)= 0.49		
ID= 1 DT=10.0 min	Total Imp(%)= 75.00	Dir. Conn.(%)= 35.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.37	0.12
Dep. Storage	(mm)=	2.00	1.50
Average Slope	(%)=	0.50	0.50
Length	(m)=	20.00	20.00
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	0.00	12.167	2.00	24.167	2.00	36.17	6.00
0.333	1.00	12.333	2.00	24.333	2.00	36.33	6.00
0.500	2.00	12.500	2.00	24.500	2.00	36.50	6.00
0.667	2.00	12.667	2.00	24.667	2.00	36.67	6.00
0.833	2.00	12.833	2.00	24.833	2.00	36.83	6.00
1.000	2.00	13.000	2.00	25.000	2.00	37.00	6.00
1.167	2.00	13.167	2.00	25.167	2.00	37.17	4.00
1.333	2.00	13.333	2.00	25.333	2.00	37.33	4.00
1.500	2.00	13.500	2.00	25.500	2.00	37.50	4.00
1.667	2.00	13.667	2.00	25.667	2.00	37.67	4.00
1.833	2.00	13.833	2.00	25.833	2.00	37.83	4.00
2.000	2.00	14.000	2.00	26.000	2.00	38.00	4.00
2.167	2.00	14.167	2.00	26.167	2.00	38.17	6.00
2.333	2.00	14.333	2.00	26.333	2.00	38.33	6.00
2.500	2.00	14.500	2.00	26.500	2.00	38.50	6.00
2.667	2.00	14.667	2.00	26.667	2.00	38.67	6.00
2.833	2.00	14.833	2.00	26.833	2.00	38.83	6.00
3.000	2.00	15.000	2.00	27.000	2.00	39.00	6.00
3.167	2.00	15.167	2.00	27.167	2.00	39.17	13.00
3.333	2.00	15.333	2.00	27.333	2.00	39.33	13.00
3.500	2.00	15.500	2.00	27.500	2.00	39.50	13.00
3.667	2.00	15.667	2.00	27.667	2.00	39.67	13.00
3.833	2.00	15.833	2.00	27.833	2.00	39.83	13.00
4.000	2.00	16.000	2.00	28.000	2.00	40.00	13.00
4.167	2.00	16.167	2.00	28.167	2.00	40.17	17.00
4.333	2.00	16.333	2.00	28.333	2.00	40.33	17.00
4.500	2.00	16.500	2.00	28.500	2.00	40.50	17.00

4.667	2.00	16.667	2.00	28.667	2.00	40.67	17.00
4.833	2.00	16.833	2.00	28.833	2.00	40.83	17.00
5.000	2.00	17.000	2.00	29.000	2.00	41.00	17.00
5.167	2.00	17.167	2.00	29.167	2.00	41.17	13.00
5.333	2.00	17.333	2.00	29.333	2.00	41.33	13.00
5.500	2.00	17.500	2.00	29.500	2.00	41.50	13.00
5.667	2.00	17.667	2.00	29.667	2.00	41.67	13.00
5.833	2.00	17.833	2.00	29.833	2.00	41.83	13.00
6.000	2.00	18.000	2.00	30.000	2.00	42.00	13.00
6.167	2.00	18.167	2.00	30.167	2.00	42.17	23.00
6.333	2.00	18.333	2.00	30.333	2.00	42.33	23.00
6.500	2.00	18.500	2.00	30.500	2.00	42.50	23.00
6.667	2.00	18.667	2.00	30.667	2.00	42.67	23.00
6.833	2.00	18.833	2.00	30.833	2.00	42.83	23.00
7.000	2.00	19.000	2.00	31.000	2.00	43.00	23.00
7.167	2.00	19.167	2.00	31.167	2.00	43.17	13.00
7.333	2.00	19.333	2.00	31.333	2.00	43.33	13.00
7.500	2.00	19.500	2.00	31.500	2.00	43.50	13.00
7.667	2.00	19.667	2.00	31.667	2.00	43.67	13.00
7.833	2.00	19.833	2.00	31.833	2.00	43.83	13.00
8.000	2.00	20.000	2.00	32.000	2.00	44.00	13.00
8.167	2.00	20.167	2.00	32.167	2.00	44.17	13.00
8.333	2.00	20.333	2.00	32.333	2.00	44.33	13.00
8.500	2.00	20.500	2.00	32.500	2.00	44.50	13.00
8.667	2.00	20.667	2.00	32.667	2.00	44.67	13.00
8.833	2.00	20.833	2.00	32.833	2.00	44.83	13.00
9.000	2.00	21.000	2.00	33.000	2.00	45.00	13.01
9.167	2.00	21.167	2.00	33.167	2.00	45.17	53.00
9.333	2.00	21.333	2.00	33.333	2.00	45.33	53.00
9.500	2.00	21.500	2.00	33.500	2.00	45.50	53.00
9.667	2.00	21.667	2.00	33.667	2.00	45.67	53.00
9.833	2.00	21.833	2.00	33.833	2.00	45.83	53.00
10.000	2.00	22.000	2.00	34.000	2.00	46.00	53.00
10.167	2.00	22.167	2.00	34.167	2.00	46.17	38.00
10.333	2.00	22.333	2.00	34.333	2.00	46.33	38.00
10.500	2.00	22.500	2.00	34.500	2.00	46.50	38.00
10.667	2.00	22.667	2.00	34.667	2.00	46.67	38.00
10.833	2.00	22.833	2.00	34.833	2.00	46.83	38.00
11.000	2.00	23.000	2.00	35.000	2.00	47.00	37.99
11.167	2.00	23.167	2.00	35.167	3.00	47.17	13.00
11.333	2.00	23.333	2.00	35.333	3.00	47.33	13.00
11.500	2.00	23.500	2.00	35.500	3.00	47.50	13.00
11.667	2.00	23.667	2.00	35.667	3.00	47.67	13.00
11.833	2.00	23.833	2.00	35.833	3.00	47.83	13.00
12.000	2.00	24.000	2.00	36.000	3.00	48.00	12.99

Max.Eff.Inten.(mm/hr)=	53.00	136.02
over (min)	10.00	10.00
Storage Coeff. (min)=	1.68 (ii)	7.92 (ii)
Unit Hyd. Tpeak (min)=	10.00	10.00

```
     Unit Hyd. peak  (cms)=       0.17         0.12
                                                              *TOTALS*
     PEAK FLOW       (cms)=       0.03         0.05           0.071 (iii)
     TIME TO PEAK    (hrs)=      45.83        46.00           46.00
     RUNOFF VOLUME    (mm)=     282.50       257.46          266.21
     TOTAL RAINFALL   (mm)=     284.50       284.50          284.50
     RUNOFF COEFFICIENT   =       0.99         0.90            0.94

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0002)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0203):     0.49   0.071    46.00   266.21
      + ID2= 2 (  0206):     1.61   0.077    46.00    80.25
        ================================================
        ID = 3 (  0002):     2.10   0.149    46.00   123.64

     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 (  0002):     2.10   0.149    46.00   123.64
      + ID2= 2 (  0200):    10.78   1.512    46.00   238.16
        ================================================
        ID = 3 (  0003):    12.88   1.661    46.00   219.49

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| ROUTEPIPE(  0064)|     PIPE Number     =   1.00
| IN= 2---> OUT= 1 |     Diameter    (mm)=1050.00
| DT=  5.0 min     |     Length       (m)=  17.90
--------------------     Slope      (m/m)=  0.005
                         Manning n       =  0.013

     <----------------- TRAVEL TIME TABLE -------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
```

(m)	(cu.m.)	(cms)	(m/s)	min
0.06	.313E+00	0.0	0.59	0.50
0.11	.870E+00	0.0	0.92	0.32
0.17	.157E+01	0.1	1.19	0.25
0.22	.237E+01	0.2	1.41	0.21
0.28	.326E+01	0.3	1.61	0.19
0.33	.420E+01	0.4	1.78	0.17
0.39	.518E+01	0.6	1.93	0.15
0.44	.620E+01	0.7	2.06	0.14
0.50	.723E+01	0.9	2.18	0.14
0.55	.827E+01	1.1	2.28	0.13
0.61	.930E+01	1.2	2.36	0.13
0.66	.103E+02	1.4	2.43	0.12
0.72	.113E+02	1.6	2.49	0.12
0.77	.122E+02	1.7	2.52	0.12
0.83	.131E+02	1.9	2.54	0.12
0.88	.139E+02	2.0	2.54	0.12
0.94	.146E+02	2.1	2.51	0.12
0.99	.152E+02	2.1	2.45	0.12
1.05	.155E+02	1.9	2.23	0.13

		<---- hydrograph ---->			<-pipe / channel->	
	AREA	QPEAK	TPEAK	R.V.	MAX DEPTH	MAX VEL
	(ha)	(cms)	(hrs)	(mm)	(m)	(m/s)
INFLOW : ID= 2 (0003)	12.88	1.66	46.00	219.49	0.75	2.51
OUTFLOW: ID= 1 (0064)	12.88	1.66	46.00	219.49	0.75	2.50

CALIB STANDHYD (0208) ID= 1 DT=10.0 min	Area (ha)= 0.37 Total Imp(%)= 40.00 Dir. Conn.(%)= 10.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.15	0.22
Dep. Storage	(mm)=	2.00	1.50
Average Slope	(%)=	1.00	1.00
Length	(m)=	40.00	30.00
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	0.00	12.167	2.00	24.167	2.00	36.17	6.00
0.333	1.00	12.333	2.00	24.333	2.00	36.33	6.00
0.500	2.00	12.500	2.00	24.500	2.00	36.50	6.00

0.667	2.00	12.667	2.00	24.667	2.00	36.67	6.00
0.833	2.00	12.833	2.00	24.833	2.00	36.83	6.00
1.000	2.00	13.000	2.00	25.000	2.00	37.00	6.00
1.167	2.00	13.167	2.00	25.167	2.00	37.17	4.00
1.333	2.00	13.333	2.00	25.333	2.00	37.33	4.00
1.500	2.00	13.500	2.00	25.500	2.00	37.50	4.00
1.667	2.00	13.667	2.00	25.667	2.00	37.67	4.00
1.833	2.00	13.833	2.00	25.833	2.00	37.83	4.00
2.000	2.00	14.000	2.00	26.000	2.00	38.00	4.00
2.167	2.00	14.167	2.00	26.167	2.00	38.17	6.00
2.333	2.00	14.333	2.00	26.333	2.00	38.33	6.00
2.500	2.00	14.500	2.00	26.500	2.00	38.50	6.00
2.667	2.00	14.667	2.00	26.667	2.00	38.67	6.00
2.833	2.00	14.833	2.00	26.833	2.00	38.83	6.00
3.000	2.00	15.000	2.00	27.000	2.00	39.00	6.00
3.167	2.00	15.167	2.00	27.167	2.00	39.17	13.00
3.333	2.00	15.333	2.00	27.333	2.00	39.33	13.00
3.500	2.00	15.500	2.00	27.500	2.00	39.50	13.00
3.667	2.00	15.667	2.00	27.667	2.00	39.67	13.00
3.833	2.00	15.833	2.00	27.833	2.00	39.83	13.00
4.000	2.00	16.000	2.00	28.000	2.00	40.00	13.00
4.167	2.00	16.167	2.00	28.167	2.00	40.17	17.00
4.333	2.00	16.333	2.00	28.333	2.00	40.33	17.00
4.500	2.00	16.500	2.00	28.500	2.00	40.50	17.00
4.667	2.00	16.667	2.00	28.667	2.00	40.67	17.00
4.833	2.00	16.833	2.00	28.833	2.00	40.83	17.00
5.000	2.00	17.000	2.00	29.000	2.00	41.00	17.00
5.167	2.00	17.167	2.00	29.167	2.00	41.17	13.00
5.333	2.00	17.333	2.00	29.333	2.00	41.33	13.00
5.500	2.00	17.500	2.00	29.500	2.00	41.50	13.00
5.667	2.00	17.667	2.00	29.667	2.00	41.67	13.00
5.833	2.00	17.833	2.00	29.833	2.00	41.83	13.00
6.000	2.00	18.000	2.00	30.000	2.00	42.00	13.00
6.167	2.00	18.167	2.00	30.167	2.00	42.17	23.00
6.333	2.00	18.333	2.00	30.333	2.00	42.33	23.00
6.500	2.00	18.500	2.00	30.500	2.00	42.50	23.00
6.667	2.00	18.667	2.00	30.667	2.00	42.67	23.00
6.833	2.00	18.833	2.00	30.833	2.00	42.83	23.00
7.000	2.00	19.000	2.00	31.000	2.00	43.00	23.00
7.167	2.00	19.167	2.00	31.167	2.00	43.17	13.00
7.333	2.00	19.333	2.00	31.333	2.00	43.33	13.00
7.500	2.00	19.500	2.00	31.500	2.00	43.50	13.00
7.667	2.00	19.667	2.00	31.667	2.00	43.67	13.00
7.833	2.00	19.833	2.00	31.833	2.00	43.83	13.00
8.000	2.00	20.000	2.00	32.000	2.00	44.00	13.00
8.167	2.00	20.167	2.00	32.167	2.00	44.17	13.00
8.333	2.00	20.333	2.00	32.333	2.00	44.33	13.00
8.500	2.00	20.500	2.00	32.500	2.00	44.50	13.00
8.667	2.00	20.667	2.00	32.667	2.00	44.67	13.00
8.833	2.00	20.833	2.00	32.833	2.00	44.83	13.00

9.000	2.00	21.000	2.00	33.000	2.00	45.00	13.01
9.167	2.00	21.167	2.00	33.167	2.00	45.17	53.00
9.333	2.00	21.333	2.00	33.333	2.00	45.33	53.00
9.500	2.00	21.500	2.00	33.500	2.00	45.50	53.00
9.667	2.00	21.667	2.00	33.667	2.00	45.67	53.00
9.833	2.00	21.833	2.00	33.833	2.00	45.83	53.00
10.000	2.00	22.000	2.00	34.000	2.00	46.00	53.00
10.167	2.00	22.167	2.00	34.167	2.00	46.17	38.00
10.333	2.00	22.333	2.00	34.333	2.00	46.33	38.00
10.500	2.00	22.500	2.00	34.500	2.00	46.50	38.00
10.667	2.00	22.667	2.00	34.667	2.00	46.67	38.00
10.833	2.00	22.833	2.00	34.833	2.00	46.83	38.00
11.000	2.00	23.000	2.00	35.000	2.00	47.00	37.99
11.167	2.00	23.167	2.00	35.167	3.00	47.17	13.00
11.333	2.00	23.333	2.00	35.333	3.00	47.33	13.00
11.500	2.00	23.500	2.00	35.500	3.00	47.50	13.00
11.667	2.00	23.667	2.00	35.667	3.00	47.67	13.00
11.833	2.00	23.833	2.00	35.833	3.00	47.83	13.00
12.000	2.00	24.000	2.00	36.000	3.00	48.00	12.99

Max.Eff.Inten.(mm/hr)=	53.00	76.87		
over (min)	10.00	20.00		
Storage Coeff. (min)=	2.07 (ii)	10.19 (ii)		
Unit Hyd. Tpeak (min)=	10.00	20.00		
Unit Hyd. peak (cms)=	0.17	0.08		
			TOTALS	
PEAK FLOW (cms)=	0.01	0.05	0.053 (iii)	
TIME TO PEAK (hrs)=	45.83	46.00	46.00	
RUNOFF VOLUME (mm)=	282.50	240.58	244.75	
TOTAL RAINFALL (mm)=	284.50	284.50	284.50	
RUNOFF COEFFICIENT =	0.99	0.85	0.86	

***** WARNING: STORAGE COEFF. IS SMALLER THAN TIME STEP!
***** WARNING:FOR AREAS WITH IMPERVIOUS RATIOS BELOW 20%
YOU SHOULD CONSIDER SPLITTING THE AREA.

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 77.0 Ia = Dep. 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 (0004)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0208):	0.37	0.053	46.00	244.75
+ ID2= 2 (0064):	12.88	1.661	46.00	219.49

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        ================================================
        ID = 3 (  0004):    13.25   1.714    46.00   220.19

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| ROUTEPIPE(  0066)|     PIPE Number     =   1.00
| IN= 2---> OUT= 1 |     Diameter    (mm)=1050.00
| DT=  5.0 min     |     Length       (m)=  21.80
--------------------     Slope      (m/m)=  0.005
                         Manning n       =  0.013

     <----------------- TRAVEL TIME TABLE ---------------------->
       DEPTH      VOLUME    FLOW RATE    VELOCITY    TRAV.TIME
        (m)      (cu.m.)      (cms)        (m/s)        min
       0.06     .381E+00       0.0          0.59         0.61
       0.11     .106E+01       0.0          0.92         0.39
       0.17     .191E+01       0.1          1.19         0.31
       0.22     .289E+01       0.2          1.41         0.26
       0.28     .397E+01       0.3          1.61         0.23
       0.33     .511E+01       0.4          1.78         0.20
       0.39     .631E+01       0.6          1.93         0.19
       0.44     .755E+01       0.7          2.06         0.18
       0.50     .881E+01       0.9          2.18         0.17
       0.55     .101E+02       1.1          2.28         0.16
       0.61     .113E+02       1.2          2.36         0.15
       0.66     .126E+02       1.4          2.43         0.15
       0.72     .138E+02       1.6          2.49         0.15
       0.77     .149E+02       1.7          2.52         0.14
       0.83     .160E+02       1.9          2.54         0.14
       0.88     .170E+02       2.0          2.54         0.14
       0.94     .178E+02       2.1          2.51         0.14
       0.99     .185E+02       2.1          2.45         0.15
       1.05     .189E+02       1.9          2.23         0.16
                                     <---- hydrograph ---->   <-pipe / channel->
                              AREA    QPEAK   TPEAK   R.V.   MAX DEPTH  MAX VEL
                              (ha)    (cms)   (hrs)   (mm)      (m)      (m/s)
   INFLOW : ID= 2 (  0004)   13.25     1.71   46.00 220.19      0.77      2.52
   OUTFLOW: ID= 1 (  0066)   13.25     1.71   46.00 220.19      0.77      2.52



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--------------------
| CALIB            |
| NASHYD   (  0201)|   Area    (ha)=   1.90   Curve Number   (CN)= 84.0
|ID= 1 DT=10.0 min |   Ia      (mm)=   4.84   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.10

         NOTE:  RAINFALL WAS TRANSFORMED TO  10.0 MIN. TIME STEP.
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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.167	0.00	12.167	2.00	24.167	2.00	36.17	6.00
0.333	1.00	12.333	2.00	24.333	2.00	36.33	6.00
0.500	2.00	12.500	2.00	24.500	2.00	36.50	6.00
0.667	2.00	12.667	2.00	24.667	2.00	36.67	6.00
0.833	2.00	12.833	2.00	24.833	2.00	36.83	6.00
1.000	2.00	13.000	2.00	25.000	2.00	37.00	6.00
1.167	2.00	13.167	2.00	25.167	2.00	37.17	4.00
1.333	2.00	13.333	2.00	25.333	2.00	37.33	4.00
1.500	2.00	13.500	2.00	25.500	2.00	37.50	4.00
1.667	2.00	13.667	2.00	25.667	2.00	37.67	4.00
1.833	2.00	13.833	2.00	25.833	2.00	37.83	4.00
2.000	2.00	14.000	2.00	26.000	2.00	38.00	4.00
2.167	2.00	14.167	2.00	26.167	2.00	38.17	6.00
2.333	2.00	14.333	2.00	26.333	2.00	38.33	6.00
2.500	2.00	14.500	2.00	26.500	2.00	38.50	6.00
2.667	2.00	14.667	2.00	26.667	2.00	38.67	6.00
2.833	2.00	14.833	2.00	26.833	2.00	38.83	6.00
3.000	2.00	15.000	2.00	27.000	2.00	39.00	6.00
3.167	2.00	15.167	2.00	27.167	2.00	39.17	13.00
3.333	2.00	15.333	2.00	27.333	2.00	39.33	13.00
3.500	2.00	15.500	2.00	27.500	2.00	39.50	13.00
3.667	2.00	15.667	2.00	27.667	2.00	39.67	13.00
3.833	2.00	15.833	2.00	27.833	2.00	39.83	13.00
4.000	2.00	16.000	2.00	28.000	2.00	40.00	13.00
4.167	2.00	16.167	2.00	28.167	2.00	40.17	17.00
4.333	2.00	16.333	2.00	28.333	2.00	40.33	17.00
4.500	2.00	16.500	2.00	28.500	2.00	40.50	17.00
4.667	2.00	16.667	2.00	28.667	2.00	40.67	17.00
4.833	2.00	16.833	2.00	28.833	2.00	40.83	17.00
5.000	2.00	17.000	2.00	29.000	2.00	41.00	17.00
5.167	2.00	17.167	2.00	29.167	2.00	41.17	13.00
5.333	2.00	17.333	2.00	29.333	2.00	41.33	13.00
5.500	2.00	17.500	2.00	29.500	2.00	41.50	13.00
5.667	2.00	17.667	2.00	29.667	2.00	41.67	13.00
5.833	2.00	17.833	2.00	29.833	2.00	41.83	13.00
6.000	2.00	18.000	2.00	30.000	2.00	42.00	13.00
6.167	2.00	18.167	2.00	30.167	2.00	42.17	23.00
6.333	2.00	18.333	2.00	30.333	2.00	42.33	23.00
6.500	2.00	18.500	2.00	30.500	2.00	42.50	23.00
6.667	2.00	18.667	2.00	30.667	2.00	42.67	23.00
6.833	2.00	18.833	2.00	30.833	2.00	42.83	23.00
7.000	2.00	19.000	2.00	31.000	2.00	43.00	23.00
7.167	2.00	19.167	2.00	31.167	2.00	43.17	13.00
7.333	2.00	19.333	2.00	31.333	2.00	43.33	13.00
7.500	2.00	19.500	2.00	31.500	2.00	43.50	13.00

7.667	2.00	19.667	2.00	31.667	2.00	43.67	13.00
7.833	2.00	19.833	2.00	31.833	2.00	43.83	13.00
8.000	2.00	20.000	2.00	32.000	2.00	44.00	13.00
8.167	2.00	20.167	2.00	32.167	2.00	44.17	13.00
8.333	2.00	20.333	2.00	32.333	2.00	44.33	13.00
8.500	2.00	20.500	2.00	32.500	2.00	44.50	13.00
8.667	2.00	20.667	2.00	32.667	2.00	44.67	13.00
8.833	2.00	20.833	2.00	32.833	2.00	44.83	13.00
9.000	2.00	21.000	2.00	33.000	2.00	45.00	13.01
9.167	2.00	21.167	2.00	33.167	2.00	45.17	53.00
9.333	2.00	21.333	2.00	33.333	2.00	45.33	53.00
9.500	2.00	21.500	2.00	33.500	2.00	45.50	53.00
9.667	2.00	21.667	2.00	33.667	2.00	45.67	53.00
9.833	2.00	21.833	2.00	33.833	2.00	45.83	53.00
10.000	2.00	22.000	2.00	34.000	2.00	46.00	53.00
10.167	2.00	22.167	2.00	34.167	2.00	46.17	38.00
10.333	2.00	22.333	2.00	34.333	2.00	46.33	38.00
10.500	2.00	22.500	2.00	34.500	2.00	46.50	38.00
10.667	2.00	22.667	2.00	34.667	2.00	46.67	38.00
10.833	2.00	22.833	2.00	34.833	2.00	46.83	38.00
11.000	2.00	23.000	2.00	35.000	2.00	47.00	37.99
11.167	2.00	23.167	2.00	35.167	3.00	47.17	13.00
11.333	2.00	23.333	2.00	35.333	3.00	47.33	13.00
11.500	2.00	23.500	2.00	35.500	3.00	47.50	13.00
11.667	2.00	23.667	2.00	35.667	3.00	47.67	13.00
11.833	2.00	23.833	2.00	35.833	3.00	47.83	13.00
12.000	2.00	24.000	2.00	36.000	3.00	48.00	12.99

Unit Hyd Qpeak (cms)= 0.726

PEAK FLOW (cms)= 0.207 (i)
TIME TO PEAK (hrs)= 46.000
RUNOFF VOLUME (mm)= 181.903
TOTAL RAINFALL (mm)= 284.499
RUNOFF COEFFICIENT = 0.639

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

CALIB NASHYD (0207) | ID= 1 DT=10.0 min	Area (ha)= 0.40	Curve Number (CN)= 84.0
	Ia (mm)= 4.84	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.14	

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	0.00	12.167	2.00	24.167	2.00	36.17	6.00
0.333	1.00	12.333	2.00	24.333	2.00	36.33	6.00
0.500	2.00	12.500	2.00	24.500	2.00	36.50	6.00
0.667	2.00	12.667	2.00	24.667	2.00	36.67	6.00
0.833	2.00	12.833	2.00	24.833	2.00	36.83	6.00
1.000	2.00	13.000	2.00	25.000	2.00	37.00	6.00
1.167	2.00	13.167	2.00	25.167	2.00	37.17	4.00
1.333	2.00	13.333	2.00	25.333	2.00	37.33	4.00
1.500	2.00	13.500	2.00	25.500	2.00	37.50	4.00
1.667	2.00	13.667	2.00	25.667	2.00	37.67	4.00
1.833	2.00	13.833	2.00	25.833	2.00	37.83	4.00
2.000	2.00	14.000	2.00	26.000	2.00	38.00	4.00
2.167	2.00	14.167	2.00	26.167	2.00	38.17	6.00
2.333	2.00	14.333	2.00	26.333	2.00	38.33	6.00
2.500	2.00	14.500	2.00	26.500	2.00	38.50	6.00
2.667	2.00	14.667	2.00	26.667	2.00	38.67	6.00
2.833	2.00	14.833	2.00	26.833	2.00	38.83	6.00
3.000	2.00	15.000	2.00	27.000	2.00	39.00	6.00
3.167	2.00	15.167	2.00	27.167	2.00	39.17	13.00
3.333	2.00	15.333	2.00	27.333	2.00	39.33	13.00
3.500	2.00	15.500	2.00	27.500	2.00	39.50	13.00
3.667	2.00	15.667	2.00	27.667	2.00	39.67	13.00
3.833	2.00	15.833	2.00	27.833	2.00	39.83	13.00
4.000	2.00	16.000	2.00	28.000	2.00	40.00	13.00
4.167	2.00	16.167	2.00	28.167	2.00	40.17	17.00
4.333	2.00	16.333	2.00	28.333	2.00	40.33	17.00
4.500	2.00	16.500	2.00	28.500	2.00	40.50	17.00
4.667	2.00	16.667	2.00	28.667	2.00	40.67	17.00
4.833	2.00	16.833	2.00	28.833	2.00	40.83	17.00
5.000	2.00	17.000	2.00	29.000	2.00	41.00	17.00
5.167	2.00	17.167	2.00	29.167	2.00	41.17	13.00
5.333	2.00	17.333	2.00	29.333	2.00	41.33	13.00
5.500	2.00	17.500	2.00	29.500	2.00	41.50	13.00
5.667	2.00	17.667	2.00	29.667	2.00	41.67	13.00
5.833	2.00	17.833	2.00	29.833	2.00	41.83	13.00
6.000	2.00	18.000	2.00	30.000	2.00	42.00	13.00
6.167	2.00	18.167	2.00	30.167	2.00	42.17	23.00
6.333	2.00	18.333	2.00	30.333	2.00	42.33	23.00
6.500	2.00	18.500	2.00	30.500	2.00	42.50	23.00
6.667	2.00	18.667	2.00	30.667	2.00	42.67	23.00
6.833	2.00	18.833	2.00	30.833	2.00	42.83	23.00
7.000	2.00	19.000	2.00	31.000	2.00	43.00	23.00
7.167	2.00	19.167	2.00	31.167	2.00	43.17	13.00
7.333	2.00	19.333	2.00	31.333	2.00	43.33	13.00
7.500	2.00	19.500	2.00	31.500	2.00	43.50	13.00
7.667	2.00	19.667	2.00	31.667	2.00	43.67	13.00
7.833	2.00	19.833	2.00	31.833	2.00	43.83	13.00
8.000	2.00	20.000	2.00	32.000	2.00	44.00	13.00
8.167	2.00	20.167	2.00	32.167	2.00	44.17	13.00

8.333	2.00	20.333	2.00	32.333	2.00	44.33	13.00
8.500	2.00	20.500	2.00	32.500	2.00	44.50	13.00
8.667	2.00	20.667	2.00	32.667	2.00	44.67	13.00
8.833	2.00	20.833	2.00	32.833	2.00	44.83	13.00
9.000	2.00	21.000	2.00	33.000	2.00	45.00	13.01
9.167	2.00	21.167	2.00	33.167	2.00	45.17	53.00
9.333	2.00	21.333	2.00	33.333	2.00	45.33	53.00
9.500	2.00	21.500	2.00	33.500	2.00	45.50	53.00
9.667	2.00	21.667	2.00	33.667	2.00	45.67	53.00
9.833	2.00	21.833	2.00	33.833	2.00	45.83	53.00
10.000	2.00	22.000	2.00	34.000	2.00	46.00	53.00
10.167	2.00	22.167	2.00	34.167	2.00	46.17	38.00
10.333	2.00	22.333	2.00	34.333	2.00	46.33	38.00
10.500	2.00	22.500	2.00	34.500	2.00	46.50	38.00
10.667	2.00	22.667	2.00	34.667	2.00	46.67	38.00
10.833	2.00	22.833	2.00	34.833	2.00	46.83	38.00
11.000	2.00	23.000	2.00	35.000	2.00	47.00	37.99
11.167	2.00	23.167	2.00	35.167	3.00	47.17	13.00
11.333	2.00	23.333	2.00	35.333	3.00	47.33	13.00
11.500	2.00	23.500	2.00	35.500	3.00	47.50	13.00
11.667	2.00	23.667	2.00	35.667	3.00	47.67	13.00
11.833	2.00	23.833	2.00	35.833	3.00	47.83	13.00
12.000	2.00	24.000	2.00	36.000	3.00	48.00	12.99

Unit Hyd Qpeak (cms)= 0.109

PEAK FLOW (cms)= 0.052 (i)
TIME TO PEAK (hrs)= 46.000
RUNOFF VOLUME (mm)= 217.436
TOTAL RAINFALL (mm)= 284.499
RUNOFF COEFFICIENT = 0.764

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

CALIB STANDHYD (0204) ID= 1 DT=10.0 min	Area (ha)= 0.68 Total Imp(%)= 75.00 Dir. Conn.(%)= 35.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.51	0.17
Dep. Storage	(mm)=	2.00	1.50
Average Slope	(%)=	0.50	0.50
Length	(m)=	20.00	20.00
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	0.00	12.167	2.00	24.167	2.00	36.17	6.00
0.333	1.00	12.333	2.00	24.333	2.00	36.33	6.00
0.500	2.00	12.500	2.00	24.500	2.00	36.50	6.00
0.667	2.00	12.667	2.00	24.667	2.00	36.67	6.00
0.833	2.00	12.833	2.00	24.833	2.00	36.83	6.00
1.000	2.00	13.000	2.00	25.000	2.00	37.00	6.00
1.167	2.00	13.167	2.00	25.167	2.00	37.17	4.00
1.333	2.00	13.333	2.00	25.333	2.00	37.33	4.00
1.500	2.00	13.500	2.00	25.500	2.00	37.50	4.00
1.667	2.00	13.667	2.00	25.667	2.00	37.67	4.00
1.833	2.00	13.833	2.00	25.833	2.00	37.83	4.00
2.000	2.00	14.000	2.00	26.000	2.00	38.00	4.00
2.167	2.00	14.167	2.00	26.167	2.00	38.17	6.00
2.333	2.00	14.333	2.00	26.333	2.00	38.33	6.00
2.500	2.00	14.500	2.00	26.500	2.00	38.50	6.00
2.667	2.00	14.667	2.00	26.667	2.00	38.67	6.00
2.833	2.00	14.833	2.00	26.833	2.00	38.83	6.00
3.000	2.00	15.000	2.00	27.000	2.00	39.00	6.00
3.167	2.00	15.167	2.00	27.167	2.00	39.17	13.00
3.333	2.00	15.333	2.00	27.333	2.00	39.33	13.00
3.500	2.00	15.500	2.00	27.500	2.00	39.50	13.00
3.667	2.00	15.667	2.00	27.667	2.00	39.67	13.00
3.833	2.00	15.833	2.00	27.833	2.00	39.83	13.00
4.000	2.00	16.000	2.00	28.000	2.00	40.00	13.00
4.167	2.00	16.167	2.00	28.167	2.00	40.17	17.00
4.333	2.00	16.333	2.00	28.333	2.00	40.33	17.00
4.500	2.00	16.500	2.00	28.500	2.00	40.50	17.00
4.667	2.00	16.667	2.00	28.667	2.00	40.67	17.00
4.833	2.00	16.833	2.00	28.833	2.00	40.83	17.00
5.000	2.00	17.000	2.00	29.000	2.00	41.00	17.00
5.167	2.00	17.167	2.00	29.167	2.00	41.17	13.00
5.333	2.00	17.333	2.00	29.333	2.00	41.33	13.00
5.500	2.00	17.500	2.00	29.500	2.00	41.50	13.00
5.667	2.00	17.667	2.00	29.667	2.00	41.67	13.00
5.833	2.00	17.833	2.00	29.833	2.00	41.83	13.00
6.000	2.00	18.000	2.00	30.000	2.00	42.00	13.00
6.167	2.00	18.167	2.00	30.167	2.00	42.17	23.00
6.333	2.00	18.333	2.00	30.333	2.00	42.33	23.00
6.500	2.00	18.500	2.00	30.500	2.00	42.50	23.00
6.667	2.00	18.667	2.00	30.667	2.00	42.67	23.00
6.833	2.00	18.833	2.00	30.833	2.00	42.83	23.00
7.000	2.00	19.000	2.00	31.000	2.00	43.00	23.00
7.167	2.00	19.167	2.00	31.167	2.00	43.17	13.00
7.333	2.00	19.333	2.00	31.333	2.00	43.33	13.00
7.500	2.00	19.500	2.00	31.500	2.00	43.50	13.00
7.667	2.00	19.667	2.00	31.667	2.00	43.67	13.00
7.833	2.00	19.833	2.00	31.833	2.00	43.83	13.00

8.000	2.00	20.000	2.00	32.000	2.00	44.00	13.00
8.167	2.00	20.167	2.00	32.167	2.00	44.17	13.00
8.333	2.00	20.333	2.00	32.333	2.00	44.33	13.00
8.500	2.00	20.500	2.00	32.500	2.00	44.50	13.00
8.667	2.00	20.667	2.00	32.667	2.00	44.67	13.00
8.833	2.00	20.833	2.00	32.833	2.00	44.83	13.00
9.000	2.00	21.000	2.00	33.000	2.00	45.00	13.01
9.167	2.00	21.167	2.00	33.167	2.00	45.17	53.00
9.333	2.00	21.333	2.00	33.333	2.00	45.33	53.00
9.500	2.00	21.500	2.00	33.500	2.00	45.50	53.00
9.667	2.00	21.667	2.00	33.667	2.00	45.67	53.00
9.833	2.00	21.833	2.00	33.833	2.00	45.83	53.00
10.000	2.00	22.000	2.00	34.000	2.00	46.00	53.00
10.167	2.00	22.167	2.00	34.167	2.00	46.17	38.00
10.333	2.00	22.333	2.00	34.333	2.00	46.33	38.00
10.500	2.00	22.500	2.00	34.500	2.00	46.50	38.00
10.667	2.00	22.667	2.00	34.667	2.00	46.67	38.00
10.833	2.00	22.833	2.00	34.833	2.00	46.83	38.00
11.000	2.00	23.000	2.00	35.000	2.00	47.00	37.99
11.167	2.00	23.167	2.00	35.167	3.00	47.17	13.00
11.333	2.00	23.333	2.00	35.333	3.00	47.33	13.00
11.500	2.00	23.500	2.00	35.500	3.00	47.50	13.00
11.667	2.00	23.667	2.00	35.667	3.00	47.67	13.00
11.833	2.00	23.833	2.00	35.833	3.00	47.83	13.00
12.000	2.00	24.000	2.00	36.000	3.00	48.00	12.99

Max.Eff.Inten.(mm/hr)=	53.00	136.02		
over (min)	10.00	10.00		
Storage Coeff. (min)=	1.68 (ii)	7.92 (ii)		
Unit Hyd. Tpeak (min)=	10.00	10.00		
Unit Hyd. peak (cms)=	0.17	0.12		
			TOTALS	
PEAK FLOW (cms)=	0.04	0.06	0.099 (iii)	
TIME TO PEAK (hrs)=	45.83	46.00	46.00	
RUNOFF VOLUME (mm)=	282.50	257.46	266.22	
TOTAL RAINFALL (mm)=	284.50	284.50	284.50	
RUNOFF COEFFICIENT =	0.99	0.90	0.94	

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 77.0 Ia = Dep. 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 (0001)

1 + 2 = 3		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0204):	0.68	0.099	46.00	266.22
+	ID2= 2 (0207):	0.40	0.052	46.00	217.44
	ID = 3 (0001):	1.08	0.151	46.00	248.15

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	
STANDHYD (0202)	Area (ha)= 3.44
ID= 1 DT=10.0 min	Total Imp(%)= 75.00 Dir. Conn.(%)= 35.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.58	0.86
Dep. Storage	(mm)=	2.00	1.50
Average Slope	(%)=	1.00	1.00
Length	(m)=	40.00	30.00
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	0.00	12.167	2.00	24.167	2.00	36.17	6.00
0.333	1.00	12.333	2.00	24.333	2.00	36.33	6.00
0.500	2.00	12.500	2.00	24.500	2.00	36.50	6.00
0.667	2.00	12.667	2.00	24.667	2.00	36.67	6.00
0.833	2.00	12.833	2.00	24.833	2.00	36.83	6.00
1.000	2.00	13.000	2.00	25.000	2.00	37.00	6.00
1.167	2.00	13.167	2.00	25.167	2.00	37.17	4.00
1.333	2.00	13.333	2.00	25.333	2.00	37.33	4.00
1.500	2.00	13.500	2.00	25.500	2.00	37.50	4.00
1.667	2.00	13.667	2.00	25.667	2.00	37.67	4.00
1.833	2.00	13.833	2.00	25.833	2.00	37.83	4.00
2.000	2.00	14.000	2.00	26.000	2.00	38.00	4.00
2.167	2.00	14.167	2.00	26.167	2.00	38.17	6.00
2.333	2.00	14.333	2.00	26.333	2.00	38.33	6.00
2.500	2.00	14.500	2.00	26.500	2.00	38.50	6.00
2.667	2.00	14.667	2.00	26.667	2.00	38.67	6.00
2.833	2.00	14.833	2.00	26.833	2.00	38.83	6.00
3.000	2.00	15.000	2.00	27.000	2.00	39.00	6.00
3.167	2.00	15.167	2.00	27.167	2.00	39.17	13.00
3.333	2.00	15.333	2.00	27.333	2.00	39.33	13.00
3.500	2.00	15.500	2.00	27.500	2.00	39.50	13.00
3.667	2.00	15.667	2.00	27.667	2.00	39.67	13.00
3.833	2.00	15.833	2.00	27.833	2.00	39.83	13.00

4.000	2.00	16.000	2.00	28.000	2.00	40.00	13.00
4.167	2.00	16.167	2.00	28.167	2.00	40.17	17.00
4.333	2.00	16.333	2.00	28.333	2.00	40.33	17.00
4.500	2.00	16.500	2.00	28.500	2.00	40.50	17.00
4.667	2.00	16.667	2.00	28.667	2.00	40.67	17.00
4.833	2.00	16.833	2.00	28.833	2.00	40.83	17.00
5.000	2.00	17.000	2.00	29.000	2.00	41.00	17.00
5.167	2.00	17.167	2.00	29.167	2.00	41.17	13.00
5.333	2.00	17.333	2.00	29.333	2.00	41.33	13.00
5.500	2.00	17.500	2.00	29.500	2.00	41.50	13.00
5.667	2.00	17.667	2.00	29.667	2.00	41.67	13.00
5.833	2.00	17.833	2.00	29.833	2.00	41.83	13.00
6.000	2.00	18.000	2.00	30.000	2.00	42.00	13.00
6.167	2.00	18.167	2.00	30.167	2.00	42.17	23.00
6.333	2.00	18.333	2.00	30.333	2.00	42.33	23.00
6.500	2.00	18.500	2.00	30.500	2.00	42.50	23.00
6.667	2.00	18.667	2.00	30.667	2.00	42.67	23.00
6.833	2.00	18.833	2.00	30.833	2.00	42.83	23.00
7.000	2.00	19.000	2.00	31.000	2.00	43.00	23.00
7.167	2.00	19.167	2.00	31.167	2.00	43.17	13.00
7.333	2.00	19.333	2.00	31.333	2.00	43.33	13.00
7.500	2.00	19.500	2.00	31.500	2.00	43.50	13.00
7.667	2.00	19.667	2.00	31.667	2.00	43.67	13.00
7.833	2.00	19.833	2.00	31.833	2.00	43.83	13.00
8.000	2.00	20.000	2.00	32.000	2.00	44.00	13.00
8.167	2.00	20.167	2.00	32.167	2.00	44.17	13.00
8.333	2.00	20.333	2.00	32.333	2.00	44.33	13.00
8.500	2.00	20.500	2.00	32.500	2.00	44.50	13.00
8.667	2.00	20.667	2.00	32.667	2.00	44.67	13.00
8.833	2.00	20.833	2.00	32.833	2.00	44.83	13.00
9.000	2.00	21.000	2.00	33.000	2.00	45.00	13.01
9.167	2.00	21.167	2.00	33.167	2.00	45.17	53.00
9.333	2.00	21.333	2.00	33.333	2.00	45.33	53.00
9.500	2.00	21.500	2.00	33.500	2.00	45.50	53.00
9.667	2.00	21.667	2.00	33.667	2.00	45.67	53.00
9.833	2.00	21.833	2.00	33.833	2.00	45.83	53.00
10.000	2.00	22.000	2.00	34.000	2.00	46.00	53.00
10.167	2.00	22.167	2.00	34.167	2.00	46.17	38.00
10.333	2.00	22.333	2.00	34.333	2.00	46.33	38.00
10.500	2.00	22.500	2.00	34.500	2.00	46.50	38.00
10.667	2.00	22.667	2.00	34.667	2.00	46.67	38.00
10.833	2.00	22.833	2.00	34.833	2.00	46.83	38.00
11.000	2.00	23.000	2.00	35.000	2.00	47.00	37.99
11.167	2.00	23.167	2.00	35.167	3.00	47.17	13.00
11.333	2.00	23.333	2.00	35.333	3.00	47.33	13.00
11.500	2.00	23.500	2.00	35.500	3.00	47.50	13.00
11.667	2.00	23.667	2.00	35.667	3.00	47.67	13.00
11.833	2.00	23.833	2.00	35.833	3.00	47.83	13.00
12.000	2.00	24.000	2.00	36.000	3.00	48.00	12.99

```
     Max.Eff.Inten.(mm/hr)=      53.00       136.02
               over (min)       10.00        10.00
     Storage Coeff.  (min)=       2.07 (ii)    8.54 (ii)
     Unit Hyd. Tpeak (min)=      10.00        10.00
     Unit Hyd. peak  (cms)=       0.17         0.12
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.18         0.32          0.502 (iii)
     TIME TO PEAK    (hrs)=      45.83        46.00          46.00
     RUNOFF VOLUME    (mm)=     282.50       257.46         266.22
     TOTAL RAINFALL   (mm)=     284.50       284.50         284.50
     RUNOFF COEFFICIENT   =       0.99         0.90           0.94

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  77.0    Ia = Dep. 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  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0001):     1.08   0.151    46.00   248.15
      + ID2= 2 (  0201):     1.90   0.207    46.00   181.90
        ================================================
        ID = 3 (  0005):     2.98   0.358    46.00   205.91

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

--------------------
| ADD HYD  (  0005)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
        ID1= 3 (  0005):     2.98   0.358    46.00   205.91
      + ID2= 2 (  0202):     3.44   0.502    46.00   266.22
        ================================================
        ID = 1 (  0005):     6.42   0.860    46.00   238.23

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

--------------------
| ADD HYD  (  0005)|
|   1 +  2 =  3    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
```

```
        ID1= 1 (  0005):     6.42   0.860    46.00   238.23
      + ID2= 2 (  0066):    13.25   1.712    46.00   220.19
        ================================================
        ID = 3 (  0005):    19.67   2.571    46.00   226.08

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
--------------------------------------------------------------------------------
--------------------
| RESERVOIR(  0007)|     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   |    0.0714      0.2390
                           0.0039      0.0080   |    0.3650      0.2830
                           0.0250      0.0360   |    1.0693      0.3300
                           0.0320      0.0670   |    2.2806      0.3790
                           0.0332      0.1000   |    4.0807      0.4300
                           0.0388      0.1360   |    6.5420      0.4840
                           0.0437      0.1760   |    9.7294      0.5410
                           0.0480      0.2170   |   12.4249      0.5820

                                  AREA     QPEAK     TPEAK       R.V.
                                  (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0005)     19.670      2.571     46.00     226.08
   OUTFLOW: ID= 1 (  0007)     19.670      2.562     46.00     226.05

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 99.65
                  TIME SHIFT OF PEAK FLOW         (min)=  0.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.3871

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

Appendix B Stormwater Management Calculations

NRCS (SCS) CURVE NUMBER DELINEATION

STORMWATER MANAGEMENT REPORT
HEDLEY BESS
JARVIS, ONTARIO

Pre-Development Conditions

TABLE OF CURVE NUMBERS (CN's)

Land Use		Hydrologic Soil Type A	AB	B	BC	C	CD	D	Manning's 'n'
Meadow	"Good"	30	44	58	64.5	71	74.5	78	0.40
Woodlot	"Fair"	36	48	60	66.5	73	76	79	0.40
Gravel		76	80.5	85	87	89	90	91	0.30
Lawns	"Good"	39	50	61	67.5	74	77	80	0.25
Pasture/Range		58	61.5	65	70.5	76	78.5	81	0.17
Crop		66	70	74	78	82	84	86	0.13
Fallow (Bare)		77	82	86	89	91	93	94	0.05
Impervious		98	98	98	98	98	98	98	0.01

Notes:

1. MTO Drainage Manual (1997), Design Chart 1.09-Soil/Land Use Curve Numbers
2. Chin (2000), Water-Resources Engineering, Table 6.13-Curve Numbers for Various Urban Land Uses

HYDROLOGIC SOIL TYPE (%)

Catchment	Hydrologic Soil Type A	AB	B	BC	C	CD	D	TOTAL
Internal Catchments								
101						100.0		100
102						100.0		100
103						100.0		100
External Catchments								
100						66.0	34.0	100
104						100.0		100

LAND USE (%)

Catchment	Meadow	Woodlot	Gravel	Lawns	Pasture Range	Crop	Fallow (Bare)	Impervious (see note)	Total
Internal Catchments									
101						100		0	100
102						100		0	100
103						100		0	100
External Catchments									
100						100		0	100
104						100		0	100

CURVE NUMBER (CN)

Catchment	Meadow	Woodlot	Gravel	Lawns	Pasture Range	Crop	Fallow (Bare)	Impervious	Weighted CN	Pervious CN
Internal Catchments										
101	0.0	0.0	0.0	0.0	0.0	84.0	0.0	0.0	84	84
102	0.0	0.0	0.0	0.0	0.0	84.0	0.0	0.0	84	84
103	0.0	0.0	0.0	0.0	0.0	84.0	0.0	0.0	84	84
External Catchments										
100	0.0	0.0	0.0	0.0	0.0	84.7	0.0	0.0	85	85
104	0.0	0.0	0.0	0.0	0.0	84.0	0.0	0.0	84	84

Notes:

1. AMC II assumed
2. Hydrological Soil Group taken from MTO Drainage Manual for each soil type

NRCS (SCS) CURVE NUMBER DELINEATION

STORMWATER MANAGEMENT REPORT
HEDLEY BESS
JARVIS, ONTARIO

TABLE OF CURVE NUMBERS (CN's)

Land Use		Hydrologic Soil Type A	AB	B	BC	C	CD	D	Manning's 'n'
Meadow	"Good"	30	44	58	64.5	71	74.5	78	0.40
Woodlot	"Fair"	36	48	60	66.5	73	76	79	0.40
Gravel		76	80.5	85	87	89	90	91	0.30
Lawns	"Good"	39	50	61	67.5	74	77	80	0.25
Pasture/Range		58	61.5	65	70.5	76	78.5	81	0.17
Crop		66	70	74	78	82	84	86	0.13
Fallow (Bare)		77	82	86	89	91	93	94	0.05
Impervious		98	98	98	98	98	98	98	0.01

Notes:

1. MTO Drainage Manual (1997), Design Chart 1.09-Soil/Land Use Curve Numbers
2. Chin (2000), Water-Resources Engineering, Table 6.13-Curve Numbers for Various Urban Land Uses

HYDROLOGIC SOIL TYPE (%)

Catchment	Hydrologic Soil Type A	AB	B	BC	C	CD	D	TOTAL
On-site catchments								
202						100.0		100
203						100.0		100
204						100.0		100
205						100.0		100
208						100.0		100
Off-site catchments								
200						66.0	34.0	100
201						100.0		100
206						100.0		100
207						100.0		100

LAND USE (%)

Catchment	Meadow	Woodlot	Gravel	Lawns	Pasture Range	Crop	Fallow (Bare)	Impervious (see note)	Total
On-site catchments									
202				25				75	100
203				25				75	100
204				25				75	100
205						100			100
208				60				40	100
Off-site catchments									
200						100			100
201						100			100
206						100			100
207						100			100

CURVE NUMBER (CN)

Catchment	Meadow	Woodlot	Gravel	Lawns	Pasture Range	Crop	Fallow (Bare)	Impervious	Weighted CN	Pervious CN
On-site catchments										
202	0.0	0.0	0.0	19.3	0.0	0.0	0.0	73.5	93	77
203	0.0	0.0	0.0	19.3	0.0	0.0	0.0	73.5	93	77
204	0.0	0.0	0.0	19.3	0.0	0.0	0.0	73.5	93	77
205	0.0	0.0	0.0	0.0	0.0	84.0	0.0	0.0	84	84
208	0.0	0.0	0.0	46.2	0.0	0.0	0.0	39.2	85	77
Off-site catchments										
200	0.0	0.0	0.0	0.0	0.0	84.7	0.0	0.0	85	85
201	0.0	0.0	0.0	0.0	0.0	84.0	0.0	0.0	84	84
206	0.0	0.0	0.0	0.0	0.0	84.0	0.0	0.0	84	84
207	0.0	0.0	0.0	0.0	0.0	84.0	0.0	0.0	84	84

Notes:

1. AMC II assumed
2. Hydrological Soil Group taken from MTO Drainage Manual for each soil type

VISUAL OTTHYMO CATCHMENT PARAMETER SUMMARY
PRE-DEVELOPMENT

STORMWATER MANAGEMENT REPORT
HEDLEY BESS
JARVIS, ONTARIO

Pre-Development Conditions

NasHyd

Area Description	Catchment ID	Area (ha)	CN	Length (m)	IA (mm)	TP (hrs)
Internal						
Agricultural land, draining east	101	2.05	84	150	4.84	0.14
External Catchment - Agricultural land, draining east	102	2.11	84	150	4.84	0.14
Agricultural land, draining south	103	0.30	84	50	4.84	0.05
Agricultural land, draining south	104	0.55	84	90	4.84	0.08
External						
External Catchment - Agricultural land, draining east	100	12.86	85	200	4.48	0.19
External Catchment - Agricultural land, draining east	105	1.69	84	140	4.84	0.13
External Catchment - Agricultural land, draining east	106	0.40	84	50	4.84	0.05

Internal Total	**5.01**
External Total	**14.95**
Total	**19.96**

Notes:

TIMP → *Total percent impervious*

XIMP → *Percent impervious directly connected*

Time of Concentration calculated using the Airport Method
(For areas less than 100 ha, and RC less than 0.4) →
Tc = [3.26 (1.1-C) L $^{0.5}$] / S $^{0.33}$
Where: C = Runoff Coefficient according to MTO Design chart 1.07 for 'cultivated' on silt loam/loam soil
L = Length of Overland Flow (m)
S = Slope (%)

Time of Concentration calculated using the Bransby Williams Method
(For areas less than 100 ha, and RC greater than 0.4) →
*Tc = 0.057*L/[(Sw^0.2)*(A^0.1)]*
Where: tc = time of concentration, minutes
L = catchment or watershed length, m
Sw = catchment or watershed slope, %
A = catchment or watershed area, ha

Time to Peak (hr) → *Tp = 0.6Tc (StandHyd), Tp = Flow Length/0.3 (NasHyd)*

Storage → *S = (25400 / CN) - 254*

Initial Abstractions → *IA = 0.1 S (from Visual Otthymo User's Manual Section 1.1.2)*

VISUAL OTTHYMO CATCHMENT PARAMETER SUMMARY
POST-DEVELOPMENT

STORMWATER MANAGEMENT REPORT
HEDLEY BESS
JARVIS, ONTARIO

Post-Development Conditions

NasHyd

Area Description	Catchment ID	To Pond	Area (ha)	CN	Length (m)	IA (mm)	TP (hrs)
Internal							
NasHyd - 205	205	N	0.29	84	30	4.84	0.03
External							
NasHyd - 200	200	Y	10.78	85	260	4.48	0.24
NasHyd - 201	201	Y	1.90	84	105	4.84	0.10
NasHyd - 206	206	Y	1.61	84	150	4.84	0.06
NasHyd - 207	207	Y	0.40	84	60	4.84	0.14

StandHyd

Area Description	Catchment ID		Area (ha)	CN	TIMP	XIMP	Slope (%)	Length (m)	R.C	Tc (hrs)	Tp (hrs)
Internal											
StanHyd - 202	202	Y	3.44	93	0.75	0.35	1.00	30.0	0.15	0.06	0.04
StanHyd - 203	203	Y	0.49	93	0.75	0.35	0.50	30.0	0.71	0.04	0.02
StanHyd - 204	204	Y	0.68	93	0.75	0.35	0.50	30.0	0.71	0.03	0.02
StanHyd - 208	208	Y	0.37	94	0.40	0.10	1.00	31.0	0.71	0.03	0.02

	Area	Imperviousness
Internal Total	5.27	
External Total	14.69	
Total	19.96	
Total Area to SWMF	19.67	18

Notes:
The total area draining to the SWM facility excludes catchment 205

TIMP ..... *Total percent impervious*

XIMP ..... *Percent impervious directly connected*

Time of Concentration calculated using the Airport Method
(For areas less than 100 ha, and RC less than 0.4) ..... $Tc = [\ 3.26\ (1.1\text{-}C)\ L^{0.5}\ ]\ /\ S^{0.33}$

Where: *C = Runoff Coefficient according to MTO Design chart 1.07 for 'cultivated' on silt loam/loam soil*
L = Length of Overland Flow (m)
S = Slope (%)

Time of Concentration calculated using the Bransby Williams Method
(For areas less than 100 ha, and RC greater than 0.4) ..... *Tc = 0.057*L/[(Sw^0.2)*(A^0.1)]*

Where: *tc = time of concentration, minutes*
L = catchment or watershed length, m
Sw = catchment or watershed slope, %
A = catchment or watershed area, ha

Time to Peak (hr) ..... *Tp = 0.6Tc (StandHyd), Tp = Flow Length/0.3 (NasHyd)*

Storage ..... $S = (25400 / CN) - 254$

Initial Abstractions ..... $IA = 0.1\ S$ *(from Visual Otthymo User's Manual Section 1.1.2)*

STORMWATER MANAGEMENT POND DESIGN
STAGE STORAGE DISCHARGE CURVE

STORMWATER MANAGEMENT REPORT
HEDLEY BESS
JARVIS, ONTARIO

Bottom of the Pond	210.04	m
Top of Pond	0.00	m

			Storage		Discharge			
Elevation (m)	Depth (m)	Footprint Area (m^2)	Total Storage Volume (m^3)	Live Storage (m^3)	Orifice 1 (m^3/s)	Weir 1 (m^3/s)	Total Flow (m^3/s)	Drawdown Time (h)
210.04	0.00	0	0	0	0.000		0.0000	0.0
210.10	0.06	2,672	80	80	0.004		0.0039	11.5
210.20	0.16	2,932	360	360	0.025		0.0250	16.9
210.30	0.26	3,203	667	667	0.032		0.0320	19.9
210.40	0.36	3,485	1,001	1,001	0.033		0.0332	22.7
210.50	0.46	3,779	1,365	1,365	0.039		0.0388	25.5
210.60	0.56	4,060	1,757	1,757	0.044		0.0437	28.2
210.70	0.66	4,301	2,175	2,175	0.048		0.0480	30.7
210.75	0.71	4,301	2,390	2,390	0.050	0.021	0.0714	31.7
210.85	0.81	4,543	2,832	2,832	0.054	0.311	0.3650	32.3
210.95	0.91	4,785	3,298	3,298	0.058	1.012	1.0693	32.5
211.05	1.01	5,028	3,789	3,789	0.061	2.220	2.2806	32.5
211.15	1.11	5,272	4,304	4,304	0.064	4.017	4.0807	32.6
211.25	1.21	5,516	4,843	4,843	0.067	6.475	6.5420	32.6
211.35	1.31	5,761	5,407	5,407	0.070	9.659	9.7294	32.6
211.42	1.38	6,006	5,819	5,819	0.072	12.353	12.4249	32.6

Orifice 1 Flow	$Q_{orif} = C \times A \times (2gH)^{1/2}$	
Crest Elevation	210.04	m
Crown Elevation	210.21	m
Diameter	0.170	m
Area	0.023	m^2
Cd	0.63	
Cw	0.018	

Spillway	$Q_{weir} = C \times L \times H^{3/2} + C_s \times S \times H^{5/2}$	
Elevation	210.72	m
Length	2.00	m
Discharge Coeff.	1.670	
Discharge Coeff.	1.268	
Height	0.7	m
Side Slopes	20	m/m

Notes:

Orifice Flow Calculations: $Q_{orif} = C \times A \times (2gH)^{1/2}$
where
C = orifice coefficient
A = area of orifice
g = acceleration due to gravity
H = head above centreline of orifice
Note: used when water elevation is above 3/4 of the orifice diameter

Sharp crested semi-circular weir equation: $Q = C_w x (H/D)^{1.5}$
where
C_w = sharp-crested weir coefficient
D = diameter of orifice
H = head above orifice invert
Note: used when water elevation is below 3/4 of the orifice diameter

Broad Crested Weir Equation: $Q_{weir} = C \times L \times H^{3/2} + C_s x S x H^{5/2}$
where
C = rectangular weir coefficient
C_s = triangular weir coefficient
L = bottom width of spillway
H = head above weir invert
S = side slopes (ratio H:W)

PROPOSED STORMWATER MANAGEMENT DRY POND
WATER QUALITY CALCULATIONS

STORMWATER MANAGEMENT REPORT
HEDLEY BESS
JARVIS, ONTARIO

SWM Pond		
Required protection level:	Enhanced	
Contributing drainage area[1]:	19.67	ha
Impervious level:	18	%
Total required water quality storage volume per hectare:	40	m^3/ha
Required extended detention volume:	787	m^3
Provided extended detention in 25-mm event:	1323	m^3

Note:

1. Internal and external site area are considered for the purposes of this analysis

MOE SWM Design Manual Table 3.2

Protection Level	SWMP Type	Storage Volume (m^3/ha) for Impervious Level			
		35%	*55%*	*70%*	*85%*
Enhanced (80% long-term S.S. removal)	Infiltration	25	30	35	40
	Wetlands	80	105	120	140
	Hybrid Wet Pond/Wetland	110	150	175	195
	Wet Pond	140	190	225	250
Normal (70% long-term S.S. removal)	Infiltration	20	20	25	30
	Wetlands	60	70	80	90
	Hybrid Wet Pond/Wetland	75	90	105	120
	Wet Pond	90	110	130	150
Basic (60% long-term S.S. removal)	Infiltration	20	20	20	20
	Wetlands	60	60	60	60
	Hybrid Wet Pond/Wetland	60	70	75	80
	Wet Pond	60	75	85	95
	Dry Pond (Continuous Flow)	90	150	200	240

PEAK FLOW SUMMARY
POST-DEVELOPMENT
SWALE AND CULVERT SIZING

STORMWATER MANAGEMENT REPORT
HEDLEY BESS
JARVIS, ONTARIO

Post-Development Conditions

Catchment/Node ID			Peak Flow Rate (m^3/s)					
	Comment	25 mm	2-year	5-year	10-year	25-year	50-year	100-year
204	Swale S2 start	0.062	0.087	0.137	0.171	0.216	0.250	0.284
1	Swale S2	0.071	0.105	0.171	0.219	0.281	0.328	0.376
203	Swale N start	0.044	0.063	0.098	0.124	0.156	0.180	0.204
2	Swale N	0.065	0.099	0.169	0.219	0.285	0.335	0.385
3	Culvert 1	0.248	0.440	0.844	1.144	1.545	1.833	2.155
4	Swale E1	0.261	0.460	0.877	1.186	1.598	1.894	2.226
4	Culvert 2	0.261	0.460	0.877	1.186	1.598	1.894	2.226
201	Swale E2	0.048	0.086	0.169	0.230	0.312	0.374	0.438
200	Swale S1	0.220	0.395	0.767	1.044	1.415	1.683	1.982
5	Flow to SWM Pond	0.613	1.043	1.840	2.419	3.183	3.762	4.362

Appendix C FlowMaster Modelling Output

Swale E1

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.030
Channel Slope	0.005 m/m
Left Side Slope	3.000 H:V
Right Side Slope	3.000 H:V
Bottom Width	2.00 m
Discharge	2,226.00 L/s

Results	
Normal Depth	527.0 mm
Flow Area	1.9 m²
Wetted Perimeter	5.3 m
Hydraulic Radius	353.9 mm
Top Width	5.16 m
Critical Depth	406.6 mm
Critical Slope	0.014 m/m
Velocity	1.18 m/s
Velocity Head	0.07 m
Specific Energy	0.60 m
Froude Number	0.623
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 mm
Length	0.0 m
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 mm
Profile Description	N/A
Profile Headloss	0.00 m
Downstream Velocity	0.00 m/s
Upstream Velocity	0.00 m/s
Normal Depth	527.0 mm
Critical Depth	406.6 mm
Channel Slope	0.005 m/m
Critical Slope	0.014 m/m

Swale E2

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Roughness Coefficient	0.030	
Channel Slope	0.005	m/m
Left Side Slope	3.000	H:V
Right Side Slope	3.000	H:V
Bottom Width	0.50	m
Discharge	438.00	L/s

Results		
Normal Depth	350.3	mm
Flow Area	0.5	m²
Wetted Perimeter	2.7	m
Hydraulic Radius	200.1	mm
Top Width	2.60	m
Critical Depth	265.8	mm
Critical Slope	0.017	m/m
Velocity	0.81	m/s
Velocity Head	0.03	m
Specific Energy	0.38	m
Froude Number	0.563	
Flow Type	Subcritical	

GVF Input Data		
Downstream Depth	0.0	mm
Length	0.0	m
Number Of Steps	0	

GVF Output Data		
Upstream Depth	0.0	mm
Profile Description	N/A	
Profile Headloss	0.00	m
Downstream Velocity	0.00	m/s
Upstream Velocity	0.00	m/s
Normal Depth	350.3	mm
Critical Depth	265.8	mm
Channel Slope	0.005	m/m
Critical Slope	0.017	m/m

Swale N

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Roughness Coefficient	0.030	
Channel Slope	0.005	m/m
Left Side Slope	3.000	H:V
Right Side Slope	3.000	H:V
Bottom Width	0.60	m
Discharge	385.00	L/s

Results		
Normal Depth	318.4	mm
Flow Area	0.5	m²
Wetted Perimeter	2.6	m
Hydraulic Radius	189.4	mm
Top Width	2.51	m
Critical Depth	238.1	mm
Critical Slope	0.017	m/m
Velocity	0.78	m/s
Velocity Head	0.03	m
Specific Energy	0.35	m
Froude Number	0.559	
Flow Type	Subcritical	

GVF Input Data		
Downstream Depth	0.0	mm
Length	0.0	m
Number Of Steps	0	

GVF Output Data		
Upstream Depth	0.0	mm
Profile Description	N/A	
Profile Headloss	0.00	m
Downstream Velocity	0.00	m/s
Upstream Velocity	0.00	m/s
Normal Depth	318.4	mm
Critical Depth	238.1	mm
Channel Slope	0.005	m/m
Critical Slope	0.017	m/m

Swale S1

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.030
Channel Slope	0.005 m/m
Left Side Slope	3.000 H:V
Right Side Slope	3.000 H:V
Bottom Width	2.00 m
Discharge	1,982.00 L/s

Results	
Normal Depth	497.0 mm
Flow Area	1.7 m²
Wetted Perimeter	5.1 m
Hydraulic Radius	337.3 mm
Top Width	4.98 m
Critical Depth	381.0 mm
Critical Slope	0.014 m/m
Velocity	1.14 m/s
Velocity Head	0.07 m
Specific Energy	0.56 m
Froude Number	0.618
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 mm
Length	0.0 m
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 mm
Profile Description	N/A
Profile Headloss	0.00 m
Downstream Velocity	0.00 m/s
Upstream Velocity	0.00 m/s
Normal Depth	497.0 mm
Critical Depth	381.0 mm
Channel Slope	0.005 m/m
Critical Slope	0.014 m/m

Swale S2

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data		
Roughness Coefficient	0.030	
Channel Slope	0.005	m/m
Left Side Slope	3.000	H:V
Right Side Slope	3.000	H:V
Bottom Width	0.70	m
Discharge	376.00	L/s

Results		
Normal Depth	303.4	mm
Flow Area	0.5	m²
Wetted Perimeter	2.6	m
Hydraulic Radius	186.5	mm
Top Width	2.52	m
Critical Depth	224.9	mm
Critical Slope	0.017	m/m
Velocity	0.77	m/s
Velocity Head	0.03	m
Specific Energy	0.33	m
Froude Number	0.558	
Flow Type	Subcritical	

GVF Input Data		
Downstream Depth	0.0	mm
Length	0.0	m
Number Of Steps	0	

GVF Output Data		
Upstream Depth	0.0	mm
Profile Description	N/A	
Profile Headloss	0.00	m
Downstream Velocity	0.00	m/s
Upstream Velocity	0.00	m/s
Normal Depth	303.4	mm
Critical Depth	224.9	mm
Channel Slope	0.005	m/m
Critical Slope	0.017	m/m

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