



BURNSIDE

Fergus Golf Course Redevelopment

**Preliminary Stormwater Management
(SWM) Report**

**Fergus Development Inc.
3190 Steeles Avenue East, Suite 300
Markham ON L3R 1G9**

Fergus Golf Course Redevelopment
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(SWM) Report
Fergus Development Inc.
3190 Steeles Avenue East, Suite 300
Markham ON L3R 1G9

R.J. Burnside & Associates Limited
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July 2026
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Distribution List

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Record of Revisions

Revision	Date	Description
0	Jan 21, 2022	OPA, DP, and ZBA submission
1	Apr 28, 2023	OPA, DP, and ZBA Re-submission
2-5	Dec 2023-2024	Detailed Design Submission 118 Lots
6	July 2026	ZBA and DP Re-submission

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1.0 Introduction

1.1 General

R.J. Burnside & Associates Limited (Burnside) has been retained by Fergus Development Inc. to prepare a Stormwater Management (SWM) Report in support of the Zoning Bylaw Amendment (ZBA) and Draft Plan of Subdivision applications for the proposed Fergus Golf Course Redevelopment.

This report details the existing storm drainage outlets, the proposed stormwater management system and the outlets to the existing downstream drainage system.

A Functional Servicing Report (FSR) (June 2026) has also been prepared by Burnside, under separate cover. This SWM Report demonstrates that the subject lands can be serviced in accordance with applicable regulatory requirements and criteria.

1.2 Site Description and Location

The Fergus Golf Course Redevelopment is 82.18 ha in size and is located along Wellington County Road 19, east of Third Line, in the Township of Centre Wellington.

The existing golf course (the "Site") consists of two parcels; the northwest parcel, which is 42.35 ha, situated on the north side of Wellington Road 19, and the southeast parcel, which is 39.83 ha, situated on the south side of Wellington Road 19. The proposed residential redevelopment is located on the Southeast parcel (the "SE Parcel") and the communal water and wastewater services are integrated into the existing Golf Course, which will remain on the Northwest parcel (the "NW Parcel").

The intent is to redevelop a portion of the Northwest parcel to provide the required water supply, storage (water tower) and water treatment plant, along with the associated wastewater treatment facility for the residential subdivision. The north parcel includes the remainder of the golf course lands.

The Southeast parcel is to be redeveloped as a residential subdivision, complete with required water, wastewater services and stormwater management facilities, as well as the associated parkland and municipal rights-of-way.

The Site is bound by existing agricultural lands to the north, Third Line to the east, existing agricultural lands to the south and a combination of existing agricultural and residential lands to the west. Wellington County Road 19 bisects the Site.

Refer to Figure 1.



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FERGUS DEVELOPMENT INC.

Figure Title

FERGUS GOLF COURSE REDEVELOPMENT

SITE LOCATION PLAN

Drawn

Z.J.

Checked

M.B.

Date

JUNE 2026

Figure No.

1

Scale

NTS

Project No.

052719.4000

1.3 Background

The servicing concepts presented within this report have been developed to comply with the information contained in the following reports, which were established for this area, and should be read in conjunction with the Functional Servicing Report (R.J. Burnside & Associates Limited, June 2026):

Document Title	Prepared By	Date
Draft Plan of Subdivision	GSP Group	June 2026
Development Manual	Township of Centre Wellington	June 2024
Topographic Survey	RPE	Various surveys 2021-2025
Stormwater Management Planning and Design Manual	Ministry of the Environment	March 2003
Geotechnical Report on Fairview Golf Club – Lot 9 and 10, Concession 3 West Garafraxa Township, Ontario	R.J. Burnside & Associates Limited.	June 21, 1990
Hydro Geological Report on Fairview Golf Club – Lot 9 and 10, Concession 3 West Garafraxa Township, Ontario	R.J. Burnside & Associates Limited.	November 2, 1990
Township of Centre Wellington – Water Supply Master Plan	AECOM Canada Ltd.	April 4, 2018
Preliminary Geotechnical Investigation Report, Proposed Residential Development – Fergus Golf Club	Golder Associates Limited	February 2022
Hydrogeological Assessment, Proposed Residential Development – Fergus Golf Club	Golder Associates Limited	April 28, 2023
Detailed Geotechnical Report, Fergus Golf Course Redevelopment, Fergus Ontario	GEMTEC Consulting Engineers and Scientists Limited	June 5, 2026
Pavement Design Recommendations, Proposed Residential Development, 8243 and 8282 Wellington Road 19, Fergus Ontario	GEMTEC Consulting Engineers and Scientists Limited	December 20, 2023
Environmental Impact Study	Beacon Environmental	April 2023
Environmental Impact Study Addendum	Beacon Environmental	June 19, 2026
Bylaw COR2023-65 for the Abandonment of the Black Drainage Works	Township of Centre Wellington	June 26, 2023
Detailed Environmental Noise Report	Jade Acoustics	June 19, 2026

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Document Title	Prepared By	Date
Water and Wastewater Servicing Study	Ainley	June 2026
Updated Water Balance Addendum – Hydrogeological Investigation Report, Fergus Golf Course Redevelopment	Gemtec	June 26, 2026
Fergus Golf Club Proposed Residential Re-development Urban Transportation Considerations	BA Group	June 2026

2.0 Existing Site Characteristics

2.1 Land Uses

The Site is currently approved for use as a residential condominium development and consists of the former Fergus Golf Course (not currently in operation). There are multiple wetlands located within the Site boundary, some of which are proposed to be retained as part of the redevelopment plan as outlined in the Environmental Impact Study prepared by Beacon Environmental (November 2025). The existing wetland feature in the middle of the site that currently discharges flow to the Black Drainage Works is to be maintained.

Please refer to Figure 2 for Existing Site Conditions.

2.2 Topographic Conditions

The site has undulating topography.

Under existing conditions, the majority of the north half of the site (the golf course) drains via sheetflow to the Armstrong Drainage Works. The remainder of the north half of the site drains via sheetflow to the adjacent lands located to the west, the Wellington County Road 19 right-of-way and the existing roadside ditches located along the east side of Third Line.

The remainder of the site, including the south half of the site, drains via sheetflow to the existing wetland feature located on the south side of Wellington County Road 19, and ultimately to the open channel portion of the Black Drainage Works along the south boundary of the Site.

2.3 Soil Conditions

From the Soil Survey of Wellington County Ontario Report No. 35 of the Ontario Soil Survey (1963), the predominant surface soil type throughout the Site and adjacent external lands is categorized as follows:

- Perth Loam (Pl) – clay loam till with imperfect drainage characteristics (Hydrologic Soil Group C)
- Parkhill Loam (Pal) – loam till with poor drainage characteristics (Hydrologic Soil Group C)
- Listowel Loam (Lil) – loam till with imperfect drainage characteristics (Hydrologic Soil Group B)
- Harriston Loam (HI) – loam till with good drainage characteristics (Hydrologic Soil Group B)
- Hillsburgh Fine Sandy Loam (Hif) – fine to medium sand with good drainage characteristics (Hydrologic Soil Group A)

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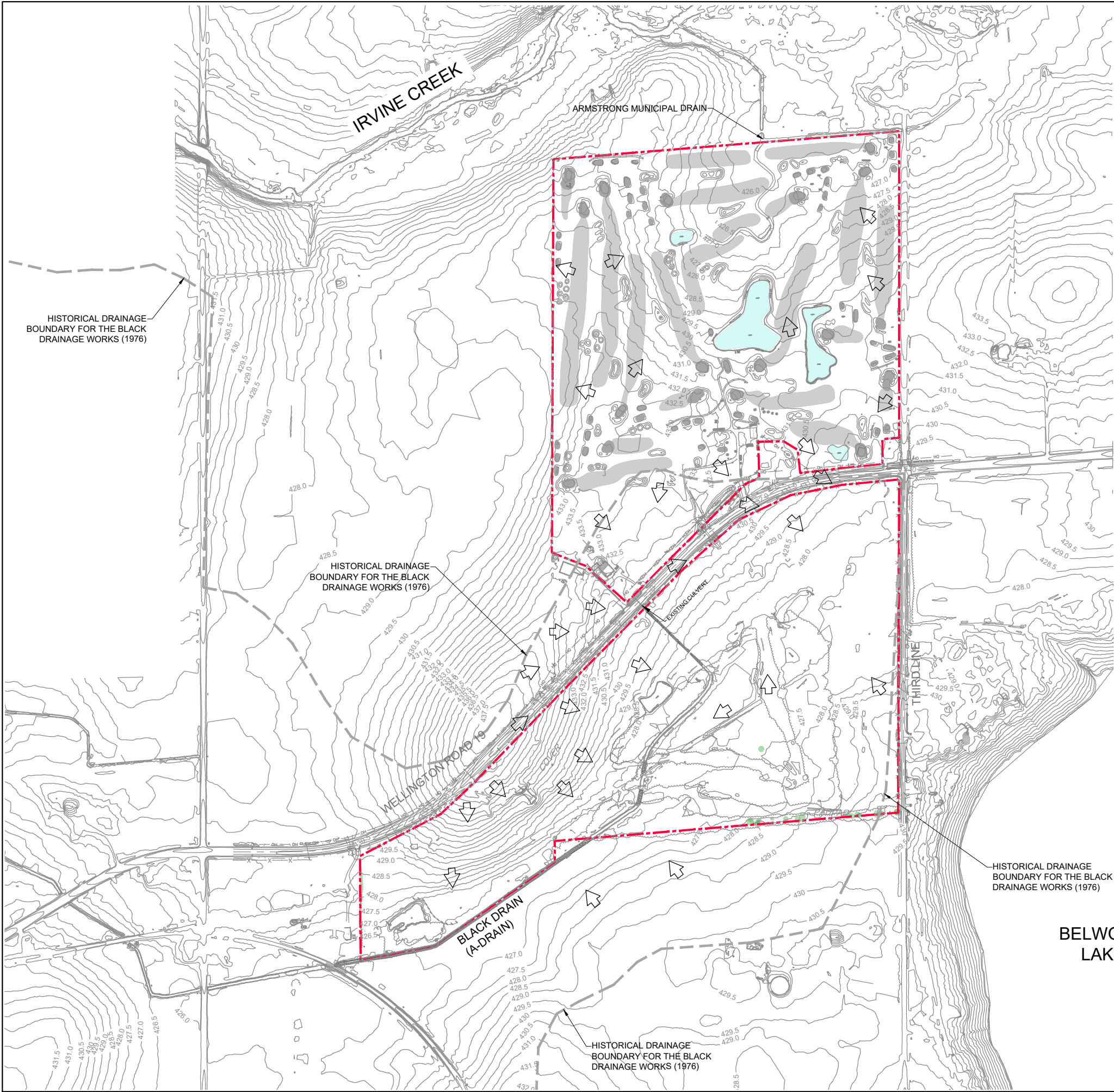
An original geotechnical investigation for the Site was completed by Golder Associates Limited (February 2022). Based upon the findings, the Site is covered by a topsoil layer, overlying silty sand to sand or clayey silt with sand containing varying amounts of gravel. These deposits are underlain by silty clay to clayey silt and silt and sand glacial till deposits. There are also more recent Geotechnical reports from GEMTEC (November 28, 2024) that confirm these general findings. Geotechnical reports are provided under separate cover.

2.4 Groundwater Conditions

Groundwater conditions were monitored as part of the geotechnical and hydrogeological assessments completed by GEMTEC (November 11, 2024). It was found that the groundwater depth ranged from approximately 0.09 m to 3.37 m below grade. The overall direction of groundwater flow is primarily in a north to south / southwest direction.

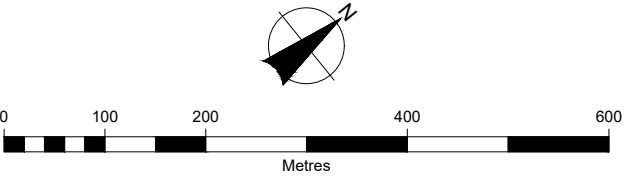
2.5 Environmental Features

A detailed description of the natural features and functions of the Site is presented in the Environmental Impact Study by Beacon Environmental (December 2023) with Addendum dated June 2026.



LEGEND

- PROPERTY LINE
- EXISTING OVERLAND FLOW DRAINAGE



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Figure Title			
FERGUS GOLF COURSE REDEVELOPMENT			
EXISTING CONDITIONS PLAN			
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3.0 Proposed Development

The proposed Draft Plan of Subdivision was prepared by GSP Group Inc. (June 2026).

The proposed redevelopment consists of the following:

Northwest Parcel (42.35 ha):

- One servicing block (0.91 ha) for the water treatment facility, wastewater treatment facility, water tower, and stormwater management works
- One existing golf course block (41.44 ha)

Southeast Parcel (39.83 ha):

- 446 single family dwelling lots
- Two open space blocks (5.96 ha total)
- One stormwater management block (1.53 ha)
- One pump station block (0.04 ha)
- Two park blocks (1.87 ha total)
- One servicing block (0.04 ha)
- One landscape strip block (0.28 ha total)

Access to the southeast parcel will be provided via one connection to Wellington County Road 19 and two connections to Third Line.

The proposed Draft Plan of Subdivision for the Site is illustrated on Figure 3.

3.1 Site Grading

The site grading for the proposed residential development, including the residential lots, internal roads and stormwater management facility are shown on the Grading Plans and has been developed in consideration of the following requirements and constraints:

- Conformance with Centre Wellington grading and drainage criteria
- Incorporating existing grades at road access points to Wellington Road 19 and Third Line
- Matching of existing boundary grades at the property limits and existing wetland and wooded areas identified for protection
- Optimization of earthworks (i.e., minimizing fill)
- Provision for adequate cover over proposed services
- Provision for overland flow conveyance on the roadways to the proposed SWM ponds (i.e., major system storm drainage and emergency overland flow)
- Conveyance of stormwater within site and minimizing external runoff
- Incorporating proposed noise barriers along Wellington Road 19

- Regrading of the municipal ditches for adequate drainage of Third Line and Wellington Road 19

The internal roads have been designed to satisfy the Township of Centre Wellington's requirements for minimum road grades, while also ensuring that minor and major overland flow from the internal road network, as well as the external lands discharging to the Site, are collected, conveyed and directed to the appropriate outlet (i.e. the existing wetland and the proposed stormwater management facility), prior to discharging to the existing Black Drainage Works.

3.2 Streets

The internal roads (Street A, Street B, Street C, Street D, Street E, Street F, and Street G) will be designed and constructed with either a 20 m or 18 m wide cross-section, complete with concrete curb and gutter and concrete sidewalk on one side of the right-of-way. Refer to the Functional Servicing Report for details of the limits and the proposed cross-section details. To ensure that major overland flow from the development is adequately conveyed via the internal road network to the appropriate outlet, a minimum centreline road grade of 0.5% (as per the Township of Centre Wellington standards) is proposed.

3.3 Storm Sewer

Under existing conditions, the Site is located within the drainage boundary for the Armstrong Drainage Works, the Black Drainage Works and Belwood Lake.

As such, runoff generated from the Site following redevelopment will continue to be direct to the Armstrong Drainage Works, the Black Drainage Works (A-Drain located to along the south boundary of the site) and Belwood Lake. The Armstrong Drainage Works is a Municipal Drain to the north of the site that conveys flows from the Site to Irvine Creek, ultimately discharging to the Grand River in Elora. The Black Drainage Works is also a Municipal Drain to the south of the site that conveys flows from the Site to Irvine Creek, ultimately discharging to the Grand River in Elora.

As part of a previous development application for the Site, a petition was filed under the Drainage Act to abandon the various sections of the Black Drainage Works (A-Drain, C-Drain, and G-Drain) within the boundary of the Site. The abandonment of the Black Drainage Works (A-Drain, C-Drain, and G-Drain) within the boundary of the Site was passed on June 26, 2023, via the passing of Bylaw 2023-52 by the Township of Centre Wellington.

A copy of the Black Drainage Works and the Bylaw for the abandonment of the Black Drainage Works within the boundary of Site (A-Drain, C-Drain, and G-Drain) has been enclosed in Appendix A.

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Following re-development of the Site, the storm sewer system on the internal roads will be sized to capture and convey the 5-year design storm event to either the existing wetland, the proposed stormwater management facility or to the existing Black Drainage Works located along the south limit of the site.

Major storm events for runoff generated from the majority of the Site will be conveyed overland via the municipal rights-of-way to the proposed stormwater management facility, discharging to the existing wetland and ultimately to the existing Black Drainage Works located along the south limit of the Site.

Due to the shallow depth of the storm sewer system and the relatively shallow groundwater, foundation drain will be provided via sump pumps discharging to either ground surface or to the foundation drain collector (FDC) sewer. The FDC sewer will then convey and discharge flows to the existing Black Drainage Works located along the south limit of the Site.

A bypass storm sewer, sized to capture and convey runoff generated from the external lands to the east of the site (i.e. Third Line) to the Black Drainage Work, up to and including the 100-year design storm event, has also been proposed. The bypass storm sewer will convey and discharge flows to the Black Drainage Works located along the south limit of the Site.

Details related to the proposed storm sewer servicing for the Site, including the FDC sewer and bypass storm sewer, have been included in the Functional Servicing Report (FSR) (as prepared by R.J. Burnside & Associates Limited, June 2026).

4.0 Stormwater Management Approach and Plan

4.1 Existing Condition Stormwater Drainage

Under existing conditions, the majority of the north half of the site (the golf course) drains via sheetflow to the Armstrong Drainage Works. The remainder of the north half of the site drains via sheetflow to the adjacent lands located to the west, the Wellington County Road 19 right-of-way and the existing roadside ditches located along the east side of Third Line to Belwood Lake.

The remainder of the site, including the south half of the site drains via sheetflow to the existing wetland feature located on the south side of Wellington County Road 19, and ultimately to the open channel portion of the Black Drainage Works along the south boundary of the Site. The Black Drainage Works is a Municipal Drain that conveys flows in an open channel to Irvine Creek, ultimately discharging to the Grand River in Elora.

Refer to Figure 4 for details on the existing storm drainage patterns.

The hydrologic model Visual Otthymo (Version 6.2) was utilized to generate the hydrographs and calculate the peak flow rates and volumes generated from the site under existing conditions. The Township of Centre Wellington IDF Curve data (Fergus Shand Dam) and rainfall intensity (time / intensity pairs) from the Township of Centre Wellington Development Manual (June 2024) were utilized to model the 2- to 100-year deign storm events. The Regional Storm (Hurricane Hazel) was also modelled.

Under existing conditions, the Site (42.35 ha North Parcel and 39.83 ha South Parcel), along with the 30.81 ha of external drainage areas also contributing flow to the site, were modelled as 14 catchment areas as follows:

- Catchment 101 is 6.21 ha in size. Catchment 101 represents a portion of the northern lands. Under existing conditions, runoff generated from Catchment 100 sheetflows overland the adjacent lands located to the west of the Site.
- Catchment 201 is 27.80 ha in size. Catchment 201 represents most of the northern half of the Site. Under existing conditions, runoff generated from Catchment 201 sheetflows overland to the Armstrong Drainage Works located along the north boundary of the site, for conveyance to Irvine Creek and ultimately discharging to the Grand River in Elora.
- Catchment 301 is 5.78 ha in size. Catchment 301 consists of the southeast corner of the north parcel, along with the adjacent properties that located on the north side of Wellington County Road 19. Runoff generated from Catchment 301 currently sheetflows overland to the existing roadside ditch along the north side of Wellington County Road 19 in an easterly direction to the intersection of Wellington County Road 19 and Third Line, and then in a southerly direction along the eastern ditch of Third Line, ultimately discharging to Belwood Lake.

- Catchment 401 is 7.45 ha in size. Catchment 401 represents the remainder of the north parcel, as well as the external agricultural lands located to the west and a portion of Wellington County Road 19. Runoff from Catchment 401 is captured and conveyed via an existing culvert crossing on Wellington County Road 19 to an existing drainage channel on the south parcel for conveyance to the existing wetland on the south parcel and ultimately the Black Drainage Works.
- Catchment 402 is 0.37 ha in size. Catchment 402 includes a portion of the Wellington County Road 19 right-of-way. Flows generated from Catchment 402 are discharge to an existing drainage channel on the south parcel for conveyance to the existing wetland on the south parcel and ultimately to the Black Drainage Works.
- Catchment 403 is 0.81 ha in size. Catchment 403 represents a portion of the south parcel. Runoff generated from Catchment 403 is conveyed via the existing drainage channel on the south parcel to the existing wetland on the south parcel and ultimately to the Black Drainage Works.
- Catchment 404 is 1.37 ha in size. Catchment 404 represents a portion of both the Wellington County Road 19 and Third Line rights-of-way. Runoff from Catchment 404 is conveyed via the existing roadside ditches on Wellington County Road 19 and Third Line to the south parcel, where flows then sheetflow overland to the existing wetland on the south parcel and the Black Drainage Works.
- Catchment 405 is 16.60 ha in size and represents the northeast portion of the south parcel. Runoff generated from Catchment 405 sheetflows overland to the existing wetland on the south parcel, ultimately discharging to the Black Drainage Works.
- Catchment 406 is 0.15 ha in size. Catchment 406 represents a portion of the Third Line right-of-way. Runoff from Catchment 406 is conveyed via the existing roadside ditch on Third Line to the south parcel, where flows then sheetflow overland to the existing wetland on the south parcel and ultimately the Black Drainage Works.
- Catchment 407 is 8.51 ha in size and represents the external agricultural lands to the south of the Site. Runoff from Catchment 407 sheetflows overland to the existing wetland on the south parcel and ultimately the Black Drainage Works.
- Catchment 408 is 7.14 ha in size and represents the southeast portion of the south parcel. Runoff generated from Catchment 408 sheetflows overland to the existing wetland on the south parcel, ultimately discharging to the Black Drainage Works.
- Catchment 409 is 7.14 ha in size and represents a portion of the south parcel. Under existing conditions, runoff generated from Catchment 409 sheetflows overland to the existing Black Drainage Works.
- Catchment 410 is 7.92 ha in size and represents remainder of the south parcel. Runoff generated from Catchment 410 sheetflows overland to the existing Black Drainage Works.
- Catchment 411 is 15.74 ha in size and represents the external agricultural lands to the south of the Site. Runoff from Catchment 411 sheetflows overland to the existing Black Drainage Works.

The existing condition stormwater catchment drainage areas are shown on Figure 4.

The parameters utilized in the hydrologic modelling of each catchment area are summarized in Table 1.

Table 1: Existing Condition Catchment Parameters

Catchment ID	Area (ha)	Curve Number - CN	Initial Abstraction - IA (mm)	N	Time to Peak - TP (hour)
101	6.21	81	5.0	3	0.2
201	27.80	76	5.0	3	0.2
301	5.78	71	5.0	3	0.2
401	7.45	71	5.0	3	0.2
402	0.37	98	5.0	3	0.2
403	0.81	71	5.0	3	0.2
404	1.37	98	5.0	3	0.2
405	16.60	68	5.0	3	0.2
406	0.15	98	5.0	3	0.2
407	8.51	30	5.0	3	0.2
408	7.14	60	5.0	3	0.2
409	7.14	71	5.0	3	0.2
410	7.92	78	5.0	3	0.2
411	15.74	56	5.0	3	0.2

The existing wetland on the south parcel, including the existing 500mm diameter culvert and golf cart path, that conveys flow from the existing wetland to the existing Black Drainage Works, has also been included in the existing condition hydrologic modelling.

The routing of flows through the existing wetland on the south parcel are summarized in Table 2.

Table 2: Existing Condition – Existing Wetland on South Parcel

	Available Capacity			Actual Capacity Used		
	Peak Flow (m ³ /s)	Storage Volume (ha-m)	Storage Elevation (m)	Peak Flow (m ³ /s)	Storage Volume (ha-m)	Storage Elevation (m)
Invert of Ex 500 mm dia culvert (at ex cart path)	0.000	0.0000	425.70	-	-	-
	0.309	0.0003	425.80	-	-	-
	0.350	0.0009	425.90	-	-	-
	0.387	0.0017	426.00	-	-	-
	0.421	0.0026	426.10	-	-	-

	Available Capacity			Actual Capacity Used		
	Peak Flow (m ³ /s)	Storage Volume (ha-m)	Storage Elevation (m)	Peak Flow (m ³ /s)	Storage Volume (ha-m)	Storage Elevation (m)
	0.452	0.0037	426.20	-	-	-
	0.481	0.0078	426.30	-	-	-
	0.509	0.0158	426.40	-	-	-
	0.535	0.2540	426.50	-	-	-
	0.560	0.3650	426.60	-	-	-
2-Year	-	-	-	0.573	0.443	426.66
	0.583	0.4870	426.70	-	-	-
Weir (at ex cart path)	0.950	0.5850	426.75	-	-	-
Overflow	0.760	0.0873	426.80	-	-	-
5-Year	-	-	-	0.922	0.111	426.82
10-Year	-	-	-	1.221	0.155	426.87
	1.4421	0.1872	426.9	-	-	-
25-Year	-	-	-	1.641	0.216	426.92
50-Year	-	-	-	1.975	0.265	426.95
100-Year	-	-	-	2.318	0.316	426.99
	2.433	0.3326	427.00	-	-	-
	3.672	0.5217	427.10	-	-	-
	5.131	0.7292	427.20	-	-	-
Regional Storm (Hurricane Hazel)	-	-	-	5.195	0.739	427.20
	6.789	0.9809	427.30	-	-	-
	8.631	1.2834	427.40	-	-	-
Top of Bank	10.647	1.6203	427.50	-	-	-

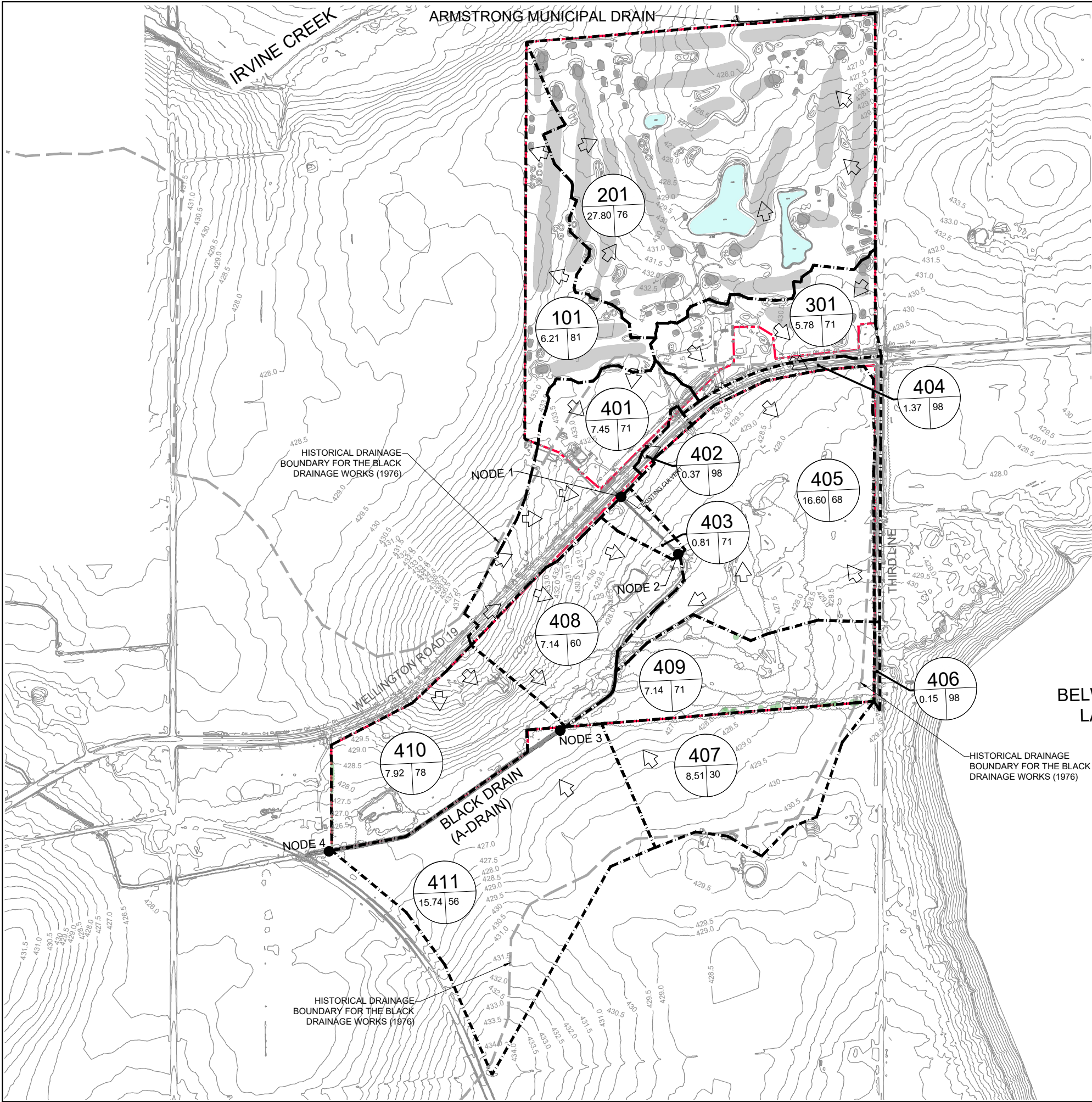
In summary, the existing condition flow rates generated from the site are as follows:

Table 3: Existing Condition – Peak Flow Rates

Catchment Number	Peak Flow Rate (m ³ /s)						Regional Storm (Hurricane Hazel)
	2-Year	5-Year	10-Year	25-Year	50-Year	100-Year	
401	0.155	0.277	0.371	0.506	0.616	0.728	0.977
402	0.038	0.055	0.066	0.08	0.091	0.101	0.054
403	0.17	0.03	0.04	0.055	0.067	0.079	0.106

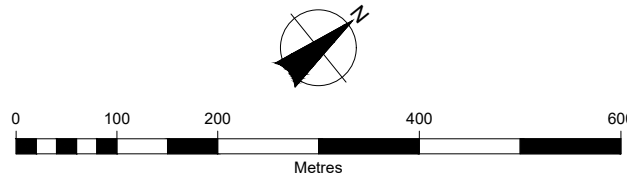
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	Peak Flow Rate (m ³ /s)						
404	0.14	0.203	0.244	0.297	0.337	0.375	0.201
405	0.307	0.551	0.741	1.016	1.239	1.469	2.125
406	0.015	0.022	0.027	0.033	0.037	0.041	0.022
407	0.036	0.067	0.092	0.13	0.163	0.197	0.577
408	0.097	0.177	0.24	0.332	0.408	0.487	0.844
409	0.149	0.266	0.356	0.485	0.59	0.698	0.937
410	0.223	0.39	0.516	0.695	0.837	0.981	1.089
411	0.185	0.338	0.46	0.64	0.788	0.943	1.774
SUB-TOTAL to Black Drainage Works (ID: 30)	0.923	1.430	1.894	2.546	3.066	3.606	7.905
101	0.202	0.349	0.458	0.611	0.733	0.855	0.868
SUB-TOTAL to Adjacent Lands	0.202	0.349	0.458	0.611	0.733	0.855	0.868
201	0.716	1.261	1.675	2.263	2.734	3.214	3.778
SUB-TOTAL to Armstrong Drainage Works	0.716	1.261	1.675	2.263	2.734	3.214	3.778
301	0.12	0.215	0.288	0.393	0.478	0.565	0.758
SUB-TOTAL to Belwood Lake	0.12	0.215	0.288	0.393	0.478	0.565	0.758
TOTAL from Site (ID: 31)	1.961	3.140	4.105	5.567	6.743	7.949	13.251



LEGEND

- PROPERTY LINE
- STORM CATCHMENT DRAINAGE AREA
- EXISTING OVERLAND FLOW DRAINAGE
- ID NUMBER
- CURVE NUMBER
- AREA IN HECTARES



 BURNSIDE			
Client			
FERGUS DEVELOPMENT INC.			
Figure Title			
FERGUS GOLF COURSE REDEVELOPMENT			
EXISTING CONDITIONS STORMWATER CATCHMENT DRAINAGE AREAS			
Drawn	Checked	Date	Figure No.
K.T.	A.K.	JUNE 2026	
Scale	Project No.		
1:7500	052719.4000		4

4.2 Stormwater Management Design Criteria

From the Township of Centre Wellington Development Manual (June 2024), the stormwater management criteria for the Site is as follows:

- Attenuate post-development peak flows to the pre-development levels for all design storm events (2- to 100-year)
- Provide Enhanced (80% TSS total suspended solids) water quality treatment prior to discharge from the site

4.3 Stormwater Management Plan

The required stormwater management controls for the Fergus Golf Course Redevelopment will be achieved through the use of two stormwater management facilities, and one existing wetland. Flows to the various existing outlet locations for both the north and south parcels, including the adjacent lands, the Armstrong Drainage Works, Belwood Lake and the Black Drainage Works will be maintained and utilized as part of the Site redevelopment.

Minor and major system post-development flows from the north parcel, will be directed to the stormwater management facility on the north parcel, prior to discharge to the existing wetland and ultimately the existing Black Drainage Works.

The minor system post-development flows from south parcel, including the proposed rights-of-way and the majority of the development area, will be directed to the stormwater management facility via a local storm sewer network. Minor storm flows from the rear lot areas and external drainage areas will be directed to either the existing wetland or to the existing Black Drainage Works.

Major system flows will be routed to the stormwater management facility, the existing wetland or directly to the existing Black Drainage Works via the rights-of-way and overland flow routes as required.

Roof drainage from the individual lots will be directed to pervious surfaces to promote infiltration and reduce surface runoff.

Quality control treatment for runoff generated from the site will be provided via the two stormwater management facilities and three oil / grit separator structures, prior to discharge from the site.

4.4 Post-Development Condition Stormwater Drainage

Upon development, runoff generated from the majority of the north half of the site (the golf course) will continue to discharge via sheetflow to the Armstrong Drainage Works. The remainder of the north half of the site drains via sheetflow to the adjacent lands

located to the west, the Wellington County Road 19 right-of-way and the existing roadside ditches located along the east side of Third Line to Belwood Lake.

Post-development runoff generated from the remainder of the site, including the south half of the site will be captured, conveyed and discharge to either the existing wetland feature located on the south side of Wellington County Road 19 or the stormwater management facility, and ultimately to the open channel portion of the Black Drainage Works located along the south boundary of the Site. The Black Drainage Works is a Municipal Drain that conveys flows in an open channel to Irvine Creek, ultimately discharging to the Irvine Creek and ultimately into the Grand River in Elora.

The hydrologic model Visual Otthymo (Version 6.2.2020) was utilized to generate the hydrographs and calculate the peak flow rates and volumes generated from the site in the post-development condition. The Township of Centre Wellington IDF Curve data (Fergus Shand Dam) and rainfall intensity (time / intensity pairs) from the Township of Centre Wellington Development Manual (June 2024) were utilized to model the 2- to 100-year deign storm events. The Regional Storm (Hurricane Hazel) was also modelled.

In the post-development condition scenario, the Site (42.35 ha North Parcel and 39.83 ha South Parcel), along with the 30.81 ha of external drainage areas also contributing flow to the site, were modelled as 15 catchment areas as follows:

- Catchment 1001 is 6.23 ha in size. Catchment 1001 represents a portion of the northern lands. Under post-development conditions, runoff generated from Catchment 1001 will continue to sheetflow overland the adjacent agricultural lands located to the west of the Site.
- Catchment 2001 is 29.70 ha in size. Catchment 2001 represents most of the northern half of the Site. Under post-development conditions, runoff generated from Catchment 2001 will sheetflow overland to the Armstrong Drainage Works located along the north boundary of the site, for conveyance to Irvine Creek and ultimately discharging to the Grand River in Elora.
- Catchment 3001 is 4.67 ha in size. Catchment 3001 consists of the southeast corner of the north parcel, along with the adjacent properties that located on the north side of Wellington County Road 19. Runoff generated from Catchment 3001 will continue to sheetflow overland to the existing roadside ditch along the north side of Wellington County Road 19 in a easterly direction to the intersection of Wellington County Road 19 and Third Line, and then in a southerly direction along Third Line, ultimately discharging to Belwood Lake.
- Catchment 4001 is 1.74 ha in size. Catchment 4001 represents the water and wastewater treatment facilities and the clubhouse (currently under construction) for the north parcel. Post-development runoff from Catchment 4001 will be captured and conveyed via an on-site storm sewer system to a stormwater management facility located on the north side of Wellington County Road 19. Discharge from the stormwater management facility will be conveyed via a storm sewer to the existing

wetland located on the south parcel and ultimately the Black Drainage Works. Quality control treatment for runoff generated from Catchment 4001 will be provided by an oil / grit separator structure, prior to discharge to the storm sewer and the existing wetland.

- Catchment 4002 is 5.20 ha in size. Catchment 4002 represents the remainder of the north parcel, as well as a portion of the Wellington County Road 19 right-of-way. Flows generated from Catchment 4002 will be conveyed via a storm sewer to the existing wetland located on the south parcel and ultimately the Black Drainage Works.
- Catchment 4003 is 3.80 ha in size. Catchment 4003 represents a portion of both the Wellington County Road 19 and Third Line rights-of-way. Runoff from Catchment 4003 will be conveyed via the existing roadside ditches on Wellington County Road 19 and Third Line to the south parcel. Various inlet structures within the existing roadside ditch on Third Line will capture and convey flows via a dedicated bypass storm sewer to the Black Drainage Works. The dedicated bypass storm sewer has been sized with sufficient capacity to convey the major design storm flows generated from Catchment 4003. Quality control treatment for runoff generated from Catchment 4003 will be provided by an oil / grit separator structure, prior to discharge to the storm sewer and the existing wetland.
- Catchment 4004 has an area of 0.93 ha and encompasses a park block and portions of the residential area. The catchment is situated northeast of the existing wetland and is proposed to drain to the existing wetland and ultimately the Black Drainage Works.
- Catchment 4005 is 12.54 ha in size and represents a portion of the redevelopment lands. Upon redevelopment, minor storm runoff generated from Catchment 4005 will be conveyed via the local storm sewer system to the stormwater management facility, ultimately discharging to the existing wetland and the Black Drainage Works. Major storm runoff generated from Catchment 4005 will be conveyed overland with the right-of-way to the stormwater management facility, prior to discharge to the existing wetland and Black Drainage Works.
- Catchment 4006 is 6.57 ha in size and represents a portion of the redevelopment lands. Upon redevelopment, minor storm runoff generated from Catchment 4006 will be conveyed via the local storm sewer system to the stormwater management facility, ultimately discharging to the existing wetland and the Black Drainage Works. Major storm runoff generated from Catchment 4006 will be conveyed overland with the right-of-way to the stormwater management facility, prior to discharge to the existing wetland and Black Drainage Works.
- Catchment 4007 has an area of 1.30 ha and represents the proposed SWM facility (wet pond). The pond outflow will ultimately discharge to the existing wetland.
- Catchment 4008 is 7.52 ha in size and represents the existing wetland and a portion of the rear yard areas. Post-development runoff from Catchment 4008 will sheetflow overland to the proposed outlet for the existing wetland, ultimately discharging to the Black Drainage Works.

- Catchment 4009 is 8.51 ha in size and represents the external agricultural lands to the south of the Site. Runoff from Catchment 4009 in the post-development condition will continue to sheetflow overland and will be captured and conveyed via the proposed rear lot drainage channel along the south boundary of the Site and ultimately the Black Drainage Works.
- Catchment 4010 is 1.48 ha in size and represents a portion of the rear yards. Runoff generated from Catchment 4010 will sheetflow overland and will be captured and conveyed via the proposed rear lot drainage channel along the south boundary of the Site into the Black Drainage Works.
- Catchment 4011 is 3.84 ha in size and represents a portion of the development area at the westerly limit of the site. Post-development runoff generated from Catchment 4011 will be captured and conveyed via the local storm sewer system to the existing Black Drainage Works. Quality control treatment for runoff generated from Catchment 4011 will be provided an oil / grit separator structure prior to discharge to the existing Black Drainage Works.
- Catchment 4012 is 15.74 ha in size and represents the external agricultural lands to the south of the Site. Runoff from Catchment 4012 in the post-development condition will continue to sheetflow overland and will be captured and conveyed via the proposed rear lot drainage channel along the south boundary of the Site and ultimately the Black Drainage Works.
- Catchment 4013 is 3.22 ha in size and represents the remainder of the rear yards. Post-development runoff generated from Catchment 4013 will sheetflow overland and will be captured and conveyed via the proposed rear lot drainage channel along the south boundary of the Site and ultimately the Black Drainage Works.

The post-development stormwater catchment drainage areas are shown on Figure 5.

The parameters utilized in the post-development hydrologic modelling of each catchment area are summarized in Table 4.

Table 4: Post-Development Stormwater Catchment Drainage Catchment Parameters

Catchment ID	Area (ha)	Curve Number - CN	Initial Abstraction - IA (mm)	N	Time to Peak - TP (hour)	TIMP %
1001	6.23	81	5.0	3	0.2	-
2001	29.70	71	5.0	3	0.2	-
3001	4.67	71	5.0	3	0.2	-
4001	1.74	83	1.5	-	-	70%
4002	5.20	83	5.0	3	0.2	-
4003	3.80	98	5.0	3	0.2	-
4004	0.93	82	1.5	-	-	70%
4005	12.54	82	1.5	-	-	70%

Catchment ID	Area (ha)	Curve Number - CN	Initial Abstraction - IA (mm)	N	Time to Peak - TP (hour)	TIMP %
4006	6.57	82	1.5	-	-	70%
4007	1.30	82	1.5	-	-	70%
4008	7.52	36	5.0	3	0.2	-
4009	8.51	36	5.0	3	0.2	-
4010	1.48	82	1.5	-	-	70%
4011	3.84	86	1.5	-	-	70%
4012	15.74	58	5.0	3	0.2	-
4013	3.22	85	1.5	-	-	70%

The existing wetland on the south parcel, which includes a new outlet structure to convey flows from the existing wetland to the existing Black Drainage Works, has also been included in the post-development condition hydrologic modelling.

The post-development hydrologic modelling outputs are provided in Appendix B.

4.5 Quantity Control

4.5.1 Stormwater Management Pond – North

A dry stormwater management pond, referred to as the North Pond, has been designed to provide stormwater quantity control for Catchment 4001. Water quality control treatment for Catchment 4001 will be provided by an oil/grit separator structure (Stormceptor EF06) or equivalent device prior to discharge to the downstream outlet.

Post-development runoff from Catchment 4001 will be collected and conveyed through the on-site storm sewer system to the North Pond, located on the north side of Wellington County Road 19. The pond is designed with a 5:1 side slopes, and a multi-staged outlet structure consisting of a 100 mm diameter orifice, a 450 mm diameter outlet pipe and a 15 m long emergency overflow weir. A geosynthetic clay liner has been proposed for the North Pond to address concerns related to high groundwater levels.

Table 5 summarizes the operating characteristics for the North Pond as well as the storage volumes required to meet the design criteria. Relevant calculations are included in Appendix C.

Table 5: Summary Table for North Pond

Drainage Area	=	1.74 ha	Percent Impervious = 60%
	=	Outlet #1 Orifice	100 mm dia orifice plate @ 429.60 ELEV
Flow Controls	=	Outlet #2	450 mm dia outlet pipe @ 430.50 ELEV
	=	Weir	15 m long @ 431.10 ELEV

Stage-storage-discharge calculations associated with the North Pond sizing are included in Appendix C. Figures SWM1, SWM2, and SWM3 illustrate the proposed pond configuration, outlet controls, and sections, including grading around the pond.

4.5.2 Stormwater Management Pond – South

The South Stormwater Management Pond has been designed with 5:1 side slopes throughout and a 4 m wide access road to provide access to the forebay, pond inlet and outlet. Discharge from the pond will be directed to the existing wetland and ultimately the Black Drainage Works. A geosynthetic clay liner has been proposed for the South Pond to address concerns related to high groundwater levels.

Table 6 summarizes the operating characteristics for the SWM Pond as well as the storage volumes required to meet the design criteria. Relevant calculations are included in Appendix C.

Table 6: Summary Table for South Pond

Drainage Area	=	20.41 ha	Percent Impervious = 70%
Permanent Pool Volume (1)	=	225 m ³ /ha	x 20.41 ha = 4,592.2 m ³
Extended detention volume (2)	=	40 m ³ /ha	x 20.41 ha = 816.4 m ³
Permanent Pool Volume Required (1)-(2)	=	3,775.85 m ³	
		5,040 m ³	
Permanent Pool Volume Provided			
Maximum Depth	=	1.5 m (1.5 m in Forebay & Main cell)	
Permanent Pool Elevation	=	425.85 m	
	=	Extended Detention Orifice	150 mm dia orifice plate @ 425.85 ELEV
Flow Controls	=	Outlet #1	250 mm dia pipe @ 426.35 ELEV
	=	Weir	24 m long @ 428.00 ELEV
Extended Detention Volume	=	40 m ³ /ha x 20.41 ha =	816.4 m ³
Extended Detention Volume Provided	=	2,856.5 m ³	
Extended Detention Depth	=	0.50 m	@ 426.35 m

Stage-storage-discharge calculations associated with the South Pond sizing are included in Appendix C. Figures SWM1, SWM2 and SWM3 illustrate the proposed pond configuration, outlet controls, and sections, including grading around the pond.

4.5.3 Existing Wetland – South

The existing wetland is located in the center of the site, on the south side of Wellington County Road 19, and ultimately conveys flows to the Black Drainage Works.

The areas contributing flow to the existing wetland include the following:

1. Outflow from the North Pond (Catchment 4001)
2. Catchment 4002
3. Catchment 4003 via a bypass pipe from Third Line
4. Catchment 4004
5. Outflow from the South Pond (Catchments 4005, 4006, and 4007)
6. the wetland itself (Catchment 4008)

Flow from the existing wetland to the Black Drainage Works will be provided via a dedicated 450 mm diameter storm sewer (at a grade of 0.2%), ultimately discharging flows to the existing channel along the south limit of the site and the Black Drainage Works.

Table 7 summarizes the operating characteristics for the existing wetland.

Table 7: Summary Table for Wetland

Existing Wetland Area	=	7.52 ha
Flow Controls	=	Pipe 450 mm dia pipe @ 425.70 ELEV

Calculations associated with the existing wetland outlet design are included in Appendix D.

Figures SWM1, SWM2 and SWM3 illustrate the proposed pond configuration, outlet controls, and sections, including grading around the pond.

4.6 Quality Control

Enhanced (formerly Level 1) stormwater quality control treatment for runoff generated from the proposed development will be achieved through the use of water quality

treatment measures, including the provision of a forebay and permanent pool in the proposed South Pond, as well as through the use of oil / grit separator (OGS) structures.

4.6.1 Stormwater Management Pond – North

Quality control treatment for runoff discharging to the North Pond will be achieved through the use of an oil / grit separator (OGS) structure (Stormceptor EFO 6) prior to discharge to the downstream receiving outlet (i.e. the existing wetland and ultimately the Black Drainage Works).

See Appendix E for oil / grit separator (OGS) sizing calculations and details.

4.6.2 Stormwater Management Pond – South

Enhanced (formerly Level 1) quality control treatment for runoff discharging to the South Pond will be provided by a combination of a forebay structure and permanent pool. As per Table 3.2 (Ministry of the Environment Stormwater Management Planning and Design Manual, March 2003) the required permanent pool and extended detention storage volumes were calculated for the South Pond. See Appendix C for detailed calculations.

The required water quality storage volume for a wet pond with 20.41 ha of contributing drainage area at 70% was calculated to be 225 m³/ha or 4,592 m³. Of the total water quality storage volume required for wet facilities, 40 m³/ha represents the required extended detention storage volume, while the remainder (185 m³/ha) represents the required permanent pool storage volume. Based on the 20.41 ha of contributing drainage area, the required extended detention storage volume and the required permanent pool storage volume for the South Pond are 816.4 m³ and 3,775.8 m³, respectively.

The proposed forebay and permanent pool in the South Pond provides a total storage volume of 5,040 m³, which achieves the required water quality storage volume.

The sediment forebay has been designed in accordance with current guidelines. The maximum required dimensions for the forebay are 42.2 meters in length and 5.3 meters in width. The proposed design provides a length of 45.0m meters and a minimum width of 10.0 meters. As a result, the forebay dimension satisfies dispersion and settling length guidelines allowing for adequate sedimentation.

See Appendix C for detailed calculations.

4.6.3 Existing Wetland – South

Runoff generated from the remainder of the site will be routed to the existing wetland.

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Quality control treatment (Enhanced 80% TSS removal) for runoff generated from Catchment 4003, will be provided via the use of an oil/grit separator (OGS) structure prior to discharge to the existing wetland.

See Appendix E for oil / grit separator (OGS) sizing calculations and details.

4.6.4 Uncontrolled Flows to Existing Black Drainage Works – South

Runoff generated from the remainder of the site will be routed overland and will discharge uncontrolled to the existing Black Drainage Works.

Quality control treatment (Enhanced 80% TSS removal) for runoff generated from Catchment 4011, will be provided via the use of an oil/grit separator (OGS) structure prior to discharge to the existing Black Drainage Works.

See Appendix E for oil/grit separator (OGS) sizing calculations and details.

The routing of flows through the North Pond, South Pond and the existing wetland are summarized in Table 8, Table 9, and Table 10.

Table 8: Post-Development Condition – Stormwater Management Facility (North)

	Available Capacity			Actual Capacity Used		
	Peak Flow (m ³ /s)	Storage Volume (ha-m)	Storage Elevation (m)	*Peak Flow (m ³ /s)	*Storage Volume (ha-m)	Storage Elevation (m)
Bottom of Pond / Invert of 100 mm dia orifice	0.000	0.0000	429.60	-	-	-
	0.005	0.0026	429.70	-	-	-
	0.008	0.0056	429.80	-	-	-
	0.010	0.0089	429.90	-	-	-
	0.012	0.0126	430.00	-	-	-
	0.014	0.0166	430.10	-	-	-
	0.015	0.0209	430.20	-	-	-
	0.017	0.0256	430.30	-	-	-
2-Year	-	-	-	0.018	0.0308	430.40
Invert of 450 mm dia outlet	0.019	0.0361	430.50	-	-	-
5-Year	-	-	-	0.111	0.0423	430.52
10-Year	-	-	-	0.131	0.0450	430.53
25-Year	-	-	-	0.337	0.0512	430.58

	Available Capacity			Actual Capacity Used		
	Peak Flow (m ³ /s)	Storage Volume (ha-m)	Storage Elevation (m)	*Peak Flow (m ³ /s)	*Storage Volume (ha-m)	Storage Elevation (m)
Regional Storm (Hurricane Hazel)	-	-	-	0.253	0.0398	430.56
50-Year	-	-	-	0.386	0.0553	430.598
	0.392	0.0419	430.60			
100-Year				0.397	0.0555	430.62
	0.417	0.0481	430.70	-	-	-
	0.440	0.0547	430.80	-	-	-
	0.462	0.0617	430.90	-	-	-
	0.482	0.0691	431.00	-	-	-
Emergency Overflow Weir	0.502	0.0768	431.10	-	-	-
Overflow / Top of Bank	1.175	0.0850	431.20	-	-	-

* Peak outflow storage-volume values are obtained from the VO program.

Table 9: Post-Development Condition – Stormwater Management Facility (South)

	Available Capacity			Actual Capacity Used		
	Peak Flow (m ³ /s)	Storage Volume (ha-m)	Storage Elevation (m)	Peak Flow (m ³ /s)	Storage Volume (ha-m)	Storage Elevation (m)
Top of Permanent Pool / NWL / Top of Forebay Weir / Invert of 150 mm dia orifice	0.000	0.0000	425.85	-	-	-
	0.013	0.0793	426.00	-	-	-
Top of Forebay Berm	0.020	0.1352	426.10	-	-	-
	0.025	0.1936	426.20	-	-	-
Invert of 250 mm dia outlet	0.031	0.2857	426.35	-	-	-
	0.053	0.3174	426.40	-	-	-
	0.077	0.3827	426.50	-	-	-
2-Year	-	-	-	0.078	0.4093	426.51
	0.103	0.5199	426.70	-	-	-
5-Year	-	-	-	0.107	0.5713	426.73
	0.118	0.5919	426.80	-	-	-

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	Available Capacity			Actual Capacity Used		
	Peak Flow (m ³ /s)	Storage Volume (ha-m)	Storage Elevation (m)	Peak Flow (m ³ /s)	Storage Volume (ha-m)	Storage Elevation (m)
10-Year	-	-	-	0.126	0.6765	426.86
	0.131	0.6662	426.90	-	-	-
25-Year	-	-	-	0.147	0.8161	427.04
	0.154	0.8217	427.10	-	-	-
50-Year	-	-	-	0.160	0.0.9226	427.16
	0.164	0.9029	427.20	-	-	-
100-Year	-	-	-	0.172	1.0271	427.28
	0.174	0.9865	427.30		-	-
	0.191	1.072	427.50			
	0.199	1.1608	427.60	-	-	-
	0.207	1.2515	427.70	-	-	-
	0.222	1.5383	427.90	-	-	-
Emergency Overflow Weir	0.229	1.6383	428.00	-	-	-
Overflow	1.276	1.7419	428.10	-	-	-
Regional Storm (Hurricane Hazel)	-	-	-	2.914	1.8338	428.18
Top of Bank	3.217	1.8500	428.20	-	-	-

* Peak outflow storage-volume values are obtained from the VO program.

Table 10: Post-Development Condition – Existing Wetland (New Outlet Structure) on South Parcel

	Available Capacity			Actual Capacity Used		
	Peak Flow (m ³ /s)	Storage Volume (ha-m)	Storage Elevation (m)	Peak Flow (m ³ /s)	Storage Volume (ha-m)	Storage Elevation (m)
NEW 450 mm dia. Outlet pipe	0.0000	0.00	425.70	-	-	-
	0.050	0.0009	425.90	-	-	-
	0.128	0.0026	426.10	-	-	-
	0.176	0.0078	426.30	-	-	-
	0.2260	0.0254	426.50	-	-	-
	0.2670	0.0487	426.70	-	-	-
2-Year	-	-	-	0.270	0.0605	426.71
5-Year	-	-	-	0.288	0.1398	426.81
10-Year	-	-	-	0.303	0.2008	426.90
	0.3030	0.1996	426.90	-	-	-

	Available Capacity			Actual Capacity Used		
	Peak Flow (m ³ /s)	Storage Volume (ha-m)	Storage Elevation (m)	Peak Flow (m ³ /s)	Storage Volume (ha-m)	Storage Elevation (m)
25-Year	-	-	-	0.311	0.2851	426.95
50-Year	-	-	-	0.317	0.3561	426.98
100-Year	-	-	-	0.324	0.4192	427.03
	0.3350	0.05341	427.10	-	-	-
	0.3640	0.9932	427.30	-	-	-
	0.3910	1.6326	427.50	-	-	-
	0.4160	2.3678	427.70	-	-	-
	0.4400	3.1856	427.90	-	-	-
	0.4620	4.0730	428.10	-	-	-
Regional Storm (Hurricane Hazel)	-	-	-	0.476	4.6914	428.22
	0.4840	5.0499	428.30	-	-	-
	0.5040	6.2129	428.50	-	-	-
	0.5140	6.8092	428.60	-	-	-
	0.5240	7.4138	428.70	-	-	-
	0.5330	8.0259	428.80	-	-	-
Weir (boulevard grade on Street A)	0.5430	8.6462	428.90	-	-	-
Overflow	0.9842	9.2768	429.00	-	-	-

In summary, the post-development condition flow rates generated from the site are as follows:

Table 11: Post-Development Condition – Peak Flow Rates

Catchment Number	Peak Flow Rate (m ³ /s)						Regional Storm (Hurricane Hazel)
	2-year	5-year	10-year	25-year	50-year	100-year	
4001	0.248	0.360	0.430	0.521	0.590	0.657	0.254
4002	0.187	0.320	0.418	0.554	0.662	0.770	0.734
4003	0.389	0.562	0.676	0.824	0.933	1.04	0.557
4004	0.142	0.200	0.237	0.286	0.323	0.359	0.136
4005	1.531	2.404	2.883	3.523	4.011	4.493	1.817
4006	0.824	1.290	1.542	1.879	2.136	2.390	0.954
4007	0.194	0.274	0.326	0.394	0.446	0.496	0.189

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	Peak Flow Rate (m ³ /s)						
4008	0.041	0.077	0.105	0.148	0.185	0.223	0.597
4009	0.046	0.087	0.119	0.168	0.209	0.253	0.676
4010	0.214	0.309	0.368	0.446	0.504	0.561	0.216
4011	0.508	0.800	0.955	1.163	1.321	1.476	0.560
4012	0.199	0.363	0.493	0.684	0.842	1.007	1.819
4013	0.434	0.664	0.793	0.965	1.095	1.225	0.470
SUB-TOTAL to Black Drainage Works (ID 63)	1.451	2.270	2.755	3.415	3.928	4.432	4.161
1001	0.202	0.350	0.459	0.613	0.735	0.858	0.871
SUB-TOTAL to Adjacent Lands	0.202	0.350	0.459	0.613	0.735	0.858	0.871
2001	0.619	1.105	1.480	2.019	2.454	2.902	3.896
SUB-TOTAL to Armstrong Drainage Works	0.619	1.105	1.480	2.019	2.454	2.902	3.896
3001	0.097	0.174	0.233	0.317	0.386	0.456	0.613
SUB-TOTAL to Belwood Lake	0.097	0.174	0.233	0.317	0.386	0.456	0.613
TOTAL from Site (ID 65)	2.219	3.666	4.637	6.001	7.084	8.176	9.538

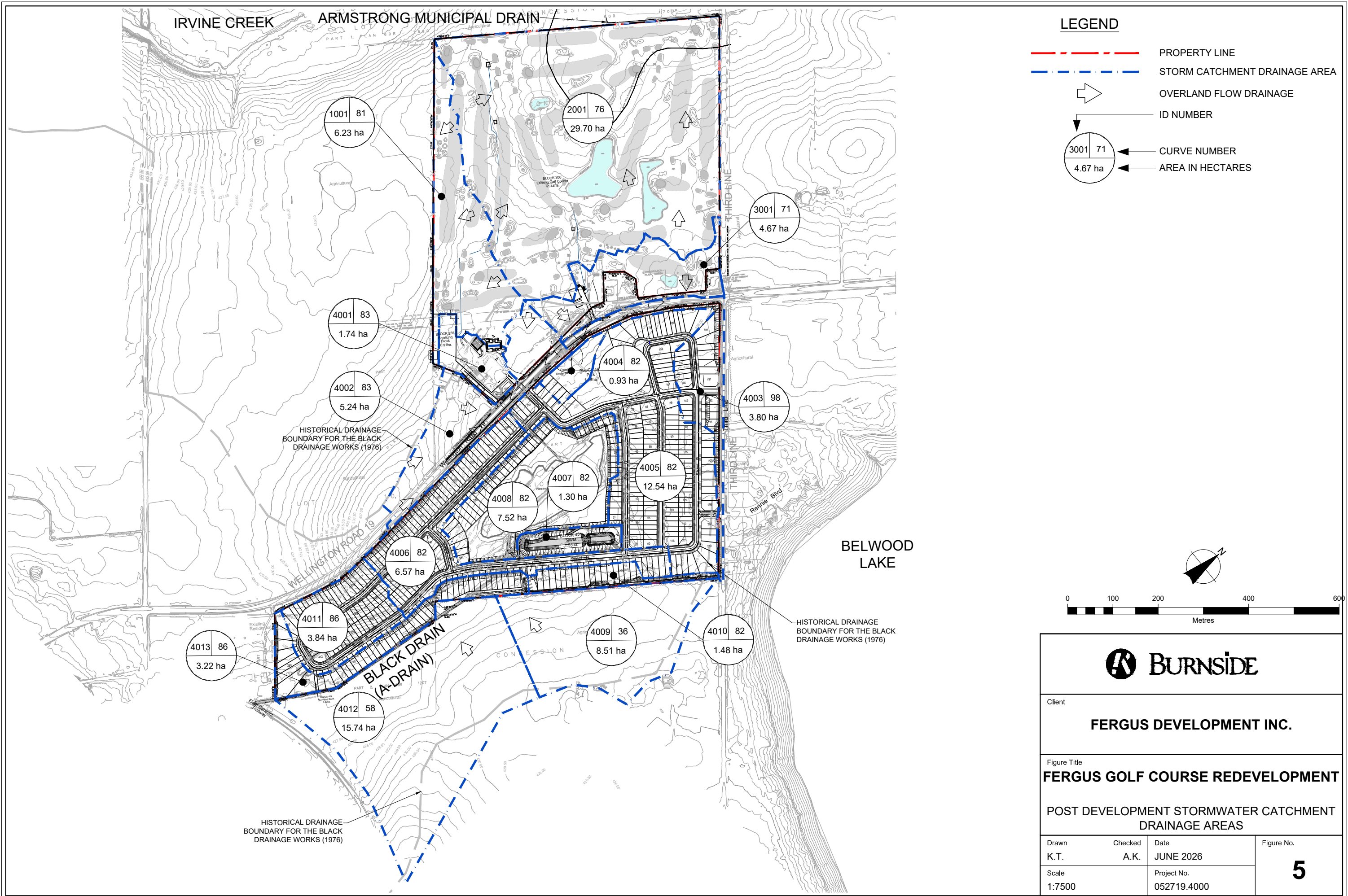
Table 12 compares the total post-development peak flow rates against the existing condition peak flow rates.

Table 12: Peak Flow Rate Comparison – Existing Condition vs. Post-Development Condition

	2-year	5-year	10-year	25-year	50-year	100-year	Regional Storm (Hurricane Hazel)
Existing Conditions							

	2-year	5-year	10-year	25-year	50-year	100-year	Regional Storm (Hurricane Hazel)
SUB-TOTAL to Black Drainage Works	0.923	1.430	1.894	2.546	3.066	3.606	7.905
SUB-TOTAL to Adjacent Lands	0.202	0.349	0.458	0.611	0.733	0.855	0.868
SUB-TOTAL to Armstrong Drainage Works	0.716	1.261	1.675	2.263	2.734	3.214	3.778
SUB-TOTAL to Belwood Lake	0.120	0.215	0.288	0.393	0.478	0.565	0.758
TOTAL from Site	1.961	3.140	4.105	5.567	6.743	7.949	13.251
Post-Development Conditions							
SUB-TOTAL to Black Drainage Works	1.451	2.27	2.755	3.415	3.928	4.432	4.161
SUB-TOTAL to Adjacent Lands	0.202	0.350	0.459	0.613	0.735	0.858	0.871
SUB-TOTAL to Armstrong Drainage Works	0.619	1.105	1.480	2.019	2.454	2.902	3.896
SUB-TOTAL to Belwood Lake	0.097	0.174	0.233	0.317	0.386	0.456	0.613
TOTAL from Site	2.219	3.666	4.637	6.001	7.084	8.176	9.538
Δ % difference (post vs. pre development)	13.2%	16.8%	13.0%	7.8%	5.1%	2.9%	-28.0%

The modelling illustrates a minor increase in the post-development flow rates from the site. In our opinion, this increase is minimal when compared to the overall catchment area discharging to the existing Black Drainage Works and is within the tolerance of the modelling for the site. As the design and approval of the development advances, the use of additional lot level, conveyance and low impact development (LID) measures will be further investigated, analyzed and evaluated for implementation on site.



Client			
FERGUS DEVELOPMENT INC.			
Figure Title			
FERGUS GOLF COURSE REDEVELOPMENT			
POST DEVELOPMENT STORMWATER CATCHMENT DRAINAGE AREAS			
Drawn	Checked	Date	Figure No.
K.T.	A.K.	JUNE 2026	
Scale	Project No.		
1:7500	052719.4000		5

4.6.5 Minor Storm System

The storm sewer system will be sized to convey the 5-year design storm event as per the Township of Centre Wellington standard. The storm sewers for the majority of the site will be located within the rights-of-way and will discharge flows to the stormwater management facilities and/or existing wetland. A small section of storm sewer will discharge flows directly to the existing Black Drainage Works.

4.6.6 Major Storm System

The major storm system and emergency overland flow route will follow a combination of proposed rights-of-way and overland flow blocks to direct runoff generated during the major design storm events, up to and including the 100-year design storm event to the appropriate outlets. Major storm system and emergency overland flows will be directed to the existing wetland, the proposed stormwater management facilities and the existing Black Drainage Works. The major storm system has been designed to contain all flows within the right-of-way.

4.6.7 External Drainage Conveyance

Post-development runoff generated from Catchment 4003, up to and including the 100-year design storm event, will be collected and conveyed from the existing roadside ditch along Third Line via dedicated bypass storm sewer for conveyance to the existing wetland and ultimately discharging to the existing Black Drainage Works. The dedicated bypass storm sewer is proposed to be 975 mm diameter with a minimum grade of 0.15%.

4.7 Water Balance / Infiltration and Low Impact Development

A hydrogeology investigation was completed by Gemtec and then updated in June 2026. The water balance analysis calculated the pre-development and unmitigated post-development annual average infiltration and runoff volumes for the Draft Plan of Subdivision lands. Based on the findings of the water balance analysis, infiltration across the entire site is anticipated to decrease by between 35% and 49% for the SE Parcel and the WHPA-Q areas respectively.

To improve the post-development infiltration volumes, Gemtec proposes the implementation of low impact development (LID) measures on the lots. There is a target of 85% of the lots to contain infiltration galleries, as well as 15% of the lots with downspout disconnections to promote the infiltration of rooftop runoff at grade. This will reduce the deficit to only 16% and 3% for the SE Parcel and the WHPA-Q areas respectively.

Additional mitigation measures could include infiltration within park lands or other public spaces, in consultation with the Township, to improve infiltration.

5.0 Erosion and Sediment Control

The following general Erosion and Sediment Control (ESC) measures will be implemented as part of the construction works associated with the proposed redevelopment. See Erosion Sediment Control Plans (C900 Drawings). The ESC measures noted below are intended to mitigate the potential impacts associated with the construction activities on the surrounding environment. The ESC measures listed below are applicable to all construction activities within the subject property:

1. Erosion and Sediment Control (ESC) measures will be implemented prior to, and maintained during the construction phases, to prevent entry of sediment into the water.
2. Sediment control fence consisting of non-woven material shall be installed and maintained to prevent sediment from leaving the proposed construction areas. Location of fencing will be established based on the site staging and proposed construction work.
3. The contractor shall maintain a supply of silt fence, clear stone, straw bales, and filter fabric on-site for emergency use.
4. All in-water and near water works will be conducted in the dry, with appropriate erosion and sediment controls.
5. No equipment or vehicles are permitted to cross through the watercourse, unless approved by Grand River Conservation Authority.
6. No sediment-laden water or deleterious substances will be released to the adjacent waterbody at any time. Dewatering discharge containing sediment laden water must be discharged to a sediment bag positioned in a vegetated area and allowed to discharge into existing established vegetation at least 30 m from any watercourse or existing storm catchbasin.
7. Removal of vegetative cover will be staged and restricted to a period immediately preceding the commencement of earth works in each stage.
8. Disturbed areas will be temporarily or permanently stabilized or restored as the work progresses.
9. If site construction activities are interrupted, and / or inactivity exceeds 30 days, all stripped and/or bare soil areas are to be stabilized using either erosion control matting (e.g., jute), sodding / seeding / mulching or other approved methods to the satisfaction of the site inspector.

10. Equipment, stockpiled material or construction material will be stored outside watercourse and buffer areas and in a manner that prevents sediment or deleterious substances from entering the Black Drain.
11. Vehicular refueling and maintenance will be conducted a minimum of 30 m from the water.
12. All damaged erosion and sediment control measures should be repaired and/or replaced within 48 hours of the inspection.
13. After hours contact numbers are to be posted on-site for emergencies.

6.0 Conclusions and Recommendations

R.J. Burnside & Associates Limited (Burnside) has been retained by Fergus Development Inc. to prepare a Stormwater Management (SWM) Report in support of the Zoning Bylaw Amendment (ZBA) and Draft Plan of Subdivision applications for the proposed Fergus Golf Course Redevelopment.

As documented above, the existing storm drainage outlets for the site have been identified. The proposed stormwater management system and the outlet locations, to support the development, have also been identified, assessed and designed.

Two stormwater management facilities (North Pond and South Pond), along with the existing wetland, will provide the required quantity control to attenuate the post-development peak flows from the site to the pre-development level.

The South Pond, as well as the three oil / grit separator (OGS) structures, will provide the required Enhanced (formerly Level 1) water quality control treatment prior to the discharge of flows from the site.

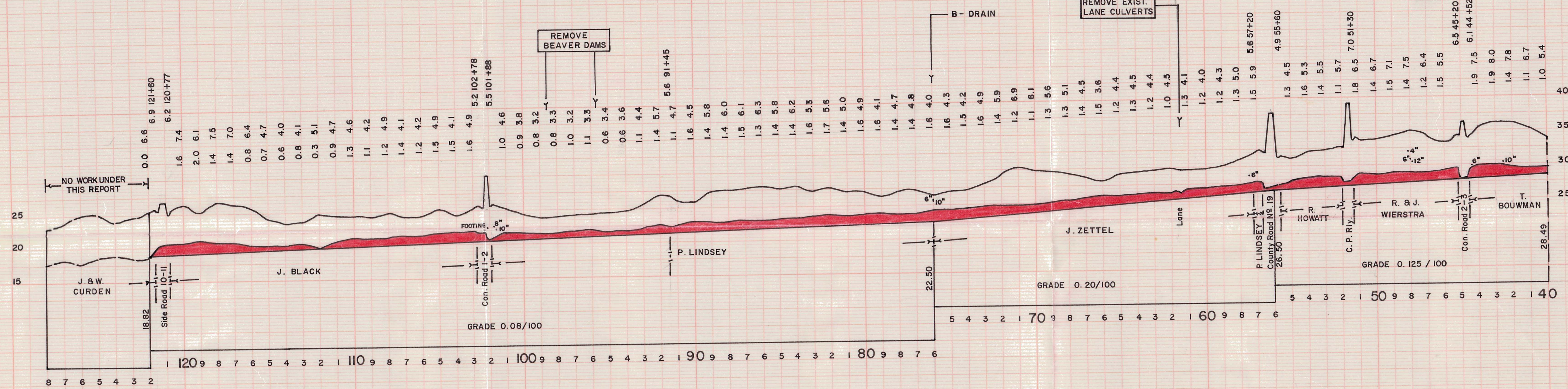
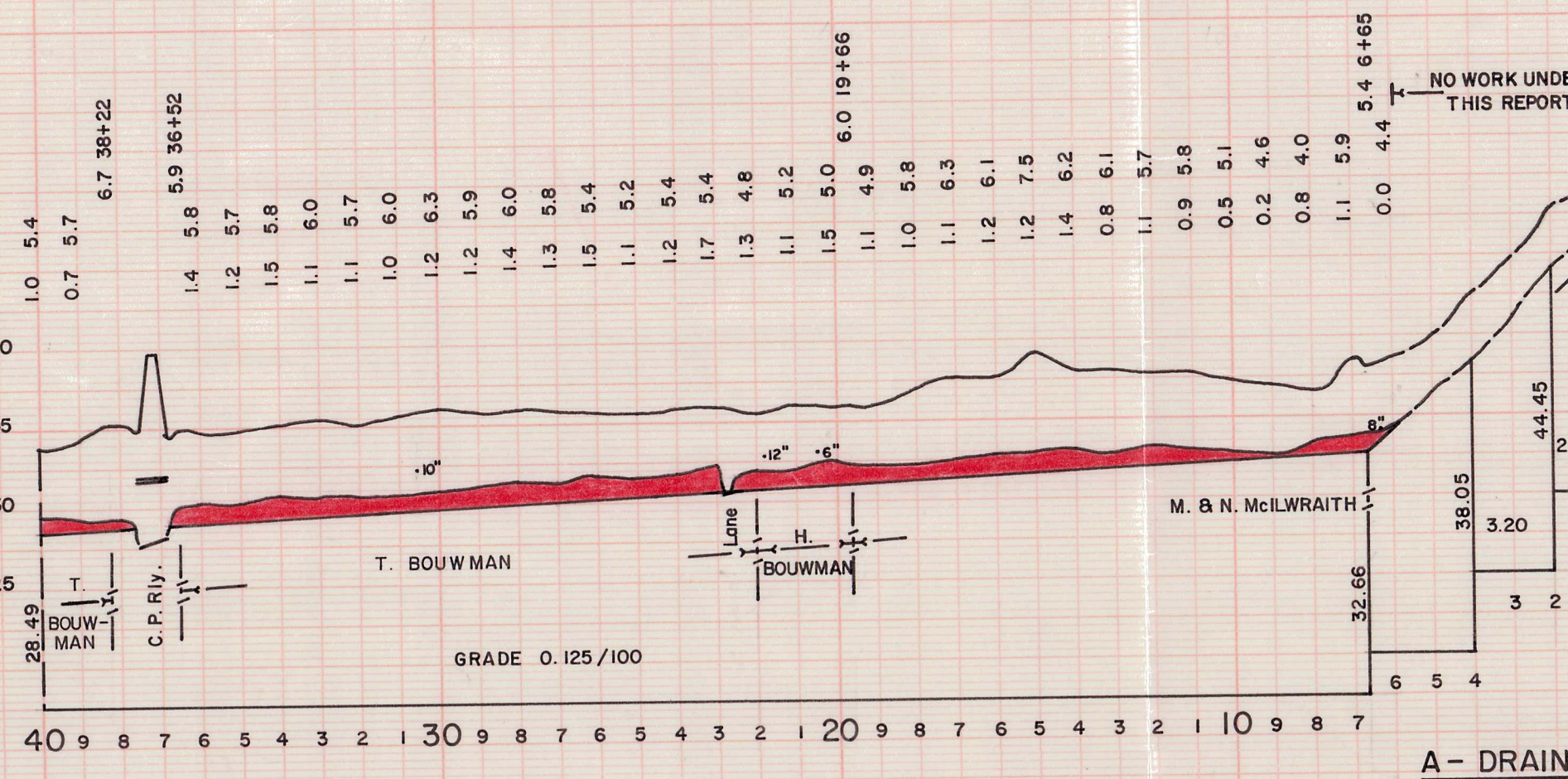


BURNSIDE

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Appendix A

Background Information



BENCH MARKS

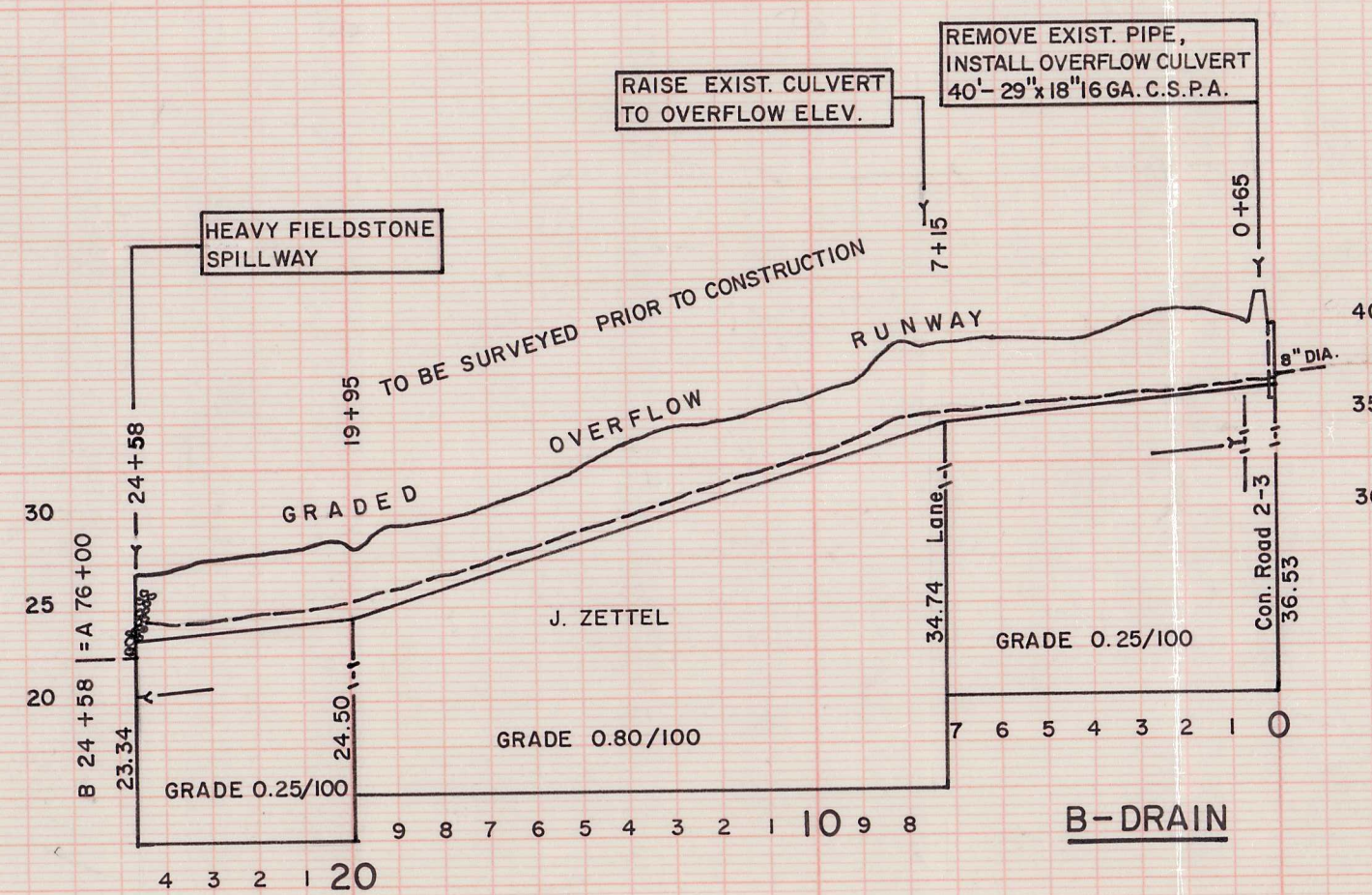
A 0+82	TOP CENTRE DWST. 18" DIA. C.S.P.	49.50
A 1+00	SPIKE IN FENCE POST	40' S. 50.31
A 14+40	TOP CENTRE DWST. CONC. CULVERT	12' W. 40.12
A 36+90	TOP CENTRE UPST. CONC. HEADWALL	37.25
A 45+10	TOP CENTRE DWST. 5' DIA. C.S.P.	32.92
A 51+70	TOP WEST TRACK	39.19
A 56+55	TOP CENTRE DWST. 5.5' DIA. C.S.P.	32.26
A 91+50	TOP CENTRE DWST. 18" DIA. C.S.P.	20' N. 26.22
A 102+32	TOP CENTRE DWST. CONC. WHEELGUARD	30.87
A 121+26	TOP CENTRE DWST. CONC. WHEELGUARD	27.99
B 0+60	SPIKE IN 1' DIA. SPRUCE TREE	2' S. 41.21
B 14+45	SPIKE IN FENCE POST	30' N. 34.03
B 24+78	SPIKE IN FENCE POST	45' N. 28.34

BOTTOM WIDTH: A 0+00-90+00 3 ft.
A 90+00-122+00 4 ft.

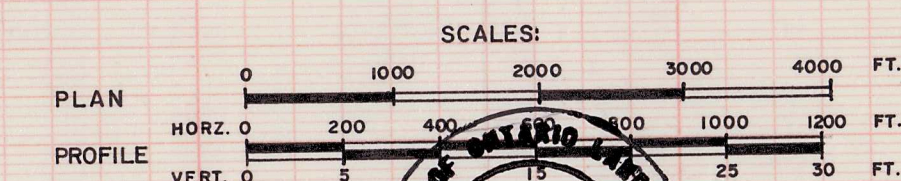
SIDE SLOPE: 1ft. vert. to 1ft. horz.

B DRAIN TILE SIZES

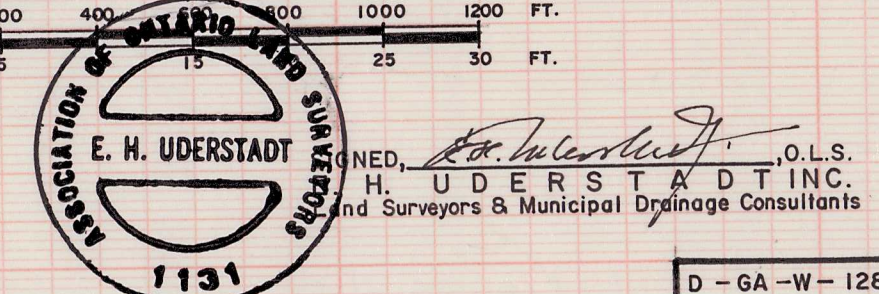
24+58-24+44 14 LIN. FT. 15" DIA. 18 GA. M.P. WITH GRATE
24+44-19+95 449 LIN. FT. 12" DIA. FIELD TILE
19+95-0+00 1955 LIN. FT. 10" DIA. FIELD TILE
CON. ROAD 2-3 40 LIN. FT. 12" DIA. 16 GA. M.P.
CATCH BASIN: 0+00



PLAN & PROFILES
OF THE
BLACK DRAINAGE WORKS
REPAIR & IMPROVEMENT, 1976
IN THE TOWNSHIPS OF
NICHOL AND WEST GARAFRAXA



DATED, MAR. 29, 1976
Orangeville, Ontario



The Corporation of the Township of Centre Wellington

By-law 2023-52

A By-law to abandon part of the Black Drainage Works

Whereas the Black Drainage Works has been established by the Council of the former Township of West Garafraxa by By-laws No. 12–1967 and No. 16–1976.

And Whereas pursuant to the provisions of the Drainage Act, R.S.O. 1990, c.D.17, s.84, the following events have taken place:

1. Council has received the written request of the owners of land assessed for benefit in respect of the Black Drainage Works to abandon part of the Drain, from Sta. A19+66 upstream to Sta. A0+00, all of 'D' Drain tile and all of 'G' Drain tile, all are located on E ½ Lot 10 Concession 3 including County Road No. 19 and Township 3rd Line Road;
2. Council forthwith notified all owners of land assessed for the drainage works by prepaid mail at their address shown in the last revised assessment roll of its intention to abandon part of the Drain unless any owner within ten days of the mailing of the notice gives the Clerk of the Municipality written notice that the owner requires a report of an engineer to be made on such proposed abandonment;
3. No owner has notified the Clerk of the Municipality that the owner requires a report of an engineer to be made on such proposed abandonment;

And Whereas it is desired to abandon part of the Black Drainage Works, from Sta. A19+66 upstream to Sta. A0+00, all of 'D' Drain tile and all of 'G' Drain tile, all located on E ½ Lot 10 Con. 3 including County Road No. 19 and Township 3rd Line Road;

Now Therefore the Council of the Corporation of the Township of Centre Wellington hereby enacts as follows:

1. That part of the Black Drainage Works, from Sta. A19+66 upstream to Sta. A0+00, all of 'D' Drain tile and all of 'G' Drain tile, all located on E ½ Lot 10 Con. 3 including County Road No. 19 and Township 3rd Line Road, is hereby abandoned.

Read a first, second and third time and finally passed this 26th day of June, 2023.



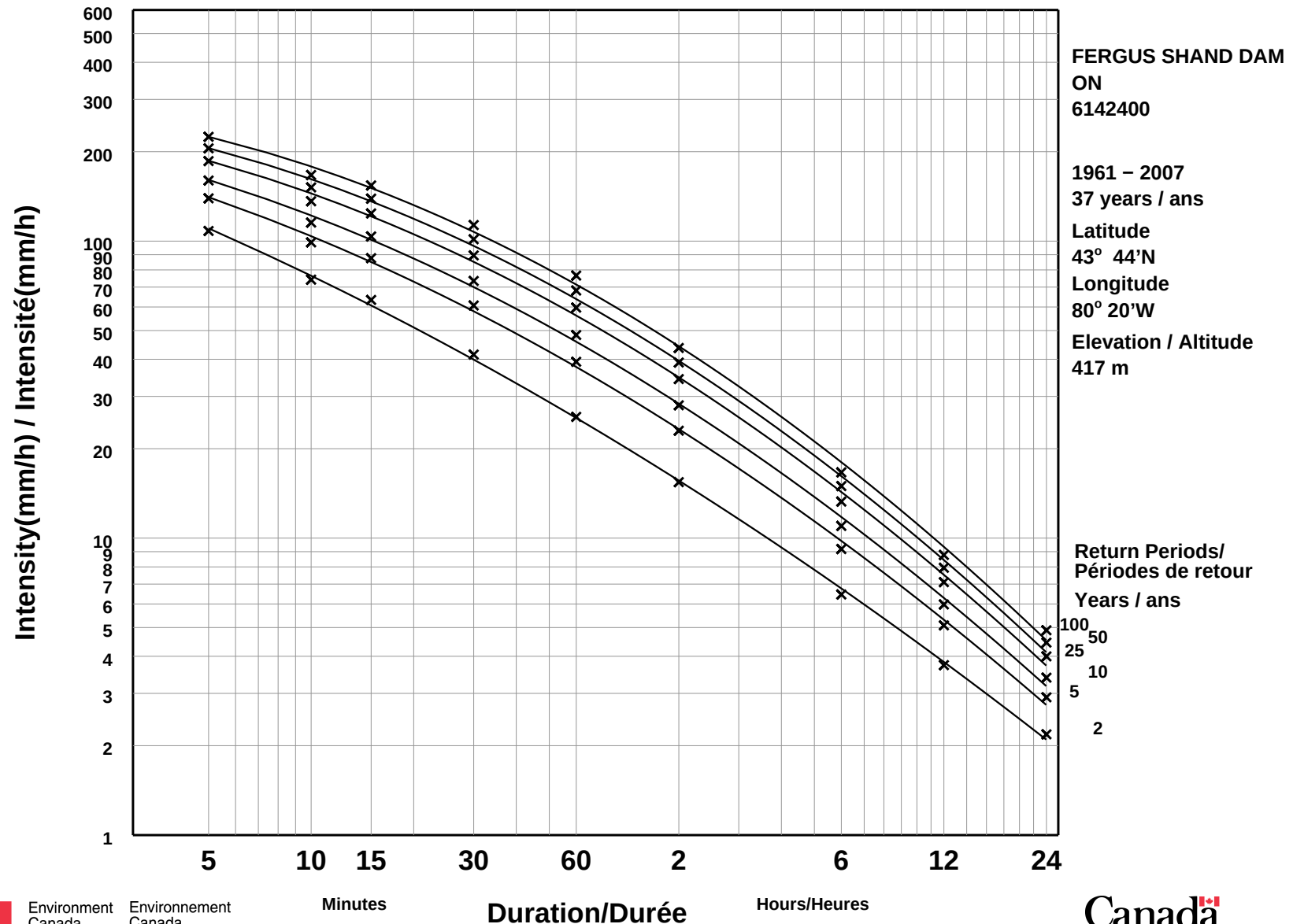
Mayor – Shawn Watters


Clerk – Kerri O'Kane

Short Duration Rainfall Intensity–Duration–Frequency Data

2019/02/27

Données sur l'intensité, la durée et la fréquence des chutes de pluie de courte durée



Environment
Canada

Environnement
Canada

Canada

Environment and Climate Change Canada
Environnement et Changement climatique Canada

Short Duration Rainfall Intensity-Duration-Frequency Data
Données sur l'intensité, la durée et la fréquence des chutes
de pluie de courte durée

Gumbel - Method of moments/Méthode des moments

2019/02/27

FERGUS SHAND DAM

ON

6142400

Latitude: 43 44'N Longitude: 80 20'W Elevation/Altitude: 417 m

Years/Années : 1961 - 2007 # Years/Années : 37

Table 1 : Annual Maximum (mm)/Maximum annuel (mm)

Year Année	5 min	10 min	15 min	30 min	1 h	2 h	6 h	12 h	24 h
1961	11.7	19.8	25.4	27.9	36.8	41.9	45.2	46.6	48.9
1962	-99.9	-99.9	-99.9	-99.9	21.6	24.4	43.4	52.8	59.2
1963	-99.9	14.7	15.7	15.7	16.8	20.8	26.4	31.2	51.3
1964	-99.9	-99.9	19.6	25.7	26.2	26.7	31.2	34.8	53.3
1965	-99.9	7.9	11.2	19.0	19.3	29.0	33.5	43.9	61.0
1966	-99.9	7.6	7.9	8.9	10.9	17.5	20.1	30.2	37.1
1967	-99.9	-99.9	33.5	53.8	86.9	89.4	111.0	113.5	116.8
1968	10.4	15.7	21.3	29.0	38.4	52.8	64.5	65.0	117.6
1970	7.9	9.4	13.5	16.5	18.3	19.6	36.6	37.3	37.3
1972	9.1	16.0	23.1	37.1	58.4	65.8	67.3	78.2	78.2
1973	12.2	18.0	22.6	30.5	30.7	52.6	54.1	54.1	76.5
1974	6.6	9.1	12.2	18.0	23.9	34.8	46.5	63.8	65.5
1975	9.4	12.4	15.5	18.8	20.6	24.1	35.3	42.2	44.7
1976	13.5	13.5	16.8	24.1	29.2	38.1	59.2	59.2	59.2
1977	9.1	15.5	17.8	20.3	23.9	24.1	34.0	38.6	48.8
1978	11.7	12.8	12.8	17.6	23.4	34.1	40.6	43.4	50.0
1979	5.5	7.9	9.5	13.4	13.5	14.1	17.6	28.6	34.2
1980	11.6	13.0	17.1	23.7	42.0	54.5	62.8	63.0	63.2
1981	8.0	14.1	16.6	18.2	21.8	22.9	34.0	41.8	51.5
1982	8.1	11.2	12.7	18.0	23.2	24.2	29.2	31.2	34.0
1983	7.6	13.4	14.0	18.4	18.6	19.0	23.5	26.6	36.9

1984	13.5	13.7	13.9	15.1	17.4	18.2	23.4	35.8	43.8
1985	11.5	13.2	17.8	26.6	26.6	32.4	37.5	49.0	65.4
1987	8.0	10.3	12.2	13.0	14.4	-99.9	-99.9	81.2	81.2
1988	7.4	9.5	11.8	17.9	31.9	35.3	42.2	42.2	42.6
1989	11.0	14.5	14.7	16.4	19.5	26.0	37.3	49.6	50.6
1990	6.1	9.0	13.2	20.8	23.7	25.0	27.4	31.4	36.8
1991	17.3	18.9	20.3	24.6	35.9	40.1	55.4	67.3	73.4
1992	9.7	12.6	17.1	19.8	31.0	36.5	-99.9	-99.9	67.8
1993	6.3	7.3	10.5	15.6	16.2	18.6	25.3	28.6	45.1
1994	7.5	9.7	11.8	13.4	13.6	15.9	21.8	30.3	36.7
1996	9.7	12.6	15.6	19.3	26.9	29.8	35.8	45.0	49.7
1997	4.5	6.1	8.1	9.9	12.8	14.4	21.8	26.0	32.0
1998	4.7	5.8	7.2	9.0	15.2	24.5	40.1	52.6	70.2
1999	11.1	18.0	23.6	33.1	37.6	40.9	57.2	60.5	63.4
2000	7.1	11.9	16.8	20.3	26.2	28.4	48.9	51.3	53.0
2001	8.3	13.6	19.3	32.0	38.7	40.8	44.0	44.0	44.0
2002	10.6	17.3	20.8	21.7	22.1	23.7	25.0	29.0	29.6
2003	17.0	31.2	43.0	65.2	75.6	79.6	79.6	80.0	80.0
2004	9.1	12.5	13.9	16.7	22.1	30.6	43.0	43.0	58.9
2005	11.3	20.2	29.1	37.8	46.6	65.4	65.5	65.5	65.5
2006	7.8	12.5	17.3	23.3	24.7	31.0	39.2	39.6	42.0
2007	9.5	12.8	16.0	20.4	26.9	26.9	27.1	30.8	36.1

# Yrs.	37	40	42	42	43	42	41	42	43
Années									
Mean	9.5	13.1	17.0	22.5	28.1	33.7	41.8	47.8	55.7
Moyenne									
Std. Dev.	2.9	4.7	6.9	10.9	15.4	17.1	18.5	18.3	19.7
Écart-type									
Skew.	0.75	1.42	1.69	2.12	2.18	1.59	1.54	1.39	1.40
Dissymétrie									
Kurtosis	4.03	7.51	7.45	8.94	8.71	5.59	6.72	5.79	5.74

*-99.9 Indicates Missing Data/Données manquantes

Warning: annual maximum amount greater than 100-yr return period amount

Avertissement : la quantité maximale annuelle excède la quantité
pour une période de retour de 100 ans

Year/Année	Duration/Durée	Data/Données	100-yr/ans
1967	1 h	86.9	76.6
1967	2 h	89.4	87.3
1967	6 h	111.0	99.9
1967	12 h	113.5	105.3
1968	24 h	117.6	117.5
2003	10 min	31.2	27.8
2003	15 min	43.0	38.5
2003	30 min	65.2	56.6

Table 2a : Return Period Rainfall Amounts (mm)
Quantité de pluie (mm) par période de retour

Duration/Durée	2	5	10	25	50	100	#Years
	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	Années
5 min	9.0	11.6	13.3	15.5	17.1	18.7	37
10 min	12.4	16.5	19.2	22.7	25.3	27.8	40
15 min	15.8	21.9	25.9	31.0	34.7	38.5	42
30 min	20.8	30.4	36.7	44.8	50.7	56.6	42
1 h	25.6	39.2	48.3	59.7	68.2	76.6	43
2 h	30.9	46.0	56.0	68.6	78.0	87.3	42
6 h	38.8	55.1	66.0	79.6	89.8	99.9	41
12 h	44.8	61.0	71.7	85.3	95.3	105.3	42
24 h	52.4	69.8	81.4	95.9	106.7	117.5	43

Table 2b :

Return Period Rainfall Rates (mm/h) - 95% Confidence limits
Intensité de la pluie (mm/h) par période de retour - Limites de confiance de 95%

Duration/Durée	2	5	10	25	50	100	#Years
	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	Années
5 min	108.2	139.3	159.9	186.0	205.3	224.5	37
	+/- 10.4	+/- 17.6	+/- 23.7	+/- 32.0	+/- 38.3	+/- 44.6	37
10 min	74.2	99.0	115.4	136.2	151.6	166.9	40
	+/- 8.0	+/- 13.5	+/- 18.2	+/- 24.5	+/- 29.3	+/- 34.2	40
15 min	63.4	87.6	103.7	124.0	139.0	153.9	42
	+/- 7.6	+/- 12.8	+/- 17.3	+/- 23.4	+/- 27.9	+/- 32.6	42
30 min	41.5	60.7	73.4	89.5	101.4	113.3	42
	+/- 6.0	+/- 10.2	+/- 13.7	+/- 18.5	+/- 22.1	+/- 25.8	42
1 h	25.6	39.2	48.3	59.7	68.2	76.6	43
	+/- 4.2	+/- 7.1	+/- 9.6	+/- 13.0	+/- 15.5	+/- 18.1	43
2 h	15.4	23.0	28.0	34.3	39.0	43.7	42
	+/- 2.4	+/- 4.0	+/- 5.4	+/- 7.3	+/- 8.7	+/- 10.2	42
6 h	6.5	9.2	11.0	13.3	15.0	16.6	41
	+/- 0.9	+/- 1.5	+/- 2.0	+/- 2.7	+/- 3.2	+/- 3.7	41
12 h	3.7	5.1	6.0	7.1	7.9	8.8	42
	+/- 0.4	+/- 0.7	+/- 1.0	+/- 1.3	+/- 1.6	+/- 1.8	42
24 h	2.2	2.9	3.4	4.0	4.4	4.9	43
	+/- 0.2	+/- 0.4	+/- 0.5	+/- 0.7	+/- 0.8	+/- 1.0	43

Table 3 : Interpolation Equation / Équation d'interpolation: $R = A \cdot T^B$

R = Interpolated Rainfall rate (mm/h)/Intensité interpolée de la pluie (mm/h)

RR = Rainfall rate (mm/h) / Intensité de la pluie (mm/h)

T = Rainfall duration (h) / Durée de la pluie (h)

Statistics/Statistiques	2	5	10	25	50	100
	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans	yr/ans
Mean of RR/Moyenne de RR	37.8	51.8	61.0	72.7	81.3	89.9
Std. Dev. /Écart-type (RR)	37.1	48.3	55.7	65.2	72.2	79.2
Std. Error/Erreur-type	8.6	16.4	21.4	27.8	32.5	37.1
Coefficient (A)	22.6	31.6	37.5	45.0	50.5	56.0
Exponent/Exposant (B)	-0.702	-0.698	-0.696	-0.694	-0.693	-0.693
Mean % Error/% erreur moyenne	9.2	13.9	15.7	17.4	18.3	19.1



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Appendix B

Visual OTTHYMO Modelling Parameters and Results

Site Soil Groups:

Perth/Parkhill Loam = Soil Group C

Listowel/Harriston Loam = Soil Group B

Hillsburgh Fine Sandy Loam = Soil Group A

Hydrologic Soil-Cover Complexes

Part 630

National Engineering Handbook

Table 9-5 Runoff curve numbers for urban areas ^{1/}

Cover description cover type and hydrologic condition	Average percent impervious area ^{2/}	-- CN for hydrologic soil group --			
		A	B	C	D
Fully developed urban areas (vegetation)					
Open space (lawns, parks, golf courses, Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only) ^{4/}		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres		46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)		77	86	91	94

Pre-Condition

Golf course soil can be said
to be in good conditionProposed Conditions
Right of WaysProposed Conditions Low
Density Residential Lots^{1/} Average runoff condition, and $I_a = 0.2S$.^{2/} The average percent impervious area shown was used to develop the composite CNs. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition.^{3/} CNs shown are equivalent to those of pasture. Composite CNs may be computed for other combinations of open space type.^{4/} Composite CNs for natural desert landscaping should be computed using figures 9-3 or 9-4 based on the impervious area percentage (CN=98) and the pervious area CN. The pervious area CNs are assumed equivalent to desert shrub in poor hydrologic condition.

Table 9-1 Runoff curve numbers for agricultural lands ^{1/} — Continued

cover type	Cover description treatment ^{2/}	hydrologic condition ^{3/}	-- CN for hydrologic soil group --			
			A	B	C	D
Pasture, grassland, or range- continuous forage for grazing ^{4/}		Poor	68	79	86	89
		Fair	49	69	79	84
		Good	39	61	74	80
Meadow-continuous grass, protected from grazing and generally mowed for hay		Good	30	58	71	78
Brush-brush-forbs-grass mixture with brush the major element ^{5/}		Poor	48	67	77	83
		Fair	35	56	70	77
		Good	30 ^{6/}	48	65	73
Woods-grass combination (orchard or tree farm) ^{7/}		Poor	57	73	82	86
		Fair	43	65	76	82
		Good	32	58	72	79
Woods ^{8/}		Poor	45	66	77	83
		Fair	36	60	73	79
		Good	30	55	70	77
Farmstead—buildings, lanes, driveways, and surrounding lots		---	59	74	82	86
Roads (including right-of-way):						
Dirt		---	72	82	87	89
Gravel		---	76	85	89	91

The external agricultural land can be said to be in good condition, refer to composite CN calculation

Soil Groups for Wooded areas:
Perth/Parkhill Loam = Soil Group C (Poor Drainage)
Listowel/Harriston Loam = Soil Group B (Fair Drainage)
Hillsburgh Fine Sandy Loam = Soil Group A (Good Drainage)

1/ Average runoff condition, and $I_a = 0.2S$

2/ Crop residue cover applies only if residue is on at least 5 percent of the surface throughout the year.

3/ Hydrologic condition is based on combinations of factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes, (d) percent of residue cover on the land surface (good $\geq 20\%$), and (e) degree of surface toughness.

Poor: Factors impair infiltration and tend to increase runoff.

Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

For conservation tillage poor hydrologic condition, 5 to 20 percent of the surface is covered with residue (less than 750 pounds per acre for row crops or 300 pounds per acre for small grain).

For conservation tillage good hydrologic condition, more than 20 percent of the surface is covered with residue (greater than 750 pounds per acre for row crops or 300 pounds per acre for small grain).

4/ Poor: < 50% ground cover or heavily grazed with no mulch.

Fair: 50 to 75% ground cover and not heavily grazed.

Good: > 75% ground cover and lightly or only occasionally grazed.

5/ Poor: < 50% ground cover.

Fair: 50 to 75% ground cover.

Good: > 75% ground cover.

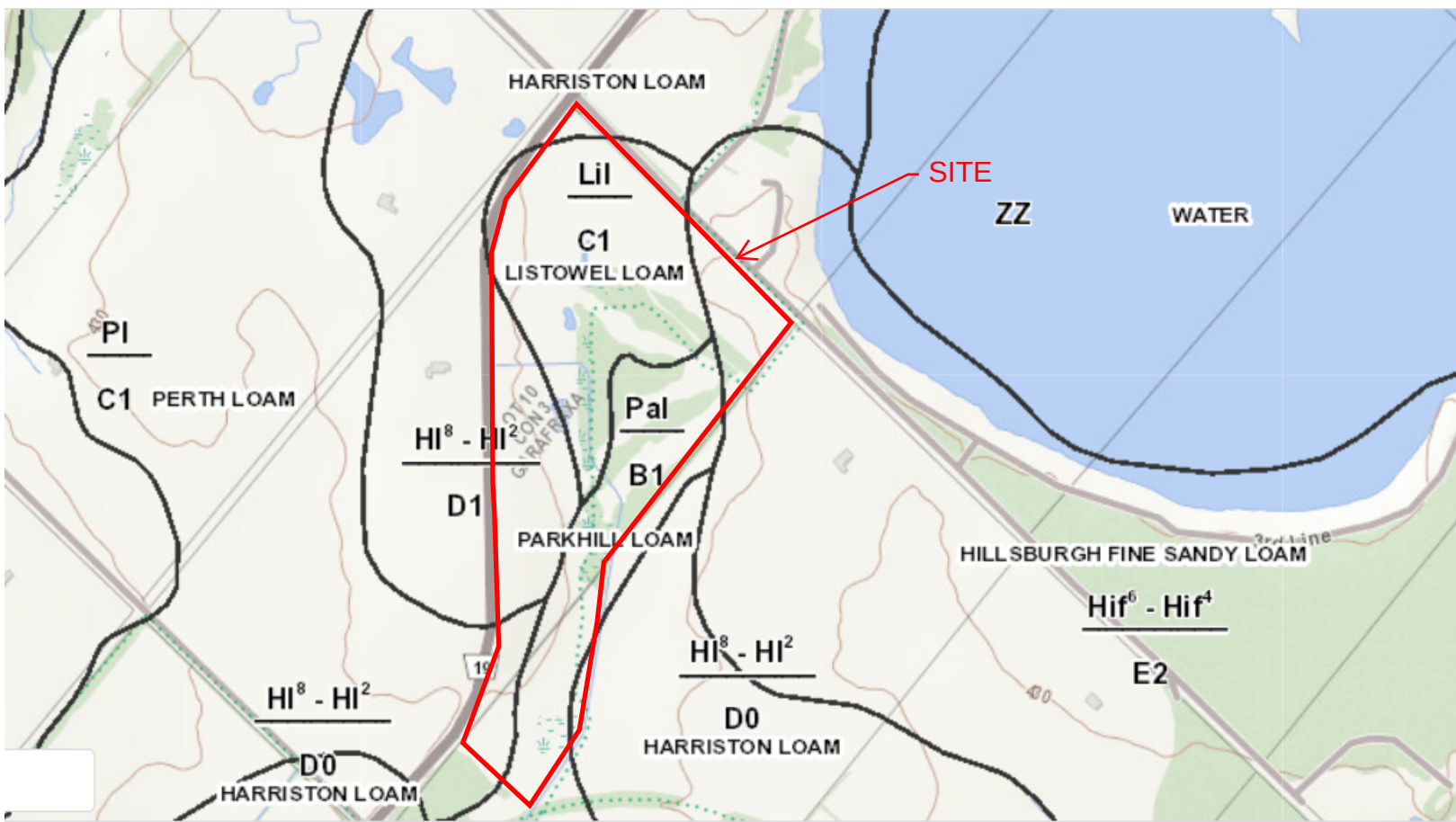
6/ If actual curve number is less than 30, use CN = 30 for runoff computation.

7/ CNs shown were computed for areas with 50 percent woods and 50 percent grass (pasture) cover. Other combinations of conditions may be computed from the CNs for woods and pasture.

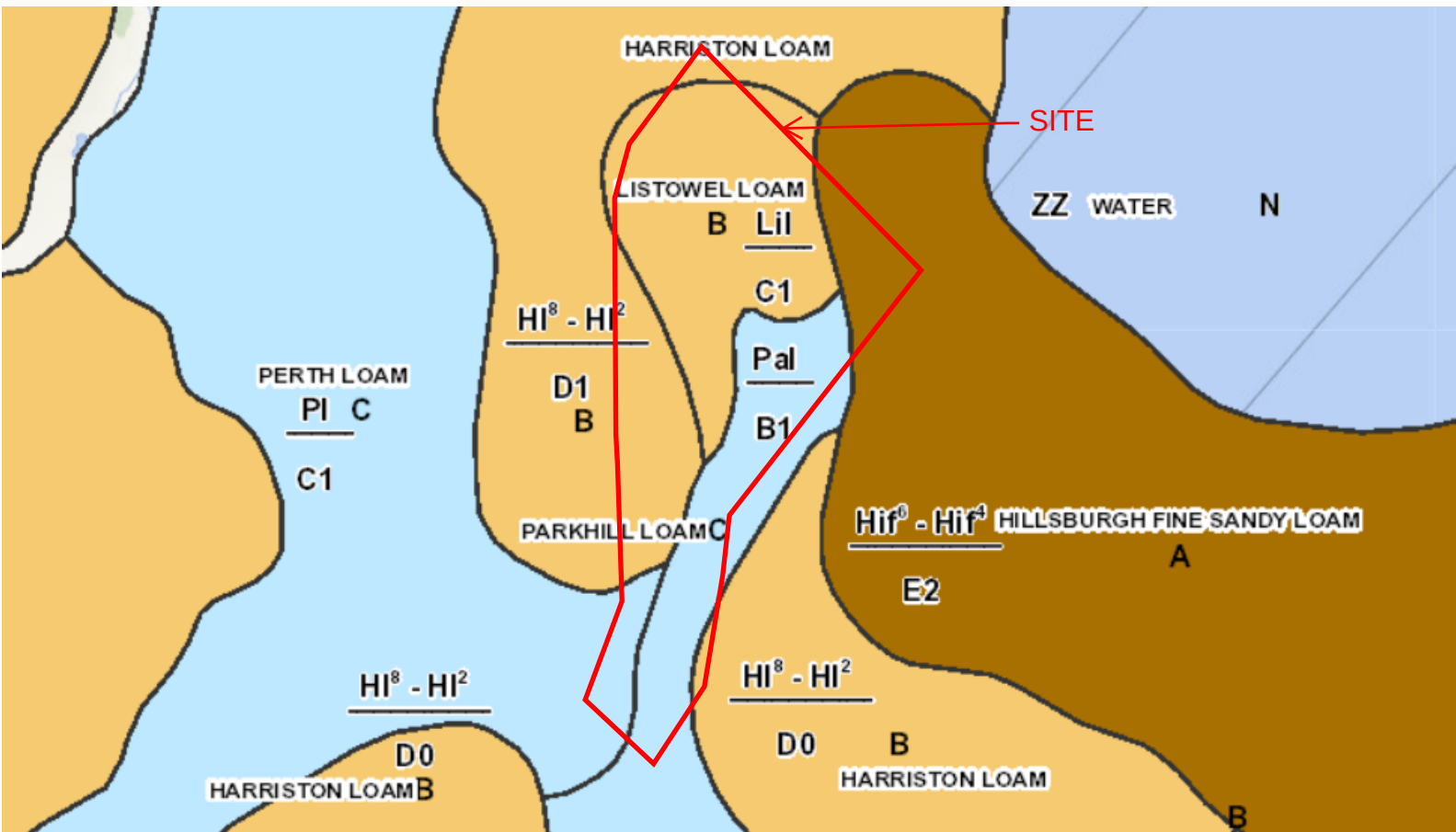
8/ Poor: Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.

Fair: Woods are grazed, but not burned, and some forest litter covers the soil.

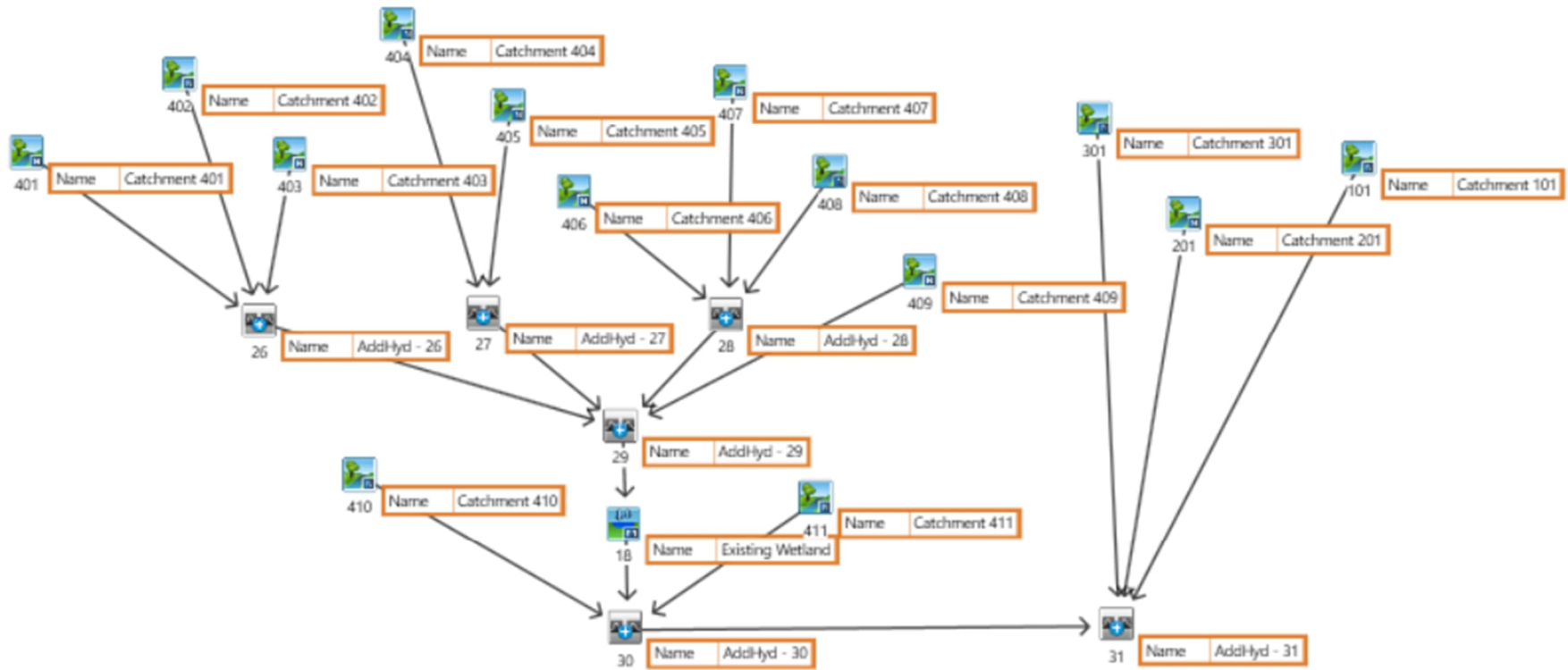
Good: Woods are protected from grazing, and litter and brush adequately cover the soil.



Mapping with Soil Group



Pre-Development Visual OTTHYMO Model Schematic



```
=====
V   V   I   SSSSS U   U   A   L           (v 6.2.2019)
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
```

```
    000   TTTTT TTTTT H   H   Y   Y   M   M   000   TM
O   O   T   T   H   H   Y   Y   MM MM O   O
O   O   T   T   H   H   Y   M   M   O   O
    000   T   T   H   H   Y   M   M   000
```

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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\sfanous\AppData\Local\Civica\XH5\9918fc2e-de2e-4ff9-b060-a882585d4126\0de88e1b-86
Summary filename: C:\Users\sfanous\AppData\Local\Civica\XH5\9918fc2e-de2e-4ff9-b060-a882585d4126\0de88e1b-86

DATE: 11/21/2025 TIME: 09:29:20

USER:

COMMENTS: _____

** SIMULATION : Hurricane Hazel **

READ STORM	Filename: C:\Users\sfanous\AppData\Local\Temp\61e201b0-0a9b-4707-8c51-0bdd0a552448\82915a9
Ptotal=285.00 mm	Comments: Hurricane Hazel - Regional Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.00	13.00	2.03	26.00	2.03	39.00	6.00
1.00	2.03	14.00	2.03	27.00	2.03	40.00	13.00
2.00	2.03	15.00	2.03	28.00	2.03	41.00	17.00
3.00	2.03	16.00	2.03	29.00	2.03	42.00	13.00
4.00	2.03	17.00	2.03	30.00	2.03	43.00	23.00
5.00	2.03	18.00	2.03	31.00	2.03	44.00	13.00
6.00	2.03	19.00	2.03	32.00	2.03	45.00	13.00
7.00	2.03	20.00	2.03	33.00	2.03	46.00	53.00
8.00	2.03	21.00	2.03	34.00	2.03	47.00	38.00
9.00	2.03	22.00	2.03	35.00	2.03	48.00	13.00
10.00	2.03	23.00	2.03	36.00	2.03		
11.00	2.03	24.00	2.03	37.00	6.00		
12.00	2.03	25.00	2.03	38.00	4.00		

CALIB NASHYD (0401) ID= 1 DT= 5.0 min	Area (ha)= 7.45 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.20	Curve Number (CN)= 71.0 # of Linear Res.(N)= 3.00
--	--	--

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00

0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00

7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 1.423

PEAK FLOW (cms)= 0.977 (i)
TIME TO PEAK (hrs)= 47.000
RUNOFF VOLUME (mm)= 203.913
TOTAL RAINFALL (mm)= 285.001
RUNOFF COEFFICIENT = 0.715

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

CALIB			
NASHYD (0402)	Area (ha)=	0.37	Curve Number (CN)= 98.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

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

----- TRANSFORMED HYETOGRAPH -----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00

0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00

7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 0.071

PEAK FLOW (cms)= 0.054 (i)
TIME TO PEAK (hrs)= 47.000
RUNOFF VOLUME (mm)= 274.387
TOTAL RAINFALL (mm)= 285.001
RUNOFF COEFFICIENT = 0.963

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

CALIB			
NASHYD (0403)	Area (ha)=	0.81	Curve Number (CN)= 71.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03

0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00

7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 0.155

PEAK FLOW (cms)= 0.106 (i)
TIME TO PEAK (hrs)= 47.000
RUNOFF VOLUME (mm)= 203.913
TOTAL RAINFALL (mm)= 285.001
RUNOFF COEFFICIENT = 0.715

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

ADD HYD (0026)				
1 + 2 = 3				
ID1= 1 (0401):	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
+ ID2= 2 (0402):	7.45	0.977	47.00	203.91
	0.37	0.054	47.00	274.39
ID = 3 (0026):	7.82	1.032	47.00	207.25

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.


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-----
| ADD HYD ( 0026) |
| 3 + 2 = 1 |
-----
ID1= 3 ( 0026):      AREA      QPEAK      TPEAK      R.V.
+ ID2= 2 ( 0403):      (ha)      (cms)      (hrs)      (mm)
=====
ID = 1 ( 0026):      8.63      1.138      47.00      206.93

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NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-----
| CALIB |
| NASHYD ( 0404) |
| ID= 1 DT= 5.0 min |
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Area      (ha)=      1.37      Curve Number      (CN)= 98.0
Ia      (mm)=      5.00      # of Linear Res.(N)= 3.00
U.H. Tp(hrs)=      0.20

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

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----- TRANSFORMED HYETOGRAPH -----

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TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00

5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00

12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 0.262

PEAK FLOW (cms)= 0.201 (i)
TIME TO PEAK (hrs)= 47.000
RUNOFF VOLUME (mm)= 274.388
TOTAL RAINFALL (mm)= 285.001
RUNOFF COEFFICIENT = 0.963

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

CALIB			
NASHYD (0405)	Area (ha)= 16.60	Curve Number (CN)= 68.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00

4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00

11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 3.170

PEAK FLOW (cms)= 2.125 (i)
 TIME TO PEAK (hrs)= 47.000
 RUNOFF VOLUME (mm)= 195.858
 TOTAL RAINFALL (mm)= 285.001
 RUNOFF COEFFICIENT = 0.687

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

ADD HYD (0027)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0404):	1.37	0.201	47.00	274.39
+ ID2= 2 (0405):	16.60	2.125	47.00	195.86
=====				
ID = 3 (0027):	17.97	2.326	47.00	201.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
NASHYD (0406)	Area (ha)=	0.15	Curve Number (CN)= 98.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00

3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00

10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 0.029

PEAK FLOW (cms)= 0.022 (i)
TIME TO PEAK (hrs)= 47.000
RUNOFF VOLUME (mm)= 274.386
TOTAL RAINFALL (mm)= 285.001
RUNOFF COEFFICIENT = 0.963

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

CALIB			
NASHYD (0407)	Area (ha)=	8.51	Curve Number (CN)= 30.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00

3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00

10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 1.625

PEAK FLOW (cms)= 0.577 (i)
 TIME TO PEAK (hrs)= 47.000
 RUNOFF VOLUME (mm)= 89.669
 TOTAL RAINFALL (mm)= 285.001
 RUNOFF COEFFICIENT = 0.315

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

CALIB			
NASHYD (0408)	Area (ha)=	7.14	Curve Number (CN)= 60.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

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

----- TRANSFORMED HYETOGRAPH -----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00

3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00

10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 1.364

PEAK FLOW (cms)= 0.844 (i)
TIME TO PEAK (hrs)= 47.000
RUNOFF VOLUME (mm)= 174.149
TOTAL RAINFALL (mm)= 285.001
RUNOFF COEFFICIENT = 0.611

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

ADD HYD (0028)					
1 + 2 = 3					
		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0406):		0.15	0.022	47.00	274.39
+ ID2= 2 (0407):		8.51	0.577	47.00	89.67
=====					
ID = 3 (0028):		8.66	0.599	47.00	92.87

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0028)					
3 + 2 = 1					
		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0028):		8.66	0.599	47.00	92.87
+ ID2= 2 (0408):		7.14	0.844	47.00	174.15
=====					
ID = 1 (0028):		15.80	1.443	47.00	129.60

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB					
NASHYD (0409)					
ID= 1 DT= 5.0 min					
	Area	(ha)=	7.14	Curve Number (CN)=	71.0
	Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00
	U.H. Tp	(hrs)=	0.20		

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00

0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00

7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 1.364

PEAK FLOW (cms)= 0.937 (i)

TIME TO PEAK (hrs)= 47.000

RUNOFF VOLUME (mm)= 203.913

TOTAL RAINFALL (mm)= 285.001

RUNOFF COEFFICIENT = 0.715

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

ADD HYD (0029)				
1 + 2 = 3				

ID1= 1 (0026):	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	8.63	1.138	47.00	206.93
+ ID2= 2 (0027):	17.97	2.326	47.00	201.85
=====				
ID = 3 (0029):	26.60	3.463	47.00	203.50

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0029)				
3 + 2 = 1				

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)

ID1= 3 (0029):	26.60	3.463	47.00	203.50
+ ID2= 2 (0028):	15.80	1.443	47.00	129.60
=====				
ID = 1 (0029):	42.40	4.906	47.00	175.96

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0029)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0029):	42.40	4.906	47.00	175.96
+ ID2= 2 (0409):	7.14	0.937	47.00	203.91
=====				
ID = 3 (0029):	49.54	5.843	47.00	179.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0018)				
IN= 2---> OUT= 1				
DT= 5.0 min				

	OVERFLOW IS OFF			
	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	0.5834	0.0487
	0.3087	0.0003	0.5950	0.0585
	0.3501	0.0009	0.7597	0.0873
	0.3870	0.0017	1.4421	0.1872
	0.4207	0.0026	2.4328	0.3326
	0.4519	0.0037	3.6724	0.5217
	0.4811	0.0078	5.1308	0.7291
	0.5086	0.0158	6.7886	0.9809
	0.5347	0.0254	8.6312	1.2834
	0.5596	0.0365	10.6473	1.6203

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0029)	49.540	5.843	47.00	179.99
OUTFLOW: ID= 1 (0018)	49.540	5.195	47.17	180.06

PEAK FLOW REDUCTION [Qout/Qin](%)= 88.91
TIME SHIFT OF PEAK FLOW (min)= 10.00
MAXIMUM STORAGE USED (ha.m.)= 0.7407

CALIB				
NASHYD (0410)				
ID= 1 DT= 5.0 min				

	Area	(ha)=	7.92	Curve Number (CN)= 78.0
	Ia	(mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp	(hrs)=	0.20	

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

----- TRANSFORMED HYETOGRAPH -----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00

2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00

9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 1.513

PEAK FLOW (cms)= 1.089 (i)
 TIME TO PEAK (hrs)= 47.000
 RUNOFF VOLUME (mm)= 222.531
 TOTAL RAINFALL (mm)= 285.001
 RUNOFF COEFFICIENT = 0.781

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

CALIB			
NASHYD (0411)	Area (ha)= 15.74	Curve Number (CN)= 56.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00

2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00

9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 3.006

PEAK FLOW (cms)= 1.774 (i)
 TIME TO PEAK (hrs)= 47.000
 RUNOFF VOLUME (mm)= 163.169
 TOTAL RAINFALL (mm)= 285.001
 RUNOFF COEFFICIENT = 0.573

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

ADD HYD (0030)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0018):	49.54	5.195	47.17	180.06
+ ID2= 2 (0410):	7.92	1.089	47.00	222.53
=====				
ID = 3 (0030):	57.46	6.183	47.08	185.91

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0030):	57.46	6.183	47.08	185.91
+ ID2= 2 (0411):	15.74	1.774	47.00	163.17
=====				
ID = 1 (0030):	73.20	7.905	47.08	181.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	Area (ha)=	5.78	Curve Number (CN)=	71.0
NASHYD (0301)	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
ID= 1 DT= 5.0 min	U.H. Tp(hrs)=	0.20		

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

----- TRANSFORMED HYETOGRAPH -----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00

6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 1.104

PEAK FLOW (cms)= 0.758 (i)
 TIME TO PEAK (hrs)= 47.000
 RUNOFF VOLUME (mm)= 203.913
 TOTAL RAINFALL (mm)= 285.001
 RUNOFF COEFFICIENT = 0.715

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

CALIB	Area (ha)=	6.21	Curve Number (CN)=	81.0
NASHYD (0101)	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
ID= 1 DT= 5.0 min	U.H. Tp(hrs)=	0.20		

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00

6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 1.186

PEAK FLOW (cms)= 0.868 (i)
 TIME TO PEAK (hrs)= 47.000
 RUNOFF VOLUME (mm)= 230.435
 TOTAL RAINFALL (mm)= 285.001
 RUNOFF COEFFICIENT = 0.809

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

CALIB			
NASHYD (0201)	Area (ha)= 27.80	Curve Number (CN)= 76.0	

ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
 ----- U.H. Tp(hrs)= 0.20

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00

6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 5.309

PEAK FLOW (cms)= 3.778 (i)
 TIME TO PEAK (hrs)= 47.000
 RUNOFF VOLUME (mm)= 217.237
 TOTAL RAINFALL (mm)= 285.001
 RUNOFF COEFFICIENT = 0.762

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

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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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\sfanous\AppData\Local\Civica\XH5\9918fc2e-de2e-4ff9-b060-a882585d4126\8dc47623-47
Summary filename: C:\Users\sfanous\AppData\Local\Civica\XH5\9918fc2e-de2e-4ff9-b060-a882585d4126\8dc47623-47
```

DATE: 11/21/2025 TIME: 09:29:22

USER:

COMMENTS: _____

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*****
** SIMULATION : TCW 100yr                               **
*****
```

READ STORM		Filename: C:\Users\sfanous\AppData	
		ata\Local\Temp\	
		61e201b0-0a9b-4707-8c51-0bdd0a552448\dd13f3c5	
Ptotal= 68.16 mm		Comments: TCW Fergus Shand Dam 100yr	

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

0.00	0.00	6.08	0.00	12.17	0.00	18.25	0.00
0.08	295.00	6.17	0.00	12.25	0.00	18.33	0.00
0.17	182.70	6.25	0.00	12.33	0.00	18.42	0.00
0.25	138.10	6.33	0.00	12.42	0.00	18.50	0.00
0.33	0.00	6.42	0.00	12.50	0.00	18.58	0.00
0.42	0.00	6.50	0.00	12.58	0.00	18.67	0.00
0.50	85.50	6.58	0.00	12.67	0.00	18.75	0.00
0.58	0.00	6.67	0.00	12.75	0.00	18.83	0.00
0.67	0.00	6.75	0.00	12.83	0.00	18.92	0.00
0.75	0.00	6.83	0.00	12.92	0.00	19.00	0.00
0.83	0.00	6.92	0.00	13.00	0.00	19.08	0.00
0.92	0.00	7.00	0.00	13.08	0.00	19.17	0.00
1.00	53.00	7.08	0.00	13.17	0.00	19.25	0.00
1.08	0.00	7.17	0.00	13.25	0.00	19.33	0.00
1.17	0.00	7.25	0.00	13.33	0.00	19.42	0.00
1.25	0.00	7.33	0.00	13.42	0.00	19.50	0.00
1.33	0.00	7.42	0.00	13.50	0.00	19.58	0.00
1.42	0.00	7.50	0.00	13.58	0.00	19.67	0.00
1.50	0.00	7.58	0.00	13.67	0.00	19.75	0.00
1.58	0.00	7.67	0.00	13.75	0.00	19.83	0.00
1.67	0.00	7.75	0.00	13.83	0.00	19.92	0.00
1.75	0.00	7.83	0.00	13.92	0.00	20.00	0.00
1.83	0.00	7.92	0.00	14.00	0.00	20.08	0.00
1.92	0.00	8.00	0.00	14.08	0.00	20.17	0.00
2.00	32.80	8.08	0.00	14.17	0.00	20.25	0.00
2.08	0.00	8.17	0.00	14.25	0.00	20.33	0.00
2.17	0.00	8.25	0.00	14.33	0.00	20.42	0.00
2.25	0.00	8.33	0.00	14.42	0.00	20.50	0.00
2.33	0.00	8.42	0.00	14.50	0.00	20.58	0.00
2.42	0.00	8.50	0.00	14.58	0.00	20.67	0.00
2.50	0.00	8.58	0.00	14.67	0.00	20.75	0.00
2.58	0.00	8.67	0.00	14.75	0.00	20.83	0.00
2.67	0.00	8.75	0.00	14.83	0.00	20.92	0.00
2.75	0.00	8.83	0.00	14.92	0.00	21.00	0.00
2.83	0.00	8.92	0.00	15.00	0.00	21.08	0.00
2.92	0.00	9.00	0.00	15.08	0.00	21.17	0.00
3.00	0.00	9.08	0.00	15.17	0.00	21.25	0.00
3.08	0.00	9.17	0.00	15.25	0.00	21.33	0.00
3.17	0.00	9.25	0.00	15.33	0.00	21.42	0.00
3.25	0.00	9.33	0.00	15.42	0.00	21.50	0.00
3.33	0.00	9.42	0.00	15.50	0.00	21.58	0.00
3.42	0.00	9.50	0.00	15.58	0.00	21.67	0.00
3.50	0.00	9.58	0.00	15.67	0.00	21.75	0.00
3.58	0.00	9.67	0.00	15.75	0.00	21.83	0.00
3.67	0.00	9.75	0.00	15.83	0.00	21.92	0.00
3.75	0.00	9.83	0.00	15.92	0.00	22.00	0.00
3.83	0.00	9.92	0.00	16.00	0.00	22.08	0.00
3.92	0.00	10.00	0.00	16.08	0.00	22.17	0.00
4.00	0.00	10.08	0.00	16.17	0.00	22.25	0.00
4.08	0.00	10.17	0.00	16.25	0.00	22.33	0.00
4.17	0.00	10.25	0.00	16.33	0.00	22.42	0.00
4.25	0.00	10.33	0.00	16.42	0.00	22.50	0.00
4.33	0.00	10.42	0.00	16.50	0.00	22.58	0.00
4.42	0.00	10.50	0.00	16.58	0.00	22.67	0.00
4.50	0.00	10.58	0.00	16.67	0.00	22.75	0.00
4.58	0.00	10.67	0.00	16.75	0.00	22.83	0.00
4.67	0.00	10.75	0.00	16.83	0.00	22.92	0.00
4.75	0.00	10.83	0.00	16.92	0.00	23.00	0.00
4.83	0.00	10.92	0.00	17.00	0.00	23.08	0.00
4.92	0.00	11.00	0.00	17.08	0.00	23.17	0.00
5.00	0.00	11.08	0.00	17.17	0.00	23.25	0.00
5.08	0.00	11.17	0.00	17.25	0.00	23.33	0.00
5.17	0.00	11.25	0.00	17.33	0.00	23.42	0.00
5.25	0.00	11.33	0.00	17.42	0.00	23.50	0.00
5.33	0.00	11.42	0.00	17.50	0.00	23.58	0.00
5.42	0.00	11.50	0.00	17.58	0.00	23.67	0.00
5.50	0.00	11.58	0.00	17.67	0.00	23.75	0.00
5.58	0.00	11.67	0.00	17.75	0.00	23.83	0.00
5.67	0.00	11.75	0.00	17.83	0.00	23.92	0.00
5.75	0.00	11.83	0.00	17.92	0.00	24.00	5.90
5.83	0.00	11.92	0.00	18.00	0.00		
5.92	0.00	12.00	9.50	18.08	0.00		
6.00	15.40	12.08	0.00	18.17	0.00		

CALIB
 NASHYD (0401)
 ID= 1 DT= 5.0 min

Area (ha)= 7.45 Curve Number (CN)= 71.0
 Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
 U.H. Tp(hrs)= 0.20

Unit Hyd Qpeak (cms)= 1.423

PEAK FLOW (cms)= 0.728 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 23.854
TOTAL RAINFALL (mm)= 68.158
RUNOFF COEFFICIENT = 0.350

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

CALIB NASHYD (0402) ID= 1 DT= 5.0 min	Area (ha)= 0.37 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.20	Curve Number (CN)= 98.0 # of Linear Res.(N)= 3.00
--	--	--

Unit Hyd Qpeak (cms)= 0.071

PEAK FLOW (cms)= 0.101 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 58.256
TOTAL RAINFALL (mm)= 68.158
RUNOFF COEFFICIENT = 0.855

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

CALIB NASHYD (0403) ID= 1 DT= 5.0 min	Area (ha)= 0.81 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.20	Curve Number (CN)= 71.0 # of Linear Res.(N)= 3.00
--	--	--

Unit Hyd Qpeak (cms)= 0.155

PEAK FLOW (cms)= 0.079 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 23.854
TOTAL RAINFALL (mm)= 68.158
RUNOFF COEFFICIENT = 0.350

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

ADD HYD (0026) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0401):	7.45	0.728	0.42	23.85
+ ID2= 2 (0402):	0.37	0.101	0.42	58.26
=====				
ID = 3 (0026):	7.82	0.829	0.42	25.48

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0026) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0026):	7.82	0.829	0.42	25.48
+ ID2= 2 (0403):	0.81	0.079	0.42	23.85
=====				
ID = 1 (0026):	8.63	0.908	0.42	25.33

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB NASHYD (0404) ID= 1 DT= 5.0 min	Area (ha)= 1.37 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.20	Curve Number (CN)= 98.0 # of Linear Res.(N)= 3.00
--	--	--

Unit Hyd Qpeak (cms)= 0.262

PEAK FLOW (cms)= 0.375 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 58.257
TOTAL RAINFALL (mm)= 68.158
RUNOFF COEFFICIENT = 0.855

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

CALIB			
NASHYD (0405)	Area (ha)= 16.60	Curve Number (CN)= 68.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

Unit Hyd Qpeak (cms)= 3.170

PEAK FLOW (cms)= 1.469 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 21.793
 TOTAL RAINFALL (mm)= 68.158
 RUNOFF COEFFICIENT = 0.320

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

ADD HYD (0027)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0404):	1.37	0.375	0.42	58.26
+ ID2= 2 (0405):	16.60	1.469	0.42	21.79
ID = 3 (0027):	17.97	1.844	0.42	24.57

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
NASHYD (0406)	Area (ha)= 0.15	Curve Number (CN)= 98.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

Unit Hyd Qpeak (cms)= 0.029

PEAK FLOW (cms)= 0.041 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 58.253
 TOTAL RAINFALL (mm)= 68.158
 RUNOFF COEFFICIENT = 0.855

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

CALIB			
NASHYD (0407)	Area (ha)= 8.51	Curve Number (CN)= 30.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

Unit Hyd Qpeak (cms)= 1.625

PEAK FLOW (cms)= 0.197 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 6.071
 TOTAL RAINFALL (mm)= 68.158
 RUNOFF COEFFICIENT = 0.089

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

CALIB			
NASHYD (0408)	Area (ha)= 7.14	Curve Number (CN)= 60.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

Unit Hyd Qpeak (cms)= 1.364

PEAK FLOW (cms)= 0.487 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 17.125
 TOTAL RAINFALL (mm)= 68.158
 RUNOFF COEFFICIENT = 0.251

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

ADD HYD (0028)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.

	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0406):	0.15	0.041	0.42	58.25
+ ID2= 2 (0407):	8.51	0.197	0.42	6.07
=====				
ID = 3 (0028):	8.66	0.238	0.42	6.97

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0028)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0028):	8.66	0.238	0.42	6.97
+ ID2= 2 (0408):	7.14	0.487	0.42	17.12
=====				
ID = 1 (0028):	15.80	0.725	0.42	11.56

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB				
NASHYD (0409)				
ID= 1 DT= 5.0 min				
	Area	(ha)=	7.14	Curve Number (CN)= 71.0
	Ia	(mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp	(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 1.364

PEAK FLOW (cms)= 0.698 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 23.854
 TOTAL RAINFALL (mm)= 68.158
 RUNOFF COEFFICIENT = 0.350

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

ADD HYD (0029)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0026):	8.63	0.908	0.42	25.33
+ ID2= 2 (0027):	17.97	1.844	0.42	24.57
=====				
ID = 3 (0029):	26.60	2.753	0.42	24.82

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0029)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0029):	26.60	2.753	0.42	24.82
+ ID2= 2 (0028):	15.80	0.725	0.42	11.56
=====				
ID = 1 (0029):	42.40	3.478	0.42	19.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0029)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0029):	42.40	3.478	0.42	19.88
+ ID2= 2 (0409):	7.14	0.698	0.42	23.85
=====				
ID = 3 (0029):	49.54	4.176	0.42	20.45

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0018)				
IN= 2---> OUT= 1				
DT= 5.0 min				
OVERFLOW IS OFF				
OUTFLOW	STORAGE	OUTFLOW	STORAGE	
(cms)	(ha.m.)	(cms)	(ha.m.)	
0.0000	0.0000	0.5834	0.0487	
0.3087	0.0003	0.5950	0.0585	
0.3501	0.0009	0.7597	0.0873	
0.3870	0.0017	1.4421	0.1872	
0.4207	0.0026	2.4328	0.3326	
0.4519	0.0037	3.6724	0.5217	

0.4811	0.0078	5.1308	0.7291
0.5086	0.0158	6.7886	0.9809
0.5347	0.0254	8.6312	1.2834
0.5596	0.0365	10.6473	1.6203

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0029)	49.540	4.176	0.42	20.45
OUTFLOW: ID= 1 (0018)	49.540	2.318	0.75	20.46

PEAK FLOW REDUCTION [Qout/Qin](%)= 55.52
 TIME SHIFT OF PEAK FLOW (min)= 20.00
 MAXIMUM STORAGE USED (ha.m.)= 0.3260

CALIB			
NASHYD (0410)	Area (ha)= 7.92	Curve Number (CN)= 78.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

Unit Hyd Qpeak (cms)= 1.513

PEAK FLOW (cms)= 0.981 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 29.536
 TOTAL RAINFALL (mm)= 68.158
 RUNOFF COEFFICIENT = 0.433

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

CALIB			
NASHYD (0411)	Area (ha)= 15.74	Curve Number (CN)= 56.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

Unit Hyd Qpeak (cms)= 3.006

PEAK FLOW (cms)= 0.943 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 15.154
 TOTAL RAINFALL (mm)= 68.158
 RUNOFF COEFFICIENT = 0.222

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

ADD HYD (0030)				
1 + 2 = 3				
ID1= 1 (0018):	AREA (ha) 49.54	QPEAK (cms) 2.318	TPEAK (hrs) 0.75	R.V. (mm) 20.46
+ ID2= 2 (0410):	7.92	0.981	0.42	29.54
ID = 3 (0030):	57.46	2.932	0.67	21.71

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
3 + 2 = 1				
ID1= 3 (0030):	AREA (ha) 57.46	QPEAK (cms) 2.932	TPEAK (hrs) 0.67	R.V. (mm) 21.71
+ ID2= 2 (0411):	15.74	0.943	0.42	15.15
ID = 1 (0030):	73.20	3.606	0.58	20.30

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
NASHYD (0301)	Area (ha)= 5.78	Curve Number (CN)= 71.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

Unit Hyd Qpeak (cms)= 1.104

PEAK FLOW (cms)= 0.565 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 23.854

TOTAL RAINFALL (mm)= 68.158
RUNOFF COEFFICIENT = 0.350

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

CALIB NASHYD (0101) ID= 1 DT= 5.0 min	Area (ha)= 6.21 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.20	Curve Number (CN)= 81.0 # of Linear Res.(N)= 3.00
--	--	--

Unit Hyd Qpeak (cms)= 1.186

PEAK FLOW (cms)= 0.855 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 32.438
TOTAL RAINFALL (mm)= 68.158
RUNOFF COEFFICIENT = 0.476

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

CALIB NASHYD (0201) ID= 1 DT= 5.0 min	Area (ha)= 27.80 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.20	Curve Number (CN)= 76.0 # of Linear Res.(N)= 3.00
--	---	--

Unit Hyd Qpeak (cms)= 5.309

PEAK FLOW (cms)= 3.214 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 27.770
TOTAL RAINFALL (mm)= 68.158
RUNOFF COEFFICIENT = 0.407

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

ADD HYD (0031) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0101):	6.21	0.855	0.42	32.44
+ ID2= 2 (0201):	27.80	3.214	0.42	27.77
ID = 3 (0031):	34.01	4.069	0.42	28.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0031) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0031):	34.01	4.069	0.42	28.62
+ ID2= 2 (0030):	73.20	3.606	0.58	20.30
ID = 1 (0031):	107.21	7.384	0.42	22.94

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0031) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0031):	107.21	7.384	0.42	22.94
+ ID2= 2 (0301):	5.78	0.565	0.42	23.85
ID = 3 (0031):	112.99	7.949	0.42	22.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

V V I SSSSS U U A L (v 6.2.2019)
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

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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\vo1n.dat
Output filename: C:\Users\sfanous\AppData\Local\Civica\XH5\9918fc2e-de2e-4ff9-b060-a882585d4126\3cb716b2-30
Summary filename: C:\Users\sfanous\AppData\Local\Civica\XH5\9918fc2e-de2e-4ff9-b060-a882585d4126\3cb716b2-30

DATE: 11/21/2025 TIME: 09:29:20

USER:

COMMENTS: _____

** SIMULATION : TCW 10yr **

READ STORM	Filename: C:\Users\sfanous\AppData\Local\Temp\61e201b0-0a9b-4707-8c51-0bdd0a552448\4bfb037
Ptotal= 48.21 mm	Comments: TCW Fergus Shand Dam 10yr

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.08	0.00	12.17	0.00	18.25	0.00
0.08	207.80	6.17	0.00	12.25	0.00	18.33	0.00
0.17	129.10	6.25	0.00	12.33	0.00	18.42	0.00
0.25	97.70	6.33	0.00	12.42	0.00	18.50	0.00
0.33	0.00	6.42	0.00	12.50	0.00	18.58	0.00
0.42	0.00	6.50	0.00	12.58	0.00	18.67	0.00
0.50	60.70	6.58	0.00	12.67	0.00	18.75	0.00
0.58	0.00	6.67	0.00	12.75	0.00	18.83	0.00
0.67	0.00	6.75	0.00	12.83	0.00	18.92	0.00
0.75	0.00	6.83	0.00	12.92	0.00	19.00	0.00
0.83	0.00	6.92	0.00	13.00	0.00	19.08	0.00
0.92	0.00	7.00	0.00	13.08	0.00	19.17	0.00
1.00	37.70	7.08	0.00	13.17	0.00	19.25	0.00
1.08	0.00	7.17	0.00	13.25	0.00	19.33	0.00
1.17	0.00	7.25	0.00	13.33	0.00	19.42	0.00
1.25	0.00	7.33	0.00	13.42	0.00	19.50	0.00
1.33	0.00	7.42	0.00	13.50	0.00	19.58	0.00
1.42	0.00	7.50	0.00	13.58	0.00	19.67	0.00
1.50	0.00	7.58	0.00	13.67	0.00	19.75	0.00
1.58	0.00	7.67	0.00	13.75	0.00	19.83	0.00
1.67	0.00	7.75	0.00	13.83	0.00	19.92	0.00
1.75	0.00	7.83	0.00	13.92	0.00	20.00	0.00
1.83	0.00	7.92	0.00	14.00	0.00	20.08	0.00
1.92	0.00	8.00	0.00	14.08	0.00	20.17	0.00
2.00	23.40	8.08	0.00	14.17	0.00	20.25	0.00
2.08	0.00	8.17	0.00	14.25	0.00	20.33	0.00
2.17	0.00	8.25	0.00	14.33	0.00	20.42	0.00
2.25	0.00	8.33	0.00	14.42	0.00	20.50	0.00
2.33	0.00	8.42	0.00	14.50	0.00	20.58	0.00
2.42	0.00	8.50	0.00	14.58	0.00	20.67	0.00
2.50	0.00	8.58	0.00	14.67	0.00	20.75	0.00
2.58	0.00	8.67	0.00	14.75	0.00	20.83	0.00
2.67	0.00	8.75	0.00	14.83	0.00	20.92	0.00
2.75	0.00	8.83	0.00	14.92	0.00	21.00	0.00
2.83	0.00	8.92	0.00	15.00	0.00	21.08	0.00
2.92	0.00	9.00	0.00	15.08	0.00	21.17	0.00
3.00	0.00	9.08	0.00	15.17	0.00	21.25	0.00
3.08	0.00	9.17	0.00	15.25	0.00	21.33	0.00
3.17	0.00	9.25	0.00	15.33	0.00	21.42	0.00
3.25	0.00	9.33	0.00	15.42	0.00	21.50	0.00
3.33	0.00	9.42	0.00	15.50	0.00	21.58	0.00
3.42	0.00	9.50	0.00	15.58	0.00	21.67	0.00
3.50	0.00	9.58	0.00	15.67	0.00	21.75	0.00
3.58	0.00	9.67	0.00	15.75	0.00	21.83	0.00

3.67	0.00	9.75	0.00	15.83	0.00	21.92	0.00
3.75	0.00	9.83	0.00	15.92	0.00	22.00	0.00
3.83	0.00	9.92	0.00	16.00	0.00	22.08	0.00
3.92	0.00	10.00	0.00	16.08	0.00	22.17	0.00
4.00	0.00	10.08	0.00	16.17	0.00	22.25	0.00
4.08	0.00	10.17	0.00	16.25	0.00	22.33	0.00
4.17	0.00	10.25	0.00	16.33	0.00	22.42	0.00
4.25	0.00	10.33	0.00	16.42	0.00	22.50	0.00
4.33	0.00	10.42	0.00	16.50	0.00	22.58	0.00
4.42	0.00	10.50	0.00	16.58	0.00	22.67	0.00
4.50	0.00	10.58	0.00	16.67	0.00	22.75	0.00
4.58	0.00	10.67	0.00	16.75	0.00	22.83	0.00
4.67	0.00	10.75	0.00	16.83	0.00	22.92	0.00
4.75	0.00	10.83	0.00	16.92	0.00	23.00	0.00
4.83	0.00	10.92	0.00	17.00	0.00	23.08	0.00
4.92	0.00	11.00	0.00	17.08	0.00	23.17	0.00
5.00	0.00	11.08	0.00	17.17	0.00	23.25	0.00
5.08	0.00	11.17	0.00	17.25	0.00	23.33	0.00
5.17	0.00	11.25	0.00	17.33	0.00	23.42	0.00
5.25	0.00	11.33	0.00	17.42	0.00	23.50	0.00
5.33	0.00	11.42	0.00	17.50	0.00	23.58	0.00
5.42	0.00	11.50	0.00	17.58	0.00	23.67	0.00
5.50	0.00	11.58	0.00	17.67	0.00	23.75	0.00
5.58	0.00	11.67	0.00	17.75	0.00	23.83	0.00
5.67	0.00	11.75	0.00	17.83	0.00	23.92	0.00
5.75	0.00	11.83	0.00	17.92	0.00	24.00	4.30
5.83	0.00	11.92	0.00	18.00	0.00		
5.92	0.00	12.00	6.80	18.08	0.00		
6.00	11.00	12.08	0.00	18.17	0.00		

CALIB			
NASHYD (0401)			
ID= 1 DT= 5.0 min	Area (ha)= 7.45	Curve Number (CN)= 71.0	
	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

Unit Hyd Qpeak (cms)= 1.423

PEAK FLOW (cms)= 0.371 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 12.680
 TOTAL RAINFALL (mm)= 48.208
 RUNOFF COEFFICIENT = 0.263

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

CALIB			
NASHYD (0402)			
ID= 1 DT= 5.0 min	Area (ha)= 0.37	Curve Number (CN)= 98.0	
	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

Unit Hyd Qpeak (cms)= 0.071

PEAK FLOW (cms)= 0.066 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 38.505
 TOTAL RAINFALL (mm)= 48.208
 RUNOFF COEFFICIENT = 0.799

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

CALIB			
NASHYD (0403)			
ID= 1 DT= 5.0 min	Area (ha)= 0.81	Curve Number (CN)= 71.0	
	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

Unit Hyd Qpeak (cms)= 0.155

PEAK FLOW (cms)= 0.040 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 12.679
 TOTAL RAINFALL (mm)= 48.208
 RUNOFF COEFFICIENT = 0.263

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

ADD HYD (0026)				
1 + 2 = 3				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0401):	7.45	0.371	0.42	12.68
+ ID2= 2 (0402):	0.37	0.066	0.42	38.51
=====				
ID = 3 (0026):	7.82	0.437	0.42	13.90

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0026)				
3 + 2 = 1				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0026):	7.82	0.437	0.42	13.90
+ ID2= 2 (0403):	0.81	0.040	0.42	12.68
=====				
ID = 1 (0026):	8.63	0.477	0.42	13.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB				
NASHYD (0404)				
ID= 1 DT= 5.0 min				

Area	(ha)=	1.37	Curve Number (CN)= 98.0	
Ia	(mm)=	5.00	# of Linear Res.(N)= 3.00	
U.H. Tp	(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 0.262

PEAK FLOW (cms)= 0.244 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 38.506
TOTAL RAINFALL (mm)= 48.208
RUNOFF COEFFICIENT = 0.799

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

CALIB				
NASHYD (0405)				
ID= 1 DT= 5.0 min				

Area	(ha)=	16.60	Curve Number (CN)= 68.0	
Ia	(mm)=	5.00	# of Linear Res.(N)= 3.00	
U.H. Tp	(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 3.170

PEAK FLOW (cms)= 0.741 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 11.450
TOTAL RAINFALL (mm)= 48.208
RUNOFF COEFFICIENT = 0.238

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

ADD HYD (0027)				
1 + 2 = 3				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0404):	1.37	0.244	0.42	38.51
+ ID2= 2 (0405):	16.60	0.741	0.42	11.45
=====				
ID = 3 (0027):	17.97	0.985	0.42	13.51

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB				
NASHYD (0406)				
ID= 1 DT= 5.0 min				

Area	(ha)=	0.15	Curve Number (CN)= 98.0	
Ia	(mm)=	5.00	# of Linear Res.(N)= 3.00	
U.H. Tp	(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 0.029

PEAK FLOW (cms)= 0.027 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 38.504
TOTAL RAINFALL (mm)= 48.208
RUNOFF COEFFICIENT = 0.799

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

CALIB			
NASHYD (0407)	Area (ha)=	8.51	Curve Number (CN)= 30.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 1.625

PEAK FLOW (cms)= 0.092 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 2.930
TOTAL RAINFALL (mm)= 48.208
RUNOFF COEFFICIENT = 0.061

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

CALIB			
NASHYD (0408)	Area (ha)=	7.14	Curve Number (CN)= 60.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 1.364

PEAK FLOW (cms)= 0.240 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 8.767
TOTAL RAINFALL (mm)= 48.208
RUNOFF COEFFICIENT = 0.182

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

ADD HYD (0028)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0406):	0.15	0.027	0.42	38.50
+ ID2= 2 (0407):	8.51	0.092	0.42	2.93
=====				
ID = 3 (0028):	8.66	0.119	0.42	3.55

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0028)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0028):	8.66	0.119	0.42	3.55
+ ID2= 2 (0408):	7.14	0.240	0.42	8.77
=====				
ID = 1 (0028):	15.80	0.359	0.42	5.91

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
NASHYD (0409)	Area (ha)=	7.14	Curve Number (CN)= 71.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 1.364

PEAK FLOW (cms)= 0.356 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 12.680
TOTAL RAINFALL (mm)= 48.208
RUNOFF COEFFICIENT = 0.263

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

ADD HYD (0029)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0026):	8.63	0.477	0.42	13.79
+ ID2= 2 (0027):	17.97	0.985	0.42	13.51

=====

ID = 3 (0029):	26.60	1.462	0.42	13.60
-----------------	-------	-------	------	-------

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0029)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0029):	26.60	1.462	0.42	13.60
+ ID2= 2 (0028):	15.80	0.359	0.42	5.91
	=====	=====	=====	=====
ID = 1 (0029):	42.40	1.821	0.42	10.73

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0029)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0029):	42.40	1.821	0.42	10.73
+ ID2= 2 (0409):	7.14	0.356	0.42	12.68
	=====	=====	=====	=====
ID = 3 (0029):	49.54	2.177	0.42	11.01

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0018)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min				
	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	0.5834	0.0487
	0.3087	0.0003	0.5950	0.0585
	0.3501	0.0009	0.7597	0.0873
	0.3870	0.0017	1.4421	0.1872
	0.4207	0.0026	2.4328	0.3326
	0.4519	0.0037	3.6724	0.5217
	0.4811	0.0078	5.1308	0.7291
	0.5086	0.0158	6.7886	0.9809
	0.5347	0.0254	8.6312	1.2834
	0.5596	0.0365	10.6473	1.6203
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0029)	49.540	2.177	0.42	11.01
OUTFLOW: ID= 1 (0018)	49.540	1.221	0.75	11.06

PEAK FLOW REDUCTION [Qout/Qin](%)= 56.09
TIME SHIFT OF PEAK FLOW (min)= 20.00
MAXIMUM STORAGE USED (ha.m.)= 0.1572

CALIB				
NASHYD (0410)	Area	(ha)= 7.92	Curve Number	(CN)= 78.0
ID= 1 DT= 5.0 min	Ia	(mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp	(hrs)= 0.20		

Unit Hyd Qpeak (cms)= 1.513

PEAK FLOW (cms)= 0.516 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 16.225
TOTAL RAINFALL (mm)= 48.208
RUNOFF COEFFICIENT = 0.337

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

CALIB				
NASHYD (0411)	Area	(ha)= 15.74	Curve Number	(CN)= 56.0
ID= 1 DT= 5.0 min	Ia	(mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp	(hrs)= 0.20		

Unit Hyd Qpeak (cms)= 3.006

PEAK FLOW (cms)= 0.460 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 7.675
TOTAL RAINFALL (mm)= 48.208

RUNOFF COEFFICIENT = 0.159

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

ADD HYD (0030)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0018):	49.54	1.221	0.75	11.06
+ ID2= 2 (0410):	7.92	0.516	0.42	16.22
=====				
ID = 3 (0030):	57.46	1.553	0.67	11.77

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0030):	57.46	1.553	0.67	11.77
+ ID2= 2 (0411):	15.74	0.460	0.42	7.68
=====				
ID = 1 (0030):	73.20	1.894	0.67	10.89

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB				
NASHYD (0301)		Area	(ha)=	5.78
ID= 1 DT= 5.0 min		Ia	(mm)=	5.00
		U.H. Tp	(hrs)=	0.20
		Curve Number	(CN)=	71.0
		# of Linear Res.	(N)=	3.00

Unit Hyd Qpeak (cms)= 1.104

PEAK FLOW (cms)= 0.288 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 12.680
TOTAL RAINFALL (mm)= 48.208
RUNOFF COEFFICIENT = 0.263

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

CALIB				
NASHYD (0101)		Area	(ha)=	6.21
ID= 1 DT= 5.0 min		Ia	(mm)=	5.00
		U.H. Tp	(hrs)=	0.20
		Curve Number	(CN)=	81.0
		# of Linear Res.	(N)=	3.00

Unit Hyd Qpeak (cms)= 1.186

PEAK FLOW (cms)= 0.458 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 18.128
TOTAL RAINFALL (mm)= 48.208
RUNOFF COEFFICIENT = 0.376

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

CALIB				
NASHYD (0201)		Area	(ha)=	27.80
ID= 1 DT= 5.0 min		Ia	(mm)=	5.00
		U.H. Tp	(hrs)=	0.20
		Curve Number	(CN)=	76.0
		# of Linear Res.	(N)=	3.00

Unit Hyd Qpeak (cms)= 5.309

PEAK FLOW (cms)= 1.675 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 15.098
TOTAL RAINFALL (mm)= 48.208
RUNOFF COEFFICIENT = 0.313

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

ADD HYD (0031)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.

		(ha)	(cms)	(hrs)	(mm)
ID1=	1 (0101):	6.21	0.458	0.42	18.13
+ ID2=	2 (0201):	27.80	1.675	0.42	15.10
ID =	3 (0031):	34.01	2.133	0.42	15.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0031)					
3 + 2 = 1					
		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1=	3 (0031):	34.01	2.133	0.42	15.65
+ ID2=	2 (0030):	73.20	1.894	0.67	10.89
ID =	1 (0031):	107.21	3.817	0.42	12.40

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0031)					
1 + 2 = 3					
		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1=	1 (0031):	107.21	3.817	0.42	12.40
+ ID2=	2 (0301):	5.78	0.288	0.42	12.68
ID =	3 (0031):	112.99	4.105	0.42	12.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

V V I SSSSS U U A L (v 6.2.2019)
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
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***** 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\sfanous\AppData\Local\Civica\XH5\9918fc2e-de2e-4ff9-b060-a882585d4126\8a562bc2-04
Summary filename: C:\Users\sfanous\AppData\Local\Civica\XH5\9918fc2e-de2e-4ff9-b060-a882585d4126\8a562bc2-04

DATE: 11/21/2025 TIME: 09:29:21

USER:

COMMENTS: _____

** SIMULATION : TCW 25yr **

READ STORM	Filename: C:\Users\sfanous\AppData\Local\Temp\61e201b0-0a9b-4707-8c51-0bdd0a552448\ef6b7283
Ptotal= 56.31 mm	Comments: TCW Fergus Shand Dam 25yr

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.08	0.00	12.17	0.00	18.25	0.00
0.08	243.40	6.17	0.00	12.25	0.00	18.33	0.00
0.17	150.90	6.25	0.00	12.33	0.00	18.42	0.00
0.25	114.10	6.33	0.00	12.42	0.00	18.50	0.00

0.33	0.00	6.42	0.00	12.50	0.00	18.58	0.00
0.42	0.00	6.50	0.00	12.58	0.00	18.67	0.00
0.50	70.70	6.58	0.00	12.67	0.00	18.75	0.00
0.58	0.00	6.67	0.00	12.75	0.00	18.83	0.00
0.67	0.00	6.75	0.00	12.83	0.00	18.92	0.00
0.75	0.00	6.83	0.00	12.92	0.00	19.00	0.00
0.83	0.00	6.92	0.00	13.00	0.00	19.08	0.00
0.92	0.00	7.00	0.00	13.08	0.00	19.17	0.00
1.00	43.90	7.08	0.00	13.17	0.00	19.25	0.00
1.08	0.00	7.17	0.00	13.25	0.00	19.33	0.00
1.17	0.00	7.25	0.00	13.33	0.00	19.42	0.00
1.25	0.00	7.33	0.00	13.42	0.00	19.50	0.00
1.33	0.00	7.42	0.00	13.50	0.00	19.58	0.00
1.42	0.00	7.50	0.00	13.58	0.00	19.67	0.00
1.50	0.00	7.58	0.00	13.67	0.00	19.75	0.00
1.58	0.00	7.67	0.00	13.75	0.00	19.83	0.00
1.67	0.00	7.75	0.00	13.83	0.00	19.92	0.00
1.75	0.00	7.83	0.00	13.92	0.00	20.00	0.00
1.83	0.00	7.92	0.00	14.00	0.00	20.08	0.00
1.92	0.00	8.00	0.00	14.08	0.00	20.17	0.00
2.00	27.20	8.08	0.00	14.17	0.00	20.25	0.00
2.08	0.00	8.17	0.00	14.25	0.00	20.33	0.00
2.17	0.00	8.25	0.00	14.33	0.00	20.42	0.00
2.25	0.00	8.33	0.00	14.42	0.00	20.50	0.00
2.33	0.00	8.42	0.00	14.50	0.00	20.58	0.00
2.42	0.00	8.50	0.00	14.58	0.00	20.67	0.00
2.50	0.00	8.58	0.00	14.67	0.00	20.75	0.00
2.58	0.00	8.67	0.00	14.75	0.00	20.83	0.00
2.67	0.00	8.75	0.00	14.83	0.00	20.92	0.00
2.75	0.00	8.83	0.00	14.92	0.00	21.00	0.00
2.83	0.00	8.92	0.00	15.00	0.00	21.08	0.00
2.92	0.00	9.00	0.00	15.08	0.00	21.17	0.00
3.00	0.00	9.08	0.00	15.17	0.00	21.25	0.00
3.08	0.00	9.17	0.00	15.25	0.00	21.33	0.00
3.17	0.00	9.25	0.00	15.33	0.00	21.42	0.00
3.25	0.00	9.33	0.00	15.42	0.00	21.50	0.00
3.33	0.00	9.42	0.00	15.50	0.00	21.58	0.00
3.42	0.00	9.50	0.00	15.58	0.00	21.67	0.00
3.50	0.00	9.58	0.00	15.67	0.00	21.75	0.00
3.58	0.00	9.67	0.00	15.75	0.00	21.83	0.00
3.67	0.00	9.75	0.00	15.83	0.00	21.92	0.00
3.75	0.00	9.83	0.00	15.92	0.00	22.00	0.00
3.83	0.00	9.92	0.00	16.00	0.00	22.08	0.00
3.92	0.00	10.00	0.00	16.08	0.00	22.17	0.00
4.00	0.00	10.08	0.00	16.17	0.00	22.25	0.00
4.08	0.00	10.17	0.00	16.25	0.00	22.33	0.00
4.17	0.00	10.25	0.00	16.33	0.00	22.42	0.00
4.25	0.00	10.33	0.00	16.42	0.00	22.50	0.00
4.33	0.00	10.42	0.00	16.50	0.00	22.58	0.00
4.42	0.00	10.50	0.00	16.58	0.00	22.67	0.00
4.50	0.00	10.58	0.00	16.67	0.00	22.75	0.00
4.58	0.00	10.67	0.00	16.75	0.00	22.83	0.00
4.67	0.00	10.75	0.00	16.83	0.00	22.92	0.00
4.75	0.00	10.83	0.00	16.92	0.00	23.00	0.00
4.83	0.00	10.92	0.00	17.00	0.00	23.08	0.00
4.92	0.00	11.00	0.00	17.08	0.00	23.17	0.00
5.00	0.00	11.08	0.00	17.17	0.00	23.25	0.00
5.08	0.00	11.17	0.00	17.25	0.00	23.33	0.00
5.17	0.00	11.25	0.00	17.33	0.00	23.42	0.00
5.25	0.00	11.33	0.00	17.42	0.00	23.50	0.00
5.33	0.00	11.42	0.00	17.50	0.00	23.58	0.00
5.42	0.00	11.50	0.00	17.58	0.00	23.67	0.00
5.50	0.00	11.58	0.00	17.67	0.00	23.75	0.00
5.58	0.00	11.67	0.00	17.75	0.00	23.83	0.00
5.67	0.00	11.75	0.00	17.83	0.00	23.92	0.00
5.75	0.00	11.83	0.00	17.92	0.00	24.00	4.90
5.83	0.00	11.92	0.00	18.00	0.00		
5.92	0.00	12.00	7.90	18.08	0.00		
6.00	12.70	12.08	0.00	18.17	0.00		

CALIB
NASHYD (0401)
ID= 1 DT= 5.0 min

Area (ha)= 7.45 Curve Number (CN)= 71.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

Unit Hyd Qpeak (cms)= 1.423

PEAK FLOW (cms)= 0.506 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 16.946
TOTAL RAINFALL (mm)= 56.308

RUNOFF COEFFICIENT = 0.301

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

CALIB			
NASHYD (0402)	Area (ha)=	0.37	Curve Number (CN)= 98.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 0.071

PEAK FLOW (cms)= 0.080 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 46.510
TOTAL RAINFALL (mm)= 56.308
RUNOFF COEFFICIENT = 0.826

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

CALIB			
NASHYD (0403)	Area (ha)=	0.81	Curve Number (CN)= 71.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 0.155

PEAK FLOW (cms)= 0.055 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 16.945
TOTAL RAINFALL (mm)= 56.308
RUNOFF COEFFICIENT = 0.301

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

ADD HYD (0026)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0401):	7.45	0.506	0.42	16.95
+ ID2= 2 (0402):	0.37	0.080	0.42	46.51
=====				
ID = 3 (0026):	7.82	0.587	0.42	18.34

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0026)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0026):	7.82	0.587	0.42	18.34
+ ID2= 2 (0403):	0.81	0.055	0.42	16.95
=====				
ID = 1 (0026):	8.63	0.642	0.42	18.21

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
NASHYD (0404)	Area (ha)=	1.37	Curve Number (CN)= 98.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 0.262

PEAK FLOW (cms)= 0.297 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 46.511
TOTAL RAINFALL (mm)= 56.308
RUNOFF COEFFICIENT = 0.826

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

CALIB			
NASHYD (0405)	Area (ha)=	16.60	Curve Number (CN)= 68.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00

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

Unit Hyd Qpeak (cms)= 3.170

PEAK FLOW (cms)= 1.016 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 15.380
TOTAL RAINFALL (mm)= 56.308
RUNOFF COEFFICIENT = 0.273

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

| ADD HYD (0027) |
1 + 2 = 3
ID1= 1 (0404): AREA (ha) QPEAK (cms) TPEAK (hrs) R.V. (mm)
+ ID2= 2 (0405): 1.37 0.297 0.42 46.51
16.60 1.016 0.42 15.38
=====

ID = 3 (0027): 17.97 1.313 0.42 17.75

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| CALIB |
| NASHYD (0406) | Area (ha)= 0.15 Curve Number (CN)= 98.0
| ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
| U.H. Tp(hrs)= 0.20

Unit Hyd Qpeak (cms)= 0.029

PEAK FLOW (cms)= 0.033 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 46.509
TOTAL RAINFALL (mm)= 56.308
RUNOFF COEFFICIENT = 0.826

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

| CALIB |
| NASHYD (0407) | Area (ha)= 8.51 Curve Number (CN)= 30.0
| ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
| U.H. Tp(hrs)= 0.20

Unit Hyd Qpeak (cms)= 1.625

PEAK FLOW (cms)= 0.130 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 4.080
TOTAL RAINFALL (mm)= 56.308
RUNOFF COEFFICIENT = 0.072

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

| CALIB |
| NASHYD (0408) | Area (ha)= 7.14 Curve Number (CN)= 60.0
| ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
| U.H. Tp(hrs)= 0.20

Unit Hyd Qpeak (cms)= 1.364

PEAK FLOW (cms)= 0.332 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 11.909
TOTAL RAINFALL (mm)= 56.308
RUNOFF COEFFICIENT = 0.211

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

| ADD HYD (0028) |
1 + 2 = 3
ID1= 1 (0406): AREA (ha) QPEAK (cms) TPEAK (hrs) R.V. (mm)
+ ID2= 2 (0407): 0.15 0.033 0.42 46.51
8.51 0.130 0.42 4.08
=====

ID = 3 (0028): 8.66 0.163 0.42 4.82

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0028)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0028):	8.66	0.163	0.42	4.82
+ ID2= 2 (0408):	7.14	0.332	0.42	11.91
=====				
ID = 1 (0028):	15.80	0.495	0.42	8.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB				
NASHYD (0409)				
ID= 1 DT= 5.0 min				
	Area (ha)=	7.14	Curve Number (CN)=	71.0
	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
	U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 1.364

PEAK FLOW (cms)= 0.485 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 16.946
TOTAL RAINFALL (mm)= 56.308
RUNOFF COEFFICIENT = 0.301

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

ADD HYD (0029)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0026):	8.63	0.642	0.42	18.21
+ ID2= 2 (0027):	17.97	1.313	0.42	17.75
=====				
ID = 3 (0029):	26.60	1.955	0.42	17.90

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0029)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0029):	26.60	1.955	0.42	17.90
+ ID2= 2 (0028):	15.80	0.495	0.42	8.02
=====				
ID = 1 (0029):	42.40	2.450	0.42	14.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0029)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0029):	42.40	2.450	0.42	14.22
+ ID2= 2 (0409):	7.14	0.485	0.42	16.95
=====				
ID = 3 (0029):	49.54	2.935	0.42	14.61

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0018)				
IN= 2---> OUT= 1				
DT= 5.0 min				
OVERFLOW IS OFF				
OUTFLOW (cms)		STORAGE (ha.m.)	OUTFLOW (cms)	
0.0000		0.0000	0.5834	
0.3087		0.0003	0.5950	
0.3501		0.0009	0.7597	
0.3870		0.0017	1.4421	
0.4207		0.0026	2.4328	
0.4519		0.0037	3.6724	
0.4811		0.0078	5.1308	
0.5086		0.0158	6.7886	
0.5347		0.0254	8.6312	
0.5596		0.0365	10.6473	
			0.0487	
			0.0585	
			0.0873	
			0.1872	
			0.3326	
			0.5217	
			0.7291	
			0.9809	
			1.2834	
			1.6203	

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0029)		49.540	2.935	0.42	14.61
OUTFLOW: ID= 1 (0018)		49.540	1.641	0.75	14.68

PEAK FLOW REDUCTION [Qout/Qin](%)= 55.92
 TIME SHIFT OF PEAK FLOW (min)= 20.00
 MAXIMUM STORAGE USED (ha.m.)= 0.2215

CALIB		Area (ha)=	Curve Number (CN)=
NASHYD (0410)		7.92	78.0
ID= 1 DT= 5.0 min		Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
		U.H. Tp(hrs)= 0.20	

Unit Hyd Qpeak (cms)= 1.513

PEAK FLOW (cms)= 0.695 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 21.371
 TOTAL RAINFALL (mm)= 56.308
 RUNOFF COEFFICIENT = 0.380

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

CALIB		Area (ha)=	Curve Number (CN)=
NASHYD (0411)		15.74	56.0
ID= 1 DT= 5.0 min		Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
		U.H. Tp(hrs)= 0.20	

Unit Hyd Qpeak (cms)= 3.006

PEAK FLOW (cms)= 0.640 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 10.473
 TOTAL RAINFALL (mm)= 56.308
 RUNOFF COEFFICIENT = 0.186

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

ADD HYD (0030)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3					
ID1= 1 (0018):		49.54	1.641	0.75	14.68
+ ID2= 2 (0410):		7.92	0.695	0.42	21.37
ID = 3 (0030):		57.46	2.083	0.67	15.60

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1					
ID1= 3 (0030):		57.46	2.083	0.67	15.60
+ ID2= 2 (0411):		15.74	0.640	0.42	10.47
ID = 1 (0030):		73.20	2.546	0.67	14.50

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB		Area (ha)=	Curve Number (CN)=
NASHYD (0301)		5.78	71.0
ID= 1 DT= 5.0 min		Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
		U.H. Tp(hrs)= 0.20	

Unit Hyd Qpeak (cms)= 1.104

PEAK FLOW (cms)= 0.393 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 16.946
 TOTAL RAINFALL (mm)= 56.308
 RUNOFF COEFFICIENT = 0.301

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

V	V	I	SSSSS	U	U	A	L		(v 6.2.2019)
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	

***** 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\vojn.dat
Output   filename: C:\Users\sfanous\AppData\Local\Civica\vh5\9918fc2e-de2e-4ff9-b060-a882585d4126\aa9f0228-a9
Summary  filename: C:\Users\sfanous\AppData\Local\Civica\vh5\9918fc2e-de2e-4ff9-b060-a882585d4126\aa9f0228-a9
```

DATE: 11/21/2025

TIME: 09:29:23

USER:

COMMENTS: _____

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*****
** SIMULATION : TCW 2yr                                     **
*****
```

READ STORM	Filename: C:\Users\sfanous\AppData
	ata\Local\Temp\
	61e201b0-0a9b-4707-8c51-0bdd0a552448\eb233077
Ptotal= 32.23 mm	Comments: TCW Fergus Shand Dam 2yr

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.08	0.00	12.17	0.00	18.25	0.00
0.08	138.20	6.17	0.00	12.25	0.00	18.33	0.00
0.17	86.20	6.25	0.00	12.33	0.00	18.42	0.00
0.25	65.30	6.33	0.00	12.42	0.00	18.50	0.00
0.33	0.00	6.42	0.00	12.50	0.00	18.58	0.00
0.42	0.00	6.50	0.00	12.58	0.00	18.67	0.00
0.50	40.70	6.58	0.00	12.67	0.00	18.75	0.00
0.58	0.00	6.67	0.00	12.75	0.00	18.83	0.00
0.67	0.00	6.75	0.00	12.83	0.00	18.92	0.00
0.75	0.00	6.83	0.00	12.92	0.00	19.00	0.00
0.83	0.00	6.92	0.00	13.00	0.00	19.08	0.00
0.92	0.00	7.00	0.00	13.08	0.00	19.17	0.00
1.00	25.40	7.08	0.00	13.17	0.00	19.25	0.00
1.08	0.00	7.17	0.00	13.25	0.00	19.33	0.00
1.17	0.00	7.25	0.00	13.33	0.00	19.42	0.00
1.25	0.00	7.33	0.00	13.42	0.00	19.50	0.00
1.33	0.00	7.42	0.00	13.50	0.00	19.58	0.00
1.42	0.00	7.50	0.00	13.58	0.00	19.67	0.00
1.50	0.00	7.58	0.00	13.67	0.00	19.75	0.00
1.58	0.00	7.67	0.00	13.75	0.00	19.83	0.00
1.67	0.00	7.75	0.00	13.83	0.00	19.92	0.00
1.75	0.00	7.83	0.00	13.92	0.00	20.00	0.00
1.83	0.00	7.92	0.00	14.00	0.00	20.08	0.00
1.92	0.00	8.00	0.00	14.08	0.00	20.17	0.00
2.00	15.80	8.08	0.00	14.17	0.00	20.25	0.00
2.08	0.00	8.17	0.00	14.25	0.00	20.33	0.00
2.17	0.00	8.25	0.00	14.33	0.00	20.42	0.00
2.25	0.00	8.33	0.00	14.42	0.00	20.50	0.00
2.33	0.00	8.42	0.00	14.50	0.00	20.58	0.00
2.42	0.00	8.50	0.00	14.58	0.00	20.67	0.00
2.50	0.00	8.58	0.00	14.67	0.00	20.75	0.00
2.58	0.00	8.67	0.00	14.75	0.00	20.83	0.00
2.67	0.00	8.75	0.00	14.83	0.00	20.92	0.00
2.75	0.00	8.83	0.00	14.92	0.00	21.00	0.00
2.83	0.00	8.92	0.00	15.00	0.00	21.08	0.00
2.92	0.00	9.00	0.00	15.08	0.00	21.17	0.00
3.00	0.00	9.08	0.00	15.17	0.00	21.25	0.00
3.08	0.00	9.17	0.00	15.25	0.00	21.33	0.00
3.17	0.00	9.25	0.00	15.33	0.00	21.42	0.00
3.25	0.00	9.33	0.00	15.42	0.00	21.50	0.00
3.33	0.00	9.42	0.00	15.50	0.00	21.58	0.00
3.42	0.00	9.50	0.00	15.58	0.00	21.67	0.00
3.50	0.00	9.58	0.00	15.67	0.00	21.75	0.00
3.58	0.00	9.67	0.00	15.75	0.00	21.83	0.00
3.67	0.00	9.75	0.00	15.83	0.00	21.92	0.00
3.75	0.00	9.83	0.00	15.92	0.00	22.00	0.00
3.83	0.00	9.92	0.00	16.00	0.00	22.08	0.00
3.92	0.00	10.00	0.00	16.08	0.00	22.17	0.00

4.00	0.00	10.08	0.00	16.17	0.00	22.25	0.00
4.08	0.00	10.17	0.00	16.25	0.00	22.33	0.00
4.17	0.00	10.25	0.00	16.33	0.00	22.42	0.00
4.25	0.00	10.33	0.00	16.42	0.00	22.50	0.00
4.33	0.00	10.42	0.00	16.50	0.00	22.58	0.00
4.42	0.00	10.50	0.00	16.58	0.00	22.67	0.00
4.50	0.00	10.58	0.00	16.67	0.00	22.75	0.00
4.58	0.00	10.67	0.00	16.75	0.00	22.83	0.00
4.67	0.00	10.75	0.00	16.83	0.00	22.92	0.00
4.75	0.00	10.83	0.00	16.92	0.00	23.00	0.00
4.83	0.00	10.92	0.00	17.00	0.00	23.08	0.00
4.92	0.00	11.00	0.00	17.08	0.00	23.17	0.00
5.00	0.00	11.08	0.00	17.17	0.00	23.25	0.00
5.08	0.00	11.17	0.00	17.25	0.00	23.33	0.00
5.17	0.00	11.25	0.00	17.33	0.00	23.42	0.00
5.25	0.00	11.33	0.00	17.42	0.00	23.50	0.00
5.33	0.00	11.42	0.00	17.50	0.00	23.58	0.00
5.42	0.00	11.50	0.00	17.58	0.00	23.67	0.00
5.50	0.00	11.58	0.00	17.67	0.00	23.75	0.00
5.58	0.00	11.67	0.00	17.75	0.00	23.83	0.00
5.67	0.00	11.75	0.00	17.83	0.00	23.92	0.00
5.75	0.00	11.83	0.00	17.92	0.00	24.00	2.90
5.83	0.00	11.92	0.00	18.00	0.00		
5.92	0.00	12.00	4.70	18.08	0.00		
6.00	7.50	12.08	0.00	18.17	0.00		

CALIB							
NASHYD	(0401)	Area	(ha)=	7.45	Curve Number	(CN)=	71.0
ID= 1 DT= 5.0 min		Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00	
		U.H. Tp(hrs)=	0.20				

Unit Hyd Qpeak (cms)= 1.423

PEAK FLOW (cms)= 0.155 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 5.648
TOTAL RAINFALL (mm)= 32.225
RUNOFF COEFFICIENT = 0.175

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

CALIB							
NASHYD	(0402)	Area	(ha)=	0.37	Curve Number	(CN)=	98.0
ID= 1 DT= 5.0 min		Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00	
		U.H. Tp(hrs)=	0.20				

Unit Hyd Qpeak (cms)= 0.071

PEAK FLOW (cms)= 0.038 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 22.826
TOTAL RAINFALL (mm)= 32.225
RUNOFF COEFFICIENT = 0.708

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

CALIB							
NASHYD	(0403)	Area	(ha)=	0.81	Curve Number	(CN)=	71.0
ID= 1 DT= 5.0 min		Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00	
		U.H. Tp(hrs)=	0.20				

Unit Hyd Qpeak (cms)= 0.155

PEAK FLOW (cms)= 0.017 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 5.648
TOTAL RAINFALL (mm)= 32.225
RUNOFF COEFFICIENT = 0.175

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

ADD HYD	(0026)						
1 + 2 = 3		AREA	QPEAK	TPEAK	R.V.		
		(ha)	(cms)	(hrs)	(mm)		

ID1= 1 (0401):	7.45	0.155	0.42	5.65
+ ID2= 2 (0402):	0.37	0.038	0.42	22.83
=====				
ID = 3 (0026):	7.82	0.193	0.42	6.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0026)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0026):	7.82	0.193	0.42	6.46
+ ID2= 2 (0403):	0.81	0.017	0.42	5.65
=====				
ID = 1 (0026):	8.63	0.210	0.42	6.38

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
NASHYD (0404)	Area (ha)=	1.37	Curve Number (CN)= 98.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 0.262

PEAK FLOW (cms)= 0.140 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 22.827
 TOTAL RAINFALL (mm)= 32.225
 RUNOFF COEFFICIENT = 0.708

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

CALIB			
NASHYD (0405)	Area (ha)=	16.60	Curve Number (CN)= 68.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 3.170

PEAK FLOW (cms)= 0.307 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 5.041
 TOTAL RAINFALL (mm)= 32.225
 RUNOFF COEFFICIENT = 0.156

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

ADD HYD (0027)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0404):	1.37	0.140	0.42	22.83
+ ID2= 2 (0405):	16.60	0.307	0.42	5.04
=====				
ID = 3 (0027):	17.97	0.447	0.42	6.40

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
NASHYD (0406)	Area (ha)=	0.15	Curve Number (CN)= 98.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 0.029

PEAK FLOW (cms)= 0.015 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 22.824
 TOTAL RAINFALL (mm)= 32.225
 RUNOFF COEFFICIENT = 0.708

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

CALIB	
-------	--

NASHYD (0407)	Area (ha)= 8.51	Curve Number (CN)= 30.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20	

Unit Hyd Qpeak (cms)= 1.625

PEAK FLOW (cms)= 0.036 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 1.193
 TOTAL RAINFALL (mm)= 32.225
 RUNOFF COEFFICIENT = 0.037

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

CALIB	Area (ha)= 7.14	Curve Number (CN)= 60.0
NASHYD (0408)	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
ID= 1 DT= 5.0 min	U.H. Tp(hrs)= 0.20	

Unit Hyd Qpeak (cms)= 1.364

PEAK FLOW (cms)= 0.097 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 3.764
 TOTAL RAINFALL (mm)= 32.225
 RUNOFF COEFFICIENT = 0.117

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

ADD HYD (0028)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0406):	0.15	0.015	0.42	22.82
+ ID2= 2 (0407):	8.51	0.036	0.42	1.19
ID = 3 (0028):	8.66	0.051	0.42	1.57

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0028)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0028):	8.66	0.051	0.42	1.57
+ ID2= 2 (0408):	7.14	0.097	0.42	3.76
ID = 1 (0028):	15.80	0.148	0.42	2.56

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	Area (ha)= 7.14	Curve Number (CN)= 71.0
NASHYD (0409)	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
ID= 1 DT= 5.0 min	U.H. Tp(hrs)= 0.20	

Unit Hyd Qpeak (cms)= 1.364

PEAK FLOW (cms)= 0.149 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 5.648
 TOTAL RAINFALL (mm)= 32.225
 RUNOFF COEFFICIENT = 0.175

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

ADD HYD (0029)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0026):	8.63	0.210	0.42	6.38
+ ID2= 2 (0027):	17.97	0.447	0.42	6.40
ID = 3 (0029):	26.60	0.657	0.42	6.39

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-----
| ADD HYD ( 0029) |
| 3 + 2 = 1 |
-----
      AREA      QPEAK      TPEAK      R.V.
      (ha)      (cms)      (hrs)      (mm)
ID1= 3 ( 0029): 26.60  0.657  0.42  6.39
+ ID2= 2 ( 0028): 15.80  0.148  0.42  2.56
=====
ID = 1 ( 0029): 42.40  0.805  0.42  4.96

```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| ADD HYD ( 0029) |
| 1 + 2 = 3 |
-----
      AREA      QPEAK      TPEAK      R.V.
      (ha)      (cms)      (hrs)      (mm)
ID1= 1 ( 0029): 42.40  0.805  0.42  4.96
+ ID2= 2 ( 0409): 7.14  0.149  0.42  5.65
=====
ID = 3 ( 0029): 49.54  0.954  0.42  5.06

```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| RESERVOIR( 0018) |
| IN= 2---> OUT= 1 |
| DT= 5.0 min |
-----
      OVERFLOW IS OFF
      OUTFLOW      STORAGE      OUTFLOW      STORAGE
      (cms)      (ha.m.)      (cms)      (ha.m.)
0.0000      0.0000      0.5834      0.0487
0.3087      0.0003      0.5950      0.0585
0.3501      0.0009      0.7597      0.0873
0.3870      0.0017      1.4421      0.1872
0.4207      0.0026      2.4328      0.3326
0.4519      0.0037      3.6724      0.5217
0.4811      0.0078      5.1308      0.7291
0.5086      0.0158      6.7886      0.9809
0.5347      0.0254      8.6312      1.2834
0.5596      0.0365      10.6473     1.6203

      AREA      QPEAK      TPEAK      R.V.
      (ha)      (cms)      (hrs)      (mm)
INFLOW : ID= 2 ( 0029) 49.540  0.954  0.42  5.06
OUTFLOW: ID= 1 ( 0018) 49.540  0.573  0.75  5.07

      PEAK FLOW REDUCTION [Qout/Qin](%)= 60.08
      TIME SHIFT OF PEAK FLOW (min)= 20.00
      MAXIMUM STORAGE USED (ha.m.)= 0.0481

```

```

-----
| CALIB
| NASHYD ( 0410) |
| ID= 1 DT= 5.0 min |
-----
      Area      (ha)= 7.92      Curve Number (CN)= 78.0
      Ia      (mm)= 5.00      # of Linear Res.(N)= 3.00
      U.H. Tp(hrs)= 0.20

```

Unit Hyd Qpeak (cms)= 1.513

PEAK FLOW (cms)= 0.223 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 7.483
 TOTAL RAINFALL (mm)= 32.225
 RUNOFF COEFFICIENT = 0.232

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

```

-----
| CALIB
| NASHYD ( 0411) |
| ID= 1 DT= 5.0 min |
-----
      Area      (ha)= 15.74      Curve Number (CN)= 56.0
      Ia      (mm)= 5.00      # of Linear Res.(N)= 3.00
      U.H. Tp(hrs)= 0.20

```

Unit Hyd Qpeak (cms)= 3.006

PEAK FLOW (cms)= 0.185 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 3.262
 TOTAL RAINFALL (mm)= 32.225
 RUNOFF COEFFICIENT = 0.101

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

```

-----
| ADD HYD ( 0030) |
| 1 + 2 = 3 |
-----
      AREA      QPEAK      TPEAK      R.V.
      (ha)      (cms)      (hrs)      (mm)
ID1= 1 ( 0018):  49.54    0.573    0.75    5.07
+ ID2= 2 ( 0410):   7.92    0.223    0.42    7.48
=====
ID = 3 ( 0030):  57.46    0.743    0.58    5.40

```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| ADD HYD ( 0030) |
| 3 + 2 = 1 |
-----
      AREA      QPEAK      TPEAK      R.V.
      (ha)      (cms)      (hrs)      (mm)
ID1= 3 ( 0030):  57.46    0.743    0.58    5.40
+ ID2= 2 ( 0411):  15.74    0.185    0.42    3.26
=====
ID = 1 ( 0030):  73.20    0.923    0.42    4.94

```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| CALIB
| NASHYD ( 0301) |
| ID= 1 DT= 5.0 min |
-----
Area      (ha)=  5.78   Curve Number (CN)= 71.0
Ia        (mm)=  5.00   # of Linear Res.(N)= 3.00
U.H. Tp(hrs)=  0.20

```

Unit Hyd Qpeak (cms)= 1.104

PEAK FLOW (cms)= 0.120 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 5.648
 TOTAL RAINFALL (mm)= 32.225
 RUNOFF COEFFICIENT = 0.175

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

```

-----
| CALIB
| NASHYD ( 0101) |
| ID= 1 DT= 5.0 min |
-----
Area      (ha)=  6.21   Curve Number (CN)= 81.0
Ia        (mm)=  5.00   # of Linear Res.(N)= 3.00
U.H. Tp(hrs)=  0.20

```

Unit Hyd Qpeak (cms)= 1.186

PEAK FLOW (cms)= 0.202 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 8.522
 TOTAL RAINFALL (mm)= 32.225
 RUNOFF COEFFICIENT = 0.264

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

```

-----
| CALIB
| NASHYD ( 0201) |
| ID= 1 DT= 5.0 min |
-----
Area      (ha)= 27.80   Curve Number (CN)= 76.0
Ia        (mm)=  5.00   # of Linear Res.(N)= 3.00
U.H. Tp(hrs)=  0.20

```

Unit Hyd Qpeak (cms)= 5.309

PEAK FLOW (cms)= 0.716 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 6.886
 TOTAL RAINFALL (mm)= 32.225
 RUNOFF COEFFICIENT = 0.214

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

```

-----
| ADD HYD ( 0031) |
| 1 + 2 = 3 |
-----
      AREA      QPEAK      TPEAK      R.V.
      (ha)      (cms)      (hrs)      (mm)
ID1= 1 ( 0101):   6.21    0.202    0.42    8.52
+ ID2= 2 ( 0201): 27.80    0.716    0.42    6.89
=====

```

ID = 3 (0031): 34.01 0.918 0.42 7.18

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
-----
| ADD HYD ( 0031) |
| 3 + 2 = 1 |
-----
          AREA      QPEAK      TPEAK      R.V.
          (ha)      (cms)      (hrs)      (mm)
ID1= 3 ( 0031): 34.01 0.918 0.42 7.18
+ ID2= 2 ( 0030): 73.20 0.923 0.42 4.94
=====
ID = 1 ( 0031): 107.21 1.840 0.42 5.65
=====
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
-----
| ADD HYD ( 0031) |
| 1 + 2 = 3 |
-----
          AREA      QPEAK      TPEAK      R.V.
          (ha)      (cms)      (hrs)      (mm)
ID1= 1 ( 0031): 107.21 1.840 0.42 5.65
+ ID2= 2 ( 0301): 5.78 0.120 0.42 5.65
=====
ID = 3 ( 0031): 112.99 1.961 0.42 5.65
=====
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
=====
V  V  I  SSSSS  U  U  A  L  (v 6.2.2019)
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
000  TTTTT  TTTTT  H  H  Y  Y  M  M  000  TM
O  O  T  T  H  H  Y  Y  MM  MM  O  O
O  O  T  T  H  H  Y  M  M  O  O
000  T  T  H  H  Y  M  M  000
```

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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\sfanous\AppData\Local\Civica\XH5\9918fc2e-de2e-4ff9-b060-a882585d4126\accee0b-13
Summary filename: C:\Users\sfanous\AppData\Local\Civica\XH5\9918fc2e-de2e-4ff9-b060-a882585d4126\accee0b-13

DATE: 11/21/2025 TIME: 09:29:23

USER:

COMMENTS: _____

```
-----
*****
** SIMULATION : TCW 50yr **
*****
```

```
-----
| READ STORM |
| Ptotal= 62.33 mm |
-----
Filename: C:\Users\sfanous\AppData\Local\Temp\
61e201b0-0a9b-4707-8c51-0bdd0a552448\50d49bf4
Comments: TCW Fergus Shand Dam 50yr
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.00	6.08	0.00	12.17	0.00	18.25	0.00
0.08	269.60	6.17	0.00	12.25	0.00	18.33	0.00
0.17	167.10	6.25	0.00	12.33	0.00	18.42	0.00
0.25	126.30	6.33	0.00	12.42	0.00	18.50	0.00
0.33	0.00	6.42	0.00	12.50	0.00	18.58	0.00
0.42	0.00	6.50	0.00	12.58	0.00	18.67	0.00
0.50	78.20	6.58	0.00	12.67	0.00	18.75	0.00
0.58	0.00	6.67	0.00	12.75	0.00	18.83	0.00

0.67	0.00	6.75	0.00	12.83	0.00	18.92	0.00
0.75	0.00	6.83	0.00	12.92	0.00	19.00	0.00
0.83	0.00	6.92	0.00	13.00	0.00	19.08	0.00
0.92	0.00	7.00	0.00	13.08	0.00	19.17	0.00
1.00	48.50	7.08	0.00	13.17	0.00	19.25	0.00
1.08	0.00	7.17	0.00	13.25	0.00	19.33	0.00
1.17	0.00	7.25	0.00	13.33	0.00	19.42	0.00
1.25	0.00	7.33	0.00	13.42	0.00	19.50	0.00
1.33	0.00	7.42	0.00	13.50	0.00	19.58	0.00
1.42	0.00	7.50	0.00	13.58	0.00	19.67	0.00
1.50	0.00	7.58	0.00	13.67	0.00	19.75	0.00
1.58	0.00	7.67	0.00	13.75	0.00	19.83	0.00
1.67	0.00	7.75	0.00	13.83	0.00	19.92	0.00
1.75	0.00	7.83	0.00	13.92	0.00	20.00	0.00
1.83	0.00	7.92	0.00	14.00	0.00	20.08	0.00
1.92	0.00	8.00	0.00	14.08	0.00	20.17	0.00
2.00	30.00	8.08	0.00	14.17	0.00	20.25	0.00
2.08	0.00	8.17	0.00	14.25	0.00	20.33	0.00
2.17	0.00	8.25	0.00	14.33	0.00	20.42	0.00
2.25	0.00	8.33	0.00	14.42	0.00	20.50	0.00
2.33	0.00	8.42	0.00	14.50	0.00	20.58	0.00
2.42	0.00	8.50	0.00	14.58	0.00	20.67	0.00
2.50	0.00	8.58	0.00	14.67	0.00	20.75	0.00
2.58	0.00	8.67	0.00	14.75	0.00	20.83	0.00
2.67	0.00	8.75	0.00	14.83	0.00	20.92	0.00
2.75	0.00	8.83	0.00	14.92	0.00	21.00	0.00
2.83	0.00	8.92	0.00	15.00	0.00	21.08	0.00
2.92	0.00	9.00	0.00	15.08	0.00	21.17	0.00
3.00	0.00	9.08	0.00	15.17	0.00	21.25	0.00
3.08	0.00	9.17	0.00	15.25	0.00	21.33	0.00
3.17	0.00	9.25	0.00	15.33	0.00	21.42	0.00
3.25	0.00	9.33	0.00	15.42	0.00	21.50	0.00
3.33	0.00	9.42	0.00	15.50	0.00	21.58	0.00
3.42	0.00	9.50	0.00	15.58	0.00	21.67	0.00
3.50	0.00	9.58	0.00	15.67	0.00	21.75	0.00
3.58	0.00	9.67	0.00	15.75	0.00	21.83	0.00
3.67	0.00	9.75	0.00	15.83	0.00	21.92	0.00
3.75	0.00	9.83	0.00	15.92	0.00	22.00	0.00
3.83	0.00	9.92	0.00	16.00	0.00	22.08	0.00
3.92	0.00	10.00	0.00	16.08	0.00	22.17	0.00
4.00	0.00	10.08	0.00	16.17	0.00	22.25	0.00
4.08	0.00	10.17	0.00	16.25	0.00	22.33	0.00
4.17	0.00	10.25	0.00	16.33	0.00	22.42	0.00
4.25	0.00	10.33	0.00	16.42	0.00	22.50	0.00
4.33	0.00	10.42	0.00	16.50	0.00	22.58	0.00
4.42	0.00	10.50	0.00	16.58	0.00	22.67	0.00
4.50	0.00	10.58	0.00	16.67	0.00	22.75	0.00
4.58	0.00	10.67	0.00	16.75	0.00	22.83	0.00
4.67	0.00	10.75	0.00	16.83	0.00	22.92	0.00
4.75	0.00	10.83	0.00	16.92	0.00	23.00	0.00
4.83	0.00	10.92	0.00	17.00	0.00	23.08	0.00
4.92	0.00	11.00	0.00	17.08	0.00	23.17	0.00
5.00	0.00	11.08	0.00	17.17	0.00	23.25	0.00
5.08	0.00	11.17	0.00	17.25	0.00	23.33	0.00
5.17	0.00	11.25	0.00	17.33	0.00	23.42	0.00
5.25	0.00	11.33	0.00	17.42	0.00	23.50	0.00
5.33	0.00	11.42	0.00	17.50	0.00	23.58	0.00
5.42	0.00	11.50	0.00	17.58	0.00	23.67	0.00
5.50	0.00	11.58	0.00	17.67	0.00	23.75	0.00
5.58	0.00	11.67	0.00	17.75	0.00	23.83	0.00
5.67	0.00	11.75	0.00	17.83	0.00	23.92	0.00
5.75	0.00	11.83	0.00	17.92	0.00	24.00	5.40
5.83	0.00	11.92	0.00	18.00	0.00		
5.92	0.00	12.00	8.70	18.08	0.00		
6.00	14.10	12.08	0.00	18.17	0.00		

CALIB			
NASHYD (0401)	Area (ha)=	7.45	Curve Number (CN)= 71.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 1.423

PEAK FLOW (cms)= 0.616 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 20.363
TOTAL RAINFALL (mm)= 62.325
RUNOFF COEFFICIENT = 0.327

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

CALIB
NASHYD (0402)
ID= 1 DT= 5.0 min

Area (ha)=	0.37	Curve Number (CN)=	98.0
Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 0.071

PEAK FLOW (cms)= 0.091 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 52.470
TOTAL RAINFALL (mm)= 62.325
RUNOFF COEFFICIENT = 0.842

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

CALIB
NASHYD (0403)
ID= 1 DT= 5.0 min

Area (ha)=	0.81	Curve Number (CN)=	71.0
Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 0.155

PEAK FLOW (cms)= 0.067 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 20.363
TOTAL RAINFALL (mm)= 62.325
RUNOFF COEFFICIENT = 0.327

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

ADD HYD (0026)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0401):	7.45	0.616	0.42	20.36
+ ID2= 2 (0402):	0.37	0.091	0.42	52.47
=====				
ID = 3 (0026):	7.82	0.707	0.42	21.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0026)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0026):	7.82	0.707	0.42	21.88
+ ID2= 2 (0403):	0.81	0.067	0.42	20.36
=====				
ID = 1 (0026):	8.63	0.774	0.42	21.74

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
NASHYD (0404)
ID= 1 DT= 5.0 min

Area (ha)=	1.37	Curve Number (CN)=	98.0
Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 0.262

PEAK FLOW (cms)= 0.337 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 52.471
TOTAL RAINFALL (mm)= 62.325
RUNOFF COEFFICIENT = 0.842

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

CALIB
NASHYD (0405)
ID= 1 DT= 5.0 min

Area (ha)=	16.60	Curve Number (CN)=	68.0
Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 3.170

PEAK FLOW (cms)= 1.239 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 18.546
TOTAL RAINFALL (mm)= 62.325
RUNOFF COEFFICIENT = 0.298

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

ADD HYD (0027)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0404):	1.37	0.337	0.42	52.47
+ ID2= 2 (0405):	16.60	1.239	0.42	18.55
=====				
ID = 3 (0027):	17.97	1.576	0.42	21.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	Area (ha)	Curve Number (CN)
NASHYD (0406)	0.15	98.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20	

Unit Hyd Qpeak (cms)= 0.029

PEAK FLOW (cms)= 0.037 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 52.468
TOTAL RAINFALL (mm)= 62.325
RUNOFF COEFFICIENT = 0.842

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

CALIB	Area (ha)	Curve Number (CN)
NASHYD (0407)	8.51	30.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20	

Unit Hyd Qpeak (cms)= 1.625

PEAK FLOW (cms)= 0.163 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 5.046
TOTAL RAINFALL (mm)= 62.325
RUNOFF COEFFICIENT = 0.081

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

CALIB	Area (ha)	Curve Number (CN)
NASHYD (0408)	7.14	60.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20	

Unit Hyd Qpeak (cms)= 1.364

PEAK FLOW (cms)= 0.408 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 14.471
TOTAL RAINFALL (mm)= 62.325
RUNOFF COEFFICIENT = 0.232

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

ADD HYD (0028)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0406):	0.15	0.037	0.42	52.47
+ ID2= 2 (0407):	8.51	0.163	0.42	5.05
=====				
ID = 3 (0028):	8.66	0.199	0.42	5.87

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0028)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0028):	8.66	0.199	0.42	5.87
+ ID2= 2 (0408):	7.14	0.408	0.42	14.47
=====				
ID = 1 (0028):	15.80	0.608	0.42	9.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB				
NASHYD (0409)				
ID= 1 DT= 5.0 min	Area	(ha)=	7.14	Curve Number (CN)= 71.0
	Ia	(mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp	(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 1.364

PEAK FLOW (cms)= 0.590 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 20.363
TOTAL RAINFALL (mm)= 62.325
RUNOFF COEFFICIENT = 0.327

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

ADD HYD (0029)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0026):	8.63	0.774	0.42	21.74
+ ID2= 2 (0027):	17.97	1.576	0.42	21.13
=====				
ID = 3 (0029):	26.60	2.349	0.42	21.33

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0029)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0029):	26.60	2.349	0.42	21.33
+ ID2= 2 (0028):	15.80	0.608	0.42	9.76
=====				
ID = 1 (0029):	42.40	2.957	0.42	17.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0029)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0029):	42.40	2.957	0.42	17.02
+ ID2= 2 (0409):	7.14	0.590	0.42	20.36
=====				
ID = 3 (0029):	49.54	3.547	0.42	17.50

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0018)				
IN= 2---> OUT= 1				
DT= 5.0 min				
OVERFLOW IS OFF				
	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	0.5834	0.0487
	0.3087	0.0003	0.5950	0.0585
	0.3501	0.0009	0.7597	0.0873
	0.3870	0.0017	1.4421	0.1872
	0.4207	0.0026	2.4328	0.3326
	0.4519	0.0037	3.6724	0.5217
	0.4811	0.0078	5.1308	0.7291
	0.5086	0.0158	6.7886	0.9809
	0.5347	0.0254	8.6312	1.2834
	0.5596	0.0365	10.6473	1.6203

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0029)	49.540	3.547	0.42	17.50

OUTFLOW: ID= 1 (0018) 49.540 1.975 0.75 17.51

PEAK FLOW REDUCTION [Qout/Qin](%)= 55.70
TIME SHIFT OF PEAK FLOW (min)= 20.00
MAXIMUM STORAGE USED (ha.m.)= 0.2779

CALIB
NASHYD (0410)
ID= 1 DT= 5.0 min

Area (ha)=	7.92	Curve Number (CN)=	78.0
Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 1.513

PEAK FLOW (cms)= 0.837 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 25.432
TOTAL RAINFALL (mm)= 62.325
RUNOFF COEFFICIENT = 0.408

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

CALIB
NASHYD (0411)
ID= 1 DT= 5.0 min

Area (ha)=	15.74	Curve Number (CN)=	56.0
Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 3.006

PEAK FLOW (cms)= 0.788 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 12.767
TOTAL RAINFALL (mm)= 62.325
RUNOFF COEFFICIENT = 0.205

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

ADD HYD (0030)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0018):	49.54	1.975	0.75	17.51
+ ID2= 2 (0410):	7.92	0.837	0.42	25.43
=====				
ID = 3 (0030):	57.46	2.503	0.67	18.60

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0030)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0030):	57.46	2.503	0.67	18.60
+ ID2= 2 (0411):	15.74	0.788	0.42	12.77
=====				
ID = 1 (0030):	73.20	3.066	0.67	17.35

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
NASHYD (0301)
ID= 1 DT= 5.0 min

Area (ha)=	5.78	Curve Number (CN)=	71.0
Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 1.104

PEAK FLOW (cms)= 0.478 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 20.363
TOTAL RAINFALL (mm)= 62.325
RUNOFF COEFFICIENT = 0.327

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

CALIB

NASHYD (0101)	Area (ha)= 6.21	Curve Number (CN)= 81.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20	

Unit Hyd Qpeak (cms)= 1.186

PEAK FLOW (cms)= 0.733 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 28.056
 TOTAL RAINFALL (mm)= 62.325
 RUNOFF COEFFICIENT = 0.450

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

CALIB	Area (ha)= 27.80	Curve Number (CN)= 76.0
NASHYD (0201)	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
ID= 1 DT= 5.0 min	U.H. Tp(hrs)= 0.20	

Unit Hyd Qpeak (cms)= 5.309

PEAK FLOW (cms)= 2.734 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 23.848
 TOTAL RAINFALL (mm)= 62.325
 RUNOFF COEFFICIENT = 0.383

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

ADD HYD (0031)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0101):	6.21	0.733	0.42	28.06
+ ID2= 2 (0201):	27.80	2.734	0.42	23.85
ID = 3 (0031):	34.01	3.467	0.42	24.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0031)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0031):	34.01	3.467	0.42	24.62
+ ID2= 2 (0030):	73.20	3.066	0.67	17.35
ID = 1 (0031):	107.21	6.266	0.42	19.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0031)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0031):	107.21	6.266	0.42	19.65
+ ID2= 2 (0301):	5.78	0.478	0.42	20.36
ID = 3 (0031):	112.99	6.743	0.42	19.69

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

FINISH

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V   V   I   SSSSS U   U   A   L
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

000   TTTTT TTTTT H   H   Y   Y   M   M   000   TM
O   O   T   T   H   H   Y   Y   MM  MM  O   O
O   O   T   T   H   H   Y   M   M   O   O
000   T   T   H   H   Y   M   M   000

```


***** 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\sfanous\AppData\Local\Civica\XH5\9918fc2e-de2e-4ff9-b060-a882585d4126\9bd6c26d-6a
Summary  filename: C:\Users\sfanous\AppData\Local\Civica\XH5\9918fc2e-de2e-4ff9-b060-a882585d4126\9bd6c26d-6a
```

DATE: 11/21/2025

TIME: 09:29:22

USER:

COMMENTS: _____

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*****
** SIMULATION : TCW 5yr                                     **
*****
```

READ STORM	Filename: C:\Users\sfanous\AppData
	ata\Local\Temp\
Ptotal= 41.88 mm	61e201b0-0a9b-4707-8c51-0bdd0a552448\542709ed
	Comments: TCW Fergus Shand Dam 5yr

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.08	0.00	12.17	0.00	18.25	0.00
0.08	180.30	6.17	0.00	12.25	0.00	18.33	0.00
0.17	112.10	6.25	0.00	12.33	0.00	18.42	0.00
0.25	84.90	6.33	0.00	12.42	0.00	18.50	0.00
0.33	0.00	6.42	0.00	12.50	0.00	18.58	0.00
0.42	0.00	6.50	0.00	12.58	0.00	18.67	0.00
0.50	52.70	6.58	0.00	12.67	0.00	18.75	0.00
0.58	0.00	6.67	0.00	12.75	0.00	18.83	0.00
0.67	0.00	6.75	0.00	12.83	0.00	18.92	0.00
0.75	0.00	6.83	0.00	12.92	0.00	19.00	0.00
0.83	0.00	6.92	0.00	13.00	0.00	19.08	0.00
0.92	0.00	7.00	0.00	13.08	0.00	19.17	0.00
1.00	32.80	7.08	0.00	13.17	0.00	19.25	0.00
1.08	0.00	7.17	0.00	13.25	0.00	19.33	0.00
1.17	0.00	7.25	0.00	13.33	0.00	19.42	0.00
1.25	0.00	7.33	0.00	13.42	0.00	19.50	0.00
1.33	0.00	7.42	0.00	13.50	0.00	19.58	0.00
1.42	0.00	7.50	0.00	13.58	0.00	19.67	0.00
1.50	0.00	7.58	0.00	13.67	0.00	19.75	0.00
1.58	0.00	7.67	0.00	13.75	0.00	19.83	0.00
1.67	0.00	7.75	0.00	13.83	0.00	19.92	0.00
1.75	0.00	7.83	0.00	13.92	0.00	20.00	0.00
1.83	0.00	7.92	0.00	14.00	0.00	20.08	0.00
1.92	0.00	8.00	0.00	14.08	0.00	20.17	0.00
2.00	20.40	8.08	0.00	14.17	0.00	20.25	0.00
2.08	0.00	8.17	0.00	14.25	0.00	20.33	0.00
2.17	0.00	8.25	0.00	14.33	0.00	20.42	0.00
2.25	0.00	8.33	0.00	14.42	0.00	20.50	0.00
2.33	0.00	8.42	0.00	14.50	0.00	20.58	0.00
2.42	0.00	8.50	0.00	14.58	0.00	20.67	0.00
2.50	0.00	8.58	0.00	14.67	0.00	20.75	0.00
2.58	0.00	8.67	0.00	14.75	0.00	20.83	0.00
2.67	0.00	8.75	0.00	14.83	0.00	20.92	0.00
2.75	0.00	8.83	0.00	14.92	0.00	21.00	0.00
2.83	0.00	8.92	0.00	15.00	0.00	21.08	0.00
2.92	0.00	9.00	0.00	15.08	0.00	21.17	0.00
3.00	0.00	9.08	0.00	15.17	0.00	21.25	0.00
3.08	0.00	9.17	0.00	15.25	0.00	21.33	0.00
3.17	0.00	9.25	0.00	15.33	0.00	21.42	0.00
3.25	0.00	9.33	0.00	15.42	0.00	21.50	0.00
3.33	0.00	9.42	0.00	15.50	0.00	21.58	0.00
3.42	0.00	9.50	0.00	15.58	0.00	21.67	0.00
3.50	0.00	9.58	0.00	15.67	0.00	21.75	0.00
3.58	0.00	9.67	0.00	15.75	0.00	21.83	0.00
3.67	0.00	9.75	0.00	15.83	0.00	21.92	0.00
3.75	0.00	9.83	0.00	15.92	0.00	22.00	0.00
3.83	0.00	9.92	0.00	16.00	0.00	22.08	0.00
3.92	0.00	10.00	0.00	16.08	0.00	22.17	0.00

4.00	0.00	10.08	0.00	16.17	0.00	22.25	0.00
4.08	0.00	10.17	0.00	16.25	0.00	22.33	0.00
4.17	0.00	10.25	0.00	16.33	0.00	22.42	0.00
4.25	0.00	10.33	0.00	16.42	0.00	22.50	0.00
4.33	0.00	10.42	0.00	16.50	0.00	22.58	0.00
4.42	0.00	10.50	0.00	16.58	0.00	22.67	0.00
4.50	0.00	10.58	0.00	16.67	0.00	22.75	0.00
4.58	0.00	10.67	0.00	16.75	0.00	22.83	0.00
4.67	0.00	10.75	0.00	16.83	0.00	22.92	0.00
4.75	0.00	10.83	0.00	16.92	0.00	23.00	0.00
4.83	0.00	10.92	0.00	17.00	0.00	23.08	0.00
4.92	0.00	11.00	0.00	17.08	0.00	23.17	0.00
5.00	0.00	11.08	0.00	17.17	0.00	23.25	0.00
5.08	0.00	11.17	0.00	17.25	0.00	23.33	0.00
5.17	0.00	11.25	0.00	17.33	0.00	23.42	0.00
5.25	0.00	11.33	0.00	17.42	0.00	23.50	0.00
5.33	0.00	11.42	0.00	17.50	0.00	23.58	0.00
5.42	0.00	11.50	0.00	17.58	0.00	23.67	0.00
5.50	0.00	11.58	0.00	17.67	0.00	23.75	0.00
5.58	0.00	11.67	0.00	17.75	0.00	23.83	0.00
5.67	0.00	11.75	0.00	17.83	0.00	23.92	0.00
5.75	0.00	11.83	0.00	17.92	0.00	24.00	3.70
5.83	0.00	11.92	0.00	18.00	0.00		
5.92	0.00	12.00	6.00	18.08	0.00		
6.00	9.60	12.08	0.00	18.17	0.00		

CALIB							
NASHYD	(0401)	Area	(ha)=	7.45	Curve Number	(CN)=	71.0
ID= 1 DT= 5.0 min		Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00	
		U.H. Tp(hrs)=	0.20				

Unit Hyd Qpeak (cms)= 1.423

PEAK FLOW (cms)= 0.277 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 9.651
TOTAL RAINFALL (mm)= 41.875
RUNOFF COEFFICIENT = 0.230

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

CALIB							
NASHYD	(0402)	Area	(ha)=	0.37	Curve Number	(CN)=	98.0
ID= 1 DT= 5.0 min		Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00	
		U.H. Tp(hrs)=	0.20				

Unit Hyd Qpeak (cms)= 0.071

PEAK FLOW (cms)= 0.055 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 32.268
TOTAL RAINFALL (mm)= 41.875
RUNOFF COEFFICIENT = 0.771

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

CALIB							
NASHYD	(0403)	Area	(ha)=	0.81	Curve Number	(CN)=	71.0
ID= 1 DT= 5.0 min		Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00	
		U.H. Tp(hrs)=	0.20				

Unit Hyd Qpeak (cms)= 0.155

PEAK FLOW (cms)= 0.030 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 9.651
TOTAL RAINFALL (mm)= 41.875
RUNOFF COEFFICIENT = 0.230

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

ADD HYD	(0026)						
1 + 2 = 3		AREA	QPEAK	TPEAK	R.V.		
		(ha)	(cms)	(hrs)	(mm)		

ID1= 1 (0401):	7.45	0.277	0.42	9.65
+ ID2= 2 (0402):	0.37	0.055	0.42	32.27
=====				
ID = 3 (0026):	7.82	0.332	0.42	10.72

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0026)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0026):	7.82	0.332	0.42	10.72
+ ID2= 2 (0403):	0.81	0.030	0.42	9.65
=====				
ID = 1 (0026):	8.63	0.362	0.42	10.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
NASHYD (0404)	Area (ha)=	1.37	Curve Number (CN)= 98.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 0.262

PEAK FLOW (cms)= 0.203 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 32.268
 TOTAL RAINFALL (mm)= 41.875
 RUNOFF COEFFICIENT = 0.771

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

CALIB			
NASHYD (0405)	Area (ha)=	16.60	Curve Number (CN)= 68.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 3.170

PEAK FLOW (cms)= 0.551 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 8.677
 TOTAL RAINFALL (mm)= 41.875
 RUNOFF COEFFICIENT = 0.207

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

ADD HYD (0027)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0404):	1.37	0.203	0.42	32.27
+ ID2= 2 (0405):	16.60	0.551	0.42	8.68
=====				
ID = 3 (0027):	17.97	0.754	0.42	10.48

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
NASHYD (0406)	Area (ha)=	0.15	Curve Number (CN)= 98.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 0.029

PEAK FLOW (cms)= 0.022 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 32.266
 TOTAL RAINFALL (mm)= 41.875
 RUNOFF COEFFICIENT = 0.771

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

CALIB	
-------	--

NASHYD (0407)	Area (ha)= 8.51	Curve Number (CN)= 30.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20	

Unit Hyd Qpeak (cms)= 1.625

PEAK FLOW (cms)= 0.067 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 2.156
 TOTAL RAINFALL (mm)= 41.875
 RUNOFF COEFFICIENT = 0.051

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

CALIB	Area (ha)= 7.14	Curve Number (CN)= 60.0
NASHYD (0408)	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
ID= 1 DT= 5.0 min	U.H. Tp(hrs)= 0.20	

Unit Hyd Qpeak (cms)= 1.364

PEAK FLOW (cms)= 0.177 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 6.582
 TOTAL RAINFALL (mm)= 41.875
 RUNOFF COEFFICIENT = 0.157

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

ADD HYD (0028)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0406):	0.15	0.022	0.42	32.27
+ ID2= 2 (0407):	8.51	0.067	0.42	2.16
ID = 3 (0028):	8.66	0.089	0.42	2.68

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0028)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0028):	8.66	0.089	0.42	2.68
+ ID2= 2 (0408):	7.14	0.177	0.42	6.58
ID = 1 (0028):	15.80	0.266	0.42	4.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	Area (ha)= 7.14	Curve Number (CN)= 71.0
NASHYD (0409)	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
ID= 1 DT= 5.0 min	U.H. Tp(hrs)= 0.20	

Unit Hyd Qpeak (cms)= 1.364

PEAK FLOW (cms)= 0.266 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 9.651
 TOTAL RAINFALL (mm)= 41.875
 RUNOFF COEFFICIENT = 0.230

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

ADD HYD (0029)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0026):	8.63	0.362	0.42	10.62
+ ID2= 2 (0027):	17.97	0.754	0.42	10.48
ID = 3 (0029):	26.60	1.116	0.42	10.52

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-----
| ADD HYD ( 0029) |
| 3 + 2 = 1 |
-----
      AREA      QPEAK      TPEAK      R.V.
      (ha)      (cms)      (hrs)      (mm)
ID1= 3 ( 0029): 26.60    1.116    0.42    10.52
+ ID2= 2 ( 0028): 15.80    0.266    0.42     4.44
=====
ID = 1 ( 0029): 42.40    1.382    0.42     8.26

```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| ADD HYD ( 0029) |
| 1 + 2 = 3 |
-----
      AREA      QPEAK      TPEAK      R.V.
      (ha)      (cms)      (hrs)      (mm)
ID1= 1 ( 0029): 42.40    1.382    0.42     8.26
+ ID2= 2 ( 0409): 7.14     0.266    0.42     9.65
=====
ID = 3 ( 0029): 49.54    1.648    0.42     8.46

```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| RESERVOIR( 0018) |
| IN= 2---> OUT= 1 |
| DT= 5.0 min |
-----
      OVERFLOW IS OFF
      OUTFLOW      STORAGE      OUTFLOW      STORAGE
      (cms)      (ha.m.)      (cms)      (ha.m.)
0.0000      0.0000      0.5834      0.0487
0.3087      0.0003      0.5950      0.0585
0.3501      0.0009      0.7597      0.0873
0.3870      0.0017      1.4421      0.1872
0.4207      0.0026      2.4328      0.3326
0.4519      0.0037      3.6724      0.5217
0.4811      0.0078      5.1308      0.7291
0.5086      0.0158      6.7886      0.9809
0.5347      0.0254      8.6312      1.2834
0.5596      0.0365      10.6473     1.6203

      AREA      QPEAK      TPEAK      R.V.
      (ha)      (cms)      (hrs)      (mm)
INFLOW : ID= 2 ( 0029) 49.540    1.648    0.42     8.46
OUTFLOW: ID= 1 ( 0018) 49.540    0.922    0.75     8.52

      PEAK FLOW REDUCTION [Qout/Qin](%)= 55.95
      TIME SHIFT OF PEAK FLOW (min)= 20.00
      MAXIMUM STORAGE USED (ha.m.)= 0.1133

```

```

-----
| CALIB
| NASHYD ( 0410) |
| ID= 1 DT= 5.0 min |
-----
      Area      (ha)= 7.92      Curve Number (CN)= 78.0
      Ia      (mm)= 5.00      # of Linear Res.(N)= 3.00
      U.H. Tp(hrs)= 0.20

```

Unit Hyd Qpeak (cms)= 1.513

PEAK FLOW (cms)= 0.390 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 12.507
 TOTAL RAINFALL (mm)= 41.875
 RUNOFF COEFFICIENT = 0.299

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

```

-----
| CALIB
| NASHYD ( 0411) |
| ID= 1 DT= 5.0 min |
-----
      Area      (ha)= 15.74      Curve Number (CN)= 56.0
      Ia      (mm)= 5.00      # of Linear Res.(N)= 3.00
      U.H. Tp(hrs)= 0.20

```

Unit Hyd Qpeak (cms)= 3.006

PEAK FLOW (cms)= 0.338 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 5.740
 TOTAL RAINFALL (mm)= 41.875
 RUNOFF COEFFICIENT = 0.137

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

```

-----
| ADD HYD ( 0030) |
| 1 + 2 = 3 |
-----
      AREA      QPEAK      TPEAK      R.V.
      (ha)      (cms)      (hrs)      (mm)
ID1= 1 ( 0018):  49.54    0.922    0.75    8.52
+ ID2= 2 ( 0410):   7.92    0.390    0.42   12.51
=====
ID = 3 ( 0030):  57.46    1.175    0.67    9.07

```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| ADD HYD ( 0030) |
| 3 + 2 = 1 |
-----
      AREA      QPEAK      TPEAK      R.V.
      (ha)      (cms)      (hrs)      (mm)
ID1= 3 ( 0030):  57.46    1.175    0.67    9.07
+ ID2= 2 ( 0411):  15.74    0.338    0.42    5.74
=====
ID = 1 ( 0030):  73.20    1.430    0.67    8.36

```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| CALIB
| NASHYD ( 0301) |
| ID= 1 DT= 5.0 min |
-----
Area      (ha)=  5.78   Curve Number (CN)= 71.0
Ia        (mm)=  5.00   # of Linear Res.(N)= 3.00
U.H. Tp(hrs)=  0.20

```

Unit Hyd Qpeak (cms)= 1.104

PEAK FLOW (cms)= 0.215 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 9.651
TOTAL RAINFALL (mm)= 41.875
RUNOFF COEFFICIENT = 0.230

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

```

-----
| CALIB
| NASHYD ( 0101) |
| ID= 1 DT= 5.0 min |
-----
Area      (ha)=  6.21   Curve Number (CN)= 81.0
Ia        (mm)=  5.00   # of Linear Res.(N)= 3.00
U.H. Tp(hrs)=  0.20

```

Unit Hyd Qpeak (cms)= 1.186

PEAK FLOW (cms)= 0.349 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 14.070
TOTAL RAINFALL (mm)= 41.875
RUNOFF COEFFICIENT = 0.336

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

```

-----
| CALIB
| NASHYD ( 0201) |
| ID= 1 DT= 5.0 min |
-----
Area      (ha)= 27.80   Curve Number (CN)= 76.0
Ia        (mm)=  5.00   # of Linear Res.(N)= 3.00
U.H. Tp(hrs)=  0.20

```

Unit Hyd Qpeak (cms)= 5.309

PEAK FLOW (cms)= 1.261 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 11.591
TOTAL RAINFALL (mm)= 41.875
RUNOFF COEFFICIENT = 0.277

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

```

-----
| ADD HYD ( 0031) |
| 1 + 2 = 3 |
-----
      AREA      QPEAK      TPEAK      R.V.
      (ha)      (cms)      (hrs)      (mm)
ID1= 1 ( 0101):   6.21    0.349    0.42   14.07
+ ID2= 2 ( 0201): 27.80    1.261    0.42   11.59
=====

```

ID = 3 (0031): 34.01 1.609 0.42 12.04

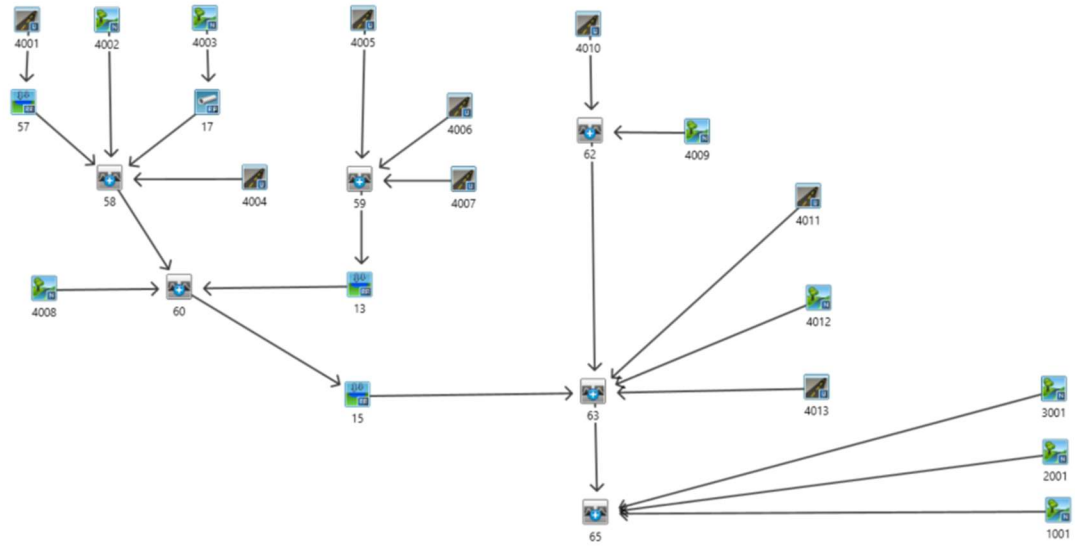
NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0031)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0031):	34.01	1.609	0.42	12.04
+ ID2= 2 (0030):	73.20	1.430	0.67	8.36
=====				
ID = 1 (0031):	107.21	2.925	0.42	9.53

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0031)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0031):	107.21	2.925	0.42	9.53
+ ID2= 2 (0301):	5.78	0.215	0.42	9.65
=====				
ID = 3 (0031):	112.99	3.140	0.42	9.53

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.



```

=====
=====
V      V      I      SSSSS  U      U      A      L      (v 6.2.2020)
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

```

```

000      TTTTT  TTTTT  H      H      Y      Y      M      M      000      TM
O      O      T      T      H      H      Y Y      MM MM  O      O
O      O      T      T      H      H      Y      M      M      O      O
000      T      T      H      H      Y      M      M      000

```

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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\SRastgou\AppData\Local\Civica\XH5\3c86505c-fc9b-4fbe-887a-385e4dcec422\3ad58929-3956-46f4-96fd-557872a2fa64\sce
 Summary filename: C:\Users\SRastgou\AppData\Local\Civica\XH5\3c86505c-fc9b-4fbe-887a-385e4dcec422\3ad58929-3956-46f4-96fd-557872a2fa64\sce

DATE: 06/24/2026

TIME: 08:17:43

USER:

COMMENTS: _____

```

-----
*****
** SIMULATION : Run 07 **
*****

```

READ STORM	Filename: C:\Users\SRastgou\AppData\Local\Temp\
Ptotal=285.00 mm	a458a24d-10c7-4b8c-9930-ea27013ace9d\257a45da
	Comments: Hurrican Hazel - Regional Storm

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	13.00	2.03	26.00	2.03	39.00	6.00
1.00	2.03	14.00	2.03	27.00	2.03	40.00	13.00
2.00	2.03	15.00	2.03	28.00	2.03	41.00	17.00
3.00	2.03	16.00	2.03	29.00	2.03	42.00	13.00
4.00	2.03	17.00	2.03	30.00	2.03	43.00	23.00
5.00	2.03	18.00	2.03	31.00	2.03	44.00	13.00
6.00	2.03	19.00	2.03	32.00	2.03	45.00	13.00
7.00	2.03	20.00	2.03	33.00	2.03	46.00	53.00
8.00	2.03	21.00	2.03	34.00	2.03	47.00	38.00
9.00	2.03	22.00	2.03	35.00	2.03	48.00	13.00
10.00	2.03	23.00	2.03	36.00	2.03		
11.00	2.03	24.00	2.03	37.00	6.00		

12.00 2.03 | 25.00 2.03 | 38.00 4.00 |

 | CALIB
 | NASHYD (4003)
ID= 1 DT= 5.0 min

Area (ha)= 3.80 Curve Number (CN)= 98.0
 Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
 U.H. Tp(hrs)= 0.20

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

----- TRANSFORMED HYETOGRAPH -----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00

4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94

9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 0.726

PEAK FLOW (cms)= 0.557 (i)
TIME TO PEAK (hrs)= 47.000
RUNOFF VOLUME (mm)= 274.388
TOTAL RAINFALL (mm)= 285.001
RUNOFF COEFFICIENT = 0.963

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

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| ROUTEPIPE( 0017) |
| IN= 2---> OUT= 1 |
| DT= 2.0 min      |

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PIPE Number = 1.00
Diameter (mm)= 975.00
Length (m)= 892.00
Slope (m/m)= 0.002
Manning n = 0.013

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

DEPTH (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME min
0.05	.134E+02	0.0	0.31	48.12
0.10	.374E+02	0.0	0.48	30.84
0.15	.675E+02	0.0	0.62	23.96
0.21	.102E+03	0.1	0.74	20.16
0.26	.140E+03	0.1	0.84	17.71
0.31	.180E+03	0.2	0.93	16.01
0.36	.223E+03	0.3	1.01	14.76

0.41	.266E+03	0.3	1.08	13.82
0.46	.311E+03	0.4	1.14	13.08
0.51	.355E+03	0.5	1.19	12.51
0.56	.400E+03	0.6	1.23	12.06
0.62	.443E+03	0.6	1.27	11.72
0.67	.486E+03	0.7	1.30	11.47
0.72	.526E+03	0.8	1.32	11.30
0.77	.564E+03	0.8	1.33	11.22
0.82	.599E+03	0.9	1.32	11.22
0.87	.629E+03	0.9	1.31	11.35
0.92	.653E+03	0.9	1.28	11.65
0.98	.666E+03	0.9	1.16	12.78

<---- hydrograph ---->

<-pipe / channel->

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (4003)	3.80	0.56	47.00	274.39	0.57	1.23
OUTFLOW: ID= 1 (0017)	3.80	0.54	47.03	274.32	0.56	1.23

CALIB
STANDHYD (4004)
ID= 1 DT= 5.0 min

Area (ha)= 0.93
Total Imp(%)= 70.00 Dir. Conn.(%)= 45.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.65	0.28
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	78.74	40.00
Mannings n =	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00

2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00

7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Max.Eff.Inten. (mm/hr)=	53.00	95.83
over (min)	5.00	15.00
Storage Coeff. (min)=	2.85 (ii)	10.03 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.28	0.10

PEAK FLOW	(cms)=	0.06	0.07	*TOTALS*
TIME TO PEAK	(hrs)=	46.75	47.00	0.136 (iii)
RUNOFF VOLUME	(mm)=	284.00	256.71	47.00
TOTAL RAINFALL	(mm)=	285.00	285.00	268.98
RUNOFF COEFFICIENT	=	1.00	0.90	285.00
				0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (4001)	Area (ha)=	1.74	
ID= 1 DT= 5.0 min	Total Imp(%)=	70.00	Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.22	0.52
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	107.70	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00

2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00

7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Max.Eff.Inten. (mm/hr)=	53.00	95.98
over (min)	5.00	15.00
Storage Coeff. (min)=	3.44 (ii)	10.62 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.26	0.09

TOTALS

PEAK FLOW (cms)=	0.12	0.14	0.254 (iii)
TIME TO PEAK (hrs)=	46.92	47.00	47.00
RUNOFF VOLUME (mm)=	284.00	258.38	269.91
TOTAL RAINFALL (mm)=	285.00	285.00	285.00

RUNOFF COEFFICIENT = 1.00 0.91 0.95

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 83.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0057)
IN= 2---> OUT= 1
DT= 5.0 min

OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0190	0.0361
0.0050	0.0026	0.3920	0.0419
0.0080	0.0056	0.4170	0.0481
0.0100	0.0089	0.4400	0.0547
0.0120	0.0126	0.4620	0.0617
0.0140	0.0166	0.4820	0.0691
0.0150	0.0209	0.5020	0.0768
0.0170	0.0256	1.1750	0.0850
0.0180	0.0307	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (4001)	1.740	0.254	47.00	269.91
OUTFLOW: ID= 1 (0057)	1.740	0.253	47.00	269.83

PEAK FLOW REDUCTION [Qout/Qin](%)= 99.90
TIME SHIFT OF PEAK FLOW (min)= 0.00
MAXIMUM STORAGE USED (ha.m.)= 0.0397

CALIB
NASHYD (4002)
ID= 1 DT= 5.0 min

Area (ha)= 5.20 Curve Number (CN)= 83.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

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

----- TRANSFORMED HYETOGRAPH -----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00

1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00

6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00

12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 0.993

PEAK FLOW (cms)= 0.734 (i)
 TIME TO PEAK (hrs)= 47.000
 RUNOFF VOLUME (mm)= 235.679
 TOTAL RAINFALL (mm)= 285.001
 RUNOFF COEFFICIENT = 0.827

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

ADD HYD (0058)				
1 + 2 = 3				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0017):	3.80	0.544	47.03	274.32
+ ID2= 2 (4002):	5.20	0.734	47.00	235.68
=====				
ID = 3 (0058):	9.00	1.278	47.00	251.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0058)				
3 + 2 = 1				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0058):	9.00	1.278	47.00	251.99
+ ID2= 2 (4004):	0.93	0.136	47.00	268.98
=====				
ID = 1 (0058):	9.93	1.413	47.00	253.58

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0058)				
1 + 2 = 3				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0058):	9.93	1.413	47.00	253.58
+ ID2= 2 (0057):	1.74	0.253	47.00	269.83
=====				
ID = 3 (0058):	11.67	1.666	47.00	255.55

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB				
NASHYD (4008)				
ID= 1 DT= 5.0 min				

Area	(ha)=	7.52	Curve Number	(CN)= 36.0
Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00
U.H. Tp	(hrs)=	0.20		

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

----- TRANSFORMED HYETOGRAPH -----							
TIME	RAIN		TIME	RAIN		TIME	RAIN
hrs	mm/hr		hrs	mm/hr		hrs	mm/hr
0.083	0.00		12.333	2.03		24.583	2.03
						36.83	2.03

0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00

5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00

10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 1.436

PEAK FLOW (cms)= 0.597 (i)
TIME TO PEAK (hrs)= 47.000
RUNOFF VOLUME (mm)= 106.965
TOTAL RAINFALL (mm)= 285.001
RUNOFF COEFFICIENT = 0.375

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

CALIB
STANDHYD (4005)
ID= 1 DT= 5.0 min
Area (ha)= 12.54
Total Imp(%)= 70.00 Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	8.78	3.76
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	289.14	40.00
Mannings n	=	0.013	0.250

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

----- TRANSFORMED HYETOGRAPH -----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00

1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00

6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00

12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Max.Eff.Inten.(mm/hr)=	53.00	95.83
over (min)	5.00	15.00
Storage Coeff. (min)=	6.23 (ii)	13.41 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.19	0.08

TOTALS

PEAK FLOW (cms)=	0.83	0.99	1.817 (iii)
TIME TO PEAK (hrs)=	47.00	47.00	47.00
RUNOFF VOLUME (mm)=	284.00	256.71	268.99
TOTAL RAINFALL (mm)=	285.00	285.00	285.00
RUNOFF COEFFICIENT =	1.00	0.90	0.94

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	
STANDHYD (4007)	
ID= 1 DT= 5.0 min	

Area (ha)=	1.30
Total Imp(%)=	70.00
Dir. Conn.(%)=	45.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.91	0.39
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	93.09	40.00
Mannings n =	0.013	0.250

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

----- TRANSFORMED HYETOGRAPH -----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00

1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00

7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Max.Eff.Inten.(mm/hr)= 53.00
over (min) 5.00

95.83
15.00

Storage Coeff. (min)= 3.15 (ii) 10.33 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.27 0.09

TOTALS

PEAK FLOW (cms)= 0.09 0.10 0.189 (iii)
TIME TO PEAK (hrs)= 46.83 47.00 47.00
RUNOFF VOLUME (mm)= 284.00 256.71 268.99
TOTAL RAINFALL (mm)= 285.00 285.00 285.00
RUNOFF COEFFICIENT = 1.00 0.90 0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB
STANDHYD (4006)
ID= 1 DT= 5.0 min
Area (ha)= 6.57
Total Imp(%)= 70.00 Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.60	1.97
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	209.28	40.00
Mannings n	=	0.013	0.250

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

----- TRANSFORMED HYETOGRAPH -----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00

2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00

7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Max.Eff.Inten. (mm/hr)=	53.00	95.83
over (min)	5.00	15.00
Storage Coeff. (min)=	5.13 (ii)	12.31 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.21	0.09

TOTALS

PEAK FLOW (cms)=	0.44	0.52	0.954 (iii)
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TIME TO PEAK	(hrs)=	47.00	47.00	47.00
RUNOFF VOLUME	(mm)=	284.00	256.71	268.99
TOTAL RAINFALL	(mm)=	285.00	285.00	285.00
RUNOFF COEFFICIENT	=	1.00	0.90	0.94

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. 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 (0059)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (4005):	12.54	1.817	47.00	268.99
+ ID2= 2 (4006):	6.57	0.954	47.00	268.99
=====				
ID = 3 (0059):	19.11	2.771	47.00	268.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0059)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0059):	19.11	2.771	47.00	268.99
+ ID2= 2 (4007):	1.30	0.189	47.00	268.99
=====				
ID = 1 (0059):	20.41	2.960	47.00	268.99

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0013)		OVERFLOW IS OFF	
IN= 2---> OUT= 1			
DT= 5.0 min			
OUTFLOW	STORAGE	OUTFLOW	STORAGE
(cms)	(ha.m.)	(cms)	(ha.m.)
0.0000	0.0000	0.1540	0.8217
0.0130	0.0793	0.1640	0.9029
0.0200	0.1352	0.1740	0.9865
0.0250	0.1936	0.1910	1.0725
0.0310	0.2857	0.1990	1.1608
0.0530	0.3174	0.2070	1.2515
0.0770	0.3827	0.2220	1.5383
0.1030	0.5199	0.2290	1.6388
0.1180	0.5919	1.2760	1.7419
0.1310	0.6662	3.2170	1.8500

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0059)	20.410	2.960	47.00	268.99
OUTFLOW: ID= 1 (0013)	20.410	2.914	47.00	268.90

PEAK FLOW REDUCTION [Qout/Qin](%)= 98.45
 TIME SHIFT OF PEAK FLOW (min)= 0.00
 MAXIMUM STORAGE USED (ha.m.)= 1.8338

| ADD HYD (0060) |
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0013):	20.41	2.914	47.00	268.90
+ ID2= 2 (4008):	7.52	0.597	47.00	106.97
=====				
ID = 3 (0060):	27.93	3.512	47.00	225.30

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (0060) |
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0060):	27.93	3.512	47.00	225.30
+ ID2= 2 (0058):	11.67	1.666	47.00	255.55
=====				
ID = 1 (0060):	39.60	5.177	47.00	204.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| RESERVOIR(0015) |
| IN= 2---> OUT= 1 |
DT= 5.0 min

OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.4160	2.3678
0.0500	0.0009	0.4400	3.1856
0.1280	0.0026	0.4620	4.0730
0.1760	0.0078	0.4840	5.0499
0.2260	0.0254	0.5040	6.2129
0.2670	0.0487	0.5140	6.8092
0.3030	0.1996	0.5240	7.4138
0.3350	0.5341	0.5330	8.0259
0.3640	0.9932	0.5430	8.6462
0.3910	1.6326	0.9842	9.2768

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0060)	39.600	5.177	47.00	204.41
OUTFLOW: ID= 1 (0015)	39.600	0.476	49.44	98.89

PEAK FLOW REDUCTION [Qout/Qin](%)= 9.19
TIME SHIFT OF PEAK FLOW (min)=146.67
MAXIMUM STORAGE USED (ha.m.)= 4.6914

**** WARNING : SELECTED ROUTING TIME STEP DENIED.

| CALIB
| NASHYD (4012) |
ID= 1 DT= 5.0 min

Area (ha)= 15.74 Curve Number (CN)= 58.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

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

----- TRANSFORMED HYETOGRAPH -----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03

0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00

5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00

10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 3.006

PEAK FLOW (cms)= 1.819 (i)
TIME TO PEAK (hrs)= 47.000
RUNOFF VOLUME (mm)= 168.670
TOTAL RAINFALL (mm)= 285.001
RUNOFF COEFFICIENT = 0.592

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

CALIB
STANDHYD (4011)
ID= 1 DT= 5.0 min

Area (ha)= 3.84
Total Imp(%)= 70.00 Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	2.69	1.15
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	160.00	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00

1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00

6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00

12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Max.Eff.Inten.(mm/hr)=	53.00	96.38
over (min)	5.00	15.00
Storage Coeff. (min)=	4.37 (ii)	11.53 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.23	0.09

TOTALS

PEAK FLOW (cms)=	0.25	0.31	0.560 (iii)
TIME TO PEAK (hrs)=	47.00	47.00	47.00
RUNOFF VOLUME (mm)=	284.00	263.29	272.61
TOTAL RAINFALL (mm)=	285.00	285.00	285.00
RUNOFF COEFFICIENT =	1.00	0.92	0.96

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 86.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB	Area (ha)= 3.22
STANDHYD (4013)	Total Imp(%)= 70.00
ID= 1 DT= 5.0 min	Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.25	0.97	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	146.52	40.00	
Mannings n =	0.013	0.250	

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

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00

1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00

7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Max.Eff.Inten.(mm/hr)= 53.00
over (min) 5.00

96.26
15.00

Storage Coeff. (min)=	4.14 (ii)	11.31 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.24	0.09

TOTALS

PEAK FLOW (cms)=	0.21	0.26	0.470 (iii)
TIME TO PEAK (hrs)=	47.00	47.00	47.00
RUNOFF VOLUME (mm)=	284.00	261.67	271.72
TOTAL RAINFALL (mm)=	285.00	285.00	285.00
RUNOFF COEFFICIENT =	1.00	0.92	0.95

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

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

CALIB	Area (ha)=	1.48	
STANDHYD (4010)	Total Imp(%)=	70.00	Dir. Conn.(%)= 45.00
ID= 1 DT= 5.0 min			

		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.04	0.44	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	99.33	40.00	
Mannings n =	0.013	0.250	

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

----- TRANSFORMED HYETOGRAPH -----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00

2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00

7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Max.Eff.Inten. (mm/hr)=	53.00	95.83
over (min)	5.00	15.00
Storage Coeff. (min)=	3.28 (ii)	10.46 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.27	0.09

TOTALS

PEAK FLOW (cms)=	0.10	0.12	0.216 (iii)
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TIME TO PEAK	(hrs)=	46.83	47.00	47.00
RUNOFF VOLUME	(mm)=	284.00	256.71	268.99
TOTAL RAINFALL	(mm)=	285.00	285.00	285.00
RUNOFF COEFFICIENT	=	1.00	0.90	0.94

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
NASHYD (4009)	Area (ha)=	8.51	Curve Number (CN)= 36.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

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

----- TRANSFORMED HYETOGRAPH -----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00

3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00

8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 1.625

PEAK FLOW (cms)= 0.676 (i)
TIME TO PEAK (hrs)= 47.000
RUNOFF VOLUME (mm)= 106.965
TOTAL RAINFALL (mm)= 285.001
RUNOFF COEFFICIENT = 0.375

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

ADD HYD (0062)				AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3				(ha)	(cms)	(hrs)	(mm)
ID1=	1	(	4009):	8.51	0.676	47.00	106.97
+ ID2=	2	(	4010):	1.48	0.216	47.00	268.99

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ID = 3 (0062):	9.99	0.891	47.00	130.97
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NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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ADD HYD (0063)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0015):	39.60	0.476	49.44	98.89
+ ID2= 2 (4011):	3.84	0.560	47.00	272.61
=====				
ID = 3 (0063):	43.44	0.983	47.00	114.24

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

ADD HYD (0063)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0063):	43.44	0.983	47.00	114.24
+ ID2= 2 (4012):	15.74	1.819	47.00	168.67
=====				
ID = 1 (0063):	59.18	2.801	47.00	128.72

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

ADD HYD (0063)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0063):	59.18	2.801	47.00	128.72
+ ID2= 2 (4013):	3.22	0.470	47.00	271.72
=====				
ID = 3 (0063):	62.40	3.270	47.00	136.10

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

ADD HYD (0063)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0063):	62.40	3.270	47.00	136.10
+ ID2= 2 (0062):	9.99	0.891	47.00	130.97
=====				
ID = 1 (0063):	72.39	4.161	47.00	135.39

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

=====

CALIB				
NASHYD (2001)	Area (ha)=	29.70	Curve Number (CN)=	71.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
	U.H. Tp(hrs)=	0.20		

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

----- TRANSFORMED HYETOGRAPH -----

TIME	RAIN		TIME	RAIN		TIME	RAIN		TIME	RAIN
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hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00

5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00

10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 5.672

PEAK FLOW (cms)= 3.896 (i)
TIME TO PEAK (hrs)= 47.000
RUNOFF VOLUME (mm)= 203.913
TOTAL RAINFALL (mm)= 285.001
RUNOFF COEFFICIENT = 0.715

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

CALIB
NASHYD (3001)
ID= 1 DT= 5.0 min

Area (ha)= 4.67
Ia (mm)= 5.00
U.H. Tp(hrs)= 0.20
Curve Number (CN)= 71.0
of Linear Res.(N)= 3.00

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00

1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00
3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00

7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00
8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 0.892

PEAK FLOW (cms)= 0.613 (i)

TIME TO PEAK (hrs)= 47.000

RUNOFF VOLUME (mm)= 203.913

TOTAL RAINFALL (mm)= 285.001

RUNOFF COEFFICIENT = 0.715

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

CALIB
NASHYD (1001)
ID= 1 DT= 5.0 min

Area (ha)= 6.23
Ia (mm)= 5.00
U.H. Tp(hrs)= 0.20

Curve Number (CN)= 81.0
of Linear Res.(N)= 3.00

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

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	12.333	2.03	24.583	2.03	36.83	2.03
0.167	0.00	12.417	2.03	24.667	2.03	36.92	2.03
0.250	0.00	12.500	2.03	24.750	2.03	37.00	2.03
0.333	0.00	12.583	2.03	24.833	2.03	37.08	6.00
0.417	0.00	12.667	2.03	24.917	2.03	37.17	6.00
0.500	0.00	12.750	2.03	25.000	2.03	37.25	6.00
0.583	0.00	12.833	2.03	25.083	2.03	37.33	6.00
0.667	0.00	12.917	2.03	25.167	2.03	37.42	6.00
0.750	0.00	13.000	2.03	25.250	2.03	37.50	6.00
0.833	0.00	13.083	2.03	25.333	2.03	37.58	6.00
0.917	0.00	13.167	2.03	25.417	2.03	37.67	6.00
1.000	0.00	13.250	2.03	25.500	2.03	37.75	6.00
1.083	2.03	13.333	2.03	25.583	2.03	37.83	6.00
1.167	2.03	13.417	2.03	25.667	2.03	37.92	6.00
1.250	2.03	13.500	2.03	25.750	2.03	38.00	6.00
1.333	2.03	13.583	2.03	25.833	2.03	38.08	4.00
1.417	2.03	13.667	2.03	25.917	2.03	38.17	4.00
1.500	2.03	13.750	2.03	26.000	2.03	38.25	4.00
1.583	2.03	13.833	2.03	26.083	2.03	38.33	4.00
1.667	2.03	13.917	2.03	26.167	2.03	38.42	4.00
1.750	2.03	14.000	2.03	26.250	2.03	38.50	4.00
1.833	2.03	14.083	2.03	26.333	2.03	38.58	4.00
1.917	2.03	14.167	2.03	26.417	2.03	38.67	4.00
2.000	2.03	14.250	2.03	26.500	2.03	38.75	4.00
2.083	2.03	14.333	2.03	26.583	2.03	38.83	4.00
2.167	2.03	14.417	2.03	26.667	2.03	38.92	4.00
2.250	2.03	14.500	2.03	26.750	2.03	39.00	4.00
2.333	2.03	14.583	2.03	26.833	2.03	39.08	6.00
2.417	2.03	14.667	2.03	26.917	2.03	39.17	6.00
2.500	2.03	14.750	2.03	27.000	2.03	39.25	6.00
2.583	2.03	14.833	2.03	27.083	2.03	39.33	6.00
2.667	2.03	14.917	2.03	27.167	2.03	39.42	6.00
2.750	2.03	15.000	2.03	27.250	2.03	39.50	6.00
2.833	2.03	15.083	2.03	27.333	2.03	39.58	6.00
2.917	2.03	15.167	2.03	27.417	2.03	39.67	6.00
3.000	2.03	15.250	2.03	27.500	2.03	39.75	6.00
3.083	2.03	15.333	2.03	27.583	2.03	39.83	6.00
3.167	2.03	15.417	2.03	27.667	2.03	39.92	6.00
3.250	2.03	15.500	2.03	27.750	2.03	40.00	6.00
3.333	2.03	15.583	2.03	27.833	2.03	40.08	13.00
3.417	2.03	15.667	2.03	27.917	2.03	40.17	13.00

3.500	2.03	15.750	2.03	28.000	2.03	40.25	13.00
3.583	2.03	15.833	2.03	28.083	2.03	40.33	13.00
3.667	2.03	15.917	2.03	28.167	2.03	40.42	13.00
3.750	2.03	16.000	2.03	28.250	2.03	40.50	13.00
3.833	2.03	16.083	2.03	28.333	2.03	40.58	13.00
3.917	2.03	16.167	2.03	28.417	2.03	40.67	13.00
4.000	2.03	16.250	2.03	28.500	2.03	40.75	13.00
4.083	2.03	16.333	2.03	28.583	2.03	40.83	13.00
4.167	2.03	16.417	2.03	28.667	2.03	40.92	13.00
4.250	2.03	16.500	2.03	28.750	2.03	41.00	13.00
4.333	2.03	16.583	2.03	28.833	2.03	41.08	17.00
4.417	2.03	16.667	2.03	28.917	2.03	41.17	17.00
4.500	2.03	16.750	2.03	29.000	2.03	41.25	17.00
4.583	2.03	16.833	2.03	29.083	2.03	41.33	17.00
4.667	2.03	16.917	2.03	29.167	2.03	41.42	17.00
4.750	2.03	17.000	2.03	29.250	2.03	41.50	17.00
4.833	2.03	17.083	2.03	29.333	2.03	41.58	17.00
4.917	2.03	17.167	2.03	29.417	2.03	41.67	17.00
5.000	2.03	17.250	2.03	29.500	2.03	41.75	17.00
5.083	2.03	17.333	2.03	29.583	2.03	41.83	17.00
5.167	2.03	17.417	2.03	29.667	2.03	41.92	17.00
5.250	2.03	17.500	2.03	29.750	2.03	42.00	17.00
5.333	2.03	17.583	2.03	29.833	2.03	42.08	13.00
5.417	2.03	17.667	2.03	29.917	2.03	42.17	13.00
5.500	2.03	17.750	2.03	30.000	2.03	42.25	13.00
5.583	2.03	17.833	2.03	30.083	2.03	42.33	13.00
5.667	2.03	17.917	2.03	30.167	2.03	42.42	13.00
5.750	2.03	18.000	2.03	30.250	2.03	42.50	13.00
5.833	2.03	18.083	2.03	30.333	2.03	42.58	13.00
5.917	2.03	18.167	2.03	30.417	2.03	42.67	13.00
6.000	2.03	18.250	2.03	30.500	2.03	42.75	13.00
6.083	2.03	18.333	2.03	30.583	2.03	42.83	13.00
6.167	2.03	18.417	2.03	30.667	2.03	42.92	13.00
6.250	2.03	18.500	2.03	30.750	2.03	43.00	13.00
6.333	2.03	18.583	2.03	30.833	2.03	43.08	22.99
6.417	2.03	18.667	2.03	30.917	2.03	43.17	23.00
6.500	2.03	18.750	2.03	31.000	2.03	43.25	23.00
6.583	2.03	18.833	2.03	31.083	2.03	43.33	23.00
6.667	2.03	18.917	2.03	31.167	2.03	43.42	23.00
6.750	2.03	19.000	2.03	31.250	2.03	43.50	23.00
6.833	2.03	19.083	2.03	31.333	2.03	43.58	23.00
6.917	2.03	19.167	2.03	31.417	2.03	43.67	23.00
7.000	2.03	19.250	2.03	31.500	2.03	43.75	23.00
7.083	2.03	19.333	2.03	31.583	2.03	43.83	23.00
7.167	2.03	19.417	2.03	31.667	2.03	43.92	23.00
7.250	2.03	19.500	2.03	31.750	2.03	44.00	23.00
7.333	2.03	19.583	2.03	31.833	2.03	44.08	13.01
7.417	2.03	19.667	2.03	31.917	2.03	44.17	13.00
7.500	2.03	19.750	2.03	32.000	2.03	44.25	13.00
7.583	2.03	19.833	2.03	32.083	2.03	44.33	13.00
7.667	2.03	19.917	2.03	32.167	2.03	44.42	13.00
7.750	2.03	20.000	2.03	32.250	2.03	44.50	13.00
7.833	2.03	20.083	2.03	32.333	2.03	44.58	13.00
7.917	2.03	20.167	2.03	32.417	2.03	44.67	13.00
8.000	2.03	20.250	2.03	32.500	2.03	44.75	13.00
8.083	2.03	20.333	2.03	32.583	2.03	44.83	13.00
8.167	2.03	20.417	2.03	32.667	2.03	44.92	13.00
8.250	2.03	20.500	2.03	32.750	2.03	45.00	13.00
8.333	2.03	20.583	2.03	32.833	2.03	45.08	13.00
8.417	2.03	20.667	2.03	32.917	2.03	45.17	13.00
8.500	2.03	20.750	2.03	33.000	2.03	45.25	13.00
8.583	2.03	20.833	2.03	33.083	2.03	45.33	13.00
8.667	2.03	20.917	2.03	33.167	2.03	45.42	13.00
8.750	2.03	21.000	2.03	33.250	2.03	45.50	13.00

8.833	2.03	21.083	2.03	33.333	2.03	45.58	13.00
8.917	2.03	21.167	2.03	33.417	2.03	45.67	13.00
9.000	2.03	21.250	2.03	33.500	2.03	45.75	13.00
9.083	2.03	21.333	2.03	33.583	2.03	45.83	13.00
9.167	2.03	21.417	2.03	33.667	2.03	45.92	13.00
9.250	2.03	21.500	2.03	33.750	2.03	46.00	13.00
9.333	2.03	21.583	2.03	33.833	2.03	46.08	52.94
9.417	2.03	21.667	2.03	33.917	2.03	46.17	53.00
9.500	2.03	21.750	2.03	34.000	2.03	46.25	53.00
9.583	2.03	21.833	2.03	34.083	2.03	46.33	53.00
9.667	2.03	21.917	2.03	34.167	2.03	46.42	53.00
9.750	2.03	22.000	2.03	34.250	2.03	46.50	53.00
9.833	2.03	22.083	2.03	34.333	2.03	46.58	53.00
9.917	2.03	22.167	2.03	34.417	2.03	46.67	53.00
10.000	2.03	22.250	2.03	34.500	2.03	46.75	53.00
10.083	2.03	22.333	2.03	34.583	2.03	46.83	53.00
10.167	2.03	22.417	2.03	34.667	2.03	46.92	53.00
10.250	2.03	22.500	2.03	34.750	2.03	47.00	53.00
10.333	2.03	22.583	2.03	34.833	2.03	47.08	38.02
10.417	2.03	22.667	2.03	34.917	2.03	47.17	38.00
10.500	2.03	22.750	2.03	35.000	2.03	47.25	38.00
10.583	2.03	22.833	2.03	35.083	2.03	47.33	38.00
10.667	2.03	22.917	2.03	35.167	2.03	47.42	38.00
10.750	2.03	23.000	2.03	35.250	2.03	47.50	38.00
10.833	2.03	23.083	2.03	35.333	2.03	47.58	38.00
10.917	2.03	23.167	2.03	35.417	2.03	47.67	38.00
11.000	2.03	23.250	2.03	35.500	2.03	47.75	38.00
11.083	2.03	23.333	2.03	35.583	2.03	47.83	38.00
11.167	2.03	23.417	2.03	35.667	2.03	47.92	38.00
11.250	2.03	23.500	2.03	35.750	2.03	48.00	38.00
11.333	2.03	23.583	2.03	35.833	2.03	48.08	13.04
11.417	2.03	23.667	2.03	35.917	2.03	48.17	13.00
11.500	2.03	23.750	2.03	36.000	2.03	48.25	13.00
11.583	2.03	23.833	2.03	36.083	2.03	48.33	13.00
11.667	2.03	23.917	2.03	36.167	2.03	48.42	13.00
11.750	2.03	24.000	2.03	36.250	2.03	48.50	13.00
11.833	2.03	24.083	2.03	36.333	2.03	48.58	13.00
11.917	2.03	24.167	2.03	36.417	2.03	48.67	13.00
12.000	2.03	24.250	2.03	36.500	2.03	48.75	13.00
12.083	2.03	24.333	2.03	36.583	2.03	48.83	13.00
12.167	2.03	24.417	2.03	36.667	2.03	48.92	13.00
12.250	2.03	24.500	2.03	36.750	2.03	49.00	13.00

Unit Hyd Qpeak (cms)= 1.190

PEAK FLOW (cms)= 0.871 (i)
TIME TO PEAK (hrs)= 47.000
RUNOFF VOLUME (mm)= 230.435
TOTAL RAINFALL (mm)= 285.001
RUNOFF COEFFICIENT = 0.809

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

ADD HYD (0065)					AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1	+	2	=	3				
ID1= 1	(	1001)	:		6.23	0.871	47.00	230.43
+ ID2= 2	(	2001)	:		29.70	3.896	47.00	203.91
=====								
ID = 3	(	0065)	:		35.93	4.767	47.00	208.51

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0065)				
3 + 2 = 1				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0065):	35.93	4.767	47.00	208.51
+ ID2= 2 (3001):	4.67	0.613	47.00	203.91
=====				
ID = 1 (0065):	40.60	5.380	47.00	207.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0065)				
1 + 2 = 3				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0065):	40.60	5.380	47.00	207.98
+ ID2= 2 (0063):	72.39	4.161	47.00	135.39
=====				
ID = 3 (0065):	112.99	9.538	47.00	161.47

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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V      V      I      SSSSS  U      U      A      L      (v 6.2.2020)
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

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    000      TTTTT  TTTTT  H      H      Y      Y      M      M      000      TM
O      O      T      T      H      H      Y Y      MM MM  O      O
O      O      T      T      H      H      Y      M      M      O      O
    000      T      T      H      H      Y      M      M      000

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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\SRastgou\AppData\Local\Civica\XH5\3c86505c-fc9b-4fbe-887a-385e4dcec422\ce7dd663-afd1-4f16-ae30-1e8da4b83dcb\sce
 Summary filename: C:\Users\SRastgou\AppData\Local\Civica\XH5\3c86505c-fc9b-4fbe-887a-385e4dcec422\ce7dd663-afd1-4f16-ae30-1e8da4b83dcb\sce

DATE: 06/24/2026

TIME: 08:45:46

USER:

COMMENTS: _____

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*****
** SIMULATION : TCW 100yr **
*****

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READ STORM	Filename: C:\Users\SRastgou\AppData\Local\Temp\b937133f-265a-44f7-ba62-35950954982b\fa534e50
Ptotal= 68.16 mm	Comments: TCW Fergus Shand Dam 100yr

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.08	0.00	12.17	0.00	18.25	0.00
0.08	295.00	6.17	0.00	12.25	0.00	18.33	0.00
0.17	182.70	6.25	0.00	12.33	0.00	18.42	0.00
0.25	138.10	6.33	0.00	12.42	0.00	18.50	0.00
0.33	0.00	6.42	0.00	12.50	0.00	18.58	0.00
0.42	0.00	6.50	0.00	12.58	0.00	18.67	0.00
0.50	85.50	6.58	0.00	12.67	0.00	18.75	0.00
0.58	0.00	6.67	0.00	12.75	0.00	18.83	0.00
0.67	0.00	6.75	0.00	12.83	0.00	18.92	0.00
0.75	0.00	6.83	0.00	12.92	0.00	19.00	0.00
0.83	0.00	6.92	0.00	13.00	0.00	19.08	0.00
0.92	0.00	7.00	0.00	13.08	0.00	19.17	0.00

1.00	53.00	7.08	0.00	13.17	0.00	19.25	0.00
1.08	0.00	7.17	0.00	13.25	0.00	19.33	0.00
1.17	0.00	7.25	0.00	13.33	0.00	19.42	0.00
1.25	0.00	7.33	0.00	13.42	0.00	19.50	0.00
1.33	0.00	7.42	0.00	13.50	0.00	19.58	0.00
1.42	0.00	7.50	0.00	13.58	0.00	19.67	0.00
1.50	0.00	7.58	0.00	13.67	0.00	19.75	0.00
1.58	0.00	7.67	0.00	13.75	0.00	19.83	0.00
1.67	0.00	7.75	0.00	13.83	0.00	19.92	0.00
1.75	0.00	7.83	0.00	13.92	0.00	20.00	0.00
1.83	0.00	7.92	0.00	14.00	0.00	20.08	0.00
1.92	0.00	8.00	0.00	14.08	0.00	20.17	0.00
2.00	32.80	8.08	0.00	14.17	0.00	20.25	0.00
2.08	0.00	8.17	0.00	14.25	0.00	20.33	0.00
2.17	0.00	8.25	0.00	14.33	0.00	20.42	0.00
2.25	0.00	8.33	0.00	14.42	0.00	20.50	0.00
2.33	0.00	8.42	0.00	14.50	0.00	20.58	0.00
2.42	0.00	8.50	0.00	14.58	0.00	20.67	0.00
2.50	0.00	8.58	0.00	14.67	0.00	20.75	0.00
2.58	0.00	8.67	0.00	14.75	0.00	20.83	0.00
2.67	0.00	8.75	0.00	14.83	0.00	20.92	0.00
2.75	0.00	8.83	0.00	14.92	0.00	21.00	0.00
2.83	0.00	8.92	0.00	15.00	0.00	21.08	0.00
2.92	0.00	9.00	0.00	15.08	0.00	21.17	0.00
3.00	0.00	9.08	0.00	15.17	0.00	21.25	0.00
3.08	0.00	9.17	0.00	15.25	0.00	21.33	0.00
3.17	0.00	9.25	0.00	15.33	0.00	21.42	0.00
3.25	0.00	9.33	0.00	15.42	0.00	21.50	0.00
3.33	0.00	9.42	0.00	15.50	0.00	21.58	0.00
3.42	0.00	9.50	0.00	15.58	0.00	21.67	0.00
3.50	0.00	9.58	0.00	15.67	0.00	21.75	0.00
3.58	0.00	9.67	0.00	15.75	0.00	21.83	0.00
3.67	0.00	9.75	0.00	15.83	0.00	21.92	0.00
3.75	0.00	9.83	0.00	15.92	0.00	22.00	0.00
3.83	0.00	9.92	0.00	16.00	0.00	22.08	0.00
3.92	0.00	10.00	0.00	16.08	0.00	22.17	0.00
4.00	0.00	10.08	0.00	16.17	0.00	22.25	0.00
4.08	0.00	10.17	0.00	16.25	0.00	22.33	0.00
4.17	0.00	10.25	0.00	16.33	0.00	22.42	0.00
4.25	0.00	10.33	0.00	16.42	0.00	22.50	0.00
4.33	0.00	10.42	0.00	16.50	0.00	22.58	0.00
4.42	0.00	10.50	0.00	16.58	0.00	22.67	0.00
4.50	0.00	10.58	0.00	16.67	0.00	22.75	0.00
4.58	0.00	10.67	0.00	16.75	0.00	22.83	0.00
4.67	0.00	10.75	0.00	16.83	0.00	22.92	0.00
4.75	0.00	10.83	0.00	16.92	0.00	23.00	0.00
4.83	0.00	10.92	0.00	17.00	0.00	23.08	0.00
4.92	0.00	11.00	0.00	17.08	0.00	23.17	0.00
5.00	0.00	11.08	0.00	17.17	0.00	23.25	0.00
5.08	0.00	11.17	0.00	17.25	0.00	23.33	0.00
5.17	0.00	11.25	0.00	17.33	0.00	23.42	0.00
5.25	0.00	11.33	0.00	17.42	0.00	23.50	0.00
5.33	0.00	11.42	0.00	17.50	0.00	23.58	0.00
5.42	0.00	11.50	0.00	17.58	0.00	23.67	0.00
5.50	0.00	11.58	0.00	17.67	0.00	23.75	0.00
5.58	0.00	11.67	0.00	17.75	0.00	23.83	0.00
5.67	0.00	11.75	0.00	17.83	0.00	23.92	0.00
5.75	0.00	11.83	0.00	17.92	0.00	24.00	5.90
5.83	0.00	11.92	0.00	18.00	0.00		
5.92	0.00	12.00	9.50	18.08	0.00		
6.00	15.40	12.08	0.00	18.17	0.00		

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| CALIB                               |
| NASHYD ( 4003)                     |
| ID= 1 DT= 5.0 min                  |
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Area      (ha)= 3.80   Curve Number (CN)= 98.0
Ia        (mm)= 5.00   # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

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Unit Hyd Qpeak (cms)= 0.726

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PEAK FLOW      (cms)= 1.040 (i)
TIME TO PEAK   (hrs)= 0.417
RUNOFF VOLUME  (mm)= 58.257
TOTAL RAINFALL (mm)= 68.158
RUNOFF COEFFICIENT = 0.855

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

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-----
| ROUTEPIPE( 0017)                   |
| IN= 2---> OUT= 1                  |
| DT= 2.0 min                       |
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PIPE Number      = 1.00
Diameter (mm)= 975.00
Length (m)= 892.00
Slope (m/m)= 0.002
Manning n        = 0.013

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**** WARNING: MINIMUM PIPE SIZE REQUIRED = 1043.19 (mm) FOR FREE FLOW.
THIS SIZE WAS USED IN THE ROUTING.
THE CAPACITY OF THIS PIPE = 1.04 (cms)

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

DEPTH (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME min
0.05	.154E+02	0.0	0.32	46.00
0.11	.428E+02	0.0	0.50	29.48
0.16	.772E+02	0.1	0.65	22.91
0.22	.117E+03	0.1	0.77	19.27
0.27	.160E+03	0.2	0.88	16.93
0.33	.207E+03	0.2	0.97	15.31
0.38	.255E+03	0.3	1.05	14.11
0.44	.305E+03	0.4	1.13	13.21
0.49	.356E+03	0.5	1.19	12.51
0.55	.407E+03	0.6	1.24	11.96
0.60	.458E+03	0.7	1.29	11.53
0.66	.507E+03	0.8	1.33	11.21
0.71	.556E+03	0.8	1.36	10.97
0.77	.602E+03	0.9	1.38	10.81
0.82	.646E+03	1.0	1.39	10.72
0.88	.685E+03	1.1	1.39	10.73
0.93	.720E+03	1.1	1.37	10.85
0.99	.747E+03	1.1	1.34	11.13
1.04	.762E+03	1.0	1.22	12.21

<----- hydrograph ----->				<-pipe / channel->	
AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (4003)	3.80	1.04	0.42	58.26	0.86
OUTFLOW: ID= 1 (0017)	3.80	0.76	0.50	56.91	0.66

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| CALIB                               |
| STANDHYD ( 4004)                   |
| ID= 1 DT= 5.0 min                  |
|-----|

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Area      (ha)= 0.93
Total Imp(%)= 70.00   Dir. Conn.(%)= 45.00

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		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.65	0.28	
Dep. Storage	(mm)=	1.00	1.50	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	78.74	40.00	
Mannings n	=	0.013	0.250	
Max.Eff.Inten.(mm/hr)=		283.00	240.95	
over (min)		5.00	10.00	
Storage Coeff. (min)=	1.46 (ii)		5.42 (ii)	
Unit Hyd. Tpeak (min)=	5.00		10.00	
Unit Hyd. peak (cms)=	0.33		0.16	
				TOTALS
PEAK FLOW (cms)=	0.32	0.16	0.359 (iii)	
TIME TO PEAK (hrs)=	0.17	0.33	0.17	
RUNOFF VOLUME (mm)=	67.16	46.39	55.73	
TOTAL RAINFALL (mm)=	68.16	68.16	68.16	
RUNOFF COEFFICIENT =	0.99	0.68	0.82	

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (4001)	Area (ha)= 1.74		
ID= 1 DT= 5.0 min	Total Imp(%)= 70.00	Dir. Conn.(%)= 45.00	

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	1.22	0.52	
Dep. Storage	(mm)=	1.00	1.50	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	107.70	40.00	
Mannings n	=	0.013	0.250	
Max.Eff.Inten.(mm/hr)=		283.00	248.23	
over (min)		5.00	10.00	
Storage Coeff. (min)=	1.76 (ii)		5.72 (ii)	
Unit Hyd. Tpeak (min)=	5.00		10.00	
Unit Hyd. peak (cms)=	0.32		0.15	
				TOTALS
PEAK FLOW (cms)=	0.58	0.30	0.657 (iii)	
TIME TO PEAK (hrs)=	0.17	0.33	0.17	
RUNOFF VOLUME (mm)=	67.16	47.38	56.28	
TOTAL RAINFALL (mm)=	68.16	68.16	68.16	
RUNOFF COEFFICIENT =	0.99	0.70	0.83	

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 83.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0057)	OVERFLOW IS OFF
IN= 2---> OUT= 1	

DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0190	0.0361
	0.0050	0.0026	0.3920	0.0419
	0.0080	0.0056	0.4170	0.0481
	0.0100	0.0089	0.4400	0.0547
	0.0120	0.0126	0.4620	0.0617
	0.0140	0.0166	0.4820	0.0691
	0.0150	0.0209	0.5020	0.0768
	0.0170	0.0256	1.1750	0.0850
	0.0180	0.0307	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (4001)	1.740	0.657	0.17	56.28
OUTFLOW: ID= 1 (0057)	1.740	0.397	0.42	56.21

PEAK FLOW REDUCTION [Qout/Qin](%)= 60.34
 TIME SHIFT OF PEAK FLOW (min)= 15.00
 MAXIMUM STORAGE USED (ha.m.)= 0.0555

CALIB				
NASHYD (4002)	Area (ha)=	5.20	Curve Number (CN)=	83.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
	U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 0.993

PEAK FLOW (cms)= 0.770 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 34.566
 TOTAL RAINFALL (mm)= 68.158
 RUNOFF COEFFICIENT = 0.507

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

ADD HYD (0058)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0017):	3.80	0.756	0.50	56.91
+ ID2= 2 (4002):	5.20	0.770	0.42	34.57
=====				
ID = 3 (0058):	9.00	1.469	0.42	44.00

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0058)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0058):	9.00	1.469	0.42	44.00
+ ID2= 2 (4004):	0.93	0.359	0.17	55.73
=====				
ID = 1 (0058):	9.93	1.599	0.42	45.10

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| ADD HYD ( 0058) |
| 1 + 2 = 3 |
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	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0058):	9.93	1.599	0.42	45.10
+ ID2= 2 (0057):	1.74	0.397	0.42	56.21
=====				
ID = 3 (0058):	11.67	1.996	0.42	46.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| CALIB |
| NASHYD ( 4008) |
| ID= 1 DT= 5.0 min |
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Area (ha)=	7.52	Curve Number (CN)=	36.0
Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 1.436

PEAK FLOW (cms)=	0.223 (i)
TIME TO PEAK (hrs)=	0.417
RUNOFF VOLUME (mm)=	7.735
TOTAL RAINFALL (mm)=	68.158
RUNOFF COEFFICIENT =	0.113

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

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| CALIB |
| STANDHYD ( 4005) |
| ID= 1 DT= 5.0 min |
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Area (ha)=	12.54		
Total Imp(%)=	70.00	Dir. Conn.(%)=	45.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	8.78	3.76
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	289.14	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	283.00	240.95
over (min)	5.00	10.00
Storage Coeff. (min)=	3.19 (ii)	7.14 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.27	0.14

TOTALS

PEAK FLOW (cms)=	3.51	1.98	4.493 (iii)
TIME TO PEAK (hrs)=	0.17	0.33	0.25
RUNOFF VOLUME (mm)=	67.16	46.39	55.74
TOTAL RAINFALL (mm)=	68.16	68.16	68.16
RUNOFF COEFFICIENT =	0.99	0.68	0.82

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. 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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| CALIB |
| STANDHYD ( 4007) |
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Area (ha)=	1.30
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|ID= 1 DT= 5.0 min | Total Imp(%)= 70.00 Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.91	0.39	
Dep. Storage	(mm)=	1.00	1.50	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	93.09	40.00	
Mannings n	=	0.013	0.250	
Max.Eff.Inten.(mm/hr)=		283.00	240.95	
over (min)		5.00	10.00	
Storage Coeff. (min)=		1.61 (ii)	5.57 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.32	0.16	
				TOTALS
PEAK FLOW	(cms)=	0.44	0.22	0.496 (iii)
TIME TO PEAK	(hrs)=	0.17	0.33	0.17
RUNOFF VOLUME	(mm)=	67.16	46.39	55.73
TOTAL RAINFALL	(mm)=	68.16	68.16	68.16
RUNOFF COEFFICIENT	=	0.99	0.68	0.82

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB				
STANDHYD (4006)	Area	(ha)=	6.57	
ID= 1 DT= 5.0 min	Total Imp(%)=	70.00	Dir. Conn.(%)=	45.00

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	4.60	1.97	
Dep. Storage	(mm)=	1.00	1.50	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	209.28	40.00	
Mannings n	=	0.013	0.250	
Max.Eff.Inten.(mm/hr)=		283.00	240.95	
over (min)		5.00	10.00	
Storage Coeff. (min)=		2.62 (ii)	6.58 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.29	0.14	
				TOTALS
PEAK FLOW	(cms)=	1.98	1.07	2.390 (iii)
TIME TO PEAK	(hrs)=	0.17	0.33	0.25
RUNOFF VOLUME	(mm)=	67.16	46.39	55.74
TOTAL RAINFALL	(mm)=	68.16	68.16	68.16
RUNOFF COEFFICIENT	=	0.99	0.68	0.82

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. 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 (0059) |
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (4005):	12.54	4.493	0.25	55.74
+ ID2= 2 (4006):	6.57	2.390	0.25	55.74
=====				
ID = 3 (0059):	19.11	6.883	0.25	55.74

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (0059) |
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0059):	19.11	6.883	0.25	55.74
+ ID2= 2 (4007):	1.30	0.496	0.17	55.73
=====				
ID = 1 (0059):	20.41	7.363	0.25	55.73

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| RESERVOIR(0013) |
| IN= 2---> OUT= 1 |
DT= 5.0 min

OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.1540	0.8217
0.0130	0.0793	0.1640	0.9029
0.0200	0.1352	0.1740	0.9865
0.0250	0.1936	0.1910	1.0725
0.0310	0.2857	0.1990	1.1608
0.0530	0.3174	0.2070	1.2515
0.0770	0.3827	0.2220	1.5383
0.1030	0.5199	0.2290	1.6388
0.1180	0.5919	1.2760	1.7419
0.1310	0.6662	3.2170	1.8500

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0059)	20.410	7.363	0.25	55.73
OUTFLOW: ID= 1 (0013)	20.410	0.172	1.33	55.66

PEAK FLOW REDUCTION [Qout/Qin](%)= 2.33
TIME SHIFT OF PEAK FLOW (min)= 65.00
MAXIMUM STORAGE USED (ha.m.)= 1.0271

| ADD HYD (0060) |
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0013):	20.41	0.172	1.33	55.66
+ ID2= 2 (4008):	7.52	0.223	0.42	7.74
=====				
ID = 3 (0060):	27.93	0.356	0.42	42.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0060)

3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0060):	27.93	0.356	0.42	42.76
+ ID2= 2 (0058):	11.67	1.996	0.42	46.76
=====				
ID = 1 (0060):	39.60	2.351	0.42	42.67

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0015)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min				
	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.4160	2.3678
	0.0500	0.0009	0.4400	3.1856
	0.1280	0.0026	0.4620	4.0730
	0.1760	0.0078	0.4840	5.0499
	0.2260	0.0254	0.5040	6.2129
	0.2670	0.0487	0.5140	6.8092
	0.3030	0.1996	0.5240	7.4138
	0.3350	0.5341	0.5330	8.0259
	0.3640	0.9932	0.5430	8.6462
	0.3910	1.6326	0.9842	9.2768

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0060)	39.600	2.351	0.42	42.67
OUTFLOW: ID= 1 (0015)	39.600	0.324	1.56	42.66

PEAK FLOW REDUCTION [Qout/Qin](%)= 13.76
TIME SHIFT OF PEAK FLOW (min)= 68.33
MAXIMUM STORAGE USED (ha.m.)= 0.4192

**** WARNING : SELECTED ROUTING TIME STEP DENIED.

CALIB		
NASHYD (4012)	Area (ha)= 15.74	Curve Number (CN)= 58.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20	

Unit Hyd Qpeak (cms)= 3.006

PEAK FLOW (cms)= 1.007 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 16.113
TOTAL RAINFALL (mm)= 68.158
RUNOFF COEFFICIENT = 0.236

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

CALIB		
STANDHYD (4011)	Area (ha)= 3.84	
ID= 1 DT= 5.0 min	Total Imp(%)= 70.00	Dir. Conn.(%)= 45.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.69	1.15
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	160.00	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	283.00	271.72	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.23 (ii)	6.19 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.30	0.15	
			TOTALS
PEAK FLOW (cms)=	1.21	0.70	1.476 (iii)
TIME TO PEAK (hrs)=	0.17	0.33	0.25
RUNOFF VOLUME (mm)=	67.16	50.44	57.97
TOTAL RAINFALL (mm)=	68.16	68.16	68.16
RUNOFF COEFFICIENT =	0.99	0.74	0.85

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 86.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (4013)	Area (ha)= 3.22		
ID= 1 DT= 5.0 min	Total Imp(%)= 70.00	Dir. Conn.(%)= 45.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.25	0.97	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	146.52	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	283.00	263.60	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.12 (ii)	6.08 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.15	
			TOTALS
PEAK FLOW (cms)=	1.03	0.58	1.225 (iii)
TIME TO PEAK (hrs)=	0.17	0.33	0.25
RUNOFF VOLUME (mm)=	67.16	49.40	57.39
TOTAL RAINFALL (mm)=	68.16	68.16	68.16
RUNOFF COEFFICIENT =	0.99	0.72	0.84

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

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

CALIB			
STANDHYD (4010)	Area (ha)= 1.48		
ID= 1 DT= 5.0 min	Total Imp(%)= 70.00	Dir. Conn.(%)= 45.00	

		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.04	0.44	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	

Length	(m)=	99.33	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		283.00	240.95
over (min)		5.00	10.00
Storage Coeff. (min)=	1.68 (ii)	5.64 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.15	

TOTALS

PEAK FLOW	(cms)=	0.50	0.25	0.561 (iii)
TIME TO PEAK	(hrs)=	0.17	0.33	0.17
RUNOFF VOLUME	(mm)=	67.16	46.39	55.73
TOTAL RAINFALL	(mm)=	68.16	68.16	68.16
RUNOFF COEFFICIENT	=	0.99	0.68	0.82

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
NASHYD (4009)	Area (ha)=	8.51	Curve Number (CN)= 36.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 1.625

PEAK FLOW	(cms)=	0.253 (i)
TIME TO PEAK	(hrs)=	0.417
RUNOFF VOLUME	(mm)=	7.735
TOTAL RAINFALL	(mm)=	68.158
RUNOFF COEFFICIENT	=	0.113

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

ADD HYD (0062)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (4009):	8.51	0.253	0.42	7.74
+ ID2= 2 (4010):	1.48	0.561	0.17	55.73
ID = 3 (0062):	9.99	0.732	0.33	14.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0063)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0015):	39.60	0.324	1.56	42.66
+ ID2= 2 (4011):	3.84	1.476	0.25	57.97
ID = 3 (0063):	43.44	1.698	0.25	44.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (0063) |
| 3 + 2 = 1 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0063):	43.44	1.698	0.25	44.02
+ ID2= 2 (4012):	15.74	1.007	0.42	16.11
=====				
ID = 1 (0063):	59.18	2.544	0.33	36.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (0063) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0063):	59.18	2.544	0.33	36.59
+ ID2= 2 (4013):	3.22	1.225	0.25	57.39
=====				
ID = 3 (0063):	62.40	3.699	0.33	37.67

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (0063) |
| 3 + 2 = 1 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0063):	62.40	3.699	0.33	37.67
+ ID2= 2 (0062):	9.99	0.732	0.33	14.85
=====				
ID = 1 (0063):	72.39	4.432	0.33	34.52

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| CALIB
| NASHYD (2001) |
| ID= 1 DT= 5.0 min |

Area (ha)=	29.70	Curve Number (CN)=	71.0
Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 5.672

PEAK FLOW (cms)= 2.902 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 23.854
TOTAL RAINFALL (mm)= 68.158
RUNOFF COEFFICIENT = 0.350

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

| CALIB
| NASHYD (3001) |
| ID= 1 DT= 5.0 min |

Area (ha)=	4.67	Curve Number (CN)=	71.0
Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 0.892

PEAK FLOW (cms)= 0.456 (i)
TIME TO PEAK (hrs)= 0.417

RUNOFF VOLUME (mm)= 23.854
TOTAL RAINFALL (mm)= 68.158
RUNOFF COEFFICIENT = 0.350

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

CALIB			
NASHYD (1001)	Area (ha)=	6.23	Curve Number (CN)= 81.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 1.190

PEAK FLOW (cms)= 0.858 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 32.438
TOTAL RAINFALL (mm)= 68.158
RUNOFF COEFFICIENT = 0.476

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

ADD HYD (0065)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (1001):	6.23	0.858	0.42	32.44
+ ID2= 2 (2001):	29.70	2.902	0.42	23.85
=====				
ID = 3 (0065):	35.93	3.760	0.42	25.34

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0065)	AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0065):	35.93	3.760	0.42	25.34
+ ID2= 2 (3001):	4.67	0.456	0.42	23.85
=====				
ID = 1 (0065):	40.60	4.217	0.42	25.17

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0065)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0065):	40.60	4.217	0.42	25.17
+ ID2= 2 (0063):	72.39	4.432	0.33	34.52
=====				
ID = 3 (0065):	112.99	8.176	0.33	31.16

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

=====
=====
V      V      I      SSSSS  U      U      A      L      (v 6.2.2020)
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

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    000      TTTTT  TTTTT  H      H      Y      Y      M      M      000      TM
O      O      T      T      H      H      Y Y      MM MM  O      O
O      O      T      T      H      H      Y      M      M      O      O
    000      T      T      H      H      Y      M      M      000

```

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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\SRastgou\AppData\Local\Civica\XH5\3c86505c-fc9b-4fbe-887a-385e4dcec422\b6931a21-069e-490a-9f97-128201e4a280\sce
 Summary filename: C:\Users\SRastgou\AppData\Local\Civica\XH5\3c86505c-fc9b-4fbe-887a-385e4dcec422\b6931a21-069e-490a-9f97-128201e4a280\sce

DATE: 06/24/2026

TIME: 08:47:01

USER:

COMMENTS: _____

```

-----
*****
** SIMULATION : TCW 50yr                      **
*****

```

READ STORM	Filename: C:\Users\SRastgou\AppData\Local\Temp\00bdeb80-566e-4cc5-a0f2-610c403661e4\0817af1e
Ptotal= 62.33 mm	Comments: TCW Fergus Shand Dam 50yr

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.08	0.00	12.17	0.00	18.25	0.00
0.08	269.60	6.17	0.00	12.25	0.00	18.33	0.00
0.17	167.10	6.25	0.00	12.33	0.00	18.42	0.00
0.25	126.30	6.33	0.00	12.42	0.00	18.50	0.00
0.33	0.00	6.42	0.00	12.50	0.00	18.58	0.00
0.42	0.00	6.50	0.00	12.58	0.00	18.67	0.00
0.50	78.20	6.58	0.00	12.67	0.00	18.75	0.00
0.58	0.00	6.67	0.00	12.75	0.00	18.83	0.00
0.67	0.00	6.75	0.00	12.83	0.00	18.92	0.00
0.75	0.00	6.83	0.00	12.92	0.00	19.00	0.00
0.83	0.00	6.92	0.00	13.00	0.00	19.08	0.00
0.92	0.00	7.00	0.00	13.08	0.00	19.17	0.00

1.00	48.50	7.08	0.00	13.17	0.00	19.25	0.00
1.08	0.00	7.17	0.00	13.25	0.00	19.33	0.00
1.17	0.00	7.25	0.00	13.33	0.00	19.42	0.00
1.25	0.00	7.33	0.00	13.42	0.00	19.50	0.00
1.33	0.00	7.42	0.00	13.50	0.00	19.58	0.00
1.42	0.00	7.50	0.00	13.58	0.00	19.67	0.00
1.50	0.00	7.58	0.00	13.67	0.00	19.75	0.00
1.58	0.00	7.67	0.00	13.75	0.00	19.83	0.00
1.67	0.00	7.75	0.00	13.83	0.00	19.92	0.00
1.75	0.00	7.83	0.00	13.92	0.00	20.00	0.00
1.83	0.00	7.92	0.00	14.00	0.00	20.08	0.00
1.92	0.00	8.00	0.00	14.08	0.00	20.17	0.00
2.00	30.00	8.08	0.00	14.17	0.00	20.25	0.00
2.08	0.00	8.17	0.00	14.25	0.00	20.33	0.00
2.17	0.00	8.25	0.00	14.33	0.00	20.42	0.00
2.25	0.00	8.33	0.00	14.42	0.00	20.50	0.00
2.33	0.00	8.42	0.00	14.50	0.00	20.58	0.00
2.42	0.00	8.50	0.00	14.58	0.00	20.67	0.00
2.50	0.00	8.58	0.00	14.67	0.00	20.75	0.00
2.58	0.00	8.67	0.00	14.75	0.00	20.83	0.00
2.67	0.00	8.75	0.00	14.83	0.00	20.92	0.00
2.75	0.00	8.83	0.00	14.92	0.00	21.00	0.00
2.83	0.00	8.92	0.00	15.00	0.00	21.08	0.00
2.92	0.00	9.00	0.00	15.08	0.00	21.17	0.00
3.00	0.00	9.08	0.00	15.17	0.00	21.25	0.00
3.08	0.00	9.17	0.00	15.25	0.00	21.33	0.00
3.17	0.00	9.25	0.00	15.33	0.00	21.42	0.00
3.25	0.00	9.33	0.00	15.42	0.00	21.50	0.00
3.33	0.00	9.42	0.00	15.50	0.00	21.58	0.00
3.42	0.00	9.50	0.00	15.58	0.00	21.67	0.00
3.50	0.00	9.58	0.00	15.67	0.00	21.75	0.00
3.58	0.00	9.67	0.00	15.75	0.00	21.83	0.00
3.67	0.00	9.75	0.00	15.83	0.00	21.92	0.00
3.75	0.00	9.83	0.00	15.92	0.00	22.00	0.00
3.83	0.00	9.92	0.00	16.00	0.00	22.08	0.00
3.92	0.00	10.00	0.00	16.08	0.00	22.17	0.00
4.00	0.00	10.08	0.00	16.17	0.00	22.25	0.00
4.08	0.00	10.17	0.00	16.25	0.00	22.33	0.00
4.17	0.00	10.25	0.00	16.33	0.00	22.42	0.00
4.25	0.00	10.33	0.00	16.42	0.00	22.50	0.00
4.33	0.00	10.42	0.00	16.50	0.00	22.58	0.00
4.42	0.00	10.50	0.00	16.58	0.00	22.67	0.00
4.50	0.00	10.58	0.00	16.67	0.00	22.75	0.00
4.58	0.00	10.67	0.00	16.75	0.00	22.83	0.00
4.67	0.00	10.75	0.00	16.83	0.00	22.92	0.00
4.75	0.00	10.83	0.00	16.92	0.00	23.00	0.00
4.83	0.00	10.92	0.00	17.00	0.00	23.08	0.00
4.92	0.00	11.00	0.00	17.08	0.00	23.17	0.00
5.00	0.00	11.08	0.00	17.17	0.00	23.25	0.00
5.08	0.00	11.17	0.00	17.25	0.00	23.33	0.00
5.17	0.00	11.25	0.00	17.33	0.00	23.42	0.00
5.25	0.00	11.33	0.00	17.42	0.00	23.50	0.00
5.33	0.00	11.42	0.00	17.50	0.00	23.58	0.00
5.42	0.00	11.50	0.00	17.58	0.00	23.67	0.00
5.50	0.00	11.58	0.00	17.67	0.00	23.75	0.00
5.58	0.00	11.67	0.00	17.75	0.00	23.83	0.00
5.67	0.00	11.75	0.00	17.83	0.00	23.92	0.00
5.75	0.00	11.83	0.00	17.92	0.00	24.00	5.40
5.83	0.00	11.92	0.00	18.00	0.00		
5.92	0.00	12.00	8.70	18.08	0.00		
6.00	14.10	12.08	0.00	18.17	0.00		

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-----
| CALIB                               |
| NASHYD ( 4003)                     |
| ID= 1 DT= 5.0 min                  |
|-----

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```

Area      (ha)= 3.80   Curve Number (CN)= 98.0
Ia        (mm)= 5.00   # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

```

Unit Hyd Qpeak (cms)= 0.726

```

PEAK FLOW      (cms)= 0.933 (i)
TIME TO PEAK   (hrs)= 0.417
RUNOFF VOLUME  (mm)= 52.471
TOTAL RAINFALL (mm)= 62.325
RUNOFF COEFFICIENT = 0.842

```

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

```

-----
| ROUTEPIPE( 0017)                   |
| IN= 2---> OUT= 1                   |
| DT= 2.0 min                        |
|-----

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```

PIPE Number    = 1.00
Diameter       (mm)= 975.00
Length        (m)= 892.00
Slope         (m/m)= 0.002
Manning n     = 0.013

```

**** WARNING: MINIMUM PIPE SIZE REQUIRED = 1001.95 (mm) FOR FREE FLOW.
THIS SIZE WAS USED IN THE ROUTING.
THE CAPACITY OF THIS PIPE = 0.93 (cms)

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

DEPTH (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME min
0.05	.142E+02	0.0	0.31	47.25
0.11	.395E+02	0.0	0.49	30.28
0.16	.713E+02	0.1	0.63	23.53
0.21	.108E+03	0.1	0.75	19.79
0.26	.148E+03	0.1	0.85	17.39
0.32	.191E+03	0.2	0.95	15.72
0.37	.235E+03	0.3	1.03	14.50
0.42	.281E+03	0.3	1.10	13.57
0.47	.328E+03	0.4	1.16	12.85
0.53	.375E+03	0.5	1.21	12.29
0.58	.422E+03	0.6	1.25	11.85
0.63	.468E+03	0.7	1.29	11.51
0.69	.513E+03	0.8	1.32	11.26
0.74	.556E+03	0.8	1.34	11.10
0.79	.596E+03	0.9	1.35	11.02
0.84	.632E+03	1.0	1.35	11.02
0.90	.664E+03	1.0	1.33	11.14
0.95	.689E+03	1.0	1.30	11.44
1.00	.703E+03	0.9	1.18	12.55

<---- hydrograph ---->				<-pipe / channel->		
AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)	
INFLOW : ID= 2 (4003)	3.80	0.93	0.42	52.47	0.82	1.35
OUTFLOW: ID= 1 (0017)	3.80	0.67	0.50	51.23	0.63	1.29

```

-----
| CALIB                               |
| STANDHYD ( 4004)                   |
| ID= 1 DT= 5.0 min                  |
|-----

```

```

Area      (ha)= 0.93
Total Imp(%)= 70.00   Dir. Conn.(%)= 45.00

```

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.65	0.28	
Dep. Storage	(mm)=	1.00	1.50	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	78.74	40.00	
Mannings n	=	0.013	0.250	
Max.Eff.Inten.(mm/hr)=		257.60	210.96	
over (min)		5.00	10.00	
Storage Coeff. (min)=	1.52 (ii)		5.63 (ii)	
Unit Hyd. Tpeak (min)=	5.00		10.00	
Unit Hyd. peak (cms)=	0.33		0.15	
				TOTALS
PEAK FLOW (cms)=	0.29	0.14	0.323 (iii)	
TIME TO PEAK (hrs)=	0.17	0.33	0.17	
RUNOFF VOLUME (mm)=	61.32	41.16	50.23	
TOTAL RAINFALL (mm)=	62.33	62.33	62.33	
RUNOFF COEFFICIENT =	0.98	0.66	0.81	

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB STANDHYD (4001) ID= 1 DT= 5.0 min	Area (ha)= 1.74 Total Imp(%)= 70.00 Dir. Conn.(%)= 45.00
--	--

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	1.22	0.52	
Dep. Storage	(mm)=	1.00	1.50	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	107.70	40.00	
Mannings n	=	0.013	0.250	
Max.Eff.Inten.(mm/hr)=		257.60	217.67	
over (min)		5.00	10.00	
Storage Coeff. (min)=	1.83 (ii)		5.94 (ii)	
Unit Hyd. Tpeak (min)=	5.00		10.00	
Unit Hyd. peak (cms)=	0.32		0.15	
				TOTALS
PEAK FLOW (cms)=	0.52	0.27	0.590 (iii)	
TIME TO PEAK (hrs)=	0.17	0.33	0.17	
RUNOFF VOLUME (mm)=	61.32	42.09	50.74	
TOTAL RAINFALL (mm)=	62.33	62.33	62.33	
RUNOFF COEFFICIENT =	0.98	0.68	0.81	

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 83.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0057) IN= 2---> OUT= 1	OVERFLOW IS OFF
--------------------------------------	-----------------

DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0190	0.0361
	0.0050	0.0026	0.3920	0.0419
	0.0080	0.0056	0.4170	0.0481
	0.0100	0.0089	0.4400	0.0547
	0.0120	0.0126	0.4620	0.0617
	0.0140	0.0166	0.4820	0.0691
	0.0150	0.0209	0.5020	0.0768
	0.0170	0.0256	1.1750	0.0850
	0.0180	0.0307	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (4001)	1.740	0.590	0.17	50.74
OUTFLOW: ID= 1 (0057)	1.740	0.386	0.42	50.67

PEAK FLOW REDUCTION [Qout/Qin](%)= 65.34
 TIME SHIFT OF PEAK FLOW (min)= 15.00
 MAXIMUM STORAGE USED (ha.m.)= 0.0533

CALIB			
NASHYD (4002)	Area (ha)= 5.20	Curve Number (CN)= 83.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.20		

Unit Hyd Qpeak (cms)= 0.993

PEAK FLOW (cms)= 0.662 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 29.995
 TOTAL RAINFALL (mm)= 62.325
 RUNOFF COEFFICIENT = 0.481

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

ADD HYD (0058)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0017):	3.80	0.671	0.50	51.23
+ ID2= 2 (4002):	5.20	0.662	0.42	29.99
=====				
ID = 3 (0058):	9.00	1.278	0.44	38.96

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0058)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0058):	9.00	1.278	0.44	38.96
+ ID2= 2 (4004):	0.93	0.323	0.17	50.23
=====				
ID = 1 (0058):	9.93	1.393	0.42	40.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| ADD HYD ( 0058) |
| 1 + 2 = 3 |
-----

```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0058):	9.93	1.393	0.42	40.02
+ ID2= 2 (0057):	1.74	0.386	0.42	50.67
=====				
ID = 3 (0058):	11.67	1.778	0.42	41.60

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| CALIB |
| NASHYD ( 4008) |
| ID= 1 DT= 5.0 min |
-----

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Area (ha)=	7.52	Curve Number (CN)=	36.0
Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 1.436

PEAK FLOW (cms)=	0.185 (i)
TIME TO PEAK (hrs)=	0.417
RUNOFF VOLUME (mm)=	6.445
TOTAL RAINFALL (mm)=	62.325
RUNOFF COEFFICIENT =	0.103

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

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-----
| CALIB |
| STANDHYD ( 4005) |
| ID= 1 DT= 5.0 min |
-----

```

Area (ha)=	12.54		
Total Imp(%)=	70.00	Dir. Conn.(%)=	45.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	8.78	3.76
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	289.14	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	257.60	210.96
over (min)	5.00	10.00
Storage Coeff. (min)=	3.31 (ii)	7.42 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.26	0.13

TOTALS

PEAK FLOW (cms)=	3.15	1.73	4.011 (iii)
TIME TO PEAK (hrs)=	0.17	0.33	0.25
RUNOFF VOLUME (mm)=	61.32	41.16	50.23
TOTAL RAINFALL (mm)=	62.33	62.33	62.33
RUNOFF COEFFICIENT =	0.98	0.66	0.81

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. 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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-----
| CALIB |
| STANDHYD ( 4007) |
-----

```

Area (ha)=	1.30
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| ID= 1 DT= 5.0 min | Total Imp(%)= 70.00 Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	0.91	0.39	
Dep. Storage	(mm)=	1.00	1.50	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	93.09	40.00	
Mannings n	=	0.013	0.250	
Max.Eff.Inten.(mm/hr)=		257.60	210.96	
over (min)		5.00	10.00	
Storage Coeff. (min)=		1.68 (ii)	5.79 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.32	0.15	
				TOTALS
PEAK FLOW (cms)=		0.40	0.20	0.446 (iii)
TIME TO PEAK (hrs)=		0.17	0.33	0.17
RUNOFF VOLUME (mm)=		61.32	41.16	50.23
TOTAL RAINFALL (mm)=		62.33	62.33	62.33
RUNOFF COEFFICIENT =		0.98	0.66	0.81

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (4006)	Area (ha)=	6.57	
ID= 1 DT= 5.0 min	Total Imp(%)=	70.00	Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)	
Surface Area	(ha)=	4.60	1.97	
Dep. Storage	(mm)=	1.00	1.50	
Average Slope	(%)=	1.00	2.00	
Length	(m)=	209.28	40.00	
Mannings n	=	0.013	0.250	
Max.Eff.Inten.(mm/hr)=		257.60	210.96	
over (min)		5.00	10.00	
Storage Coeff. (min)=		2.73 (ii)	6.84 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.29	0.14	
				TOTALS
PEAK FLOW (cms)=		1.78	0.93	2.136 (iii)
TIME TO PEAK (hrs)=		0.17	0.33	0.25
RUNOFF VOLUME (mm)=		61.32	41.16	50.23
TOTAL RAINFALL (mm)=		62.33	62.33	62.33
RUNOFF COEFFICIENT =		0.98	0.66	0.81

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. 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 ( 0059) |
| 1 + 2 = 3 |
-----

```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (4005):	12.54	4.011	0.25	50.23
+ ID2= 2 (4006):	6.57	2.136	0.25	50.23
=====				
ID = 3 (0059):	19.11	6.148	0.25	50.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| ADD HYD ( 0059) |
| 3 + 2 = 1 |
-----

```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0059):	19.11	6.148	0.25	50.23
+ ID2= 2 (4007):	1.30	0.446	0.17	50.23
=====				
ID = 1 (0059):	20.41	6.576	0.25	50.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| RESERVOIR( 0013) |
| IN= 2---> OUT= 1 |
| DT= 5.0 min |
-----

```

OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.1540	0.8217
0.0130	0.0793	0.1640	0.9029
0.0200	0.1352	0.1740	0.9865
0.0250	0.1936	0.1910	1.0725
0.0310	0.2857	0.1990	1.1608
0.0530	0.3174	0.2070	1.2515
0.0770	0.3827	0.2220	1.5383
0.1030	0.5199	0.2290	1.6388
0.1180	0.5919	1.2760	1.7419
0.1310	0.6662	3.2170	1.8500

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0059)	20.410	6.576	0.25	50.23
OUTFLOW: ID= 1 (0013)	20.410	0.160	1.33	50.16

PEAK FLOW REDUCTION [Qout/Qin](%)= 2.43
 TIME SHIFT OF PEAK FLOW (min)= 65.00
 MAXIMUM STORAGE USED (ha.m.)= 0.9226

```

-----
| ADD HYD ( 0060) |
| 1 + 2 = 3 |
-----

```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0013):	20.41	0.160	1.33	50.16
+ ID2= 2 (4008):	7.52	0.185	0.42	6.45
=====				
ID = 3 (0060):	27.93	0.305	0.42	38.39

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| ADD HYD ( 0060) |
-----

```

3 + 2 = 1	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0060):	27.93	0.305	0.42	38.39
+ ID2= 2 (0058):	11.67	1.778	0.42	41.60
=====				
ID = 1 (0060):	39.60	2.084	0.42	38.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0015)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min				
	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	0.4160	2.3678
	0.0500	0.0009	0.4400	3.1856
	0.1280	0.0026	0.4620	4.0730
	0.1760	0.0078	0.4840	5.0499
	0.2260	0.0254	0.5040	6.2129
	0.2670	0.0487	0.5140	6.8092
	0.3030	0.1996	0.5240	7.4138
	0.3350	0.5341	0.5330	8.0259
	0.3640	0.9932	0.5430	8.6462
	0.3910	1.6326	0.9842	9.2768

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0060)	39.600	2.084	0.42	38.19
OUTFLOW: ID= 1 (0015)	39.600	0.317	1.53	38.19

PEAK FLOW REDUCTION [Qout/Qin](%)= 15.23
TIME SHIFT OF PEAK FLOW (min)= 66.67
MAXIMUM STORAGE USED (ha.m.)= 0.3516

**** WARNING : SELECTED ROUTING TIME STEP DENIED.

CALIB		
NASHYD (4012)	Area (ha)= 15.74	Curve Number (CN)= 58.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.20	

Unit Hyd Qpeak (cms)= 3.006

PEAK FLOW (cms)= 0.842 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 13.595
TOTAL RAINFALL (mm)= 62.325
RUNOFF COEFFICIENT = 0.218

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

CALIB		
STANDHYD (4011)	Area (ha)= 3.84	Dir. Conn.(%)= 45.00
ID= 1 DT= 5.0 min	Total Imp(%)= 70.00	

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.69	1.15
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	160.00	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	257.60	239.48	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.32 (ii)	6.43 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.30	0.14	
			TOTALS
PEAK FLOW (cms)=	1.09	0.62	1.321 (iii)
TIME TO PEAK (hrs)=	0.17	0.33	0.25
RUNOFF VOLUME (mm)=	61.32	45.00	52.35
TOTAL RAINFALL (mm)=	62.33	62.33	62.33
RUNOFF COEFFICIENT =	0.98	0.72	0.84

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB STANDHYD (4013) ID= 1 DT= 5.0 min	Area (ha)= 3.22 Total Imp(%)= 70.00	Dir. Conn.(%)= 45.00
--	--	----------------------

	IMPERVIOUS	PERVIOUS (i)	
Surface Area (ha)=	2.25	0.97	
Dep. Storage (mm)=	1.00	1.50	
Average Slope (%)=	1.00	2.00	
Length (m)=	146.52	40.00	
Mannings n =	0.013	0.250	
Max.Eff.Inten.(mm/hr)=	257.60	231.92	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.20 (ii)	6.31 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.30	0.15	
			TOTALS
PEAK FLOW (cms)=	0.93	0.51	1.095 (iii)
TIME TO PEAK (hrs)=	0.17	0.33	0.25
RUNOFF VOLUME (mm)=	61.32	44.01	51.80
TOTAL RAINFALL (mm)=	62.33	62.33	62.33
RUNOFF COEFFICIENT =	0.98	0.71	0.83

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

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

CALIB STANDHYD (4010) ID= 1 DT= 5.0 min	Area (ha)= 1.48 Total Imp(%)= 70.00	Dir. Conn.(%)= 45.00
--	--	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.04	0.44
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00

Length	(m)=	99.33	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		257.60	210.96
over (min)		5.00	10.00
Storage Coeff. (min)=	1.74 (ii)	5.85 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.15	

TOTALS

PEAK FLOW	(cms)=	0.45	0.22	0.504 (iii)
TIME TO PEAK	(hrs)=	0.17	0.33	0.17
RUNOFF VOLUME	(mm)=	61.32	41.16	50.23
TOTAL RAINFALL	(mm)=	62.33	62.33	62.33
RUNOFF COEFFICIENT	=	0.98	0.66	0.81

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
NASHYD (4009)	Area (ha)=	8.51	Curve Number (CN)= 36.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 1.625

PEAK FLOW	(cms)=	0.209 (i)
TIME TO PEAK	(hrs)=	0.417
RUNOFF VOLUME	(mm)=	6.445
TOTAL RAINFALL	(mm)=	62.325
RUNOFF COEFFICIENT	=	0.103

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

ADD HYD (0062)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (4009):	8.51	0.209	0.42	6.45
+ ID2= 2 (4010):	1.48	0.504	0.17	50.23
ID = 3 (0062):	9.99	0.640	0.33	12.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0063)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0015):	39.60	0.317	1.53	38.19
+ ID2= 2 (4011):	3.84	1.321	0.25	52.35
ID = 3 (0063):	43.44	1.532	0.25	39.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (0063) |
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0063):	43.44	1.532	0.25	39.44
+ ID2= 2 (4012):	15.74	0.842	0.42	13.60
=====				
ID = 1 (0063):	59.18	2.251	0.33	32.57

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (0063) |
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0063):	59.18	2.251	0.33	32.57
+ ID2= 2 (4013):	3.22	1.095	0.25	51.80
=====				
ID = 3 (0063):	62.40	3.288	0.33	33.56

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (0063) |
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0063):	62.40	3.288	0.33	33.56
+ ID2= 2 (0062):	9.99	0.640	0.33	12.93
=====				
ID = 1 (0063):	72.39	3.928	0.33	30.71

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| CALIB
| NASHYD (2001) |
ID= 1 DT= 5.0 min

Area (ha)=	29.70	Curve Number (CN)=	71.0
Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 5.672

PEAK FLOW (cms)= 2.454 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 20.363
TOTAL RAINFALL (mm)= 62.325
RUNOFF COEFFICIENT = 0.327

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

| CALIB
| NASHYD (3001) |
ID= 1 DT= 5.0 min

Area (ha)=	4.67	Curve Number (CN)=	71.0
Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 0.892

PEAK FLOW (cms)= 0.386 (i)
TIME TO PEAK (hrs)= 0.417

RUNOFF VOLUME (mm)= 20.363
TOTAL RAINFALL (mm)= 62.325
RUNOFF COEFFICIENT = 0.327

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

CALIB NASHYD (1001) ID= 1 DT= 5.0 min	Area (ha)= 6.23 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.20	Curve Number (CN)= 81.0 # of Linear Res.(N)= 3.00
--	--	--

Unit Hyd Qpeak (cms)= 1.190

PEAK FLOW (cms)= 0.735 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 28.056
TOTAL RAINFALL (mm)= 62.325
RUNOFF COEFFICIENT = 0.450

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

ADD HYD (0065) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (1001):	6.23	0.735	0.42	28.06
+ ID2= 2 (2001):	29.70	2.454	0.42	20.36
=====				
ID = 3 (0065):	35.93	3.189	0.42	21.70

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0065) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0065):	35.93	3.189	0.42	21.70
+ ID2= 2 (3001):	4.67	0.386	0.42	20.36
=====				
ID = 1 (0065):	40.60	3.575	0.42	21.54

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0065) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0065):	40.60	3.575	0.42	21.54
+ ID2= 2 (0063):	72.39	3.928	0.33	30.71
=====				
ID = 3 (0065):	112.99	7.084	0.33	27.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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V      V      I      SSSSS  U      U      A      L      (v 6.2.2020)
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

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000      TTTTT  TTTTT  H      H      Y      Y      M      M      000      TM
O      O      T      T      H      H      Y Y      MM MM  O      O
O      O      T      T      H      H      Y      M      M      O      O
000      T      T      H      H      Y      M      M      000

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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\SRastgou\AppData\Local\Civica\XH5\3c86505c-fc9b-4fbe-887a-385e4dcec422\de9946c6-2cfd-4f2b-881e-ce6c485033e5\sce
 Summary filename: C:\Users\SRastgou\AppData\Local\Civica\XH5\3c86505c-fc9b-4fbe-887a-385e4dcec422\de9946c6-2cfd-4f2b-881e-ce6c485033e5\sce

DATE: 06/24/2026

TIME: 08:47:02

USER:

COMMENTS: _____

 ** SIMULATION : TCW 25yr **

READ STORM

Ptotal= 56.31 mm

Filename: C:\Users\SRastgou\AppData\Local\Temp\00bdeb80-566e-4cc5-a0f2-610c403661e4\561e124c
 Comments: TCW Fergus Shand Dam 25yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.00	6.08	0.00	12.17	0.00	18.25	0.00
0.08	243.40	6.17	0.00	12.25	0.00	18.33	0.00
0.17	150.90	6.25	0.00	12.33	0.00	18.42	0.00
0.25	114.10	6.33	0.00	12.42	0.00	18.50	0.00
0.33	0.00	6.42	0.00	12.50	0.00	18.58	0.00
0.42	0.00	6.50	0.00	12.58	0.00	18.67	0.00
0.50	70.70	6.58	0.00	12.67	0.00	18.75	0.00
0.58	0.00	6.67	0.00	12.75	0.00	18.83	0.00
0.67	0.00	6.75	0.00	12.83	0.00	18.92	0.00
0.75	0.00	6.83	0.00	12.92	0.00	19.00	0.00
0.83	0.00	6.92	0.00	13.00	0.00	19.08	0.00
0.92	0.00	7.00	0.00	13.08	0.00	19.17	0.00

1.00	43.90	7.08	0.00	13.17	0.00	19.25	0.00
1.08	0.00	7.17	0.00	13.25	0.00	19.33	0.00
1.17	0.00	7.25	0.00	13.33	0.00	19.42	0.00
1.25	0.00	7.33	0.00	13.42	0.00	19.50	0.00
1.33	0.00	7.42	0.00	13.50	0.00	19.58	0.00
1.42	0.00	7.50	0.00	13.58	0.00	19.67	0.00
1.50	0.00	7.58	0.00	13.67	0.00	19.75	0.00
1.58	0.00	7.67	0.00	13.75	0.00	19.83	0.00
1.67	0.00	7.75	0.00	13.83	0.00	19.92	0.00
1.75	0.00	7.83	0.00	13.92	0.00	20.00	0.00
1.83	0.00	7.92	0.00	14.00	0.00	20.08	0.00
1.92	0.00	8.00	0.00	14.08	0.00	20.17	0.00
2.00	27.20	8.08	0.00	14.17	0.00	20.25	0.00
2.08	0.00	8.17	0.00	14.25	0.00	20.33	0.00
2.17	0.00	8.25	0.00	14.33	0.00	20.42	0.00
2.25	0.00	8.33	0.00	14.42	0.00	20.50	0.00
2.33	0.00	8.42	0.00	14.50	0.00	20.58	0.00
2.42	0.00	8.50	0.00	14.58	0.00	20.67	0.00
2.50	0.00	8.58	0.00	14.67	0.00	20.75	0.00
2.58	0.00	8.67	0.00	14.75	0.00	20.83	0.00
2.67	0.00	8.75	0.00	14.83	0.00	20.92	0.00
2.75	0.00	8.83	0.00	14.92	0.00	21.00	0.00
2.83	0.00	8.92	0.00	15.00	0.00	21.08	0.00
2.92	0.00	9.00	0.00	15.08	0.00	21.17	0.00
3.00	0.00	9.08	0.00	15.17	0.00	21.25	0.00
3.08	0.00	9.17	0.00	15.25	0.00	21.33	0.00
3.17	0.00	9.25	0.00	15.33	0.00	21.42	0.00
3.25	0.00	9.33	0.00	15.42	0.00	21.50	0.00
3.33	0.00	9.42	0.00	15.50	0.00	21.58	0.00
3.42	0.00	9.50	0.00	15.58	0.00	21.67	0.00
3.50	0.00	9.58	0.00	15.67	0.00	21.75	0.00
3.58	0.00	9.67	0.00	15.75	0.00	21.83	0.00
3.67	0.00	9.75	0.00	15.83	0.00	21.92	0.00
3.75	0.00	9.83	0.00	15.92	0.00	22.00	0.00
3.83	0.00	9.92	0.00	16.00	0.00	22.08	0.00
3.92	0.00	10.00	0.00	16.08	0.00	22.17	0.00
4.00	0.00	10.08	0.00	16.17	0.00	22.25	0.00
4.08	0.00	10.17	0.00	16.25	0.00	22.33	0.00
4.17	0.00	10.25	0.00	16.33	0.00	22.42	0.00
4.25	0.00	10.33	0.00	16.42	0.00	22.50	0.00
4.33	0.00	10.42	0.00	16.50	0.00	22.58	0.00
4.42	0.00	10.50	0.00	16.58	0.00	22.67	0.00
4.50	0.00	10.58	0.00	16.67	0.00	22.75	0.00
4.58	0.00	10.67	0.00	16.75	0.00	22.83	0.00
4.67	0.00	10.75	0.00	16.83	0.00	22.92	0.00
4.75	0.00	10.83	0.00	16.92	0.00	23.00	0.00
4.83	0.00	10.92	0.00	17.00	0.00	23.08	0.00
4.92	0.00	11.00	0.00	17.08	0.00	23.17	0.00
5.00	0.00	11.08	0.00	17.17	0.00	23.25	0.00
5.08	0.00	11.17	0.00	17.25	0.00	23.33	0.00
5.17	0.00	11.25	0.00	17.33	0.00	23.42	0.00
5.25	0.00	11.33	0.00	17.42	0.00	23.50	0.00
5.33	0.00	11.42	0.00	17.50	0.00	23.58	0.00
5.42	0.00	11.50	0.00	17.58	0.00	23.67	0.00
5.50	0.00	11.58	0.00	17.67	0.00	23.75	0.00
5.58	0.00	11.67	0.00	17.75	0.00	23.83	0.00
5.67	0.00	11.75	0.00	17.83	0.00	23.92	0.00
5.75	0.00	11.83	0.00	17.92	0.00	24.00	4.90
5.83	0.00	11.92	0.00	18.00	0.00		
5.92	0.00	12.00	7.90	18.08	0.00		
6.00	12.70	12.08	0.00	18.17	0.00		

```

-----
| CALIB                               |
| NASHYD ( 4003)                     |
| ID= 1 DT= 5.0 min                  |
|-----|

```

```

Area      (ha)= 3.80   Curve Number (CN)= 98.0
Ia        (mm)= 5.00   # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

```

Unit Hyd Qpeak (cms)= 0.726

```

PEAK FLOW      (cms)= 0.824 (i)
TIME TO PEAK   (hrs)= 0.417
RUNOFF VOLUME  (mm)= 46.512
TOTAL RAINFALL (mm)= 56.308
RUNOFF COEFFICIENT = 0.826

```

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

```

-----
| ROUTEPIPE( 0017)                   |
| IN= 2---> OUT= 1                  |
| DT= 2.0 min                        |
|-----|

```

```

PIPE Number    = 1.00
Diameter      (mm)= 975.00
Length        (m)= 892.00
Slope         (m/m)= 0.002
Manning n     = 0.013

```

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

DEPTH (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME min
0.05	.134E+02	0.0	0.31	48.12
0.10	.374E+02	0.0	0.48	30.84
0.15	.675E+02	0.0	0.62	23.96
0.21	.102E+03	0.1	0.74	20.16
0.26	.140E+03	0.1	0.84	17.71
0.31	.180E+03	0.2	0.93	16.01
0.36	.223E+03	0.3	1.01	14.76
0.41	.266E+03	0.3	1.08	13.82
0.46	.311E+03	0.4	1.14	13.08
0.51	.355E+03	0.5	1.19	12.51
0.56	.400E+03	0.6	1.23	12.06
0.62	.443E+03	0.6	1.27	11.72
0.67	.486E+03	0.7	1.30	11.47
0.72	.526E+03	0.8	1.32	11.30
0.77	.564E+03	0.8	1.33	11.22
0.82	.599E+03	0.9	1.32	11.22
0.87	.629E+03	0.9	1.31	11.35
0.92	.653E+03	0.9	1.28	11.65
0.98	.666E+03	0.9	1.16	12.78

<---- hydrograph ---->				<-pipe / channel->	
AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (4003)	3.80	0.82	0.42	46.51	0.76
OUTFLOW: ID= 1 (0017)	3.80	0.58	0.50	45.38	1.24

```

-----
| CALIB                               |
| STANDHYD ( 4004)                   |
| ID= 1 DT= 5.0 min                  |
|-----|

```

```

Area      (ha)= 0.93
Total Imp(%)= 70.00   Dir. Conn.(%)= 45.00

```

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.65	0.28
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00

Length	(m)=	78.74	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		231.40	180.81
over (min)		5.00	10.00
Storage Coeff. (min)=	1.58 (ii)		5.87 (ii)
Unit Hyd. Tpeak (min)=	5.00		10.00
Unit Hyd. peak (cms)=	0.33		0.15

TOTALS

PEAK FLOW	(cms)=	0.26	0.12	0.286 (iii)
TIME TO PEAK	(hrs)=	0.17	0.33	0.17
RUNOFF VOLUME	(mm)=	55.31	35.84	44.60
TOTAL RAINFALL	(mm)=	56.31	56.31	56.31
RUNOFF COEFFICIENT	=	0.98	0.64	0.79

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (4001)	Area (ha)=	1.74	
ID= 1 DT= 5.0 min	Total Imp(%)=	70.00	Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.22	0.52
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	107.70	40.00
Mannings n	=	0.013	0.250

Max.Eff.Inten.(mm/hr)=		231.40	186.91
over (min)		5.00	10.00
Storage Coeff. (min)=	1.91 (ii)		6.20 (ii)
Unit Hyd. Tpeak (min)=	5.00		10.00
Unit Hyd. peak (cms)=	0.32		0.15

TOTALS

PEAK FLOW	(cms)=	0.47	0.23	0.521 (iii)
TIME TO PEAK	(hrs)=	0.17	0.33	0.17
RUNOFF VOLUME	(mm)=	55.31	36.71	45.08
TOTAL RAINFALL	(mm)=	56.31	56.31	56.31
RUNOFF COEFFICIENT	=	0.98	0.65	0.80

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 83.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0057)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	0.0190	0.0361
	0.0050	0.0026	0.3920	0.0419

0.0080	0.0056	0.4170	0.0481
0.0100	0.0089	0.4400	0.0547
0.0120	0.0126	0.4620	0.0617
0.0140	0.0166	0.4820	0.0691
0.0150	0.0209	0.5020	0.0768
0.0170	0.0256	1.1750	0.0850
0.0180	0.0307	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (4001)	1.740	0.521	0.17	45.08
OUTFLOW: ID= 1 (0057)	1.740	0.337	0.42	45.01

PEAK FLOW REDUCTION [Qout/Qin](%)= 64.71
TIME SHIFT OF PEAK FLOW (min)= 15.00
MAXIMUM STORAGE USED (ha.m.)= 0.0512

CALIB NASHYD (4002) ID= 1 DT= 5.0 min	Area (ha)= 5.20 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.20	Curve Number (CN)= 83.0 # of Linear Res.(N)= 3.00
--	--	--

Unit Hyd Qpeak (cms)= 0.993

PEAK FLOW (cms)= 0.554 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 25.428
TOTAL RAINFALL (mm)= 56.308
RUNOFF COEFFICIENT = 0.452

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

ADD HYD (0058) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0017):	3.80	0.585	0.50	45.38
+ ID2= 2 (4002):	5.20	0.554	0.42	25.43
ID = 3 (0058):	9.00	1.088	0.44	33.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0058) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0058):	9.00	1.088	0.44	33.85
+ ID2= 2 (4004):	0.93	0.286	0.17	44.60
ID = 1 (0058):	9.93	1.186	0.42	34.86

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0058) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
------------------------------	--------------	----------------	----------------	--------------

ID1= 1 (0058):	9.93	1.186	0.42	34.86
+ ID2= 2 (0057):	1.74	0.337	0.42	45.01
=====				
ID = 3 (0058):	11.67	1.523	0.42	36.37

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB NASHYD (4008) ID= 1 DT= 5.0 min	Area (ha)= 7.52 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.20	Curve Number (CN)= 36.0 # of Linear Res.(N)= 3.00
--	--	--

Unit Hyd Qpeak (cms)= 1.436

PEAK FLOW (cms)= 0.148 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 5.225
 TOTAL RAINFALL (mm)= 56.308
 RUNOFF COEFFICIENT = 0.093

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

CALIB STANDHYD (4005) ID= 1 DT= 5.0 min	Area (ha)= 12.54 Total Imp(%)= 70.00	Dir. Conn.(%)= 45.00
--	---	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	8.78	3.76
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	289.14	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	231.40	180.81
over (min)	5.00	10.00
Storage Coeff. (min)=	3.45 (ii)	7.74 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.26	0.13

PEAK FLOW (cms)=	2.77	1.47	*TOTALS*
TIME TO PEAK (hrs)=	0.17	0.33	3.523 (iii)
RUNOFF VOLUME (mm)=	55.31	35.84	0.25
TOTAL RAINFALL (mm)=	56.31	56.31	44.60
RUNOFF COEFFICIENT =	0.98	0.64	56.31
			0.79

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB STANDHYD (4007) ID= 1 DT= 5.0 min	Area (ha)= 1.30 Total Imp(%)= 70.00	Dir. Conn.(%)= 45.00
--	--	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.91	0.39

Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	93.09	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		231.40	180.81
over (min)		5.00	10.00
Storage Coeff. (min)=		1.75 (ii)	6.04 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.32	0.15

TOTALS

PEAK FLOW	(cms)=	0.35	0.17	0.394 (iii)
TIME TO PEAK	(hrs)=	0.17	0.33	0.17
RUNOFF VOLUME	(mm)=	55.31	35.84	44.60
TOTAL RAINFALL	(mm)=	56.31	56.31	56.31
RUNOFF COEFFICIENT	=	0.98	0.64	0.79

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (4006)	Area (ha)=	6.57	
ID= 1 DT= 5.0 min	Total Imp(%)=	70.00	Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.60	1.97
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	209.28	40.00
Mannings n	=	0.013	0.250

Max.Eff.Inten.(mm/hr)=		231.40	180.81
over (min)		5.00	10.00
Storage Coeff. (min)=		2.84 (ii)	7.13 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.28	0.14

TOTALS

PEAK FLOW	(cms)=	1.57	0.79	1.879 (iii)
TIME TO PEAK	(hrs)=	0.17	0.33	0.25
RUNOFF VOLUME	(mm)=	55.31	35.84	44.60
TOTAL RAINFALL	(mm)=	56.31	56.31	56.31
RUNOFF COEFFICIENT	=	0.98	0.64	0.79

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 82.0 Ia = Dep. 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 (0059)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)

ID1= 1 (4005):	12.54	3.523	0.25	44.60
+ ID2= 2 (4006):	6.57	1.879	0.25	44.60
=====				
ID = 3 (0059):	19.11	5.403	0.25	44.60

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0059)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0059):	19.11	5.403	0.25	44.60
+ ID2= 2 (4007):	1.30	0.394	0.17	44.60
=====				
ID = 1 (0059):	20.41	5.780	0.25	44.60

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0013)
IN= 2---> OUT= 1
DT= 5.0 min

OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.1540	0.8217
0.0130	0.0793	0.1640	0.9029
0.0200	0.1352	0.1740	0.9865
0.0250	0.1936	0.1910	1.0725
0.0310	0.2857	0.1990	1.1608
0.0530	0.3174	0.2070	1.2515
0.0770	0.3827	0.2220	1.5383
0.1030	0.5199	0.2290	1.6388
0.1180	0.5919	1.2760	1.7419
0.1310	0.6662	3.2170	1.8500

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0059)	20.410	5.780	0.25	44.60
OUTFLOW: ID= 1 (0013)	20.410	0.147	1.33	44.53

PEAK FLOW REDUCTION [Qout/Qin](%)= 2.54
 TIME SHIFT OF PEAK FLOW (min)= 65.00
 MAXIMUM STORAGE USED (ha.m.)= 0.8161

ADD HYD (0060)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0013):	20.41	0.147	1.33	44.53
+ ID2= 2 (4008):	7.52	0.148	0.42	5.23
=====				
ID = 3 (0060):	27.93	0.254	0.42	33.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0060)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0060):	27.93	0.254	0.42	33.95
+ ID2= 2 (0058):	11.67	1.523	0.42	36.37

=====

ID = 1 (0060):	39.60	1.777	0.42	33.64
-----------------	-------	-------	------	-------

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0015)
IN= 2---> OUT= 1
DT= 5.0 min

OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.4160	2.3678
0.0500	0.0009	0.4400	3.1856
0.1280	0.0026	0.4620	4.0730
0.1760	0.0078	0.4840	5.0499
0.2260	0.0254	0.5040	6.2129
0.2670	0.0487	0.5140	6.8092
0.3030	0.1996	0.5240	7.4138
0.3350	0.5341	0.5330	8.0259
0.3640	0.9932	0.5430	8.6462
0.3910	1.6326	0.9842	9.2768

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0060)	39.600	1.777	0.42	33.64
OUTFLOW: ID= 1 (0015)	39.600	0.311	1.47	33.64

PEAK FLOW REDUCTION [Qout/Qin](%)= 17.50
TIME SHIFT OF PEAK FLOW (min)= 63.33
MAXIMUM STORAGE USED (ha.m.)= 0.2851

**** WARNING : SELECTED ROUTING TIME STEP DENIED.

CALIB
NASHYD (4012)
ID= 1 DT= 5.0 min

Area (ha)=	15.74	Curve Number (CN)=	58.0
Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 3.006

PEAK FLOW (cms)= 0.684 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 11.170
TOTAL RAINFALL (mm)= 56.308
RUNOFF COEFFICIENT = 0.198

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

CALIB
STANDHYD (4011)
ID= 1 DT= 5.0 min

Area (ha)=	3.84		
Total Imp(%)=	70.00	Dir. Conn.(%)=	45.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.69	1.15
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	160.00	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	231.40	206.84
over (min)	5.00	10.00
Storage Coeff. (min)=	2.42 (ii)	6.71 (ii)

Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.30	0.14

TOTALS
1.163 (iii)
0.25
46.59
56.31
0.83

PEAK FLOW (cms)=	0.97	0.53
TIME TO PEAK (hrs)=	0.17	0.33
RUNOFF VOLUME (mm)=	55.31	39.45
TOTAL RAINFALL (mm)=	56.31	56.31
RUNOFF COEFFICIENT =	0.98	0.70

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB STANDHYD (4013) ID= 1 DT= 5.0 min	Area (ha)= 3.22 Total Imp(%)= 70.00	Dir. Conn.(%)= 45.00
--	--	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.25	0.97
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	146.52	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	231.40	199.90
over (min)	5.00	10.00
Storage Coeff. (min)=	2.30 (ii)	6.59 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.30	0.14

TOTALS
0.965 (iii)
0.25
46.07
56.31
0.82

PEAK FLOW (cms)=	0.83	0.44
TIME TO PEAK (hrs)=	0.17	0.33
RUNOFF VOLUME (mm)=	55.31	38.52
TOTAL RAINFALL (mm)=	56.31	56.31
RUNOFF COEFFICIENT =	0.98	0.68

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

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

CALIB STANDHYD (4010) ID= 1 DT= 5.0 min	Area (ha)= 1.48 Total Imp(%)= 70.00	Dir. Conn.(%)= 45.00
--	--	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.04	0.44
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	99.33	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	231.40	180.81
------------------------	--------	--------

over (min)	5.00	10.00
Storage Coeff. (min)=	1.82 (ii)	6.11 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.32	0.15

TOTALS

PEAK FLOW (cms)=	0.40	0.19	0.446 (iii)
TIME TO PEAK (hrs)=	0.17	0.33	0.17
RUNOFF VOLUME (mm)=	55.31	35.84	44.60
TOTAL RAINFALL (mm)=	56.31	56.31	56.31
RUNOFF COEFFICIENT =	0.98	0.64	0.79

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
NASHYD (4009)	Area (ha)=	8.51	Curve Number (CN)= 36.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 1.625

PEAK FLOW (cms)=	0.168 (i)
TIME TO PEAK (hrs)=	0.417
RUNOFF VOLUME (mm)=	5.225
TOTAL RAINFALL (mm)=	56.308
RUNOFF COEFFICIENT =	0.093

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

ADD HYD (0062)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (4009):	8.51	0.168	0.42	5.23
+ ID2= 2 (4010):	1.48	0.446	0.17	44.60
=====				
ID = 3 (0062):	9.99	0.549	0.33	11.06

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0063)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0015):	39.60	0.311	1.47	33.64
+ ID2= 2 (4011):	3.84	1.163	0.25	46.59
=====				
ID = 3 (0063):	43.44	1.363	0.25	34.78

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0063)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0063):	43.44	1.363	0.25	34.78
+ ID2= 2 (4012):	15.74	0.684	0.42	11.17
=====				
ID = 1 (0063):	59.18	1.951	0.33	28.50

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ADD HYD (0063)				
1 + 2 = 3				
ID1= 1 (0063):	59.18	1.951	0.33	28.50
+ ID2= 2 (4013):	3.22	0.965	0.25	46.07
=====				
ID = 3 (0063):	62.40	2.866	0.33	29.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ADD HYD (0063)				
3 + 2 = 1				
ID1= 3 (0063):	62.40	2.866	0.33	29.41
+ ID2= 2 (0062):	9.99	0.549	0.33	11.06
=====				
ID = 1 (0063):	72.39	3.415	0.33	26.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
NASHYD (2001)	Area (ha)=	29.70	Curve Number (CN)= 71.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 5.672

PEAK FLOW (cms)= 2.019 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 16.946
 TOTAL RAINFALL (mm)= 56.308
 RUNOFF COEFFICIENT = 0.301

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

CALIB			
NASHYD (3001)	Area (ha)=	4.67	Curve Number (CN)= 71.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 0.892

PEAK FLOW (cms)= 0.317 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 16.946
 TOTAL RAINFALL (mm)= 56.308
 RUNOFF COEFFICIENT = 0.301

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

CALIB			
NASHYD (1001)	Area (ha)=	6.23	Curve Number (CN)= 81.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 1.190

PEAK FLOW (cms)= 0.613 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 23.695
TOTAL RAINFALL (mm)= 56.308
RUNOFF COEFFICIENT = 0.421

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

ADD HYD (0065)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (1001):	6.23	0.613	0.42	23.70
+ ID2= 2 (2001):	29.70	2.019	0.42	16.95
=====				
ID = 3 (0065):	35.93	2.632	0.42	18.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0065)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0065):	35.93	2.632	0.42	18.12
+ ID2= 2 (3001):	4.67	0.317	0.42	16.95
=====				
ID = 1 (0065):	40.60	2.950	0.42	17.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0065)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0065):	40.60	2.950	0.42	17.98
+ ID2= 2 (0063):	72.39	3.415	0.33	26.88
=====				
ID = 3 (0065):	112.99	6.001	0.33	23.68

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

FINISH

```

V      V      I      SSSSS  U      U      A      L      (v 6.2.2020)
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

```

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    000      TTTTT  TTTTT  H      H      Y      Y      M      M      000      TM
O      O      T      T      H      H      Y      Y      MM  MM  O      O
O      O      T      T      H      H      Y      M      M      O      O
    000      T      T      H      H      Y      M      M      000

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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\SRastgou\AppData\Local\Civica\XH5\3c86505c-fc9b-4fbe-887a-385e4dcec422\4779e820-fa2d-4e00-9f00-ab2e04b64498\sce
 Summary filename: C:\Users\SRastgou\AppData\Local\Civica\XH5\3c86505c-fc9b-4fbe-887a-385e4dcec422\4779e820-fa2d-4e00-9f00-ab2e04b64498\sce

DATE: 06/24/2026

TIME: 08:47:00

USER:

COMMENTS: _____

 ** SIMULATION : TCW 10yr **

READ STORM	Filename: C:\Users\SRastgou\AppData\Local\Temp\00bdeb80-566e-4cc5-a0f2-610c403661e4\5ab79922
Ptotal= 48.21 mm	Comments: TCW Fergus Shand Dam 10yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	0.00	6.08	0.00	12.17	0.00	18.25	0.00
0.08	207.80	6.17	0.00	12.25	0.00	18.33	0.00
0.17	129.10	6.25	0.00	12.33	0.00	18.42	0.00
0.25	97.70	6.33	0.00	12.42	0.00	18.50	0.00
0.33	0.00	6.42	0.00	12.50	0.00	18.58	0.00
0.42	0.00	6.50	0.00	12.58	0.00	18.67	0.00
0.50	60.70	6.58	0.00	12.67	0.00	18.75	0.00
0.58	0.00	6.67	0.00	12.75	0.00	18.83	0.00
0.67	0.00	6.75	0.00	12.83	0.00	18.92	0.00
0.75	0.00	6.83	0.00	12.92	0.00	19.00	0.00
0.83	0.00	6.92	0.00	13.00	0.00	19.08	0.00
0.92	0.00	7.00	0.00	13.08	0.00	19.17	0.00

1.00	37.70	7.08	0.00	13.17	0.00	19.25	0.00
1.08	0.00	7.17	0.00	13.25	0.00	19.33	0.00
1.17	0.00	7.25	0.00	13.33	0.00	19.42	0.00
1.25	0.00	7.33	0.00	13.42	0.00	19.50	0.00
1.33	0.00	7.42	0.00	13.50	0.00	19.58	0.00
1.42	0.00	7.50	0.00	13.58	0.00	19.67	0.00
1.50	0.00	7.58	0.00	13.67	0.00	19.75	0.00
1.58	0.00	7.67	0.00	13.75	0.00	19.83	0.00
1.67	0.00	7.75	0.00	13.83	0.00	19.92	0.00
1.75	0.00	7.83	0.00	13.92	0.00	20.00	0.00
1.83	0.00	7.92	0.00	14.00	0.00	20.08	0.00
1.92	0.00	8.00	0.00	14.08	0.00	20.17	0.00
2.00	23.40	8.08	0.00	14.17	0.00	20.25	0.00
2.08	0.00	8.17	0.00	14.25	0.00	20.33	0.00
2.17	0.00	8.25	0.00	14.33	0.00	20.42	0.00
2.25	0.00	8.33	0.00	14.42	0.00	20.50	0.00
2.33	0.00	8.42	0.00	14.50	0.00	20.58	0.00
2.42	0.00	8.50	0.00	14.58	0.00	20.67	0.00
2.50	0.00	8.58	0.00	14.67	0.00	20.75	0.00
2.58	0.00	8.67	0.00	14.75	0.00	20.83	0.00
2.67	0.00	8.75	0.00	14.83	0.00	20.92	0.00
2.75	0.00	8.83	0.00	14.92	0.00	21.00	0.00
2.83	0.00	8.92	0.00	15.00	0.00	21.08	0.00
2.92	0.00	9.00	0.00	15.08	0.00	21.17	0.00
3.00	0.00	9.08	0.00	15.17	0.00	21.25	0.00
3.08	0.00	9.17	0.00	15.25	0.00	21.33	0.00
3.17	0.00	9.25	0.00	15.33	0.00	21.42	0.00
3.25	0.00	9.33	0.00	15.42	0.00	21.50	0.00
3.33	0.00	9.42	0.00	15.50	0.00	21.58	0.00
3.42	0.00	9.50	0.00	15.58	0.00	21.67	0.00
3.50	0.00	9.58	0.00	15.67	0.00	21.75	0.00
3.58	0.00	9.67	0.00	15.75	0.00	21.83	0.00
3.67	0.00	9.75	0.00	15.83	0.00	21.92	0.00
3.75	0.00	9.83	0.00	15.92	0.00	22.00	0.00
3.83	0.00	9.92	0.00	16.00	0.00	22.08	0.00
3.92	0.00	10.00	0.00	16.08	0.00	22.17	0.00
4.00	0.00	10.08	0.00	16.17	0.00	22.25	0.00
4.08	0.00	10.17	0.00	16.25	0.00	22.33	0.00
4.17	0.00	10.25	0.00	16.33	0.00	22.42	0.00
4.25	0.00	10.33	0.00	16.42	0.00	22.50	0.00
4.33	0.00	10.42	0.00	16.50	0.00	22.58	0.00
4.42	0.00	10.50	0.00	16.58	0.00	22.67	0.00
4.50	0.00	10.58	0.00	16.67	0.00	22.75	0.00
4.58	0.00	10.67	0.00	16.75	0.00	22.83	0.00
4.67	0.00	10.75	0.00	16.83	0.00	22.92	0.00
4.75	0.00	10.83	0.00	16.92	0.00	23.00	0.00
4.83	0.00	10.92	0.00	17.00	0.00	23.08	0.00
4.92	0.00	11.00	0.00	17.08	0.00	23.17	0.00
5.00	0.00	11.08	0.00	17.17	0.00	23.25	0.00
5.08	0.00	11.17	0.00	17.25	0.00	23.33	0.00
5.17	0.00	11.25	0.00	17.33	0.00	23.42	0.00
5.25	0.00	11.33	0.00	17.42	0.00	23.50	0.00
5.33	0.00	11.42	0.00	17.50	0.00	23.58	0.00
5.42	0.00	11.50	0.00	17.58	0.00	23.67	0.00
5.50	0.00	11.58	0.00	17.67	0.00	23.75	0.00
5.58	0.00	11.67	0.00	17.75	0.00	23.83	0.00
5.67	0.00	11.75	0.00	17.83	0.00	23.92	0.00
5.75	0.00	11.83	0.00	17.92	0.00	24.00	4.30
5.83	0.00	11.92	0.00	18.00	0.00		
5.92	0.00	12.00	6.80	18.08	0.00		
6.00	11.00	12.08	0.00	18.17	0.00		


```

-----
| CALIB                               |
| NASHYD ( 4003)                     |
| ID= 1 DT= 5.0 min                  |
|-----|

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```

Area      (ha)= 3.80   Curve Number (CN)= 98.0
Ia        (mm)= 5.00   # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

```

Unit Hyd Qpeak (cms)= 0.726

```

PEAK FLOW      (cms)= 0.676 (i)
TIME TO PEAK   (hrs)= 0.417
RUNOFF VOLUME  (mm)= 38.506
TOTAL RAINFALL (mm)= 48.208
RUNOFF COEFFICIENT = 0.799

```

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

```

-----
| ROUTEPIPE( 0017)                   |
| IN= 2---> OUT= 1                  |
| DT= 2.0 min                        |
|-----|

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```

PIPE Number    = 1.00
Diameter       (mm)= 975.00
Length         (m)= 892.00
Slope          (m/m)= 0.002
Manning n      = 0.013

```

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

DEPTH (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME min
0.05	.134E+02	0.0	0.31	48.12
0.10	.374E+02	0.0	0.48	30.84
0.15	.675E+02	0.0	0.62	23.96
0.21	.102E+03	0.1	0.74	20.16
0.26	.140E+03	0.1	0.84	17.71
0.31	.180E+03	0.2	0.93	16.01
0.36	.223E+03	0.3	1.01	14.76
0.41	.266E+03	0.3	1.08	13.82
0.46	.311E+03	0.4	1.14	13.08
0.51	.355E+03	0.5	1.19	12.51
0.56	.400E+03	0.6	1.23	12.06
0.62	.443E+03	0.6	1.27	11.72
0.67	.486E+03	0.7	1.30	11.47
0.72	.526E+03	0.8	1.32	11.30
0.77	.564E+03	0.8	1.33	11.22
0.82	.599E+03	0.9	1.32	11.22
0.87	.629E+03	0.9	1.31	11.35
0.92	.653E+03	0.9	1.28	11.65
0.98	.666E+03	0.9	1.16	12.78

<---- hydrograph ---->				<-pipe / channel->	
AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (4003)	3.80	0.68	0.42	38.51	0.65
OUTFLOW: ID= 1 (0017)	3.80	0.47	0.53	37.53	1.19

```

-----
| CALIB                               |
| STANDHYD ( 4004)                   |
| ID= 1 DT= 5.0 min                  |
|-----|

```

```

Area      (ha)= 0.93
Total Imp(%)= 70.00   Dir. Conn.(%)= 45.00

```

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.65	0.28
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00

Length	(m)=	78.74	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		195.80	145.61
over (min)		5.00	10.00
Storage Coeff. (min)=	1.69 (ii)		6.28 (ii)
Unit Hyd. Tpeak (min)=	5.00		10.00
Unit Hyd. peak (cms)=	0.32		0.15

TOTALS

PEAK FLOW	(cms)=	0.22	0.09	0.237 (iii)
TIME TO PEAK	(hrs)=	0.17	0.33	0.17
RUNOFF VOLUME	(mm)=	47.21	28.87	37.11
TOTAL RAINFALL	(mm)=	48.21	48.21	48.21
RUNOFF COEFFICIENT	=	0.98	0.60	0.77

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (4001)	Area (ha)=	1.74	
ID= 1 DT= 5.0 min	Total Imp(%)=	70.00	Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.22	0.52
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	107.70	40.00
Mannings n	=	0.013	0.250

Max.Eff.Inten.(mm/hr)=		195.80	149.40
over (min)		5.00	10.00
Storage Coeff. (min)=	2.04 (ii)		6.63 (ii)
Unit Hyd. Tpeak (min)=	5.00		10.00
Unit Hyd. peak (cms)=	0.31		0.14

TOTALS

PEAK FLOW	(cms)=	0.39	0.18	0.430 (iii)
TIME TO PEAK	(hrs)=	0.17	0.33	0.17
RUNOFF VOLUME	(mm)=	47.21	29.64	37.54
TOTAL RAINFALL	(mm)=	48.21	48.21	48.21
RUNOFF COEFFICIENT	=	0.98	0.61	0.78

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 83.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0057)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	0.0190	0.0361
	0.0050	0.0026	0.3920	0.0419

0.0080	0.0056	0.4170	0.0481
0.0100	0.0089	0.4400	0.0547
0.0120	0.0126	0.4620	0.0617
0.0140	0.0166	0.4820	0.0691
0.0150	0.0209	0.5020	0.0768
0.0170	0.0256	1.1750	0.0850
0.0180	0.0307	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (4001)	1.740	0.430	0.17	37.54
OUTFLOW: ID= 1 (0057)	1.740	0.131	0.67	37.47

PEAK FLOW REDUCTION [Qout/Qin](%)= 30.48
TIME SHIFT OF PEAK FLOW (min)= 30.00
MAXIMUM STORAGE USED (ha.m.)= 0.0450

CALIB NASHYD (4002) ID= 1 DT= 5.0 min	Area (ha)= 5.20 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.20	Curve Number (CN)= 83.0 # of Linear Res.(N)= 3.00
--	--	--

Unit Hyd Qpeak (cms)= 0.993

PEAK FLOW (cms)= 0.418 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 19.567
TOTAL RAINFALL (mm)= 48.208
RUNOFF COEFFICIENT = 0.406

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

ADD HYD (0058) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0017):	3.80	0.472	0.53	37.53
+ ID2= 2 (4002):	5.20	0.418	0.42	19.57
ID = 3 (0058):	9.00	0.842	0.44	27.15

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0058) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0058):	9.00	0.842	0.44	27.15
+ ID2= 2 (4004):	0.93	0.237	0.17	37.11
ID = 1 (0058):	9.93	0.916	0.42	28.08

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0058) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
------------------------------	--------------	----------------	----------------	--------------

ID1= 1 (0058):	9.93	0.916	0.42	28.08
+ ID2= 2 (0057):	1.74	0.131	0.67	37.47
=====				
ID = 3 (0058):	11.67	1.012	0.58	29.48

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB NASHYD (4008) ID= 1 DT= 5.0 min	Area (ha)= 7.52 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.20	Curve Number (CN)= 36.0 # of Linear Res.(N)= 3.00
--	--	--

Unit Hyd Qpeak (cms)= 1.436

PEAK FLOW (cms)= 0.105 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 3.766
 TOTAL RAINFALL (mm)= 48.208
 RUNOFF COEFFICIENT = 0.078

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

CALIB STANDHYD (4005) ID= 1 DT= 5.0 min	Area (ha)= 12.54 Total Imp(%)= 70.00	Dir. Conn.(%)= 45.00
--	---	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	8.78	3.76
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	289.14	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	195.80	145.61
over (min)	5.00	10.00
Storage Coeff. (min)=	3.69 (ii)	8.28 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.25	0.13

PEAK FLOW (cms)=	2.28	1.13	*TOTALS*
TIME TO PEAK (hrs)=	0.17	0.33	2.883 (iii)
RUNOFF VOLUME (mm)=	47.21	28.87	0.25
TOTAL RAINFALL (mm)=	48.21	48.21	37.12
RUNOFF COEFFICIENT =	0.98	0.60	48.21
			0.77

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB STANDHYD (4007) ID= 1 DT= 5.0 min	Area (ha)= 1.30 Total Imp(%)= 70.00	Dir. Conn.(%)= 45.00
--	--	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.91	0.39

Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	93.09	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		195.80	145.61
over (min)		5.00	10.00
Storage Coeff. (min)=		1.87 (ii)	6.46 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.32	0.14

TOTALS

PEAK FLOW	(cms)=	0.30	0.13	0.326 (iii)
TIME TO PEAK	(hrs)=	0.17	0.33	0.17
RUNOFF VOLUME	(mm)=	47.21	28.87	37.12
TOTAL RAINFALL	(mm)=	48.21	48.21	48.21
RUNOFF COEFFICIENT	=	0.98	0.60	0.77

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (4006)	Area (ha)=	6.57	
ID= 1 DT= 5.0 min	Total Imp(%)=	70.00	Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.60	1.97
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	209.28	40.00
Mannings n	=	0.013	0.250

Max.Eff.Inten.(mm/hr)=		195.80	145.61
over (min)		5.00	10.00
Storage Coeff. (min)=		3.04 (ii)	7.63 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.27	0.13

TOTALS

PEAK FLOW	(cms)=	1.30	0.61	1.542 (iii)
TIME TO PEAK	(hrs)=	0.17	0.33	0.25
RUNOFF VOLUME	(mm)=	47.21	28.87	37.12
TOTAL RAINFALL	(mm)=	48.21	48.21	48.21
RUNOFF COEFFICIENT	=	0.98	0.60	0.77

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. 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 (0059)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)

ID1= 1 (4005):	12.54	2.883	0.25	37.12
+ ID2= 2 (4006):	6.57	1.542	0.25	37.12
=====				
ID = 3 (0059):	19.11	4.425	0.25	37.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0059)				
3 + 2 = 1				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0059):	19.11	4.425	0.25	37.12
+ ID2= 2 (4007):	1.30	0.326	0.17	37.12
=====				
ID = 1 (0059):	20.41	4.735	0.25	37.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0013)		OVERFLOW IS OFF			
IN= 2---> OUT= 1					
DT= 5.0 min					

	OUTFLOW	STORAGE		OUTFLOW	STORAGE
	(cms)	(ha.m.)		(cms)	(ha.m.)
	0.0000	0.0000		0.1540	0.8217
	0.0130	0.0793		0.1640	0.9029
	0.0200	0.1352		0.1740	0.9865
	0.0250	0.1936		0.1910	1.0725
	0.0310	0.2857		0.1990	1.1608
	0.0530	0.3174		0.2070	1.2515
	0.0770	0.3827		0.2220	1.5383
	0.1030	0.5199		0.2290	1.6388
	0.1180	0.5919		1.2760	1.7419
	0.1310	0.6662		3.2170	1.8500

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0059)	20.410	4.735	0.25	37.12
OUTFLOW: ID= 1 (0013)	20.410	0.126	1.33	37.04

PEAK FLOW REDUCTION [Qout/Qin](%)= 2.67
TIME SHIFT OF PEAK FLOW (min)= 65.00
MAXIMUM STORAGE USED (ha.m.)= 0.6765

ADD HYD (0060)				
1 + 2 = 3				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0013):	20.41	0.126	1.33	37.04
+ ID2= 2 (4008):	7.52	0.105	0.42	3.77
=====				
ID = 3 (0060):	27.93	0.193	0.67	28.08

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0060)				
3 + 2 = 1				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0060):	27.93	0.193	0.67	28.08
+ ID2= 2 (0058):	11.67	1.012	0.58	29.48

=====

ID = 1 (0060):	39.60	1.203	0.58	27.63
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NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0015)
IN= 2---> OUT= 1
DT= 5.0 min

OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.4160	2.3678
0.0500	0.0009	0.4400	3.1856
0.1280	0.0026	0.4620	4.0730
0.1760	0.0078	0.4840	5.0499
0.2260	0.0254	0.5040	6.2129
0.2670	0.0487	0.5140	6.8092
0.3030	0.1996	0.5240	7.4138
0.3350	0.5341	0.5330	8.0259
0.3640	0.9932	0.5430	8.6462
0.3910	1.6326	0.9842	9.2768

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0060)	39.600	1.203	0.58	27.63
OUTFLOW: ID= 1 (0015)	39.600	0.303	1.42	27.63

PEAK FLOW REDUCTION [Qout/Qin](%)= 25.19
TIME SHIFT OF PEAK FLOW (min)= 50.00
MAXIMUM STORAGE USED (ha.m.)= 0.2008

**** WARNING : SELECTED ROUTING TIME STEP DENIED.

CALIB
NASHYD (4012)
ID= 1 DT= 5.0 min

Area (ha)= 15.74 Curve Number (CN)= 58.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

Unit Hyd Qpeak (cms)= 3.006

PEAK FLOW (cms)= 0.493 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 8.204
TOTAL RAINFALL (mm)= 48.208
RUNOFF COEFFICIENT = 0.170

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

CALIB
STANDHYD (4011)
ID= 1 DT= 5.0 min

Area (ha)= 3.84
Total Imp(%)= 70.00 Dir. Conn.(%)= 45.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.69	1.15
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	160.00	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	195.80	164.07
over (min)	5.00	10.00
Storage Coeff. (min)=	2.59 (ii)	7.18 (ii)

Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.29	0.14

TOTALS
0.955 (iii)
0.25
38.90
48.21
0.81

PEAK FLOW (cms)=	0.80	0.42
TIME TO PEAK (hrs)=	0.17	0.33
RUNOFF VOLUME (mm)=	47.21	32.11
TOTAL RAINFALL (mm)=	48.21	48.21
RUNOFF COEFFICIENT =	0.98	0.67

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB STANDHYD (4013) ID= 1 DT= 5.0 min	Area (ha)= 3.22 Total Imp(%)= 70.00	Dir. Conn.(%)= 45.00
--	--	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.25	0.97
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	146.52	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	195.80	158.05
over (min)	5.00	10.00
Storage Coeff. (min)=	2.46 (ii)	7.04 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.30	0.14

TOTALS
0.793 (iii)
0.25
38.44
48.21
0.80

PEAK FLOW (cms)=	0.69	0.34
TIME TO PEAK (hrs)=	0.17	0.33
RUNOFF VOLUME (mm)=	47.21	31.26
TOTAL RAINFALL (mm)=	48.21	48.21
RUNOFF COEFFICIENT =	0.98	0.65

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

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

CALIB STANDHYD (4010) ID= 1 DT= 5.0 min	Area (ha)= 1.48 Total Imp(%)= 70.00	Dir. Conn.(%)= 45.00
--	--	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.04	0.44
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	99.33	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	195.80	145.61
------------------------	--------	--------

over (min)	5.00	10.00
Storage Coeff. (min)=	1.94 (ii)	6.53 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.31	0.14

TOTALS

PEAK FLOW (cms)=	0.33	0.15	0.368 (iii)
TIME TO PEAK (hrs)=	0.17	0.33	0.17
RUNOFF VOLUME (mm)=	47.21	28.87	37.12
TOTAL RAINFALL (mm)=	48.21	48.21	48.21
RUNOFF COEFFICIENT =	0.98	0.60	0.77

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
NASHYD (4009)	Area (ha)=	8.51	Curve Number (CN)= 36.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 1.625

PEAK FLOW (cms)=	0.119 (i)
TIME TO PEAK (hrs)=	0.417
RUNOFF VOLUME (mm)=	3.766
TOTAL RAINFALL (mm)=	48.208
RUNOFF COEFFICIENT =	0.078

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

ADD HYD (0062)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (4009):	8.51	0.119	0.42	3.77
+ ID2= 2 (4010):	1.48	0.368	0.17	37.12
=====				
ID = 3 (0062):	9.99	0.434	0.33	8.71

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0063)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0015):	39.60	0.303	1.42	27.63
+ ID2= 2 (4011):	3.84	0.955	0.25	38.90
=====				
ID = 3 (0063):	43.44	1.145	0.33	28.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0063)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0063):	43.44	1.145	0.33	28.62
+ ID2= 2 (4012):	15.74	0.493	0.42	8.20
=====				
ID = 1 (0063):	59.18	1.567	0.33	23.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ADD HYD (0063)				
1 + 2 = 3				
ID1= 1 (0063):	59.18	1.567	0.33	23.19
+ ID2= 2 (4013):	3.22	0.793	0.25	38.44
=====				
ID = 3 (0063):	62.40	2.321	0.33	23.98

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ADD HYD (0063)				
3 + 2 = 1				
ID1= 3 (0063):	62.40	2.321	0.33	23.98
+ ID2= 2 (0062):	9.99	0.434	0.33	8.71
=====				
ID = 1 (0063):	72.39	2.755	0.33	21.87

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
NASHYD (2001)	Area (ha)=	29.70	Curve Number (CN)= 71.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 5.672

PEAK FLOW (cms)= 1.480 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 12.680
 TOTAL RAINFALL (mm)= 48.208
 RUNOFF COEFFICIENT = 0.263

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

CALIB			
NASHYD (3001)	Area (ha)=	4.67	Curve Number (CN)= 71.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 0.892

PEAK FLOW (cms)= 0.233 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 12.680
 TOTAL RAINFALL (mm)= 48.208
 RUNOFF COEFFICIENT = 0.263

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

CALIB			
NASHYD (1001)	Area (ha)=	6.23	Curve Number (CN)= 81.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 1.190

PEAK FLOW (cms)= 0.459 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 18.128
TOTAL RAINFALL (mm)= 48.208
RUNOFF COEFFICIENT = 0.376

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

ADD HYD (0065)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (1001):	6.23	0.459	0.42	18.13
+ ID2= 2 (2001):	29.70	1.480	0.42	12.68
=====				
ID = 3 (0065):	35.93	1.939	0.42	13.62

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0065)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0065):	35.93	1.939	0.42	13.62
+ ID2= 2 (3001):	4.67	0.233	0.42	12.68
=====				
ID = 1 (0065):	40.60	2.172	0.42	13.52

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0065)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0065):	40.60	2.172	0.42	13.52
+ ID2= 2 (0063):	72.39	2.755	0.33	21.87
=====				
ID = 3 (0065):	112.99	4.637	0.33	18.87

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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V      V      I      SSSSS  U      U      A      L      (v 6.2.2020)
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

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    000      TTTTT  TTTTT  H      H      Y      Y      M      M      000      TM
O      O      T      T      H      H      Y Y      MM MM  O      O
O      O      T      T      H      H      Y      M      M      O      O
    000      T      T      H      H      Y      M      M      000

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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\SRastgou\AppData\Local\Civica\XH5\3c86505c-fc9b-4fbe-887a-385e4dcec422\9d6af8bc-8308-4251-93d7-c69e883a1326\sce
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DATE: 06/24/2026

TIME: 08:47:00

USER:

COMMENTS: _____

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*****
** SIMULATION : TCW 5yr **
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READ STORM	Filename: C:\Users\SRastgou\AppData\Local\Temp\00bdeb80-566e-4cc5-a0f2-610c403661e4\dd06e9a6
Ptotal= 41.88 mm	Comments: TCW Fergus Shand Dam 5yr

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.08	0.00	12.17	0.00	18.25	0.00
0.08	180.30	6.17	0.00	12.25	0.00	18.33	0.00
0.17	112.10	6.25	0.00	12.33	0.00	18.42	0.00
0.25	84.90	6.33	0.00	12.42	0.00	18.50	0.00
0.33	0.00	6.42	0.00	12.50	0.00	18.58	0.00
0.42	0.00	6.50	0.00	12.58	0.00	18.67	0.00
0.50	52.70	6.58	0.00	12.67	0.00	18.75	0.00
0.58	0.00	6.67	0.00	12.75	0.00	18.83	0.00
0.67	0.00	6.75	0.00	12.83	0.00	18.92	0.00
0.75	0.00	6.83	0.00	12.92	0.00	19.00	0.00
0.83	0.00	6.92	0.00	13.00	0.00	19.08	0.00
0.92	0.00	7.00	0.00	13.08	0.00	19.17	0.00

1.00	32.80	7.08	0.00	13.17	0.00	19.25	0.00
1.08	0.00	7.17	0.00	13.25	0.00	19.33	0.00
1.17	0.00	7.25	0.00	13.33	0.00	19.42	0.00
1.25	0.00	7.33	0.00	13.42	0.00	19.50	0.00
1.33	0.00	7.42	0.00	13.50	0.00	19.58	0.00
1.42	0.00	7.50	0.00	13.58	0.00	19.67	0.00
1.50	0.00	7.58	0.00	13.67	0.00	19.75	0.00
1.58	0.00	7.67	0.00	13.75	0.00	19.83	0.00
1.67	0.00	7.75	0.00	13.83	0.00	19.92	0.00
1.75	0.00	7.83	0.00	13.92	0.00	20.00	0.00
1.83	0.00	7.92	0.00	14.00	0.00	20.08	0.00
1.92	0.00	8.00	0.00	14.08	0.00	20.17	0.00
2.00	20.40	8.08	0.00	14.17	0.00	20.25	0.00
2.08	0.00	8.17	0.00	14.25	0.00	20.33	0.00
2.17	0.00	8.25	0.00	14.33	0.00	20.42	0.00
2.25	0.00	8.33	0.00	14.42	0.00	20.50	0.00
2.33	0.00	8.42	0.00	14.50	0.00	20.58	0.00
2.42	0.00	8.50	0.00	14.58	0.00	20.67	0.00
2.50	0.00	8.58	0.00	14.67	0.00	20.75	0.00
2.58	0.00	8.67	0.00	14.75	0.00	20.83	0.00
2.67	0.00	8.75	0.00	14.83	0.00	20.92	0.00
2.75	0.00	8.83	0.00	14.92	0.00	21.00	0.00
2.83	0.00	8.92	0.00	15.00	0.00	21.08	0.00
2.92	0.00	9.00	0.00	15.08	0.00	21.17	0.00
3.00	0.00	9.08	0.00	15.17	0.00	21.25	0.00
3.08	0.00	9.17	0.00	15.25	0.00	21.33	0.00
3.17	0.00	9.25	0.00	15.33	0.00	21.42	0.00
3.25	0.00	9.33	0.00	15.42	0.00	21.50	0.00
3.33	0.00	9.42	0.00	15.50	0.00	21.58	0.00
3.42	0.00	9.50	0.00	15.58	0.00	21.67	0.00
3.50	0.00	9.58	0.00	15.67	0.00	21.75	0.00
3.58	0.00	9.67	0.00	15.75	0.00	21.83	0.00
3.67	0.00	9.75	0.00	15.83	0.00	21.92	0.00
3.75	0.00	9.83	0.00	15.92	0.00	22.00	0.00
3.83	0.00	9.92	0.00	16.00	0.00	22.08	0.00
3.92	0.00	10.00	0.00	16.08	0.00	22.17	0.00
4.00	0.00	10.08	0.00	16.17	0.00	22.25	0.00
4.08	0.00	10.17	0.00	16.25	0.00	22.33	0.00
4.17	0.00	10.25	0.00	16.33	0.00	22.42	0.00
4.25	0.00	10.33	0.00	16.42	0.00	22.50	0.00
4.33	0.00	10.42	0.00	16.50	0.00	22.58	0.00
4.42	0.00	10.50	0.00	16.58	0.00	22.67	0.00
4.50	0.00	10.58	0.00	16.67	0.00	22.75	0.00
4.58	0.00	10.67	0.00	16.75	0.00	22.83	0.00
4.67	0.00	10.75	0.00	16.83	0.00	22.92	0.00
4.75	0.00	10.83	0.00	16.92	0.00	23.00	0.00
4.83	0.00	10.92	0.00	17.00	0.00	23.08	0.00
4.92	0.00	11.00	0.00	17.08	0.00	23.17	0.00
5.00	0.00	11.08	0.00	17.17	0.00	23.25	0.00
5.08	0.00	11.17	0.00	17.25	0.00	23.33	0.00
5.17	0.00	11.25	0.00	17.33	0.00	23.42	0.00
5.25	0.00	11.33	0.00	17.42	0.00	23.50	0.00
5.33	0.00	11.42	0.00	17.50	0.00	23.58	0.00
5.42	0.00	11.50	0.00	17.58	0.00	23.67	0.00
5.50	0.00	11.58	0.00	17.67	0.00	23.75	0.00
5.58	0.00	11.67	0.00	17.75	0.00	23.83	0.00
5.67	0.00	11.75	0.00	17.83	0.00	23.92	0.00
5.75	0.00	11.83	0.00	17.92	0.00	24.00	3.70
5.83	0.00	11.92	0.00	18.00	0.00		
5.92	0.00	12.00	6.00	18.08	0.00		
6.00	9.60	12.08	0.00	18.17	0.00		

```

-----
| CALIB                               |
| NASHYD   (  4003)                 |
| ID= 1 DT= 5.0 min                 |
|-----|

```

```

Area      (ha)=   3.80   Curve Number  (CN)= 98.0
Ia        (mm)=   5.00   # of Linear Res.(N)= 3.00
U.H. Tp(hrs)=   0.20

```

Unit Hyd Qpeak (cms)= 0.726

```

PEAK FLOW      (cms)=   0.562 (i)
TIME TO PEAK   (hrs)=   0.417
RUNOFF VOLUME  (mm)=   32.269
TOTAL RAINFALL (mm)=   41.875
RUNOFF COEFFICIENT =   0.771

```

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

```

-----
| ROUTEPIPE( 0017)                 |
| IN= 2---> OUT= 1                 |
| DT= 2.0 min                       |
|-----|

```

```

PIPE Number      =   1.00
Diameter (mm)=  975.00
Length  (m)=  892.00
Slope   (m/m)=   0.002
Manning n      =   0.013

```

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

DEPTH (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME min
0.05	.134E+02	0.0	0.31	48.12
0.10	.374E+02	0.0	0.48	30.84
0.15	.675E+02	0.0	0.62	23.96
0.21	.102E+03	0.1	0.74	20.16
0.26	.140E+03	0.1	0.84	17.71
0.31	.180E+03	0.2	0.93	16.01
0.36	.223E+03	0.3	1.01	14.76
0.41	.266E+03	0.3	1.08	13.82
0.46	.311E+03	0.4	1.14	13.08
0.51	.355E+03	0.5	1.19	12.51
0.56	.400E+03	0.6	1.23	12.06
0.62	.443E+03	0.6	1.27	11.72
0.67	.486E+03	0.7	1.30	11.47
0.72	.526E+03	0.8	1.32	11.30
0.77	.564E+03	0.8	1.33	11.22
0.82	.599E+03	0.9	1.32	11.22
0.87	.629E+03	0.9	1.31	11.35
0.92	.653E+03	0.9	1.28	11.65
0.98	.666E+03	0.9	1.16	12.78

<---- hydrograph ---->				<-pipe / channel->		
AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)	
INFLOW : ID= 2 (4003)	3.80	0.56	0.42	32.27	0.57	1.24
OUTFLOW: ID= 1 (0017)	3.80	0.39	0.56	31.42	0.45	1.13

```

-----
| CALIB                               |
| STANDHYD (  4004)                 |
| ID= 1 DT= 5.0 min                 |
|-----|

```

```

Area      (ha)=   0.93
Total Imp(%)=  70.00   Dir. Conn.(%)=  45.00

```

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.65	0.28
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00

Length	(m)=	78.74	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		168.30	119.25
over (min)		5.00	10.00
Storage Coeff. (min)=	1.80 (ii)		6.67 (ii)
Unit Hyd. Tpeak (min)=	5.00		10.00
Unit Hyd. peak (cms)=	0.32		0.14

TOTALS

PEAK FLOW	(cms)=	0.18	0.07	0.200 (iii)
TIME TO PEAK	(hrs)=	0.17	0.33	0.17
RUNOFF VOLUME	(mm)=	40.87	23.59	31.36
TOTAL RAINFALL	(mm)=	41.88	41.88	41.88
RUNOFF COEFFICIENT	=	0.98	0.56	0.75

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (4001)	Area (ha)=	1.74	
ID= 1 DT= 5.0 min	Total Imp(%)=	70.00	Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.22	0.52
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	107.70	40.00
Mannings n	=	0.013	0.250

Max.Eff.Inten.(mm/hr)=		168.30	122.71
over (min)		5.00	10.00
Storage Coeff. (min)=	2.17 (ii)		7.04 (ii)
Unit Hyd. Tpeak (min)=	5.00		10.00
Unit Hyd. peak (cms)=	0.31		0.14

TOTALS

PEAK FLOW	(cms)=	0.33	0.14	0.360 (iii)
TIME TO PEAK	(hrs)=	0.17	0.33	0.17
RUNOFF VOLUME	(mm)=	40.87	24.28	31.74
TOTAL RAINFALL	(mm)=	41.88	41.88	41.88
RUNOFF COEFFICIENT	=	0.98	0.58	0.76

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 83.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0057)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	0.0190	0.0361
	0.0050	0.0026	0.3920	0.0419

0.0080	0.0056	0.4170	0.0481
0.0100	0.0089	0.4400	0.0547
0.0120	0.0126	0.4620	0.0617
0.0140	0.0166	0.4820	0.0691
0.0150	0.0209	0.5020	0.0768
0.0170	0.0256	1.1750	0.0850
0.0180	0.0307	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (4001)	1.740	0.360	0.17	31.74
OUTFLOW: ID= 1 (0057)	1.740	0.111	0.67	31.67

PEAK FLOW REDUCTION [Qout/Qin](%)= 30.77
TIME SHIFT OF PEAK FLOW (min)= 30.00
MAXIMUM STORAGE USED (ha.m.)= 0.0423

CALIB NASHYD (4002) ID= 1 DT= 5.0 min	Area (ha)= 5.20 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.20	Curve Number (CN)= 83.0 # of Linear Res.(N)= 3.00
--	--	--

Unit Hyd Qpeak (cms)= 0.993

PEAK FLOW (cms)= 0.320 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 15.266
TOTAL RAINFALL (mm)= 41.875
RUNOFF COEFFICIENT = 0.365

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

ADD HYD (0058) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0017):	3.80	0.385	0.56	31.42
+ ID2= 2 (4002):	5.20	0.320	0.42	15.27
ID = 3 (0058):	9.00	0.660	0.44	22.09

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0058) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0058):	9.00	0.660	0.44	22.09
+ ID2= 2 (4004):	0.93	0.200	0.17	31.36
ID = 1 (0058):	9.93	0.718	0.58	22.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0058) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
------------------------------	--------------	----------------	----------------	--------------

ID1= 1 (0058):	9.93	0.718	0.58	22.95
+ ID2= 2 (0057):	1.74	0.111	0.67	31.67
=====				
ID = 3 (0058):	11.67	0.770	0.58	24.25

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB NASHYD (4008) ID= 1 DT= 5.0 min	Area (ha)= 7.52 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.20	Curve Number (CN)= 36.0 # of Linear Res.(N)= 3.00
--	--	--

Unit Hyd Qpeak (cms)= 1.436

PEAK FLOW (cms)= 0.077 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 2.779
 TOTAL RAINFALL (mm)= 41.875
 RUNOFF COEFFICIENT = 0.066

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

CALIB STANDHYD (4005) ID= 1 DT= 5.0 min	Area (ha)= 12.54 Total Imp(%)= 70.00	Dir. Conn.(%)= 45.00
--	---	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	8.78	3.76
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	289.14	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	168.30	119.25
over (min)	5.00	10.00
Storage Coeff. (min)=	3.92 (ii)	8.80 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.24	0.12

PEAK FLOW (cms)=	1.90	0.89	*TOTALS*
TIME TO PEAK (hrs)=	0.17	0.33	2.404 (iii)
RUNOFF VOLUME (mm)=	40.87	23.59	0.25
TOTAL RAINFALL (mm)=	41.88	41.88	31.37
RUNOFF COEFFICIENT =	0.98	0.56	41.88
			0.75

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB STANDHYD (4007) ID= 1 DT= 5.0 min	Area (ha)= 1.30 Total Imp(%)= 70.00	Dir. Conn.(%)= 45.00
--	--	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.91	0.39

Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	93.09	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		168.30	119.25
over (min)		5.00	10.00
Storage Coeff. (min)=		1.99 (ii)	6.86 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.31	0.14

TOTALS

PEAK FLOW	(cms)=	0.25	0.10	0.274 (iii)
TIME TO PEAK	(hrs)=	0.17	0.33	0.17
RUNOFF VOLUME	(mm)=	40.87	23.59	31.36
TOTAL RAINFALL	(mm)=	41.88	41.88	41.88
RUNOFF COEFFICIENT	=	0.98	0.56	0.75

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (4006)	Area (ha)=	6.57	
ID= 1 DT= 5.0 min	Total Imp(%)=	70.00	Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.60	1.97
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	209.28	40.00
Mannings n	=	0.013	0.250

Max.Eff.Inten.(mm/hr)=		168.30	119.25
over (min)		5.00	10.00
Storage Coeff. (min)=		3.23 (ii)	8.10 (ii)
Unit Hyd. Tpeak (min)=		5.00	10.00
Unit Hyd. peak (cms)=		0.27	0.13

TOTALS

PEAK FLOW	(cms)=	1.09	0.48	1.290 (iii)
TIME TO PEAK	(hrs)=	0.17	0.33	0.25
RUNOFF VOLUME	(mm)=	40.87	23.59	31.37
TOTAL RAINFALL	(mm)=	41.88	41.88	41.88
RUNOFF COEFFICIENT	=	0.98	0.56	0.75

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. 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 (0059)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)

ID1= 1 (4005):	12.54	2.404	0.25	31.37
+ ID2= 2 (4006):	6.57	1.290	0.25	31.37
=====				
ID = 3 (0059):	19.11	3.693	0.25	31.37

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0059)				
3 + 2 = 1				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0059):	19.11	3.693	0.25	31.37
+ ID2= 2 (4007):	1.30	0.274	0.17	31.36
=====				
ID = 1 (0059):	20.41	3.954	0.25	31.37

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----		OVERFLOW IS OFF	
RESERVOIR(0013)			
IN= 2---> OUT= 1			
DT= 5.0 min			

	OUTFLOW	STORAGE	
	(cms)	(ha.m.)	
	0.0000	0.0000	
	0.0130	0.0793	
	0.0200	0.1352	
	0.0250	0.1936	
	0.0310	0.2857	
	0.0530	0.3174	
	0.0770	0.3827	
	0.1030	0.5199	
	0.1180	0.5919	
	0.1310	0.6662	
	OUTFLOW	STORAGE	
	(cms)	(ha.m.)	
	0.1540	0.8217	
	0.1640	0.9029	
	0.1740	0.9865	
	0.1910	1.0725	
	0.1990	1.1608	
	0.2070	1.2515	
	0.2220	1.5383	
	0.2290	1.6388	
	1.2760	1.7419	
	3.2170	1.8500	

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0059)	20.410	3.954	0.25	31.37
OUTFLOW: ID= 1 (0013)	20.410	0.107	1.33	31.29

PEAK FLOW REDUCTION [Qout/Qin](%)= 2.71
TIME SHIFT OF PEAK FLOW (min)= 65.00
MAXIMUM STORAGE USED (ha.m.)= 0.5713

ADD HYD (0060)				
1 + 2 = 3				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0013):	20.41	0.107	1.33	31.29
+ ID2= 2 (4008):	7.52	0.077	0.42	2.78
=====				
ID = 3 (0060):	27.93	0.154	0.67	23.61

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0060)				
3 + 2 = 1				

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0060):	27.93	0.154	0.67	23.61
+ ID2= 2 (0058):	11.67	0.770	0.58	24.25

=====

ID = 1 (0060):	39.60	0.922	0.58	23.05
-----------------	-------	-------	------	-------

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0015)
IN= 2---> OUT= 1
DT= 5.0 min

OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.4160	2.3678
0.0500	0.0009	0.4400	3.1856
0.1280	0.0026	0.4620	4.0730
0.1760	0.0078	0.4840	5.0499
0.2260	0.0254	0.5040	6.2129
0.2670	0.0487	0.5140	6.8092
0.3030	0.1996	0.5240	7.4138
0.3350	0.5341	0.5330	8.0259
0.3640	0.9932	0.5430	8.6462
0.3910	1.6326	0.9842	9.2768

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0060)	39.600	0.922	0.58	23.05
OUTFLOW: ID= 1 (0015)	39.600	0.288	1.36	23.05

PEAK FLOW REDUCTION [Qout/Qin](%)= 31.29
TIME SHIFT OF PEAK FLOW (min)= 46.67
MAXIMUM STORAGE USED (ha.m.)= 0.1398

**** WARNING : SELECTED ROUTING TIME STEP DENIED.

CALIB
NASHYD (4012)
ID= 1 DT= 5.0 min

Area (ha)=	15.74	Curve Number (CN)=	58.0
Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 3.006

PEAK FLOW (cms)= 0.363 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 6.146
TOTAL RAINFALL (mm)= 41.875
RUNOFF COEFFICIENT = 0.147

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

CALIB
STANDHYD (4011)
ID= 1 DT= 5.0 min

Area (ha)=	3.84		
Total Imp(%)=	70.00	Dir. Conn.(%)=	45.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.69	1.15
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	160.00	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	168.30	133.59
over (min)	5.00	10.00
Storage Coeff. (min)=	2.75 (ii)	7.62 (ii)

Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.28	0.13

TOTALS
0.800 (iii)
0.25
32.97
41.88
0.79

PEAK FLOW (cms)=	0.68	0.33
TIME TO PEAK (hrs)=	0.17	0.33
RUNOFF VOLUME (mm)=	40.87	26.50
TOTAL RAINFALL (mm)=	41.88	41.88
RUNOFF COEFFICIENT =	0.98	0.63

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB STANDHYD (4013) ID= 1 DT= 5.0 min	Area (ha)= 3.22 Total Imp(%)= 70.00 Dir. Conn.(%)= 45.00
--	--

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.25	0.97
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	146.52	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	168.30	129.88
over (min)	5.00	10.00
Storage Coeff. (min)=	2.61 (ii)	7.48 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.29	0.13

TOTALS
0.664 (iii)
0.25
32.55
41.88
0.78

PEAK FLOW (cms)=	0.58	0.27
TIME TO PEAK (hrs)=	0.17	0.33
RUNOFF VOLUME (mm)=	40.87	25.73
TOTAL RAINFALL (mm)=	41.88	41.88
RUNOFF COEFFICIENT =	0.98	0.61

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

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

CALIB STANDHYD (4010) ID= 1 DT= 5.0 min	Area (ha)= 1.48 Total Imp(%)= 70.00 Dir. Conn.(%)= 45.00
--	--

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.04	0.44
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	99.33	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	168.30	119.25
------------------------	--------	--------

over (min)	5.00	10.00
Storage Coeff. (min)=	2.07 (ii)	6.94 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.31	0.14

TOTALS

PEAK FLOW (cms)=	0.28	0.12	0.309 (iii)
TIME TO PEAK (hrs)=	0.17	0.33	0.17
RUNOFF VOLUME (mm)=	40.87	23.59	31.36
TOTAL RAINFALL (mm)=	41.88	41.88	41.88
RUNOFF COEFFICIENT =	0.98	0.56	0.75

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
NASHYD (4009)	Area (ha)=	8.51	Curve Number (CN)= 36.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 1.625

PEAK FLOW (cms)=	0.087 (i)
TIME TO PEAK (hrs)=	0.417
RUNOFF VOLUME (mm)=	2.779
TOTAL RAINFALL (mm)=	41.875
RUNOFF COEFFICIENT =	0.066

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

ADD HYD (0062)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (4009):	8.51	0.087	0.42	2.78
+ ID2= 2 (4010):	1.48	0.309	0.17	31.36
ID = 3 (0062):	9.99	0.351	0.33	7.01

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0063)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0015):	39.60	0.288	1.36	23.05
+ ID2= 2 (4011):	3.84	0.800	0.25	32.97
ID = 3 (0063):	43.44	0.979	0.33	23.92

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0063)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0063):	43.44	0.979	0.33	23.92
+ ID2= 2 (4012):	15.74	0.363	0.42	6.15
=====				
ID = 1 (0063):	59.18	1.286	0.33	19.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ADD HYD (0063)				
1 + 2 = 3				
ID1= 1 (0063):	59.18	1.286	0.33	19.19
+ ID2= 2 (4013):	3.22	0.664	0.25	32.55
=====				
ID = 3 (0063):	62.40	1.919	0.33	19.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ADD HYD (0063)				
3 + 2 = 1				
ID1= 3 (0063):	62.40	1.919	0.33	19.88
+ ID2= 2 (0062):	9.99	0.351	0.33	7.01
=====				
ID = 1 (0063):	72.39	2.270	0.33	18.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
NASHYD (2001)	Area (ha)=	29.70	Curve Number (CN)= 71.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 5.672

PEAK FLOW (cms)= 1.105 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 9.651
 TOTAL RAINFALL (mm)= 41.875
 RUNOFF COEFFICIENT = 0.230

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

CALIB			
NASHYD (3001)	Area (ha)=	4.67	Curve Number (CN)= 71.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 0.892

PEAK FLOW (cms)= 0.174 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 9.651
 TOTAL RAINFALL (mm)= 41.875
 RUNOFF COEFFICIENT = 0.230

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

CALIB				
NASHYD (1001)	Area (ha)=	6.23	Curve Number (CN)=	81.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
	U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 1.190

PEAK FLOW (cms)= 0.350 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 14.070
TOTAL RAINFALL (mm)= 41.875
RUNOFF COEFFICIENT = 0.336

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

ADD HYD (0065)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (1001):	6.23	0.350	0.42	14.07
+ ID2= 2 (2001):	29.70	1.105	0.42	9.65
=====				
ID = 3 (0065):	35.93	1.455	0.42	10.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0065)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0065):	35.93	1.455	0.42	10.42
+ ID2= 2 (3001):	4.67	0.174	0.42	9.65
=====				
ID = 1 (0065):	40.60	1.629	0.42	10.33

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0065)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0065):	40.60	1.629	0.42	10.33
+ ID2= 2 (0063):	72.39	2.270	0.33	18.11
=====				
ID = 3 (0065):	112.99	3.666	0.33	15.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.


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=====
=====
V      V      I      SSSSS  U      U      A      L      (v 6.2.2020)
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

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    000      TTTTT  TTTTT  H      H      Y      Y      M      M      000      TM
O      O      T      T      H      H      Y Y      MM MM  O      O
O      O      T      T      H      H      Y      M      M      O      O
    000      T      T      H      H      Y      M      M      000

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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\SRastgou\AppData\Local\Civica\XH5\3c86505c-fc9b-4fbe-887a-385e4dcec422\4ea83804-50d2-43b7-a949-83ddbe3b3f44\sce
 Summary filename: C:\Users\SRastgou\AppData\Local\Civica\XH5\3c86505c-fc9b-4fbe-887a-385e4dcec422\4ea83804-50d2-43b7-a949-83ddbe3b3f44\sce

DATE: 06/24/2026

TIME: 08:46:59

USER:

COMMENTS: _____

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*****
** SIMULATION : TCW 2yr **
*****

```

READ STORM	Filename: C:\Users\SRastgou\AppData\Local\Temp\00bdeb80-566e-4cc5-a0f2-610c403661e4\115b3bfb
Ptotal= 32.23 mm	Comments: TCW Fergus Shand Dam 2yr

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.00	0.00	6.08	0.00	12.17	0.00	18.25	0.00
0.08	138.20	6.17	0.00	12.25	0.00	18.33	0.00
0.17	86.20	6.25	0.00	12.33	0.00	18.42	0.00
0.25	65.30	6.33	0.00	12.42	0.00	18.50	0.00
0.33	0.00	6.42	0.00	12.50	0.00	18.58	0.00
0.42	0.00	6.50	0.00	12.58	0.00	18.67	0.00
0.50	40.70	6.58	0.00	12.67	0.00	18.75	0.00
0.58	0.00	6.67	0.00	12.75	0.00	18.83	0.00
0.67	0.00	6.75	0.00	12.83	0.00	18.92	0.00
0.75	0.00	6.83	0.00	12.92	0.00	19.00	0.00
0.83	0.00	6.92	0.00	13.00	0.00	19.08	0.00
0.92	0.00	7.00	0.00	13.08	0.00	19.17	0.00

1.00	25.40	7.08	0.00	13.17	0.00	19.25	0.00
1.08	0.00	7.17	0.00	13.25	0.00	19.33	0.00
1.17	0.00	7.25	0.00	13.33	0.00	19.42	0.00
1.25	0.00	7.33	0.00	13.42	0.00	19.50	0.00
1.33	0.00	7.42	0.00	13.50	0.00	19.58	0.00
1.42	0.00	7.50	0.00	13.58	0.00	19.67	0.00
1.50	0.00	7.58	0.00	13.67	0.00	19.75	0.00
1.58	0.00	7.67	0.00	13.75	0.00	19.83	0.00
1.67	0.00	7.75	0.00	13.83	0.00	19.92	0.00
1.75	0.00	7.83	0.00	13.92	0.00	20.00	0.00
1.83	0.00	7.92	0.00	14.00	0.00	20.08	0.00
1.92	0.00	8.00	0.00	14.08	0.00	20.17	0.00
2.00	15.80	8.08	0.00	14.17	0.00	20.25	0.00
2.08	0.00	8.17	0.00	14.25	0.00	20.33	0.00
2.17	0.00	8.25	0.00	14.33	0.00	20.42	0.00
2.25	0.00	8.33	0.00	14.42	0.00	20.50	0.00
2.33	0.00	8.42	0.00	14.50	0.00	20.58	0.00
2.42	0.00	8.50	0.00	14.58	0.00	20.67	0.00
2.50	0.00	8.58	0.00	14.67	0.00	20.75	0.00
2.58	0.00	8.67	0.00	14.75	0.00	20.83	0.00
2.67	0.00	8.75	0.00	14.83	0.00	20.92	0.00
2.75	0.00	8.83	0.00	14.92	0.00	21.00	0.00
2.83	0.00	8.92	0.00	15.00	0.00	21.08	0.00
2.92	0.00	9.00	0.00	15.08	0.00	21.17	0.00
3.00	0.00	9.08	0.00	15.17	0.00	21.25	0.00
3.08	0.00	9.17	0.00	15.25	0.00	21.33	0.00
3.17	0.00	9.25	0.00	15.33	0.00	21.42	0.00
3.25	0.00	9.33	0.00	15.42	0.00	21.50	0.00
3.33	0.00	9.42	0.00	15.50	0.00	21.58	0.00
3.42	0.00	9.50	0.00	15.58	0.00	21.67	0.00
3.50	0.00	9.58	0.00	15.67	0.00	21.75	0.00
3.58	0.00	9.67	0.00	15.75	0.00	21.83	0.00
3.67	0.00	9.75	0.00	15.83	0.00	21.92	0.00
3.75	0.00	9.83	0.00	15.92	0.00	22.00	0.00
3.83	0.00	9.92	0.00	16.00	0.00	22.08	0.00
3.92	0.00	10.00	0.00	16.08	0.00	22.17	0.00
4.00	0.00	10.08	0.00	16.17	0.00	22.25	0.00
4.08	0.00	10.17	0.00	16.25	0.00	22.33	0.00
4.17	0.00	10.25	0.00	16.33	0.00	22.42	0.00
4.25	0.00	10.33	0.00	16.42	0.00	22.50	0.00
4.33	0.00	10.42	0.00	16.50	0.00	22.58	0.00
4.42	0.00	10.50	0.00	16.58	0.00	22.67	0.00
4.50	0.00	10.58	0.00	16.67	0.00	22.75	0.00
4.58	0.00	10.67	0.00	16.75	0.00	22.83	0.00
4.67	0.00	10.75	0.00	16.83	0.00	22.92	0.00
4.75	0.00	10.83	0.00	16.92	0.00	23.00	0.00
4.83	0.00	10.92	0.00	17.00	0.00	23.08	0.00
4.92	0.00	11.00	0.00	17.08	0.00	23.17	0.00
5.00	0.00	11.08	0.00	17.17	0.00	23.25	0.00
5.08	0.00	11.17	0.00	17.25	0.00	23.33	0.00
5.17	0.00	11.25	0.00	17.33	0.00	23.42	0.00
5.25	0.00	11.33	0.00	17.42	0.00	23.50	0.00
5.33	0.00	11.42	0.00	17.50	0.00	23.58	0.00
5.42	0.00	11.50	0.00	17.58	0.00	23.67	0.00
5.50	0.00	11.58	0.00	17.67	0.00	23.75	0.00
5.58	0.00	11.67	0.00	17.75	0.00	23.83	0.00
5.67	0.00	11.75	0.00	17.83	0.00	23.92	0.00
5.75	0.00	11.83	0.00	17.92	0.00	24.00	2.90
5.83	0.00	11.92	0.00	18.00	0.00		
5.92	0.00	12.00	4.70	18.08	0.00		
6.00	7.50	12.08	0.00	18.17	0.00		

```

-----
| CALIB                               |
| NASHYD   ( 4003)                   |
| ID= 1 DT= 5.0 min                   |
|-----|

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```

Area      (ha)= 3.80   Curve Number (CN)= 98.0
Ia        (mm)= 5.00   # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.20

```

Unit Hyd Qpeak (cms)= 0.726

```

PEAK FLOW      (cms)= 0.389 (i)
TIME TO PEAK   (hrs)= 0.417
RUNOFF VOLUME  (mm)= 22.827
TOTAL RAINFALL (mm)= 32.225
RUNOFF COEFFICIENT = 0.708

```

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

```

-----
| ROUTEPIPE( 0017)                   |
| IN= 2---> OUT= 1                   |
| DT= 2.0 min                         |
|-----|

```

```

PIPE Number    = 1.00
Diameter      (mm)= 975.00
Length        (m)= 892.00
Slope         (m/m)= 0.002
Manning n     = 0.013

```

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

DEPTH (m)	VOLUME (cu.m.)	FLOW RATE (cms)	VELOCITY (m/s)	TRAV.TIME min
0.05	.134E+02	0.0	0.31	48.12
0.10	.374E+02	0.0	0.48	30.84
0.15	.675E+02	0.0	0.62	23.96
0.21	.102E+03	0.1	0.74	20.16
0.26	.140E+03	0.1	0.84	17.71
0.31	.180E+03	0.2	0.93	16.01
0.36	.223E+03	0.3	1.01	14.76
0.41	.266E+03	0.3	1.08	13.82
0.46	.311E+03	0.4	1.14	13.08
0.51	.355E+03	0.5	1.19	12.51
0.56	.400E+03	0.6	1.23	12.06
0.62	.443E+03	0.6	1.27	11.72
0.67	.486E+03	0.7	1.30	11.47
0.72	.526E+03	0.8	1.32	11.30
0.77	.564E+03	0.8	1.33	11.22
0.82	.599E+03	0.9	1.32	11.22
0.87	.629E+03	0.9	1.31	11.35
0.92	.653E+03	0.9	1.28	11.65
0.98	.666E+03	0.9	1.16	12.78

<---- hydrograph ---->				<-pipe / channel->	
AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	MAX DEPTH (m)	MAX VEL (m/s)
INFLOW : ID= 2 (4003)	3.80	0.39	0.42	22.83	0.46
OUTFLOW: ID= 1 (0017)	3.80	0.26	0.58	22.17	0.36

```

-----
| CALIB                               |
| STANDHYD ( 4004)                   |
| ID= 1 DT= 5.0 min                   |
|-----|

```

```

Area      (ha)= 0.93
Total Imp(%)= 70.00   Dir. Conn.(%)= 45.00

```

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.65	0.28
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00

Length	(m)=	78.74	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		126.20	80.73
over (min)		5.00	10.00
Storage Coeff. (min)=	2.02 (ii)		9.71 (ii)
Unit Hyd. Tpeak (min)=	5.00		10.00
Unit Hyd. peak (cms)=	0.31		0.11
PEAK FLOW	(cms)=	0.13	0.04
TIME TO PEAK	(hrs)=	0.17	0.33
RUNOFF VOLUME	(mm)=	31.22	15.96
TOTAL RAINFALL	(mm)=	32.23	32.23
RUNOFF COEFFICIENT	=	0.97	0.50

TOTALS

0.142 (iii)
0.17
22.82
32.23
0.71

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (4001)	Area (ha)=	1.74	
ID= 1 DT= 5.0 min	Total Imp(%)=	70.00	Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.22	0.52
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	107.70	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		126.20	83.52
over (min)		5.00	15.00
Storage Coeff. (min)=	2.43 (ii)		10.02 (ii)
Unit Hyd. Tpeak (min)=	5.00		15.00
Unit Hyd. peak (cms)=	0.30		0.10

TOTALS

0.248 (iii)
0.17
23.12
32.23
0.72

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 83.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0057)	OVERFLOW IS OFF			
IN= 2---> OUT= 1				
DT= 5.0 min	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	0.0190	0.0361
	0.0050	0.0026	0.3920	0.0419

0.0080	0.0056	0.4170	0.0481
0.0100	0.0089	0.4400	0.0547
0.0120	0.0126	0.4620	0.0617
0.0140	0.0166	0.4820	0.0691
0.0150	0.0209	0.5020	0.0768
0.0170	0.0256	1.1750	0.0850
0.0180	0.0307	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (4001)	1.740	0.248	0.17	23.12
OUTFLOW: ID= 1 (0057)	1.740	0.018	1.25	23.05

PEAK FLOW REDUCTION [Qout/Qin](%)= 7.13
TIME SHIFT OF PEAK FLOW (min)= 65.00
MAXIMUM STORAGE USED (ha.m.)= 0.0308

CALIB NASHYD (4002) ID= 1 DT= 5.0 min	Area (ha)= 5.20 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.20	Curve Number (CN)= 83.0 # of Linear Res.(N)= 3.00
--	--	--

Unit Hyd Qpeak (cms)= 0.993

PEAK FLOW (cms)= 0.187 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 9.335
TOTAL RAINFALL (mm)= 32.225
RUNOFF COEFFICIENT = 0.290

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

ADD HYD (0058) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0017):	3.80	0.257	0.58	22.17
+ ID2= 2 (4002):	5.20	0.187	0.42	9.33
ID = 3 (0058):	9.00	0.411	0.56	14.75

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0058) 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0058):	9.00	0.411	0.56	14.75
+ ID2= 2 (4004):	0.93	0.142	0.17	22.82
ID = 1 (0058):	9.93	0.473	0.58	15.51

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0058) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
------------------------------	--------------	----------------	----------------	--------------

ID1= 1 (0058):	9.93	0.473	0.58	15.51
+ ID2= 2 (0057):	1.74	0.018	1.25	23.05
=====				
ID = 3 (0058):	11.67	0.490	0.58	16.63

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB NASHYD (4008) ID= 1 DT= 5.0 min	Area (ha)= 7.52 Ia (mm)= 5.00 U.H. Tp(hrs)= 0.20	Curve Number (CN)= 36.0 # of Linear Res.(N)= 3.00
--	--	--

Unit Hyd Qpeak (cms)= 1.436

PEAK FLOW (cms)= 0.041 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 1.545
 TOTAL RAINFALL (mm)= 32.225
 RUNOFF COEFFICIENT = 0.048

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

CALIB STANDHYD (4005) ID= 1 DT= 5.0 min	Area (ha)= 12.54 Total Imp(%)= 70.00	Dir. Conn.(%)= 45.00
--	---	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	8.78	3.76
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	289.14	40.00
Mannings n =	0.013	0.250

Max.Eff.Inten.(mm/hr)=	126.20	80.73
over (min)	5.00	15.00
Storage Coeff. (min)=	4.40 (ii)	12.09 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.23	0.09

PEAK FLOW (cms)=	1.35	0.47	*TOTALS*
TIME TO PEAK (hrs)=	0.25	0.42	1.531 (iii)
RUNOFF VOLUME (mm)=	31.22	15.96	0.25
TOTAL RAINFALL (mm)=	32.23	32.23	22.83
RUNOFF COEFFICIENT =	0.97	0.50	32.23
			0.71

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB STANDHYD (4007) ID= 1 DT= 5.0 min	Area (ha)= 1.30 Total Imp(%)= 70.00	Dir. Conn.(%)= 45.00
--	--	----------------------

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.91	0.39

Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	93.09	40.00
Mannings n	=	0.013	0.250
Max.Eff.Inten.(mm/hr)=		126.20	80.73
over (min)		5.00	10.00
Storage Coeff. (min)=	2.23 (ii)		9.92 (ii)
Unit Hyd. Tpeak (min)=	5.00		10.00
Unit Hyd. peak (cms)=	0.30		0.11

TOTALS

PEAK FLOW	(cms)=	0.18	0.06	0.194 (iii)
TIME TO PEAK	(hrs)=	0.17	0.33	0.17
RUNOFF VOLUME	(mm)=	31.22	15.96	22.82
TOTAL RAINFALL	(mm)=	32.23	32.23	32.23
RUNOFF COEFFICIENT	=	0.97	0.50	0.71

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (4006)	Area (ha)=	6.57	
ID= 1 DT= 5.0 min	Total Imp(%)=	70.00	Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	4.60	1.97
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	209.28	40.00
Mannings n	=	0.013	0.250

Max.Eff.Inten.(mm/hr)=		126.20	80.73
over (min)		5.00	15.00
Storage Coeff. (min)=	3.63 (ii)		11.31 (ii)
Unit Hyd. Tpeak (min)=	5.00		15.00
Unit Hyd. peak (cms)=	0.25		0.09

TOTALS

PEAK FLOW	(cms)=	0.78	0.25	0.824 (iii)
TIME TO PEAK	(hrs)=	0.17	0.42	0.25
RUNOFF VOLUME	(mm)=	31.22	15.96	22.83
TOTAL RAINFALL	(mm)=	32.23	32.23	32.23
RUNOFF COEFFICIENT	=	0.97	0.50	0.71

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. 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 (0059)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)

ID1= 1 (4005):	12.54	1.531	0.25	22.83
+ ID2= 2 (4006):	6.57	0.824	0.25	22.83
=====				
ID = 3 (0059):	19.11	2.355	0.25	22.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0059)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0059):	19.11	2.355	0.25	22.83
+ ID2= 2 (4007):	1.30	0.194	0.17	22.82
=====				
ID = 1 (0059):	20.41	2.537	0.25	22.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0013)
IN= 2---> OUT= 1
DT= 5.0 min

OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.1540	0.8217
0.0130	0.0793	0.1640	0.9029
0.0200	0.1352	0.1740	0.9865
0.0250	0.1936	0.1910	1.0725
0.0310	0.2857	0.1990	1.1608
0.0530	0.3174	0.2070	1.2515
0.0770	0.3827	0.2220	1.5383
0.1030	0.5199	0.2290	1.6388
0.1180	0.5919	1.2760	1.7419
0.1310	0.6662	3.2170	1.8500

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0059)	20.410	2.537	0.25	22.83
OUTFLOW: ID= 1 (0013)	20.410	0.078	1.42	22.75

PEAK FLOW REDUCTION [Qout/Qin](%)= 3.09
TIME SHIFT OF PEAK FLOW (min)= 70.00
MAXIMUM STORAGE USED (ha.m.)= 0.4093

ADD HYD (0060)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0013):	20.41	0.078	1.42	22.75
+ ID2= 2 (4008):	7.52	0.041	0.42	1.55
=====				
ID = 3 (0060):	27.93	0.091	0.67	17.04

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0060)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0060):	27.93	0.091	0.67	17.04
+ ID2= 2 (0058):	11.67	0.490	0.58	16.63

=====

ID = 1 (0060):	39.60	0.567	0.58	16.34
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NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0015)
IN= 2---> OUT= 1
DT= 5.0 min

OVERFLOW IS OFF

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.4160	2.3678
0.0500	0.0009	0.4400	3.1856
0.1280	0.0026	0.4620	4.0730
0.1760	0.0078	0.4840	5.0499
0.2260	0.0254	0.5040	6.2129
0.2670	0.0487	0.5140	6.8092
0.3030	0.1996	0.5240	7.4138
0.3350	0.5341	0.5330	8.0259
0.3640	0.9932	0.5430	8.6462
0.3910	1.6326	0.9842	9.2768

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0060)	39.600	0.567	0.58	16.34
OUTFLOW: ID= 1 (0015)	39.600	0.270	0.97	16.34

PEAK FLOW REDUCTION [Qout/Qin](%)= 47.53
TIME SHIFT OF PEAK FLOW (min)= 23.33
MAXIMUM STORAGE USED (ha.m.)= 0.0605

**** WARNING : SELECTED ROUTING TIME STEP DENIED.

CALIB
NASHYD (4012)
ID= 1 DT= 5.0 min

Area (ha)=	15.74	Curve Number (CN)=	58.0
Ia (mm)=	5.00	# of Linear Res.(N)=	3.00
U.H. Tp(hrs)=	0.20		

Unit Hyd Qpeak (cms)= 3.006

PEAK FLOW (cms)= 0.199 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 3.503
TOTAL RAINFALL (mm)= 32.225
RUNOFF COEFFICIENT = 0.109

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

CALIB
STANDHYD (4011)
ID= 1 DT= 5.0 min

Area (ha)=	3.84		
Total Imp(%)=	70.00	Dir. Conn.(%)=	45.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.69	1.15
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	160.00	40.00
Mannings n =	0.013	0.250
Max.Eff.Inten.(mm/hr)=	126.20	92.57
over (min)	5.00	15.00
Storage Coeff. (min)=	3.09 (ii)	10.37 (ii)

Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.27	0.09

TOTALS
0.508 (iii)
0.17
24.10
32.23
0.75

PEAK FLOW (cms)=	0.49	0.18
TIME TO PEAK (hrs)=	0.17	0.42
RUNOFF VOLUME (mm)=	31.22	18.28
TOTAL RAINFALL (mm)=	32.23	32.23
RUNOFF COEFFICIENT =	0.97	0.57

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 86.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
STANDHYD (4013)	Area (ha)=	3.22	
ID= 1 DT= 5.0 min	Total Imp(%)=	70.00	Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=		2.25	0.97
Dep. Storage (mm)=		1.00	1.50
Average Slope (%)=		1.00	2.00
Length (m)=		146.52	40.00
Mannings n =		0.013	0.250

Max.Eff.Inten.(mm/hr)=	126.20	89.44
over (min)	5.00	15.00
Storage Coeff. (min)=	2.93 (ii)	10.31 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.28	0.09

TOTALS
0.434 (iii)
0.17
23.76
32.23
0.74

PEAK FLOW (cms)=	0.42	0.15
TIME TO PEAK (hrs)=	0.17	0.42
RUNOFF VOLUME (mm)=	31.22	17.66
TOTAL RAINFALL (mm)=	32.23	32.23
RUNOFF COEFFICIENT =	0.97	0.55

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

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

CALIB			
STANDHYD (4010)	Area (ha)=	1.48	
ID= 1 DT= 5.0 min	Total Imp(%)=	70.00	Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=		1.04	0.44
Dep. Storage (mm)=		1.00	1.50
Average Slope (%)=		1.00	2.00
Length (m)=		99.33	40.00
Mannings n =		0.013	0.250

Max.Eff.Inten.(mm/hr)=	126.20	80.73
------------------------	--------	-------

over (min)	5.00	15.00
Storage Coeff. (min)=	2.32 (ii)	10.01 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.30	0.10

TOTALS

PEAK FLOW (cms)=	0.21	0.06	0.214 (iii)
TIME TO PEAK (hrs)=	0.17	0.42	0.17
RUNOFF VOLUME (mm)=	31.22	15.96	22.82
TOTAL RAINFALL (mm)=	32.23	32.23	32.23
RUNOFF COEFFICIENT =	0.97	0.50	0.71

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 82.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

CALIB			
NASHYD (4009)	Area (ha)=	8.51	Curve Number (CN)= 36.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 1.625

PEAK FLOW (cms)=	0.046 (i)
TIME TO PEAK (hrs)=	0.417
RUNOFF VOLUME (mm)=	1.545
TOTAL RAINFALL (mm)=	32.225
RUNOFF COEFFICIENT =	0.048

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

ADD HYD (0062)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (4009):	8.51	0.046	0.42	1.55
+ ID2= 2 (4010):	1.48	0.214	0.17	22.82
ID = 3 (0062):	9.99	0.217	0.17	4.70

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0063)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0015):	39.60	0.270	0.97	16.34
+ ID2= 2 (4011):	3.84	0.508	0.17	24.10
ID = 3 (0063):	43.44	0.671	0.33	17.03

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0063)

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0063):	43.44	0.671	0.33	17.03
+ ID2= 2 (4012):	15.74	0.199	0.42	3.50
=====				
ID = 1 (0063):	59.18	0.836	0.33	13.43

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ADD HYD (0063)				
1 + 2 = 3				
ID1= 1 (0063):	59.18	0.836	0.33	13.43
+ ID2= 2 (4013):	3.22	0.434	0.17	23.76
=====				
ID = 3 (0063):	62.40	1.237	0.33	13.96

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ADD HYD (0063)				
3 + 2 = 1				
ID1= 3 (0063):	62.40	1.237	0.33	13.96
+ ID2= 2 (0062):	9.99	0.217	0.17	4.70
=====				
ID = 1 (0063):	72.39	1.451	0.33	12.69

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
NASHYD (2001)	Area (ha)=	29.70	Curve Number (CN)= 71.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 5.672

PEAK FLOW (cms)= 0.619 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 5.648
 TOTAL RAINFALL (mm)= 32.225
 RUNOFF COEFFICIENT = 0.175

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

CALIB			
NASHYD (3001)	Area (ha)=	4.67	Curve Number (CN)= 71.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 0.892

PEAK FLOW (cms)= 0.097 (i)
 TIME TO PEAK (hrs)= 0.417
 RUNOFF VOLUME (mm)= 5.648
 TOTAL RAINFALL (mm)= 32.225
 RUNOFF COEFFICIENT = 0.175

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

CALIB			
NASHYD (1001)	Area (ha)=	6.23	Curve Number (CN)= 81.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.20	

Unit Hyd Qpeak (cms)= 1.190

PEAK FLOW (cms)= 0.202 (i)
TIME TO PEAK (hrs)= 0.417
RUNOFF VOLUME (mm)= 8.522
TOTAL RAINFALL (mm)= 32.225
RUNOFF COEFFICIENT = 0.264

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

ADD HYD (0065)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (1001):	6.23	0.202	0.42	8.52
+ ID2= 2 (2001):	29.70	0.619	0.42	5.65
ID = 3 (0065):	35.93	0.821	0.42	6.15

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0065)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0065):	35.93	0.821	0.42	6.15
+ ID2= 2 (3001):	4.67	0.097	0.42	5.65
ID = 1 (0065):	40.60	0.919	0.42	6.09

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0065)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0065):	40.60	0.919	0.42	6.09
+ ID2= 2 (0063):	72.39	1.451	0.33	12.69
ID = 3 (0065):	112.99	2.219	0.33	10.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.



BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix C

Stormwater Pond Design Calculations

Fergus Golf Course Redevelopment
Project No. 300052719.3000
June 24, 2026

Proposed Stormwater Management Pond (North)

ELEV	INC. DEPTH	SURFACE AREA	INCREM. STORAGE VOLUME	ACCUM. STORAGE VOL	INCREM. ACTIVE STORAGE VOLUME	ACCUM. ACTIVE STORAGE VOLUME	
(m)	(m)	(m ²)	(m ³)	(m ³)	(m ³)	(m ³)	
429.60	0.00	247.98	0.00	0.00	0.00	0.00	Bottom of Pond / Invert of 100mm dia orifice
429.70	0.10	280.57	26.43	26.43	26.43	26.43	
429.80	0.20	313.84	29.72	56.15	29.72	56.15	
429.90	0.30	347.67	33.08	89.22	33.08	89.22	
430.00	0.40	382.07	36.49	125.71	36.49	125.71	
430.10	0.50	417.04	39.96	165.67	39.96	165.67	
430.20	0.60	452.55	43.48	209.15	43.48	209.15	
430.30	0.70	488.65	47.06	256.21	47.06	256.21	
430.40	0.80	525.30	50.70	306.90	50.70	306.90	
430.50	0.90	562.51	54.39	361.29	54.39	361.29	Invert of 450mm dia outlet
430.60	1.00	600.29	58.14	419.43	58.14	419.43	
430.70	1.10	638.63	61.95	481.38	61.95	481.38	
430.80	1.20	677.53	65.81	547.19	65.81	547.19	
430.90	1.30	717.00	69.73	616.91	69.73	616.91	
431.00	1.40	757.07	73.70	690.62	73.70	690.62	
431.10	1.50	797.70	77.74	768.36	77.74	768.36	Emergency Overflow Weir
431.20	1.60	838.89	81.83	850.19	81.83	850.19	Overflow / Top of Bank

ORIFICE CALCUALTION**(100mm dia. Orifice)**

Q = 0.026 m³/s
 Cd = 0.60
 H = 1.55 m
 2g = 19.62
 A = 0.008 m²
 D= 0.100 m
 D/2= 0.050 m

ORIFICE CALCUALTION**(450mm dia. outlet pipe)**

Q = 0.321 m³/s
 Cd = 0.60 (NEW)
 H = 0.58 m
 2g = 19.62
 A = 0.159 m²
 D= 0.450 m
 D/2= 0.225 m

OVERFLOW WEIR**15m long emergency weir)**

Q = 0.654 cu m/s
 d1 = 1.600 m
 h = 1.500 m
 H = 0.100 m
 2g = 19.620
 L = 15.000 m

ELEV (m)	STAGE (m)	STORAGE (ha-m)	ORIFICE (m ³ /s)	PIPE (m ³ /s)	WEIR (m ³ /s)	TOTAL (m ³ /s)	
429.60	0.00	0.0000	0.000	0.000	0.000	0.000	Bottom of Pond / Invert of 100mm dia orifice
429.70	0.10	0.0026	0.005	0.000	0.000	0.005	
429.80	0.20	0.0056	0.008	0.000	0.000	0.008	
429.90	0.30	0.0089	0.010	0.000	0.000	0.010	
430.00	0.40	0.0126	0.012	0.000	0.000	0.012	
430.10	0.50	0.0166	0.014	0.000	0.000	0.014	
430.20	0.60	0.0209	0.015	0.000	0.000	0.015	
430.30	0.70	0.0256	0.017	0.000	0.000	0.017	
430.40	0.80	0.0307	0.018	0.000	0.000	0.018	
430.50	0.90	0.0361	0.019	0.000	0.000	0.019	Invert of 450mm dia outlet
430.60	1.00	0.0419	0.020	0.372	0.000	0.392	
430.70	1.10	0.0481	0.021	0.395	0.000	0.417	
430.80	1.20	0.0547	0.022	0.417	0.000	0.440	
430.90	1.30	0.0617	0.023	0.438	0.000	0.462	
431.00	1.40	0.0691	0.024	0.458	0.000	0.482	
431.10	1.50	0.0768	0.025	0.477	0.000	0.502	Emergency Overflow Weir
431.20	1.60	0.0850	0.026	0.496	0.654	1.175	Overflow / Top of Bank

Fergus Golf Course Redevelopment
Project No. 30005271943000
June 24, 2025

Proposed Stormwater Management Pond (South)

ELEV	INC.	SURFACE	INCREMENTAL	ACCUMULATED	INCREMENTAL	ACCUMULATED	
DEPTH	AREA	STORAGE	STORAGE	ACTIVE	ACTIVE		
(m)	(m)	(m ²)	VOLUME	VOL	STORAGE	STORAGE	
			(m ³)	(m ³)	VOLUME	VOLUME	
					(m ³)	(m ³)	
424.35	0.00	1,862.32	0.00	0.00	0.00	0.00	Bottom of Pond / Bottom of Forebay
424.40	0.05	1,972.71	95.88	95.88	0.00	0.00	
424.50	0.15	2,150.90	206.18	302.06	0.00	0.00	
424.60	0.25	2,332.75	224.18	526.24	0.00	0.00	
424.70	0.35	2,518.20	242.55	768.79	0.00	0.00	
424.80	0.45	2,707.22	261.27	1,030.06	0.00	0.00	
424.85	0.50	2,803.07	137.76	1,167.81	0.00	0.00	
424.90	0.55	2,899.83	142.57	1,310.39	0.00	0.00	
425.00	0.65	3,096.04	299.79	1,610.18	0.00	0.00	
425.10	0.75	3,295.84	319.59	1,929.77	0.00	0.00	
425.20	0.85	3,499.25	339.75	2,269.53	0.00	0.00	
425.30	0.95	3,706.24	360.27	2,629.80	0.00	0.00	
425.40	1.05	3,916.82	381.15	3,010.96	0.00	0.00	
425.50	1.15	4,131.43	402.41	3,413.37	0.00	0.00	
425.60	1.25	4,495.66	431.35	3,844.72	0.00	0.00	
425.70	1.35	4,720.83	460.82	4,305.55	0.00	0.00	
425.80	1.45	4,949.16	483.50	4,789.05	0.00	0.00	Top of Perm. Pool / Forebay Weir / Inv. of 150mm dia orifice
425.85	1.50	5,089.02	250.95	5,040.00	0.00	0.00	
425.90	1.55	5,228.87	257.95	5,297.95	257.95	257.95	Top of Forebay Berm
426.00	1.65	5,469.89	534.94	5,832.89	534.94	792.89	
426.10	1.75	5,711.81	559.09	6,391.97	559.09	1,351.97	
426.20	1.85	5,971.02	584.14	6,976.11	584.14	1,936.11	
426.30	1.95	6,190.80	608.09	7,584.20	608.09	2,544.20	Invert of 250mm dia outlet
426.35	2.00	6,301.38	312.30	7,896.51	312.30	2,856.51	
426.40	2.05	6,412.37	317.84	8,214.35	317.84	3,174.35	
426.50	2.15	6,635.16	652.38	8,866.73	652.38	3,826.73	
426.60	2.25	6,859.69	674.74	9,541.47	674.74	4,501.47	
426.70	2.35	7,086.11	697.29	10,238.76	697.29	5,198.76	
426.80	2.45	7,313.71	719.99	10,958.75	719.99	5,918.75	
426.90	2.55	7,543.74	742.87	11,701.63	742.87	6,661.62	
427.00	2.65	7,775.12	765.94	12,467.57	765.94	7,427.57	
427.10	2.75	8,007.88	789.15	13,256.72	789.15	8,216.72	
427.20	2.85	8,241.89	812.49	14,069.21	812.49	9,029.20	Overflow
427.30	2.95	8,477.25	835.96	14,905.16	835.96	9,865.16	
427.40	3.05	8,714.06	859.57	15,764.73	859.57	10,724.73	
427.50	3.15	8,952.26	883.32	16,648.05	883.32	11,608.04	
427.60	3.25	9,192.30	907.23	17,555.27	907.23	12,515.27	
427.70	3.35	9,434.14	931.32	18,486.60	931.32	13,446.59	
427.80	3.45	9,680.86	955.75	19,442.35	955.75	14,402.34	Emergency Overflow Weir
427.90	3.55	9,929.70	980.53	20,422.87	980.53	15,382.87	
428.00	3.65	10,180.51	1,005.51	21,428.38	1,005.51	16,388.38	Overflow
428.10	3.75	10,437.06	1,030.88	22,459.26	1,030.88	17,419.26	
428.20	3.85	11,173.42	1,080.52	23,539.79	1,080.52	18,499.78	Top of Bank

ORIFICE CALCULATION
(150mm dia. Orifice)

Q = 0.071 m³/s
 Cd = 0.60
 H = 2.28 m
 2g = 19.62
 A = 0.018 m²
 D = **0.150** m
 D/2 = 0.075 m

ORIFICE CALCULATION
(250mm dia. outlet pipe)

Q = 0.171 m³/s
 Cd = 0.60
 H = 1.73 m
 2g = 19.62
 A = 0.049 m²
 D = **0.250** m
 D/2 = 0.125 m

OVERFLOW WEIR
(24m long emergency weir)

Q = 2.975 cu m/s
 Cd = 0.433
 d1 = 2.350 m
 h = 2.150 m
 H = 0.200 m
 2g = 19.620
 L = **24.000** m

ELEV (m)	STAGE (m)	STORAGE (ha-m)	ORIFICE (m ³ /s)	PIPE (m ³ /s)	WEIR (m ³ /s)	TOTAL (m ³ /s)	
425.85	0.00	0.0000	0.000	0.000	0.000	0.000	orifice
426.00	0.15	0.0793	0.013	0.000	0.000	0.013	
426.10	0.25	0.1352	0.020	0.000	0.000	0.020	Top of Forebay Berm
426.20	0.35	0.1936	0.025	0.000	0.000	0.025	
426.35	0.50	0.2857	0.031	0.000	0.000	0.031	Invert of 250mm dia outlet
426.40	0.55	0.3174	0.032	0.021	0.000	0.053	
426.50	0.65	0.3827	0.036	0.041	0.000	0.077	
426.70	0.85	0.5199	0.041	0.062	0.000	0.103	
426.80	0.95	0.5919	0.044	0.074	0.000	0.118	
426.90	1.05	0.6662	0.046	0.085	0.000	0.131	
427.10	1.25	0.8217	0.051	0.103	0.000	0.154	
427.20	1.35	0.9029	0.053	0.111	0.000	0.164	
427.30	1.45	0.9865	0.055	0.118	0.000	0.174	
427.50	1.65	1.0725	0.059	0.132	0.000	0.191	
427.60	1.75	1.1608	0.061	0.138	0.000	0.199	
427.70	1.85	1.2515	0.063	0.144	0.000	0.207	
427.90	2.05	1.5383	0.066	0.156	0.000	0.222	
428.00	2.15	1.6388	0.068	0.161	0.000	0.229	Emergency Overflow Weir
428.10	2.25	1.7419	0.069	0.166	1.041	1.276	Overflow
428.20	2.35	1.8500	0.071	0.171	2.975	3.217	Top of Bank

Project: **Fergus Golf Course Development**
 Project #: **3000052719**
 Designed By: Angela Kroetsch
 Checked By: Angela Kroetsch
 Date: 24-Jun-2026



Table 3.2 Water Quality Storage Requirements based on Receiving Waters^{1, 2}

Protection Level	SWMP Type	Storage Volume (m ³ /ha) for Impervious Level			
		35%	55%	70%	85%
<i>Enhanced</i> 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
<i>Normal</i> 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
<i>Basic</i> 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

For 70% IMP Level: 225.00 m³/ha
 Extended detention volume 40 m³/ha
 Required Volume/ ha 185.00 m³/ha
 Total area: 20.41 ha
 Required Volume/ ha 3775.85 m³
 Provided 5040 m³

Project: **Fergus Golf Course Redevelopment**
 Project #: 300052719.3000
 Designed By: A. Kroetsch
 Checked By: A. Kroetsch
 Date: 24-Jun-2026



BURNSIDE

Falling Head Orifice Equation (Eq. 4.11 MOE 2003) - Drawdown Time

SWMF -South Pond

Solve for Orifice Size/Drawdown Time

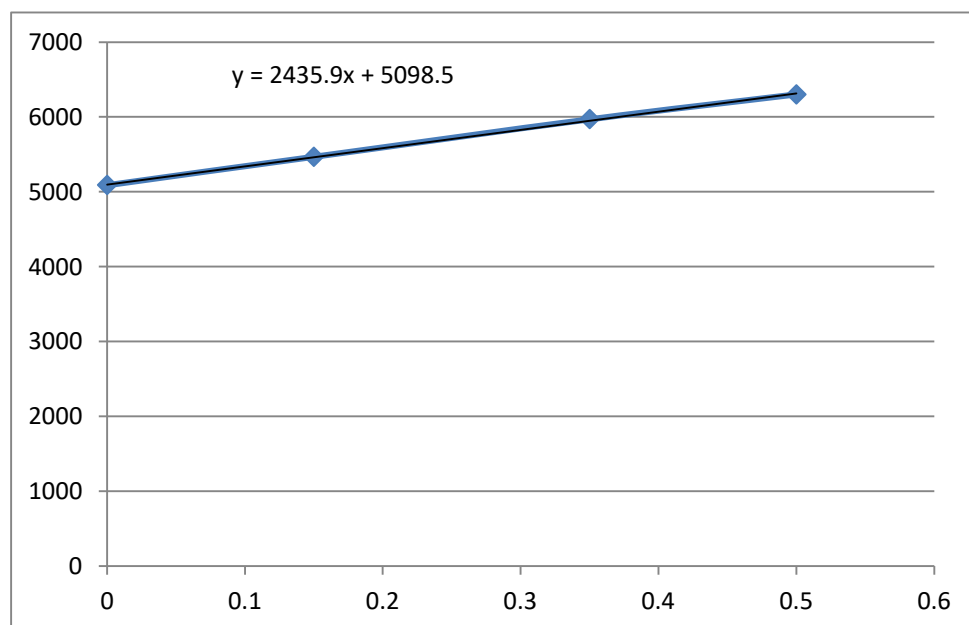
$$A_o = \frac{0.66C_2h^{1.5} + 2C_3h^{0.5}}{2.75t}$$

Known:

t= 153819.0681 seconds = **43** hours
 h= **0.5** m
 C₂= **2435.9** slope coefficient from area-depth linear regression
 C₃= **5098.5** intercept from the area-depth linear regression
 A_o= 0.0184 m²
 Dia= 0.153 mm (150mm)

Area - Depth Linear Regression

Elevation (m)	Depth (m)	Area (m ²)
425.85	0	5089
426	0.15	5469
426.2	0.35	5971
426.35	0.5	6301



Project: **Fergus Golf Course Redevelopment**
 Project #: 300052719.3000
 Designed By: S. Rastgou
 Checked By: A. Kroetsch
 Date: 24-Jun-2026



BURNSIDE

SEDIMENT FOREBAY SIZING

Refer to MOE SWM Planning and Design Manual (2003)

1) Settling Calculations

$$\text{Dist} = \sqrt{\frac{r Q_p}{V_s}}$$

Equation 4.5: Forebay Settling Length

$r =$ 4.5 :1 (length:width)
 $Q_p =$ 0.0310 m³/s (ED quality event outflow)
 $V_s =$ 0.0003 m/s (recommended settling velocity)
Dist = 21.6 m (min settling length)

2) Dispersion Length

$$\text{Dist} = \frac{8Q}{dV_f}$$

Equation 4.6: Dispersion Length

$Q =$ 3.954 m³/s (5-year inflow) **in this case 5yr**
 $d =$ 1.5 m (forebay depth)
 $V_f =$ 0.5 m/s (velocity of discharge jet at forebay berm)
Dist = 42.2 m (min dispersion length)

$$\text{Width} = \frac{\text{Dist}}{8}$$

Equation 4.7: Minimum Forebay Deep Zone Bottom Width

Width = 5.3 m (min bottom width)

Max velocity = Q/cross-sectional area
 = 0.15 m/s (0.15 m/s maximum)

3) Cleanout Frequency

Adapted from table 6.3 (MOE, 2003)

Imperviousness	Sediment Loading (m ³ /ha/a)
35%	0.6
55%	1.9
70%	2.8
85%	3.8

Removal Efficiency= 80%
 Pond Drainage Area= 20.41 ha

Imperviousness= 70.0%
 Min. Cleanout Frequency= 10 years
 (Cleanout at maximum 50% full)

Required Forebay
Perm Pool Volume= 924.8 m³
Provided 1423.3

	<u>Required</u>	<u>Provided</u>
Forebay Length (m)	42.2	>45
Minimum Bottom Width (m)	5.3	>10
Forebay Perm Pool Volume (m³)	1424.3	925



BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix D

Wetland Design Calculations

Fergus Golf Course Redevelopment
Project No. 300052719.4000
June 24, 2025

Existing Wetland

STORAGE VOLUME CALCULATIONS					
ELEV	INC	SURFACE	INCR.	ACCUM	
	D	AREA	STORAGE	STORAGE	
			VOL	VOL	
(m)	(m)	(sq m)	(cu m)	(cu m)	
425.70	0.000	0.00	0	0	Ex. 500mm dia. culvert (at cart path)
425.80	0.100	56.22	2.8	2.81	
425.90	0.200	69.56	6.3	9.10	
426.00	0.300	83.84	7.7	16.77	
426.10	0.400	99.08	9.1	25.92	
426.20	0.500	115.18	10.7	36.63	
426.30	0.600	716.64	41.6	78.22	
426.40	0.700	872.85	79.5	157.69	
426.50	0.800	1,049.00	96.1	253.79	
426.60	0.900	1,165.63	110.7	364.52	
426.70	1.000	1,286.50	122.6	487.12	
426.75	1.050	2,625.00	97.8	584.91	
426.80	1.100	8,890.37	287.9	872.80	Weir (existing cart path) Overflow
426.90	1.200	11,101.31	999.6	1,872.38	
427.00	1.300	17,962.47	1,453.2	3,325.57	
427.10	1.400	19,875.01	1,891.9	5,217.44	
427.20	1.500	21,617.14	2,074.6	7,292.05	
427.30	1.600	28,725.80	2,517.1	9,809.20	
427.40	1.700	31,768.69	3,024.7	12,833.92	
427.50	1.800	35,617.54	3,369.3	16,203.23	

Fergus Golf Course Redevelopment

Project No. 300052719.4000

June 24, 2025

EXISTING CULVERT

Q = 0.747 m³/s
 Cd = 0.6
 H = 2.05 m
 2g = 19.62
 A = 0.196 m²
 D = 0.500 m

OVERFLOW WEIR

Q = 9.900 cu m/s
 d1 = 1.800 m
 h = 1.050 m
 H = 0.750 m
 2g = 19.620
 L = 10.000 m

ELEV (m)	STAGE (m)	STORAGE (ha-m)	ORIFICE DISCHARGE (cu m/s)	WEIR DISCHARGE (cu m/s)	TOTAL DISCHARGE (cu m/s)	
425.70	0.000	0.00	0.000	0.000	0.0000	Ex. 500mm dia. culvert (at cart path)
425.80	0.100	0.0003	0.309	0.000	0.3087	
425.90	0.200	0.0009	0.350	0.000	0.3501	
426.00	0.300	0.0017	0.387	0.000	0.3870	
426.10	0.400	0.0026	0.421	0.000	0.4207	
426.20	0.500	0.0037	0.452	0.000	0.4519	
426.30	0.600	0.0078	0.481	0.000	0.4811	
426.40	0.700	0.0158	0.509	0.000	0.5086	
426.50	0.800	0.0254	0.535	0.000	0.5347	
426.60	0.900	0.0365	0.560	0.000	0.5596	
426.70	1.000	0.0487	0.583	0.000	0.5834	
426.75	1.050	0.0585	0.595	0.000	0.5950	
426.80	1.100	0.0873	0.606	0.153	0.7597	
426.90	1.200	0.1872	0.628	0.814	1.4421	
427.00	1.300	0.3326	0.650	1.783	2.4328	
427.10	1.400	0.5217	0.670	3.002	3.6724	Weir (existing cart path) Overflow
427.20	1.500	0.7292	0.690	4.440	5.1308	
427.30	1.600	0.9809	0.710	6.079	6.7886	
427.40	1.700	1.2834	0.729	7.903	8.6312	
427.50	1.800	1.6203	0.747	9.900	10.6473	

Fergus Golf Course Redevelopment
Project No. 300052719.4000
June 24, 2025

Existing Wetland (with new outlet structure crossing Street A)

STORAGE VOLUME CALCULATIONS					
ELEV	INC	SURFACE	INCR.	ACCUM	
	D	AREA	STORAGE	STORAGE	
			VOL	VOL	
(m)	(m)	(sq m)	(cu m)	(cu m)	
425.70	0.000	0.00	0	0	NEW 450mm dia. Outlet pipe invert
425.80	0.100	56.22	2.8	2.81	
425.90	0.200	69.56	6.3	9.10	
426.00	0.300	83.84	7.7	16.77	
426.10	0.400	99.08	9.1	25.92	
426.20	0.500	115.18	10.7	36.63	
426.30	0.600	716.64	41.6	78.22	
426.40	0.700	872.85	79.5	157.69	
426.50	0.800	1,049.00	96.1	253.79	
426.60	0.900	1,165.63	110.7	364.52	
426.70	1.000	1,286.50	122.6	487.13	
426.80	1.100	8,890.37	508.8	995.97	
426.90	1.200	11,101.31	999.6	1,995.55	
427.00	1.300	17,962.47	1,453.2	3,448.74	
427.10	1.400	19,875.01	1,891.9	5,340.62	
427.20	1.500	21,617.14	2,074.6	7,415.22	
427.30	1.600	28,725.80	2,517.1	9,932.37	
427.40	1.700	31,768.69	3,024.7	12,957.09	
427.50	1.800	35,617.54	3,369.3	16,326.41	
427.60	1.900	36,747.58	3,618.3	19,944.66	
427.70	2.000	37,923.86	3,733.6	23,678.23	
427.80	2.100	41,421.30	3,967.3	27,645.49	
427.90	2.200	42,797.05	4,210.9	31,856.41	
428.00	2.300	44,584.62	4,369.1	36,225.49	
428.10	2.400	45,502.04	4,504.3	40,729.83	
428.20	2.500	46,352.20	4,592.7	45,322.54	
428.30	2.600	57,175.63	5,176.4	50,498.93	
428.40	2.700	58,113.08	5,764.4	56,263.37	
428.50	2.800	59,198.97	5,865.6	62,128.97	
428.60	2.900	60,070.59	5,963.5	68,092.45	
428.70	3.000	60,846.25	6,045.8	74,138.29	
428.80	3.100	61,565.68	6,120.6	80,258.88	
428.90	3.200	62,502.00	6,203.4	86,462.27	Weir (boulevard grade on Street A)
429.00	3.300	63,613.51	6,305.8	92,768.04	Overflow

HGL CALCULATION

Q = 0.360 m³/s
 Cd = 0.6
 H = 0.73 m
 2g = 19.62
 A = 0.159 m²
 D = 0.450 m

OVERFLOW WEIR

Q = 0.432 cu m/s
 d1 = 3.300 m
 h = 3.200 m
 H = 0.100 m
 2g = 19.620
 L = 10.000 m

Wetland Water Elevation (m)	Outlet Pipe Size (mm)	Depth of Flow in Pipe (m)	Q (for Outlet Pipe based on Flow Depth) (m3/s)	Obvert of Outlet Pipe (m)	Length of Outlet Pipe (m)	HGL (%)	Q (for Outlet Pipe Size at HGL %) (m3/s)
425.70	450	0.00	0.000	426.00	80	-	-
425.80	450	0.10	0.017	426.00	80	-	-
425.90	450	0.20	0.050	426.00	80	-	-
426.00	450	0.30	0.100	426.00	80	-	-
426.10	450	0.40	0.128	426.00	80	-	-
426.20	450	-	-	426.00	80	0.25%	0.143
426.30	450	-	-	426.00	80	0.38%	0.176
426.40	450	-	-	426.00	80	0.50%	0.202
426.50	450	-	-	426.00	80	0.63%	0.226
426.60	450	-	-	426.00	80	0.75%	0.247
426.70	450	-	-	426.00	80	0.88%	0.267
426.80	450	-	-	426.00	80	1.00%	0.285
426.90	450	-	-	426.00	80	1.13%	0.303
427.00	450	-	-	426.00	80	1.25%	0.319
427.10	450	-	-	426.00	80	1.38%	0.335
427.20	450	-	-	426.00	80	1.50%	0.349
427.30	450	-	-	426.00	80	1.63%	0.364
427.40	450	-	-	426.00	80	1.75%	0.377
427.50	450	-	-	426.00	80	1.88%	0.391
427.60	450	-	-	426.00	80	2.00%	0.403
427.70	450	-	-	426.00	80	2.13%	0.416
427.80	450	-	-	426.00	80	2.25%	0.428
427.90	450	-	-	426.00	80	2.38%	0.440
428.00	450	-	-	426.00	80	2.50%	0.451
428.10	450	-	-	426.00	80	2.63%	0.462
428.20	450	-	-	426.00	80	2.75%	0.473
428.30	450	-	-	426.00	80	2.88%	0.484
428.40	450	-	-	426.00	80	3.00%	0.494
428.50	450	-	-	426.00	80	3.13%	0.504
428.60	450	-	-	426.00	80	3.25%	0.514
428.70	450	-	-	426.00	80	3.38%	0.524
428.80	450	-	-	426.00	80	3.50%	0.533
428.90	450	-	-	426.00	80	3.63%	0.543
429.00	450	-	-	426.00	80	3.75%	0.552

ELEV (m)	STAGE (m)	STORAGE (ha-m)	PIPE DISCHARGE (cu m/s)	WEIR DISCHARGE (cu m/s)	TOTAL DISCHARGE (cu m/s)	
425.70	0.000	0.00	0.000	0.000	0.0000	NEW 450mm dia. Outlet pipe invert
425.90	0.200	0.0009	0.050	0.000	0.0500	
426.10	0.400	0.0026	0.128	0.000	0.1280	
426.30	0.600	0.0078	0.176	0.000	0.1760	
426.50	0.800	0.0254	0.226	0.000	0.2260	
426.70	1.000	0.0487	0.267	0.000	0.2670	
426.90	1.200	0.1996	0.303	0.000	0.3030	
427.10	1.400	0.5341	0.335	0.000	0.3350	
427.30	1.600	0.9932	0.364	0.000	0.3640	
427.50	1.800	1.6326	0.391	0.000	0.3910	
427.70	2.000	2.3678	0.416	0.000	0.4160	
427.90	2.200	3.1856	0.440	0.000	0.4400	
428.10	2.400	4.0730	0.462	0.000	0.4620	
428.30	2.600	5.0499	0.484	0.000	0.4840	
428.50	2.800	6.2129	0.504	0.000	0.5040	
428.60	2.900	6.8092	0.514	0.000	0.5140	
428.70	3.000	7.4138	0.524	0.000	0.5240	
428.80	3.100	8.0259	0.533	0.000	0.5330	
428.90	3.200	8.6462	0.543	0.000	0.5430	Weir (boulevard grade on Street A) Overflow
429.00	3.300	9.2768	0.552	0.432	0.9842	



BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix E

Appendix E Oil and Grit Separator (O.G.S)

Imbrium® Systems ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION 11/26/2025																	
Province:		Ontario															
City:		Centre Wellington															
Nearest Rainfall Station:		WATERLOO WELLINGTON AP															
Climate Station Id:		6149387															
Years of Rainfall Data:		34															
Site Name:		Catchment 4001															
Drainage Area (ha):		1.74															
Runoff Coefficient 'c':		0.62															
Particle Size Distribution:		Fine															
Target TSS Removal (%):		80.0															
Required Water Quality Runoff Volume Capture (%):		90.0															
Oil / Fuel Spill Risk Site?		Yes															
Upstream Flow Control?		No															
Peak Conveyance (maximum) Flow Rate (L/s):																	
Project Name:		Fergus Golf Course															
Project Number:		052719															
Designer Name:		Brandon O'Leary															
Designer Company:		Rinker Pipe															
Designer Email:		brandon.oleary@RinkerPipe.com															
Designer Phone:		905-630-0359															
EOR Name:		Angela Kroetsch															
EOR Company:		R.J. Burnside & Associates Ltd.															
EOR Email:																	
EOR Phone:																	
Net Annual Sediment (TSS) Load Reduction Sizing Summary <table><thead><tr><th>Stormceptor Model</th><th>TSS Removal Provided (%)</th></tr></thead><tbody><tr><td>EFO4</td><td>68</td></tr><tr><td>EFO5</td><td>76</td></tr><tr><td>EFO6</td><td>81</td></tr><tr><td>EFO8</td><td>88</td></tr><tr><td>EFO10</td><td>93</td></tr><tr><td>EFO12</td><td>95</td></tr></tbody></table>				Stormceptor Model	TSS Removal Provided (%)	EFO4	68	EFO5	76	EFO6	81	EFO8	88	EFO10	93	EFO12	95
Stormceptor Model	TSS Removal Provided (%)																
EFO4	68																
EFO5	76																
EFO6	81																
EFO8	88																
EFO10	93																
EFO12	95																
Recommended Stormceptor EFO Model: EFO6 Estimated Net Annual Sediment (TSS) Load Reduction (%): 81 Water Quality Runoff Volume Capture (%): > 90																	



THIRD-PARTY TESTING AND VERIFICATION

► Stormceptor® EF and Stormceptor® EFO are the latest evolutions in the Stormceptor® oil-grit separator (OGS) technology series, and are designed to remove a wide variety of pollutants from stormwater and snowmelt runoff. These technologies have been third-party tested in accordance with the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** and performance has been third-party verified in accordance with the **ISO 14034 Environmental Technology Verification (ETV)** protocol.

PERFORMANCE

► Stormceptor® EF and EFO remove stormwater pollutants through gravity separation and floatation, and feature a patent-pending design that generates positive removal of total suspended solids (TSS) throughout each storm event, including high-intensity storms. Captured pollutants include sediment, free oils, and sediment-bound pollutants such as nutrients, heavy metals, and petroleum hydrocarbons. Stormceptor is sized to remove a high level of TSS from the frequent rainfall events that contribute the vast majority of annual runoff volume and pollutant load. The technology incorporates an internal bypass to convey excessive stormwater flows from high-intensity storms through the device without resuspension and washout (scour) of previously captured pollutants. Proper routine maintenance ensures high pollutant removal performance and protection of downstream waterways.

PARTICLE SIZE DISTRIBUTION (PSD)

► The **Canadian ETV PSD** shown in the table below was used, or in part, for this sizing. This is the identical PSD that is referenced in the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators** for both sediment removal testing and scour testing. The Canadian ETV PSD contains a wide range of particle sizes in the sand and silt fractions, and is considered reasonably representative of the particle size fractions found in typical urban stormwater runoff.

Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

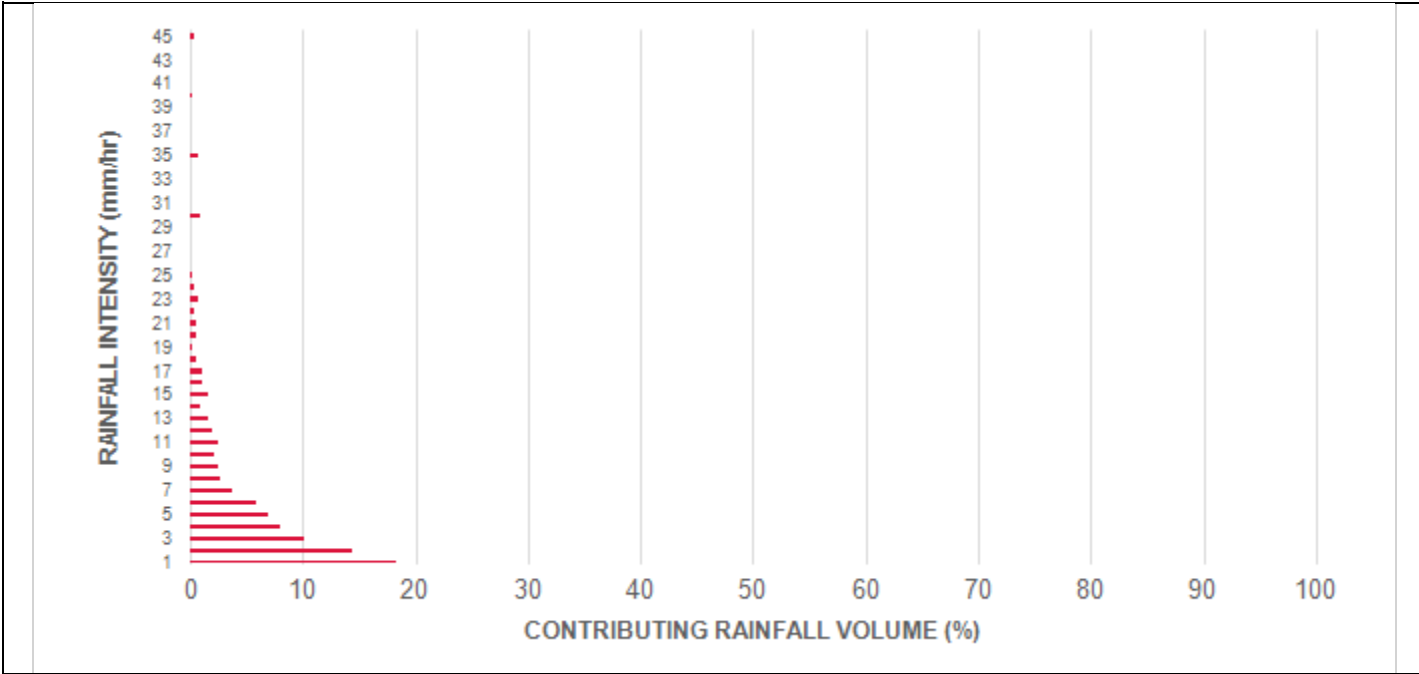


Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.50	8.5	8.5	1.50	90.0	34.0	100	8.5	8.5
1.00	18.3	26.8	3.00	180.0	68.0	100	18.3	26.8
2.00	14.4	41.3	6.00	360.0	137.0	92	13.3	40.1
3.00	10.2	51.5	9.00	540.0	205.0	83	8.5	48.6
4.00	8.0	59.5	12.00	720.0	274.0	80	6.4	55.0
5.00	6.9	66.4	15.00	900.0	342.0	77	5.3	60.3
6.00	5.9	72.3	17.99	1080.0	411.0	73	4.3	64.6
7.00	3.8	76.1	20.99	1260.0	479.0	71	2.7	67.3
8.00	2.6	78.7	23.99	1440.0	547.0	67	1.7	69.0
9.00	2.5	81.1	26.99	1619.0	616.0	65	1.6	70.6
10.00	2.2	83.3	29.99	1799.0	684.0	64	1.4	72.0
11.00	2.5	85.8	32.99	1979.0	753.0	63	1.6	73.6
12.00	2.0	87.8	35.99	2159.0	821.0	63	1.3	74.9
13.00	1.6	89.4	38.99	2339.0	889.0	62	1.0	75.9
14.00	0.9	90.4	41.99	2519.0	958.0	62	0.6	76.4
15.00	1.6	91.9	44.99	2699.0	1026.0	61	1.0	77.4
16.00	1.1	93.0	47.99	2879.0	1095.0	59	0.6	78.0
17.00	1.0	94.0	50.98	3059.0	1163.0	58	0.6	78.6
18.00	0.5	94.6	53.98	3239.0	1232.0	56	0.3	79.0
19.00	0.2	94.8	56.98	3419.0	1300.0	55	0.1	79.1
20.00	0.6	95.4	59.98	3599.0	1368.0	53	0.3	79.4
21.00	0.6	96.1	62.98	3779.0	1437.0	51	0.3	79.7
22.00	0.3	96.4	65.98	3959.0	1505.0	49	0.1	79.9
23.00	0.8	97.2	68.98	4139.0	1574.0	47	0.4	80.3
24.00	0.4	97.6	71.98	4319.0	1642.0	45	0.2	80.5
25.00	0.2	97.8	74.98	4499.0	1710.0	43	0.1	80.5
30.00	0.9	98.7	89.97	5398.0	2053.0	36	0.3	80.8
35.00	0.8	99.5	104.97	6298.0	2395.0	31	0.3	81.1
40.00	0.2	99.7	119.96	7198.0	2737.0	27	0.1	81.2
45.00	0.3	100.0	134.96	8097.0	3079.0	24	0.1	81.2
Estimated Net Annual Sediment (TSS) Load Reduction =								81 %

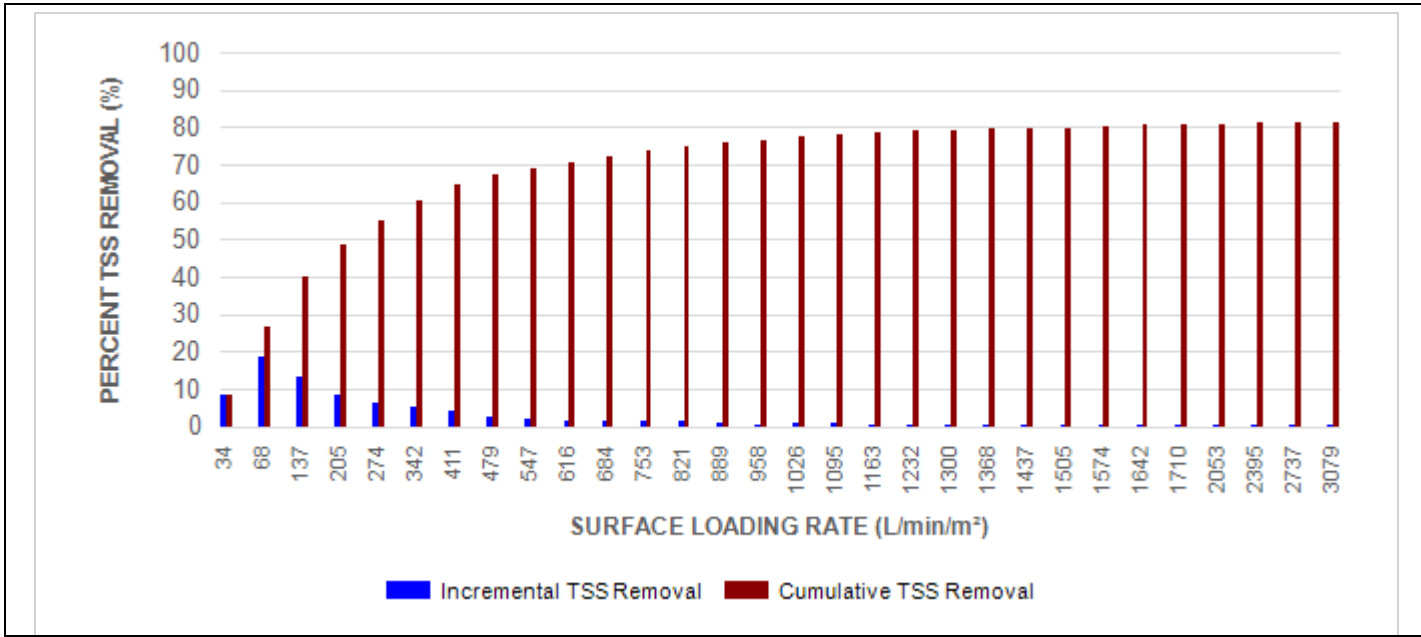
Climate Station ID: 6149387 Years of Rainfall Data: 34



RAINFALL DATA FROM WATERLOO WELLINGTON AP RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL
FOR THE RECOMMENDED STORMCEPTOR® MODEL



Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF5 / EFO5	1.5	5	90	762	30	762	30	710	25
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

SCOUR PREVENTION AND ONLINE CONFIGURATION

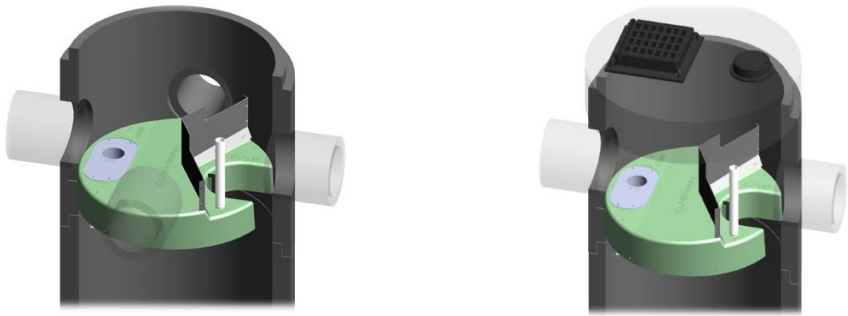
► Stormceptor® EF and EFO feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test performance has been third-party verified in accordance with the ISO 14034 ETV protocol. As a result, Stormceptor EF and EFO are approved for online installation, eliminating the need for costly additional bypass structures, piping, and installation expense.

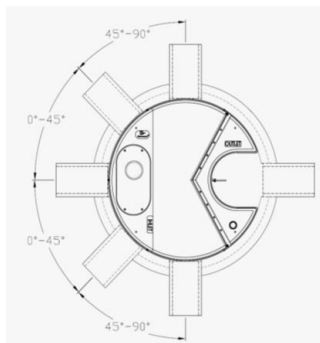
DESIGN FLEXIBILITY

► Stormceptor® EF and EFO offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend angle, and can be modified to ensure performance in submerged conditions.

OIL CAPTURE AND RETENTION

► While Stormceptor® EF will capture and retain oil from dry weather spills and low intensity runoff, Stormceptor® EFO has demonstrated superior oil capture and greater than 99% oil retention in third-party testing according to the light liquid re-entrainment testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**. Stormceptor EFO is recommended for sites where oil capture and retention is a requirement.



**INLET-TO-OUTLET DROP**

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.

0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.

45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

HEAD LOSS

The head loss through Stormceptor EF is similar to that of a 60-degree bend structure. The applicable K value for calculating minor losses through the unit is 1.1. For submerged conditions the applicable K value is 3.0.

Pollutant Capacity

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft³)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	265	70	203	8	1190	42	1904	5250
EF5 / EFO5	1.5	5	1.62	5.3	420	111	305	10	2124	75	2612	5758
EF6 / EFO6	1.8	6	1.93	6.3	610	160	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	1070	280	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	1670	440	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	2475	655	610	24	31220	1103	49952	137875

*Increased sump depth may be added to increase sediment storage capacity

** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft³)

Feature	Benefit	Feature Appeals To
Patent-pending enhanced flow treatment and scour prevention technology	Superior, verified third-party performance	Regulator, Specifying & Design Engineer
Third-party verified light liquid capture and retention for EFO version	Proven performance for fuel/oil hotspot locations	Regulator, Specifying & Design Engineer, Site Owner
Functions as bend, junction or inlet structure	Design flexibility	Specifying & Design Engineer
Minimal drop between inlet and outlet	Site installation ease	Contractor
Large diameter outlet riser for inspection and maintenance	Easy maintenance access from grade	Maintenance Contractor & Site Owner

STANDARD STORMCEPTOR EF/EFO DRAWINGS

For standard details, please visit <http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef>

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

For specifications, please visit <http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef>

STANDARD PERFORMANCE SPECIFICATION FOR “OIL GRIT SEPARATOR” (OGS) STORMWATER QUALITY TREATMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management – Environmental Technology Verification (ETV).

1.2 REFERENCE STANDARDS & PROCEDURES

ISO 14034:2016 Environmental management – Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program's **Procedure for Laboratory Testing of Oil-Grit Separators**

1.3 SUBMITTALS

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The minimum sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1	4 ft (1219 mm) Diameter OGS Units:	1.19 m ³ sediment / 265 L oil
	5 ft (1524 mm) Diameter OGS Units:	1.95 m ³ sediment / 420 L oil
	6 ft (1829 mm) Diameter OGS Units:	3.48 m ³ sediment / 609 L oil
	8 ft (2438 mm) Diameter OGS Units:	8.78 m ³ sediment / 1,071 L oil
	10 ft (3048 mm) Diameter OGS Units:	17.78 m ³ sediment / 1,673 L oil
	12 ft (3657 mm) Diameter OGS Units:	31.23 m ³ sediment / 2,476 L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall

remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing of the OGS shall be determined by use of a minimum ten (10) years of local historical rainfall data provided by Environment Canada. Sizing shall also be determined by use of the sediment removal performance data derived from the ISO 14034 ETV third-party verified laboratory testing data from testing conducted in accordance with the Canadian ETV protocol Procedure for Laboratory Testing of Oil-Grit Separators, as follows:

3.2.1 Sediment removal efficiency for a given surface loading rate and its associated flow rate shall be based on sediment removal efficiency demonstrated at the seven (7) tested surface loading rates specified in the protocol, ranging 40 L/min/m² to 1400 L/min/m², and as stated in the ISO 14034 ETV Verification Statement for the OGS device.

3.2.2 Sediment removal efficiency for surface loading rates between 40 L/min/m² and 1400 L/min/m² shall be based on linear interpolation of data between consecutive tested surface loading rates.

3.2.3 Sediment removal efficiency for surface loading rates less than the lowest tested surface loading rate of 40 L/min/m² shall be assumed to be identical to the sediment removal efficiency at 40 L/min/m². No extrapolation shall be allowed that results in a sediment removal efficiency that is greater than that demonstrated at 40 L/min/m².

3.2.4 Sediment removal efficiency for surface loading rates greater than the highest tested surface loading rate of 1400 L/min/m² shall assume zero sediment removal for the portion of flow that exceeds 1400 L/min/m², and shall be calculated using a simple proportioning formula, with 1400 L/min/m² in the numerator and the higher surface loading rate in the denominator, and multiplying the resulting fraction times the sediment removal efficiency at 1400 L/min/m².

The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**.

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m².

3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid Re-entrainment Simulation Testing in accordance with the Canadian ETV **Program's Procedure for Laboratory Testing of Oil-Grit Separators**, with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to assess whether light liquids captured after a spill are effectively retained at high flow rates.

3.4.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance

results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m² to 2600 L/min/m²) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**. However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.

Imbrium® Systems ESTIMATED NET ANNUAL SEDIMENT (TSS) LOAD REDUCTION 11/22/2025																	
Province:		Ontario															
City:		Centre Wellington															
Nearest Rainfall Station:		WATERLOO WELLINGTON AP															
Climate Station Id:		6149387															
Years of Rainfall Data:		34															
Site Name:		Catchment 4010															
Drainage Area (ha):		1.96															
Runoff Coefficient 'c':		0.62															
Particle Size Distribution:		Fine															
Target TSS Removal (%):		80.0															
Required Water Quality Runoff Volume Capture (%):		90.0															
Oil / Fuel Spill Risk Site?		Yes															
Upstream Flow Control?		No															
Peak Conveyance (maximum) Flow Rate (L/s):																	
Project Name:		Fergus Golf Course															
Project Number:		052719															
Designer Name:		Brandon O'Leary															
Designer Company:		Rinker Pipe															
Designer Email:		brandon.oleary@RinkerPipe.com															
Designer Phone:		905-630-0359															
EOR Name:		Angela Kroetsch															
EOR Company:		R.J. Burnside & Associates Ltd.															
EOR Email:																	
EOR Phone:																	
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Stormceptor Model	TSS Removal Provided (%)																
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EFO8	87																
EFO10	91																
EFO12	94																
Recommended Stormceptor EFO Model: EFO6 Estimated Net Annual Sediment (TSS) Load Reduction (%): 80 Water Quality Runoff Volume Capture (%): > 90																	



THIRD-PARTY TESTING AND VERIFICATION

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PERFORMANCE

► Stormceptor® EF and EFO remove stormwater pollutants through gravity separation and floatation, and feature a patent-pending design that generates positive removal of total suspended solids (TSS) throughout each storm event, including high-intensity storms. Captured pollutants include sediment, free oils, and sediment-bound pollutants such as nutrients, heavy metals, and petroleum hydrocarbons. Stormceptor is sized to remove a high level of TSS from the frequent rainfall events that contribute the vast majority of annual runoff volume and pollutant load. The technology incorporates an internal bypass to convey excessive stormwater flows from high-intensity storms through the device without resuspension and washout (scour) of previously captured pollutants. Proper routine maintenance ensures high pollutant removal performance and protection of downstream waterways.

PARTICLE SIZE DISTRIBUTION (PSD)

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Particle Size (µm)	Percent Less Than	Particle Size Fraction (µm)	Percent
1000	100	500-1000	5
500	95	250-500	5
250	90	150-250	15
150	75	100-150	15
100	60	75-100	10
75	50	50-75	5
50	45	20-50	10
20	35	8-20	15
8	20	5-8	10
5	10	2-5	5
2	5	<2	5

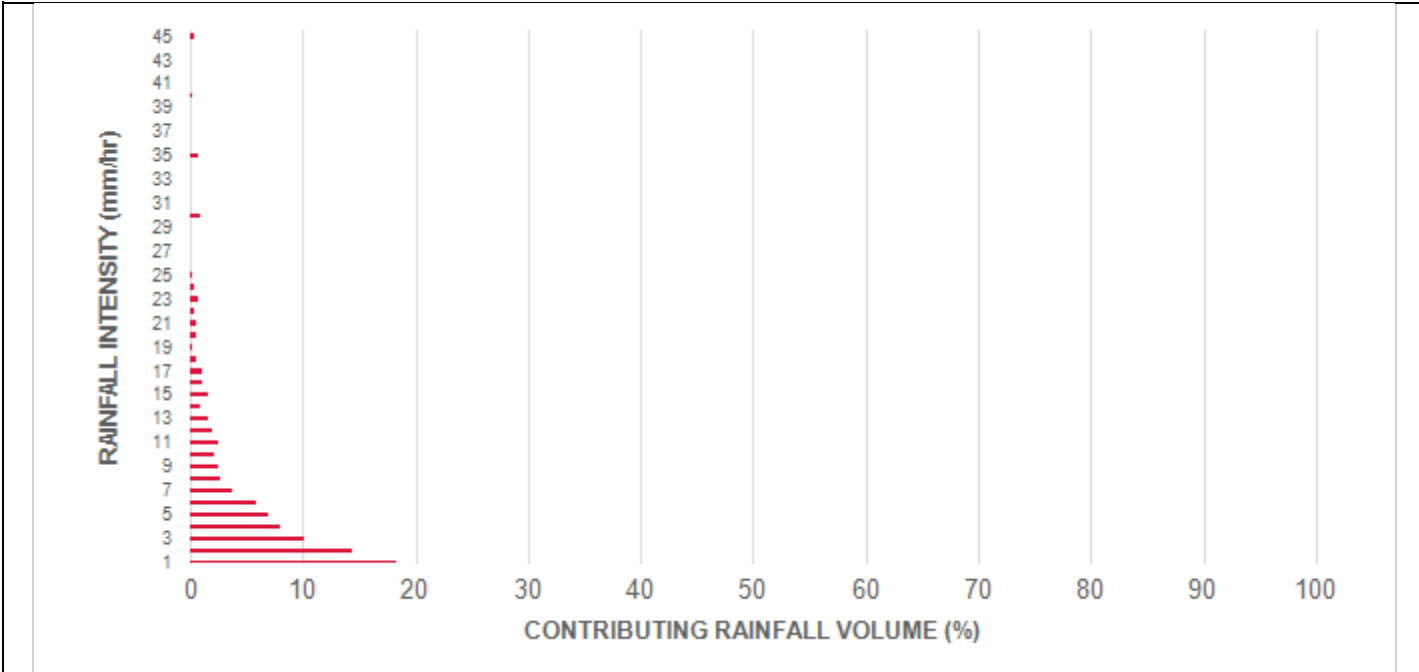


Rainfall Intensity (mm / hr)	Percent Rainfall Volume (%)	Cumulative Rainfall Volume (%)	Flow Rate (L/s)	Flow Rate (L/min)	Surface Loading Rate (L/min/m²)	Removal Efficiency (%)	Incremental Removal (%)	Cumulative Removal (%)
0.50	8.5	8.5	1.69	101.0	39.0	100	8.5	8.5
1.00	18.3	26.8	3.38	203.0	77.0	100	18.3	26.8
2.00	14.4	41.3	6.76	405.0	154.0	89	12.9	39.7
3.00	10.2	51.5	10.13	608.0	231.0	82	8.3	48.1
4.00	8.0	59.5	13.51	811.0	308.0	78	6.3	54.4
5.00	6.9	66.4	16.89	1013.0	385.0	75	5.2	59.5
6.00	5.9	72.3	20.27	1216.0	462.0	71	4.2	63.7
7.00	3.8	76.1	23.65	1419.0	539.0	67	2.6	66.3
8.00	2.6	78.7	27.03	1622.0	617.0	65	1.7	67.9
9.00	2.5	81.1	30.40	1824.0	694.0	64	1.6	69.5
10.00	2.2	83.3	33.78	2027.0	771.0	63	1.4	70.9
11.00	2.5	85.8	37.16	2230.0	848.0	63	1.6	72.5
12.00	2.0	87.8	40.54	2432.0	925.0	62	1.2	73.7
13.00	1.6	89.4	43.92	2635.0	1002.0	62	1.0	74.7
14.00	0.9	90.4	47.30	2838.0	1079.0	60	0.6	75.3
15.00	1.6	91.9	50.67	3040.0	1156.0	58	0.9	76.2
16.00	1.1	93.0	54.05	3243.0	1233.0	56	0.6	76.8
17.00	1.0	94.0	57.43	3446.0	1310.0	54	0.6	77.4
18.00	0.5	94.6	60.81	3649.0	1387.0	53	0.3	77.6
19.00	0.2	94.8	64.19	3851.0	1464.0	50	0.1	77.8
20.00	0.6	95.4	67.57	4054.0	1541.0	48	0.3	78.1
21.00	0.6	96.1	70.94	4257.0	1618.0	45	0.3	78.3
22.00	0.3	96.4	74.32	4459.0	1696.0	43	0.1	78.5
23.00	0.8	97.2	77.70	4662.0	1773.0	41	0.4	78.8
24.00	0.4	97.6	81.08	4865.0	1850.0	40	0.2	79.0
25.00	0.2	97.8	84.46	5067.0	1927.0	38	0.1	79.0
30.00	0.9	98.7	101.35	6081.0	2312.0	32	0.3	79.3
35.00	0.8	99.5	118.24	7094.0	2697.0	28	0.2	79.6
40.00	0.2	99.7	135.13	8108.0	3083.0	24	0.1	79.6
45.00	0.3	100.0	152.02	9121.0	3468.0	22	0.1	79.7
Estimated Net Annual Sediment (TSS) Load Reduction =								80 %

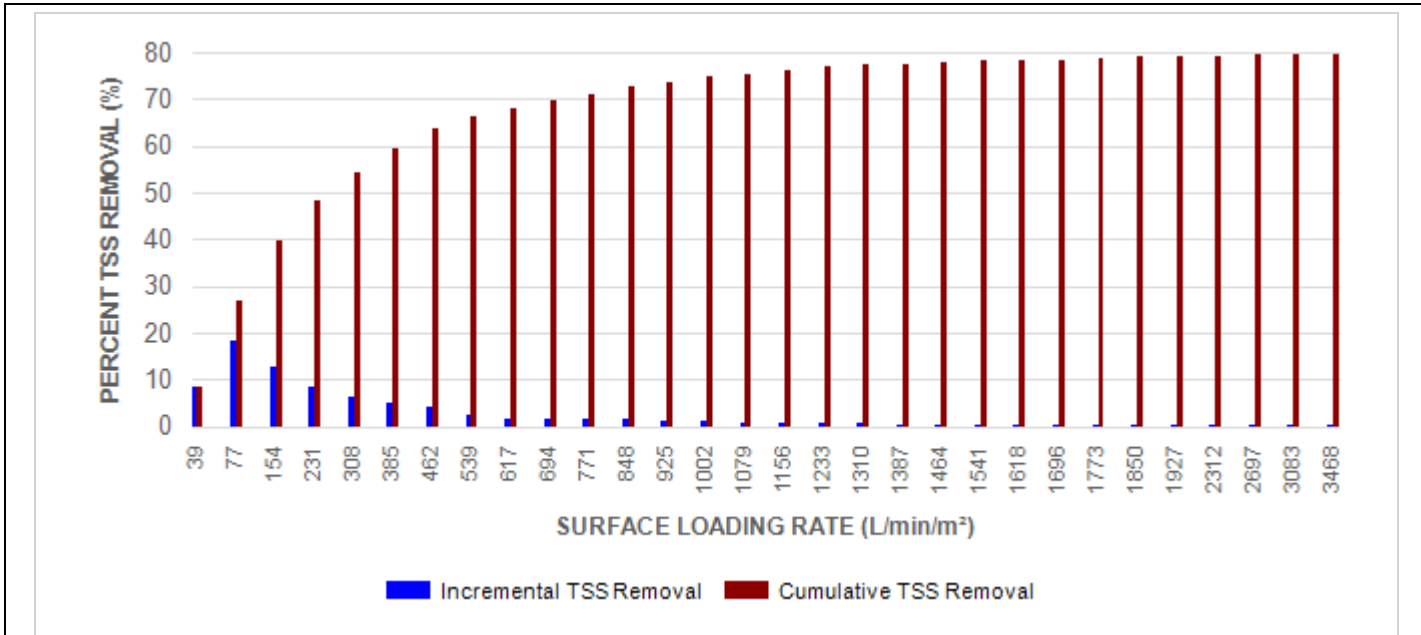
Climate Station ID: 6149387 Years of Rainfall Data: 34



RAINFALL DATA FROM WATERLOO WELLINGTON AP RAINFALL STATION



INCREMENTAL AND CUMULATIVE TSS REMOVAL
FOR THE RECOMMENDED STORMCEPTOR® MODEL



Maximum Pipe Diameter / Peak Conveyance

Stormceptor EF / EFO	Model Diameter		Min Angle Inlet / Outlet Pipes	Max Inlet Pipe Diameter		Max Outlet Pipe Diameter		Peak Conveyance Flow Rate	
	(m)	(ft)		(mm)	(in)	(mm)	(in)	(L/s)	(cfs)
EF4 / EFO4	1.2	4	90	609	24	609	24	425	15
EF5 / EFO5	1.5	5	90	762	30	762	30	710	25
EF6 / EFO6	1.8	6	90	914	36	914	36	990	35
EF8 / EFO8	2.4	8	90	1219	48	1219	48	1700	60
EF10 / EFO10	3.0	10	90	1828	72	1828	72	2830	100
EF12 / EFO12	3.6	12	90	1828	72	1828	72	2830	100

SCOUR PREVENTION AND ONLINE CONFIGURATION

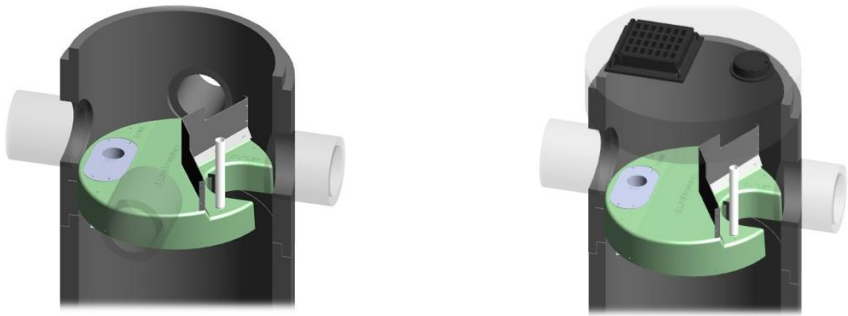
► Stormceptor® EF and EFO feature an internal bypass and superior scour prevention technology that have been demonstrated in third-party testing according to the scour testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**, and the exceptional scour test performance has been third-party verified in accordance with the ISO 14034 ETV protocol. As a result, Stormceptor EF and EFO are approved for online installation, eliminating the need for costly additional bypass structures, piping, and installation expense.

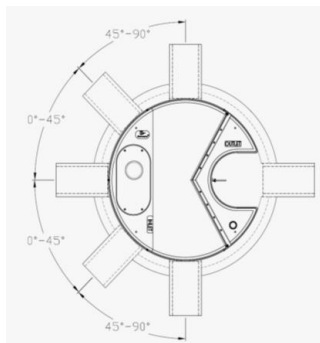
DESIGN FLEXIBILITY

► Stormceptor® EF and EFO offers design flexibility in one simplified platform, accepting stormwater flow from a single inlet pipe or multiple inlet pipes, and/or surface runoff through an inlet grate. The device can also serve as a junction structure, accommodate a 90-degree inlet-to-outlet bend angle, and can be modified to ensure performance in submerged conditions.

OIL CAPTURE AND RETENTION

► While Stormceptor® EF will capture and retain oil from dry weather spills and low intensity runoff, Stormceptor® EFO has demonstrated superior oil capture and greater than 99% oil retention in third-party testing according to the light liquid re-entrainment testing provisions of the Canadian ETV **Procedure for Laboratory Testing of Oil-Grit Separators**. Stormceptor EFO is recommended for sites where oil capture and retention is a requirement.



**INLET-TO-OUTLET DROP**

Elevation differential between inlet and outlet pipe inverts is dictated by the angle at which the inlet pipe(s) enters the unit.

0° - 45° : The inlet pipe is 1-inch (25mm) higher than the outlet pipe.

45° - 90° : The inlet pipe is 2-inches (50mm) higher than the outlet pipe.

HEAD LOSS

The head loss through Stormceptor EF is similar to that of a 60-degree bend structure. The applicable K value for calculating minor losses through the unit is 1.1. For submerged conditions the applicable K value is 3.0.

Pollutant Capacity

Stormceptor EF / EFO	Model Diameter		Depth (Outlet Pipe Invert to Sump Floor)		Oil Volume		Recommended Sediment Maintenance Depth *		Maximum Sediment Volume *		Maximum Sediment Mass **	
	(m)	(ft)	(m)	(ft)	(L)	(Gal)	(mm)	(in)	(L)	(ft³)	(kg)	(lb)
EF4 / EFO4	1.2	4	1.52	5.0	265	70	203	8	1190	42	1904	5250
EF5 / EFO5	1.5	5	1.62	5.3	420	111	305	10	2124	75	2612	5758
EF6 / EFO6	1.8	6	1.93	6.3	610	160	305	12	3470	123	5552	15375
EF8 / EFO8	2.4	8	2.59	8.5	1070	280	610	24	8780	310	14048	38750
EF10 / EFO10	3.0	10	3.25	10.7	1670	440	610	24	17790	628	28464	78500
EF12 / EFO12	3.6	12	3.89	12.8	2475	655	610	24	31220	1103	49952	137875

*Increased sump depth may be added to increase sediment storage capacity

** Average density of wet packed sediment in sump = 1.6 kg/L (100 lb/ft³)

Feature	Benefit	Feature Appeals To
Patent-pending enhanced flow treatment and scour prevention technology	Superior, verified third-party performance	Regulator, Specifying & Design Engineer
Third-party verified light liquid capture and retention for EFO version	Proven performance for fuel/oil hotspot locations	Regulator, Specifying & Design Engineer, Site Owner
Functions as bend, junction or inlet structure	Design flexibility	Specifying & Design Engineer
Minimal drop between inlet and outlet	Site installation ease	Contractor
Large diameter outlet riser for inspection and maintenance	Easy maintenance access from grade	Maintenance Contractor & Site Owner

STANDARD STORMCEPTOR EF/EFO DRAWINGS

For standard details, please visit <http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef>

STANDARD STORMCEPTOR EF/EFO SPECIFICATION

For specifications, please visit <http://www.imbriumsystems.com/stormwater-treatment-solutions/stormceptor-ef>

STANDARD PERFORMANCE SPECIFICATION FOR “OIL GRIT SEPARATOR” (OGS) STORMWATER QUALITY TREATMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, with third-party testing results and a Statement of Verification in accordance with ISO 14034 Environmental Management – Environmental Technology Verification (ETV).

1.2 REFERENCE STANDARDS & PROCEDURES

ISO 14034:2016 Environmental management – Environmental technology verification (ETV)

Canadian Environmental Technology Verification (ETV) Program's **Procedure for Laboratory Testing of Oil-Grit Separators**

1.3 SUBMITTALS

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

PART 2 – PRODUCTS

2.1 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The minimum sediment & petroleum hydrocarbon storage capacity shall be as follows:

2.1.1	4 ft (1219 mm) Diameter OGS Units:	1.19 m ³ sediment / 265 L oil
	5 ft (1524 mm) Diameter OGS Units:	1.95 m ³ sediment / 420 L oil
	6 ft (1829 mm) Diameter OGS Units:	3.48 m ³ sediment / 609 L oil
	8 ft (2438 mm) Diameter OGS Units:	8.78 m ³ sediment / 1,071 L oil
	10 ft (3048 mm) Diameter OGS Units:	17.78 m ³ sediment / 1,673 L oil
	12 ft (3657 mm) Diameter OGS Units:	31.23 m ³ sediment / 2,476 L oil

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall

remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in the sizing report for the specified device. Sizing of the OGS shall be determined by use of a minimum ten (10) years of local historical rainfall data provided by Environment Canada. Sizing shall also be determined by use of the sediment removal performance data derived from the ISO 14034 ETV third-party verified laboratory testing data from testing conducted in accordance with the Canadian ETV protocol Procedure for Laboratory Testing of Oil-Grit Separators, as follows:

3.2.1 Sediment removal efficiency for a given surface loading rate and its associated flow rate shall be based on sediment removal efficiency demonstrated at the seven (7) tested surface loading rates specified in the protocol, ranging 40 L/min/m² to 1400 L/min/m², and as stated in the ISO 14034 ETV Verification Statement for the OGS device.

3.2.2 Sediment removal efficiency for surface loading rates between 40 L/min/m² and 1400 L/min/m² shall be based on linear interpolation of data between consecutive tested surface loading rates.

3.2.3 Sediment removal efficiency for surface loading rates less than the lowest tested surface loading rate of 40 L/min/m² shall be assumed to be identical to the sediment removal efficiency at 40 L/min/m². No extrapolation shall be allowed that results in a sediment removal efficiency that is greater than that demonstrated at 40 L/min/m².

3.2.4 Sediment removal efficiency for surface loading rates greater than the highest tested surface loading rate of 1400 L/min/m² shall assume zero sediment removal for the portion of flow that exceeds 1400 L/min/m², and shall be calculated using a simple proportioning formula, with 1400 L/min/m² in the numerator and the higher surface loading rate in the denominator, and multiplying the resulting fraction times the sediment removal efficiency at 1400 L/min/m².

The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 2.1.

3.3 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of third-party scour testing conducted in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**.

3.3.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m².

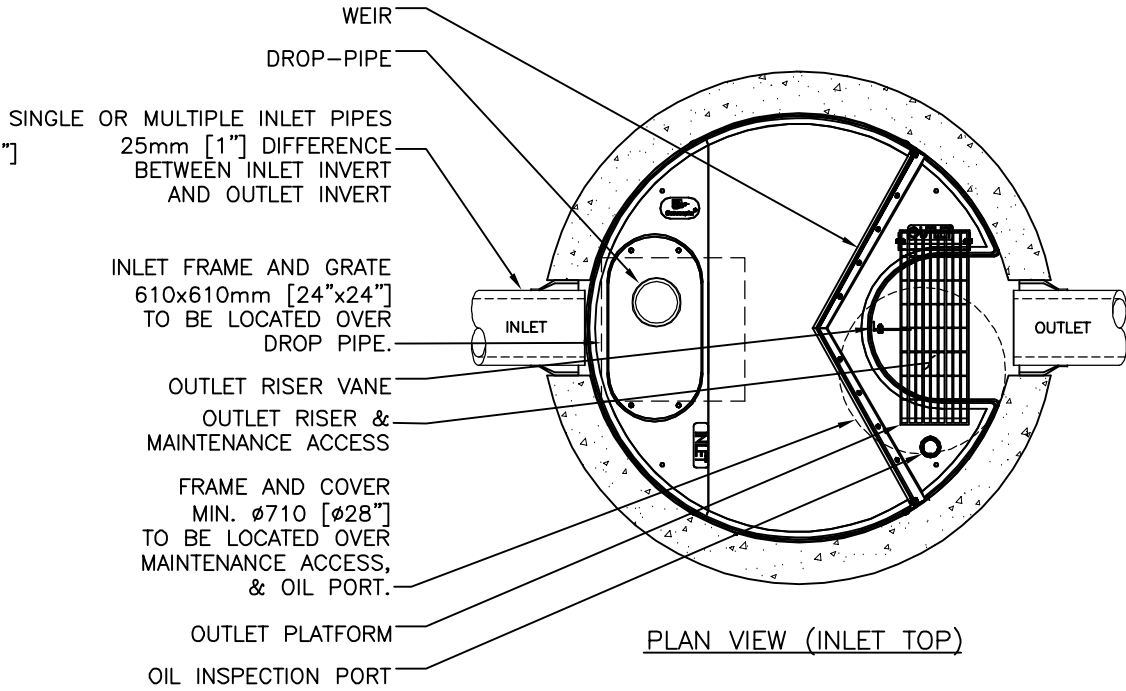
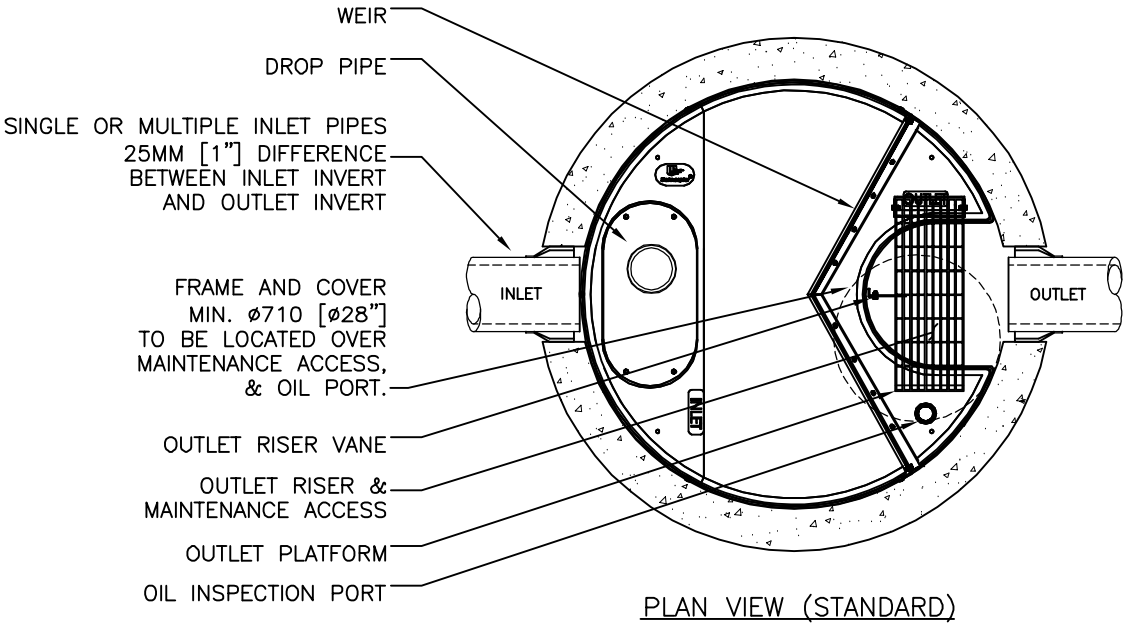
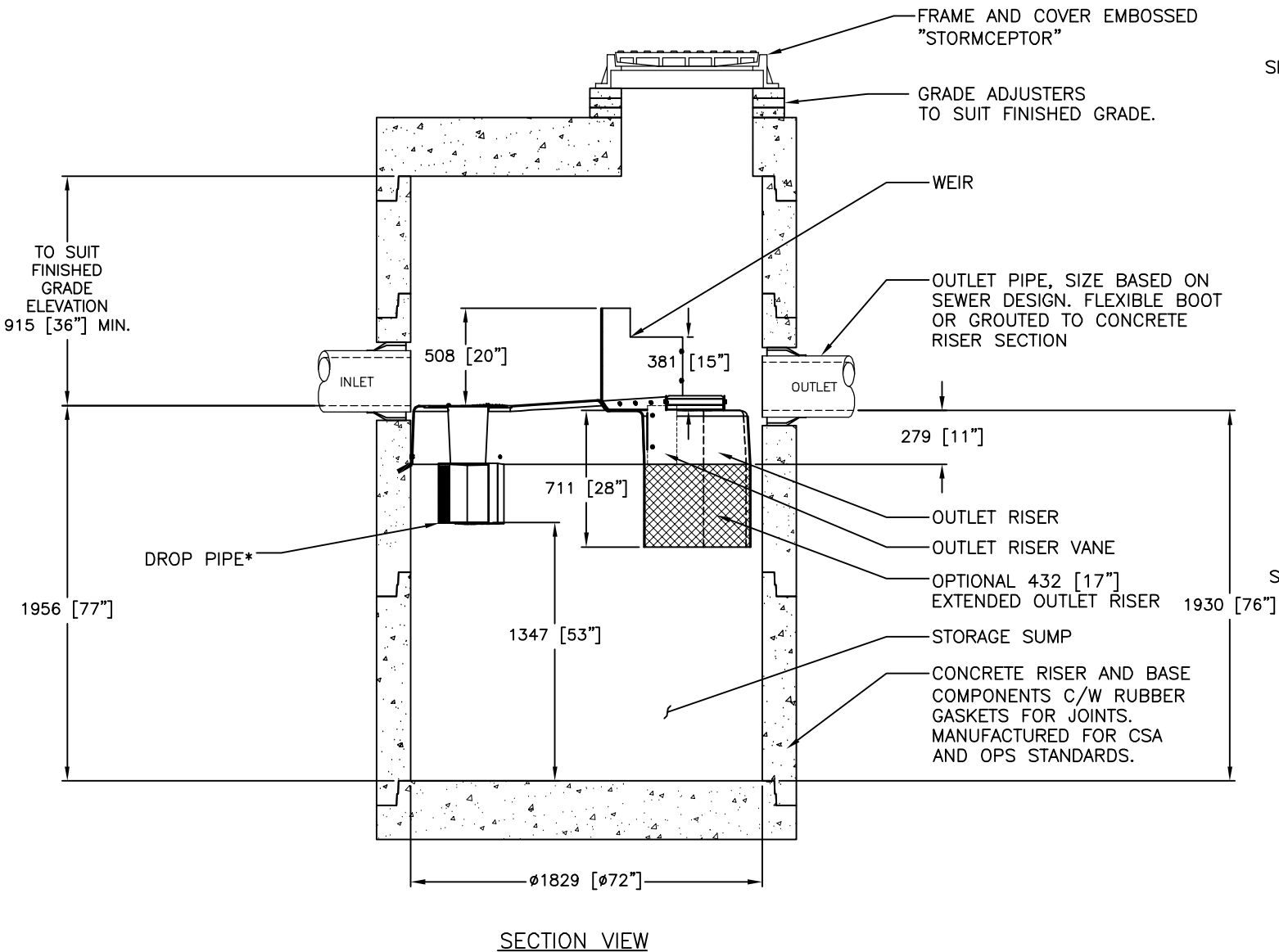
3.4 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid Re-entrainment Simulation Testing in accordance with the Canadian ETV **Program's Procedure for Laboratory Testing of Oil-Grit Separators**, with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to assess whether light liquids captured after a spill are effectively retained at high flow rates.

3.4.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance

results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m² to 2600 L/min/m²) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**. However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.

DRAWING NOT TO BE USED FOR CONSTRUCTION



GENERAL NOTES:

- * MAXIMUM SURFACE LOADING RATE (SLR) INTO LOWER CHAMBER THROUGH DROP PIPE IS 1135 L/min/m² (27.9 gpm/ft²) FOR STORMCEPTOR EF6 AND 535 L/min/m² (13.1 gpm/ft²) FOR STORMCEPTOR EFO6 (OIL CAPTURE CONFIGURATION).
- 1. ALL DIMENSIONS INDICATED ARE IN MILLIMETERS (INCHES) UNLESS OTHERWISE SPECIFIED.
- 2. STORMCEPTOR STRUCTURE INLET AND OUTLET PIPE SIZE AND ORIENTATION SHOWN FOR INFORMATIONAL PURPOSES ONLY.
- 3. UNLESS OTHERWISE NOTED, BYPASS INFRASTRUCTURE, SUCH AS ALL UPSTREAM DIVERSION STRUCTURES, CONNECTING STRUCTURES, OR PIPE CONDUITS CONNECTING TO COMPLETE THE STORMCEPTOR SYSTEM SHALL BE PROVIDED AND ADDRESSED SEPARATELY.
- 4. DRAWING FOR INFORMATION PURPOSES ONLY. REFER TO ENGINEER'S SITE/UTILITY PLAN FOR STRUCTURE ORIENTATION.
- 5. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES

- A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE (LIFTING CLUTCHES PROVIDED)
- C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT)
- D. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT THE DEVICE FROM CONSTRUCTION-RELATED EROSION RUNOFF.
- E. DEVICE ACTIVATION, BY CONTRACTOR, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE STORMCEPTOR UNIT IS CLEAN AND FREE OF DEBRIS.

FOR SITE SPECIFIC DRAWINGS PLEASE CONTACT YOUR LOCAL STORMCEPTOR REPRESENTATIVE. SITE SPECIFIC DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION AT THE TIME. SOME FIELD REVISIONS TO THE SYSTEM LOCATION OR CONNECTION PIPING MAY BE NECESSARY BASED ON AVAILABLE SPACE OR SITE CONFIGURATION REVISIONS. ELEVATIONS SHOULD BE MAINTAINED EXCEPT WHERE NOTED ON BYPASS STRUCTURE (IF REQUIRED).

STANDARD DETAIL
NOT FOR CONSTRUCTION

SITE SPECIFIC DATA REQUIREMENTS

STORMCEPTOR MODEL		EFO6				
STRUCTURE ID		*				
HYDROCARBON STORAGE REQ'D (L)		*				
WATER QUALITY FLOW RATE (L/s)		*				
PEAK FLOW RATE (L/s)		*				
RETURN PERIOD OF PEAK FLOW (yrs)		*				
DRAINAGE AREA (HA)		*				
DRAINAGE AREA IMPERVIOUSNESS (%)		*				
PIPE DATA:	I.E.	MAT'L	DIA	SLOPE %	HGL	
INLET #1	*	*	*	*	*	
INLET #2	*	*	*	*	*	
OUTLET	*	*	*	*	*	

* PER ENGINEER OF RECORD

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REVISION DESCRIPTION	DATE	MARK	BY
	05/26/17	0	JSK
INITIAL RELEASE			
OUTLET PLATFORM	6/8/18	1	JSK

Stormceptor® EF

SCALE = NTS

imbrum

7037 RIDGE ROAD, SUITE 300, HANOVER, MD 21078
USA 888-278-8828 CA 800-588-4887 INTL +1-410-560-2600

The Stormceptor system is protected by one or more of the following patents: US Pat. Nos. 8,000,000; 8,000,001; 8,000,002; 8,000,003; 8,000,004; 8,000,005; 8,000,006; 8,000,007; 8,000,008; 8,000,009; 8,000,010; 8,000,011; 8,000,012; 8,000,013; 8,000,014; 8,000,015; 8,000,016; 8,000,017; 8,000,018; 8,000,019; 8,000,020; 8,000,021; 8,000,022; 8,000,023; 8,000,024; 8,000,025; 8,000,026; 8,000,027; 8,000,028; 8,000,029; 8,000,030; 8,000,031; 8,000,032; 8,000,033; 8,000,034; 8,000,035; 8,000,036; 8,000,037; 8,000,038; 8,000,039; 8,000,040; 8,000,041; 8,000,042; 8,000,043; 8,000,044; 8,000,045; 8,000,046; 8,000,047; 8,000,048; 8,000,049; 8,000,050; 8,000,051; 8,000,052; 8,000,053; 8,000,054; 8,000,055; 8,000,056; 8,000,057; 8,000,058; 8,000,059; 8,000,060; 8,000,061; 8,000,062; 8,000,063; 8,000,064; 8,000,065; 8,000,066; 8,000,067; 8,000,068; 8,000,069; 8,000,070; 8,000,071; 8,000,072; 8,000,073; 8,000,074; 8,000,075; 8,000,076; 8,000,077; 8,000,078; 8,000,079; 8,000,080; 8,000,081; 8,000,082; 8,000,083; 8,000,084; 8,000,085; 8,000,086; 8,000,087; 8,000,088; 8,000,089; 8,000,090; 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STANDARD SPECIFICATION FOR “OIL GRIT SEPARATOR” (OGS) STORMWATER QUALITY TREATMENT DEVICE WITH THIRD-PARTY VERIFIED LIGHT LIQUID RE-ENTRAINMENT SIMULATION PERFORMANCE TESTING RESULTS

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, designing, maintaining, and constructing an underground Oil Grit Separator (OGS) device for stormwater quality treatment, **specifically an OGS device that has been third-party tested for oil and fuel retention capability using a protocol for light liquid re-entrainment simulation testing, with testing results and a Statement of Verification in accordance with all the provisions of ISO 14034 Environmental Management – Environmental Technology Verification (ETV).** Work includes supply and installation of concrete bases, precast sections, and the appropriate precast section with OGS internal components correctly installed within the system, watertight sealed to the precast concrete prior to arrival to the project site.

1.2 REFERENCE STANDARDS

1.2.1 For Canadian projects only, the following reference standards apply:

CAN/CSA-A257.4-14: Joints for Circular Concrete Sewer and Culvert Pipe, Manhole Sections, and Fittings Using Rubber Gaskets

CAN/CSA-A257.4-14: Precast Reinforced Circular Concrete Manhole Sections, Catch Basins, and Fittings

CAN/CSA-S6-00: Canadian Highway Bridge Design Code

1.2.2 For ALL projects, the following reference standards apply:

ASTM D-4097: Contact Molded Glass Fiber Reinforced Chemical Resistant Tanks

ASTM C 478: Specification for Precast Reinforced Concrete Manhole Sections

ASTM C 443: Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets

ASTM C 891: Standard Practice for Installation of Underground Precast Concrete Utility Structures

ASTM D2563: Standard Practice for Classification of Visual Defects in Reinforced Plastics

1.3 SHOP DRAWINGS

1.3.1 Shop drawings shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail the precast concrete components and OGS internal components prior to shipment, including the sequence for installation.

1.3.2 Unless directed otherwise by the Engineer of Record, OGS stormwater quality treatment product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record. Any and all changes to project cost estimates, bonding amounts, plan check fees for revision of approved documents, or design impacts due to regulatory requirements as a result of a product substitution shall be coordinated by the Contractor with the Engineer of Record.

1.4 HANDLING AND STORAGE

Prevent damage to materials during storage and handling.

1.4.1 OGS internal components supplied by the Manufacturer for attachment to the precast concrete vessel shall be pre-fabricated, bolted to the precast and watertight sealed to the precast vessel surface prior to site delivery to ensure Manufacturer's internal assembly process and quality control processes are fully adhered to, and to prevent materials damage on site.

1.4.2 Follow all instructions including the sequence for installation in the shop drawings during installation.

PART 2 – PRODUCTS

2.1 GENERAL

2.1.1 The OGS vessel shall be cylindrical and constructed from precast concrete riser and slab components.

2.1.2 The precast concrete OGS internal components shall include a fiberglass insert bolted and watertight sealed inside the precast concrete vessel, prior to site delivery. Primary internal components that are to be anchored and watertight sealed to the precast concrete vessel shall be done so only by the Manufacturer prior to arrival at the job site to ensure product quality.

2.1.3 The OGS shall be allowed to be specified and have the ability to function as a 240-degree bend structure in the stormwater drainage system, or as a junction structure.

2.1.4 The OGS to be specified shall have the capability to accept influent flow from an inlet grate and an inlet pipe.

2.2 PRECAST CONCRETE SECTIONS

All precast concrete components shall be designed and manufactured to meet highway loading conditions per State/Provincial or local requirements.

2.3 GASKETS

Only profile neoprene or nitrile rubber gaskets that are oil resistant shall be accepted. For Canadian projects only, gaskets shall be in accordance to CSA A257.4-14. Mastic sealants, butyl tape/rope or Conseal CS-101 alone are not acceptable gasket materials.

2.4 JOINTS

The concrete joints shall be watertight and meet the design criteria according to ASTM C-990. For projects where joints require gaskets, the concrete joints shall be watertight and oil resistant and meet the design criteria according to ASTM C-443. Mastic sealants or butyl tape/rope alone are not an acceptable alternative.

2.5 FRAMES AND COVERS

Frames and covers shall be manufactured in accordance with State/Provincial or local requirements for inspection and maintenance access purposes. A minimum of one cover, at least 22-inch (560 mm) in diameter, shall be clearly embossed with the OGS manufacturer's product name to properly identify this asset's purpose is for stormwater quality treatment.

2.6 PRECAST CONCRETE

All precast concrete components shall conform to the appropriate CSA or ASTM specifications.

2.7 FIBERGLASS

The fiberglass portion of the OGS device shall be constructed in accordance with ASTM D2563, and in accordance with the PS15-69 manufacturing standard, and shall only be installed, bolted and watertight sealed to the precast concrete by the Manufacturer prior to arrival at the project site to ensure product quality.

2.8 OGS POLLUTANT STORAGE

The OGS device shall include a sump for sediment storage, and a fiberglass insert for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants. The total sediment storage capacity shall be a minimum 40 ft³ (1.1 m³). The total petroleum hydrocarbon storage capacity shall be a minimum 50 gallons (189 liters). The access opening to the sump of the OGS device for periodic inspection and maintenance purposes shall be a minimum 16 inches (406 mm) in diameter.

2.9 LADDERS

Ladder rungs shall be provided upon request or to comply with State/Provincial or local requirements.

2.10 INSPECTION

All precast concrete sections shall be level and inspected to ensure dimensions, appearance, integrity of internal components, and quality of the product meets State/Provincial or local specifications and associated standards.

PART 3 – PERFORMANCE & DESIGN

3.1 GENERAL

The OGS stormwater quality treatment device shall be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV). The OGS stormwater quality treatment device shall remove oil, sediment and gross pollutants from stormwater runoff during frequent wet weather events, and retain these pollutants during less frequent high flow wet weather events below the insert within the OGS for later removal during maintenance. The Manufacturer shall have at least ten (10) years of local experience, history and success in engineering design, manufacturing and production and supply of OGS stormwater quality treatment device systems, acceptable to the Engineer of Record.

3.2 HYDROLOGY AND RUNOFF VOLUME

The OGS device shall be engineered, designed and sized to treat a minimum of 90 percent of the average annual runoff volume, unless otherwise stated by the Engineer of Record, using historical rainfall data. Rainfall data sets should be comprised of a minimum 15-years of rainfall data or a longer continuous period if available for a given location, but in all cases a minimum 5-year period of rainfall data.

3.3 ANNUAL (TSS) SEDIMENT LOAD AND STORAGE CAPACITY

The OGS device shall be capable of removing and have sufficient storage capacity for the calculated annual total suspended solids (TSS) mass load and volume without scouring previously captured pollutants prior to maintenance being required. The annual (TSS) sediment load and volume transported from the drainage area should be calculated and compared to the OGS device's available storage capacity by the specifying Engineer to ensure adequate capacity between maintenance cycles. Sediment loadings shall be determined by land use and defined as a minimum of 450 kg (992 lb) of sediment (TSS) per impervious hectare of drainage area per year, or greater based on land use, as noted in Table 1 below.

Annual sediment volume calculations shall be performed using the projected average annual treated runoff volume, a typical sediment bulk density of 1602 kg/m³ (100 lbs/ft³) and an assumed Event Mean Concentration (EMC) of 125 mg/L TSS in the runoff, or as otherwise determined by the Engineer of Record.

Example calculation for a 1.3-hectares parking lot site:

- 1.28 meters of rainfall depth, per year
- 1.3 hectares of 100% impervious drainage area
- EMC of 125 mg/L TSS in runoff
- Treatment of 90% of the average annual runoff volume
- Target average annual TSS removal rate of 60% by OGS

Annual Runoff Volume:

- $1.28 \text{ m rain depth} \times 1.3 \text{ ha} \times 10,000 \text{ m}^2/\text{ha} = 16,640 \text{ m}^3$ of runoff volume
- $16,640 \text{ m}^3 \times 1000 \text{ L/m}^3 = 16,640,000 \text{ L}$ of runoff volume
- $16,640,000 \text{ L} \times 0.90 = 14,976,000 \text{ L}$ to be treated by OGS unit

Annual Sediment Mass and Sediment Volume Load Calculation:

- $14,976,000 \text{ L} \times 125 \text{ mg/L} \times \text{kg}/1,000,000 \text{ mg} = 1,872 \text{ kg}$ annual sediment mass
- $1,872 \text{ kg} \times \text{m}^3/1602 \text{ kg} = 1.17 \text{ m}^3$ annual sediment volume
- $1.17 \text{ m}^3 \times 60\% \text{ TSS removal rate by OGS} = 0.70 \text{ m}^3$ minimum expected annual storage requirement in OGS

As a guideline, the U.S. EPA has determined typical annual sediment loads per drainage area for various sites by land use (see Table 1). Certain States, Provinces and local jurisdictions have also established such guidelines.

Table 1 – Annual Mass Sediment Loading by Land Use								
	Commercial	Parking Lot	Residential			Highways	Industrial	Shopping Center
(lbs/acre/yr)	1,000	400	High	Med.	Low	880	500	440
(kg/hectare/yr)	1,124	450	472	281	11	989	562	494

Source: U.S. EPA Stormwater Best Management Practice Design Guide Volume 1, Appendix D, Table D-1, Burton and Pitt 2002

3.4 SIZING METHODOLOGY

The OGS device shall be engineered, designed and sized to provide stormwater quality treatment based on treating a minimum of 90 percent of the average annual runoff volume and a minimum removal of an annual average 60% of the sediment (TSS) load based on the Particle Size Distribution (PSD) specified in Table 2, Section 3.5, and based on third-party performance testing conducted in accordance with the Canadian Environmental Technology Verification (ETV) Program's **Procedure for Laboratory Testing of Oil-Grit Separators**. Sizing of the OGS shall be determined by use of a minimum ten (10) years of local historical rainfall data provided by Environment Canada. Sizing shall also be determined by use of the sediment removal performance data derived from the ISO 14034 ETV third-party verified laboratory testing data from testing conducted in accordance with the Canadian ETV protocol *Procedure for Laboratory Testing of Oil-Grit Separators*, as follows:

3.4.1 Sediment removal efficiency for a given surface loading rate and its associated flow rate shall be based on sediment removal efficiency demonstrated at the seven (7) tested surface loading rates specified in the protocol, ranging 40 L/min/m² to 1400 L/min/m², and as stated in the ISO 14034 ETV Verification Statement for the OGS device.

3.4.2 Sediment removal efficiency for surface loading rates between 40 L/min/m² and 1400 L/min/m² shall be based on linear interpolation of data between consecutive tested surface loading rates.

3.4.3 Sediment removal efficiency for surface loading rates less than the lowest tested surface loading rate of 40 L/min/m² shall be assumed to be identical to the sediment removal efficiency at 40 L/min/m². No extrapolation shall be allowed that results in a sediment removal efficiency that is greater than that demonstrated at 40 L/min/m².

3.4.4 Sediment removal efficiency for surface loading rates greater than the highest tested surface loading rate of 1400 L/min/m² shall assume zero sediment removal for the portion of flow that exceeds 1400 L/min/m², and shall be calculated using a simple proportioning formula, with 1400 L/min/m² in the numerator and the higher surface loading rate in the denominator, and multiplying the resulting fraction times the sediment removal efficiency at 1400 L/min/m².

The OGS device shall also have sufficient annual sediment storage capacity as specified and calculated in Section 3.3.

3.4.5 The Peclet Number is not an approved method or model for calculating TSS removal, sizing, or scaling OGS devices.

3.4.6 If an alternate OGS device is proposed, supporting documentation shall be submitted that demonstrates:

- Canadian ETV or ISO 14034 ETV Verification Statement which verifies third-party performance testing conducted in accordance with the **Procedure for Laboratory Testing of Oil-Grit Separators**, including the Light Liquid Re-entrainment Simulation Testing.
- Equal or better sediment (TSS) removal of the PSD specified in Table 2 at equivalent surface loading rates, as compared to the OGS device specified herein.
- Equal or better Light Liquid Re-entrainment Simulation Test results (using low-density polyethylene beads as a surrogate for light liquids such as oil and fuel) at equivalent surface loading rates, as compared to the OGS device specified herein. However, an alternative OGS device shall not be allowed as a substitute if the Light Liquid Re-entrainment Simulation Test was performed with screening components within the OGS device that are effective at retaining the low-density polyethylene beads, but would not be expected to retain light liquids such as oil and fuel.
- Equal or greater sediment storage capacity, as compared to the OGS device specified herein.
- Supporting documentation shall be signed and sealed by a local registered Professional Engineer. All costs associated with preparing and certifying this documentation shall be born solely by the Contractor.

3.5 PARTICLE SIZE DISTRIBUTION (PSD) FOR SIZING

The OGS device shall be sized to achieve the Engineer-specified average annual percent sediment (TSS) removal based solely on the test sediment used in the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**. This test sediment is comprised of inorganic ground silica with a specific gravity of 2.65, uniformly mixed, and containing a broad range of particle sizes as specified in Table 2. No alternative PSDs or deviations from Table 2 shall be accepted.

Table 2 Canadian ETV Program Procedure for Laboratory Testing of Oil-Grit Separators Particle Size Distribution (PSD) of Test Sediment		
Particle Diameter (Microns)	% by Mass of All Particles	Specific Gravity
1000	5%	2.65
500	5%	2.65
250	15%	2.65
150	15%	2.65
100	10%	2.65
75	5%	2.65
50	10%	2.65
20	15%	2.65
8	10%	2.65
5	5%	2.65
2	5%	2.65

3.6 CANADIAN ETV or ISO 14034 ETV VERIFICATION OF SCOUR TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party scour testing conducted and have in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**. This scour testing is conducted with the device pre-loaded with test sediment comprised of the particle size distribution (PSD) illustrated in Table 2.

3.6.1 To be acceptable for on-line installation, the OGS device must demonstrate an average scour test effluent concentration less than 10 mg/L at each surface loading rate tested, up to and including 2600 L/min/m².

Data generated from laboratory scour testing performed with an OGS device pre-loaded with a coarser PSD than in Table 2 (i.e. the coarser PSD has no particles in the 1-micron to 50-micron size range, or the D₅₀ of the test sediment exceeds 75 microns) shall not be acceptable for the determination of the device's suitability for on-line installation.

3.7 DESIGN ACCOUNTING FOR BYPASS

3.7.1 The OGS device shall be specified to achieve the TSS removal performance and water quality objectives without washout of previously captured pollutants. The OGS device shall also have sufficient hydraulic conveyance capacity to convey the peak storm event, in accordance with hydraulic conditions per the Engineer of Record. To ensure this is achieved, there are two design options with associated requirements:

3.7.1.1 The OGS device shall be placed **off-line** with an upstream diversion structure (typically in an upstream manhole) that only allows the water quality volume to be diverted to the OGS device, and excessive flows diverted downstream around the OGS device to prevent high flow washout of pollutants previously captured. This design typically incorporates a triangular layout including an upstream bypass manhole with an appropriately engineered weir wall, the OGS device, and a downstream junction manhole, which is connected to both the OGS device and bypass structure. In this case with an external bypass required, the OGS device manufacturer must provide calculations and designs for all structures, piping and any other required material applicable to the proper functioning of the system, stamped by a Professional Engineer.

3.7.1.2 Alternatively, OGS devices in compliance with Section 3.6 shall be acceptable for an **on-line** design configuration, thereby eliminating the requirement for an upstream bypass manhole and downstream junction manhole.

3.7.2 The OGS device shall also have sufficient hydraulic conveyance capacity to convey the peak storm event, in accordance with hydraulic conditions per the Engineer of Record. If an alternate OGS device is proposed, supporting documentation shall be submitted that demonstrates equal or better hydraulic conveyance capacity as compared to the OGS device specified herein. This documentation shall be signed and sealed by a local registered Professional Engineer. All costs associated with preparing and certifying this documentation shall be born solely by the Contractor.

3.8 LIGHT LIQUID RE-ENTRAINMENT SIMULATION TESTING

The OGS device shall have Canadian ETV or ISO 14034 ETV Verification of completed third-party Light Liquid Re-entrainment Simulation Testing in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**, with results reported within the Canadian ETV or ISO 14034 ETV verification. This re-entrainment testing is conducted with the device pre-loaded with low density polyethylene (LDPE) plastic beads as a surrogate for light liquids such as oil and fuel. Testing is conducted on the same OGS unit tested for sediment removal to assess whether light liquids captured after a spill are effectively retained at high flow rates.

3.8.1 For an OGS device to be an acceptable stormwater treatment device on a site where vehicular traffic occurs and the potential for an oil or fuel spill exists, the OGS device must have reported verified performance results of greater than 99% cumulative retention of LDPE plastic beads for the five specified surface loading rates (ranging 200 L/min/m² to 2600 L/min/m²) in accordance with the Light Liquid Re-entrainment Simulation Testing within the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**. However, an OGS device shall not be allowed if the Light Liquid Re-entrainment Simulation Testing was performed with screening components within the OGS device that are effective at retaining the LDPE plastic beads, but would not be expected to retain light liquids such as oil and fuel.

3.9 PETROLEUM HYDROCARBONS AND FLOATABLES STORAGE CAPACITY

Petroleum hydrocarbons and floatables storage capacity in the OGS device shall be a minimum 50 gallons (189 Liters), or more as specified.

3.9.1 The OGS device shall have gasketed precast concrete joints that are watertight, and oil resistant and meet the design criteria according to ASTM C-443 to provide safe oil and other hydrocarbon materials storage and ground water protection. Mastic sealants or butyl tape/rope alone are not an acceptable alternative.

3.10 SURFACE LOADING RATE SCALING OF DIFFERENT MODEL SIZES

The reference device for scaling shall be an OGS device that has been third-party tested in accordance with the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**. Other model sizes of the tested device shall only be scaled such that the claimed TSS removal efficiency of the scaled device shall be no greater than the TSS removal efficiency of the tested device at identical **surface loading rates** (flow rate divided by settling surface area). The depth of other model sizes of the tested device shall be scaled in accordance with the depth scaling provisions within Section 6.0 of the Canadian ETV Program's **Procedure for Laboratory Testing of Oil-Grit Separators**.

3.10.1 The Peclet Number and volumetric scaling are not approved methods for scaling OGS devices.

PART 4 – INSPECTION & MAINTENANCE

The OGS manufacturer shall provide an Owner's Manual upon request. Maintenance shall be performed by a professional service provider who has experience in cleaning OGS devices and has been trained and certified in applicable health and safety practices, including confined space entry procedures.

- 4.1 A Quality Assurance Plan that provides inspection for a minimum of 5 years shall be included with the OGS stormwater quality device, and written into the Environmental Compliance Approval (ECA) or the appropriate State/Provincial or local approval document.
- 4.2 OGS device inspection shall include determination of sediment depth and presence of petroleum hydrocarbons below the insert. Inspection shall be easily conducted from finished grade through a frame and cover of at least 22 inch (560 mm) in diameter.
- 4.3 Inspection and pollutant removal shall be conducted periodically. For routine maintenance cleaning activities, pollutant removal shall typically utilize a truck equipped with vacuum apparatus, and shall be easily conducted from finished grade through a frame and cover of at least 22-inches (560 mm) in diameter.
- 4.4 Diameter of the maintenance access opening to the lower chamber and sump shall be scaled consistently across all model sizes, and shall be 1/3 the inside diameter of the OGS structure, or larger.
- 4.5 No confined space entry shall be required for routine inspection and maintenance cleaning activities.

- 4.6 For OGS model sizes of diameter 72 inches (1828 mm) and greater, the access opening to the OGS device's lower chamber and sump shall be large enough to allow a maintenance worker to enter the lower chamber to facilitate non-routine maintenance cleaning activities and repairs, as needed.
- 4.7 The orifice-containing component (i.e. drop pipe, duct, chute, etc.) of the OGS device used to control flow rate into the lower chamber shall be removable from the insert to facilitate cleaning, repair, or replacement of the orifice-containing component, as needed.

PART 5 – EXECUTION

5.1 PRECAST CONCRETE INSTALLATION

The installation of the precast concrete OGS stormwater quality treatment device shall conform to ASTM C 891, ASTM C 478, ASTM C 443, CAN/CSA-A257.4-14, CAN/CSA-A257.4-14, CAN/CSA-S6-00 and all highway, State/Provincial, or local specifications for the construction of manholes. Selected sections of a general specification that are applicable are summarized below. The Contractor shall furnish all labor, equipment and materials necessary to offload, assemble as needed the OGS internal components as specified in the Shop Drawings.

5.2 EXCAVATION

5.2.1 Excavation for the installation of the OGS stormwater quality treatment device shall conform to highway, State/Provincial or local specifications. Topsoil that is removed during the excavation for the OGS stormwater quality treatment device shall be stockpiled in designated areas and not be mixed with subsoil or other materials. Topsoil stockpiles and the general site preparation for the installation of the OGS stormwater quality device shall conform to highway, State/Provincial or local specifications.

5.2.2 The OGS device shall not be installed on frozen ground. Excavation shall extend a minimum of 12 inch (300 mm) from the precast concrete surfaces plus an allowance for shoring and bracing where required. If the bottom of the excavation provides an unsuitable foundation additional excavation may be required.

5.2.3 In areas with a high water table, continuous dewatering shall be provided to ensure that the excavation is stable and free of water.

5.3 BACKFILLING

Backfill material shall conform to highway, State/Provincial or local specifications. Backfill material shall be placed in uniform layers not exceeding 12 inches (300 mm) in depth and compacted to highway, State/Provincial or local specifications.

5.4 OGS WATER QUALITY DEVICE CONSTRUCTION SEQUENCE

5.4.1 The precast concrete OGS stormwater quality treatment device is installed and leveled in sections in the following sequence:

- aggregate base
- base slab, or base
- riser section(s) (if required)
- riser section w/ pre-installed fiberglass insert
- upper riser section(s)
- internal OGS device components
- connect inlet and outlet pipes
- riser section, top slab and/or transition (if required)
- frame and access cover

5.4.2 The precast concrete base shall be placed level at the specified grade. The entire base shall be in contact with the underlying compacted granular material. Subsequent sections, complete with oil resistant, watertight joint seals, shall be installed in accordance with the precast concrete manufacturer's recommendations.

5.4.3 Adjustment of the OGS stormwater quality treatment device can be performed by lifting the upper sections free of the excavated area, re-leveling the base, and re-installing the sections. Damaged sections and gaskets shall be repaired or replaced as necessary. Once the OGS stormwater quality treatment device has been constructed, any lift holes must be plugged with mortar.

5.5 DROP PIPE AND OIL INSPECTION PIPE

Once the upper precast concrete riser has been attached to the lower precast concrete riser section, the OGS device Drop Pipe and Oil Inspection Pipe must be attached, and watertight sealed to the fiberglass insert using Sikaflex 1a. Installation instructions and required materials shall be provided by the OGS manufacturer.

5.6 INLET AND OUTLET PIPES

Inlet and outlet pipes shall be securely set using grout or approved pipe seals (flexible boot connections, where applicable) so that the structure is watertight. Non-secure inlets and outlets will result in improper performance.

5.7 FRAME AND COVER OR FRAME AND GRATE INSTALLATION

Precast concrete adjustment units shall be installed to set the frame and cover/grate at the required elevation. The adjustment units shall be laid in a full bed of mortar with successive units being joined using sealant recommended by the manufacturer. Frames for the cover/grate should be set in a full bed of mortar at the elevation specified.

5.7.1 A minimum of one cover, at least 22-inch (560 mm) in diameter, shall be clearly embossed with the OGS device brand or product name to properly identify this asset's purpose is for stormwater quality treatment.

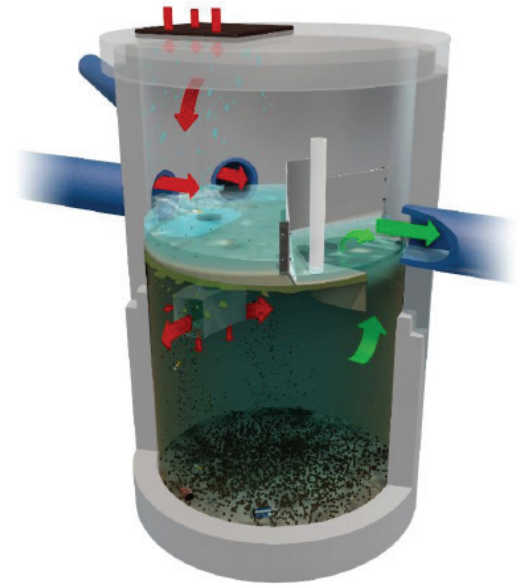
Rinker Materials Quality Assurance Program (QAP)

Stormceptor® Quality Assurance Program

The QAP provides the following to ensure Stormceptor's top performance:

- Six inspections over a 5-year period, cleaning not included
- First inspection when installed
- At 6 months a second inspection
- Inspections every 12 months thereafter for 5 years
- Oil and sediment level are documented along with maintenance recommendations

All QAP programs are completed by Minotaur.



We've got you covered.

Your QAP starts with post construction inspection to ensure the unit has been installed as designed. The unit is recorded in our expansive database summarizing all installed units with their GPS locations. When you inspect and maintain these OGS units, you play an important part in protecting the environment, while ensuring your stormwater assets remain in compliance with environmental regulations. Rinker Materials industry leading line of Stormceptor products are one of the lowest-cost OGS units in the market, functioning effectively in all aspects of keeping pollutants out of our waterways. The Rinker Materials' Quality Assurance Program is in place at no extra cost to the asset's owner, providing inspections for up to 5 years.

Improving products, improving service.

Our commitment to providing the best storm water quality devices continues as we have recently expanded our already impressive line of Stormceptor® products with the addition of the ISO14034/ETV verified Stormceptor EF and EFO - simply the most cost competitive stormwater quality device on the market. Now we're improving our service by ensuring inspections on our entire Stormceptor product line for up to 5 years after installation.

At Rinker Materials, we understand that maintaining a high standard of water quality is crucial to the environment and to our lives. That's why, 20 years ago, we introduced a 2-year inspection plan with every Stormceptor unit sold. As municipalities continue to focus on OGS units operating as designed, we felt it was time to strengthen our program even further. We are now offering at no additional cost to the asset's owner, a 5- year QAP with every Stormceptor unit to ensure water quality continues to be at its best.

Rinker Materials Quality Assurance Program (QAP)

Jellyfish® Quality Assurance Program

The activation of a Jellyfish Unit is the procedure to bring the installed unit into full operation in the post construction phase.

- Minotaur Services Limited is the company licensed by Rinker Materials that performs the Jellyfish Unit's filter installation.
- The installation of the filter cartridges can only be done once the unit is installed and cleaned out by the contractor.

Project site completed: (asphalt/landscaping) an activation form must be completed and submitted.

- Our partner Minotaur can complete the activation within 5 weeks of initial contact.

Post-activation sediment level inspection:

is scheduled and performed by Minotaur 6 - 12 months after the initial system activation. The owner will then be informed of the sediment level.



We've got you covered.

When you inspect and maintain filtration units, you play an important part in protecting the environment, while ensuring your stormwater assets remain in compliance with environmental regulations.

Rinker Materials line of stormwater products are known as a leader in the market, functioning effectively in all aspects of keeping pollutants out of our waterways. The Rinker Materials Quality Assurance Program is in place at no extra cost to the asset's owner.

Improving products, improving service.

At Rinker Materials, we understand that maintaining a high standard of water quality is crucial to the environment and to our lives. Now we're improving our service by ensuring proper activation of the Jellyfish unit after installation.



BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix F

Visual OTTHYMO Models (Electronic Version)



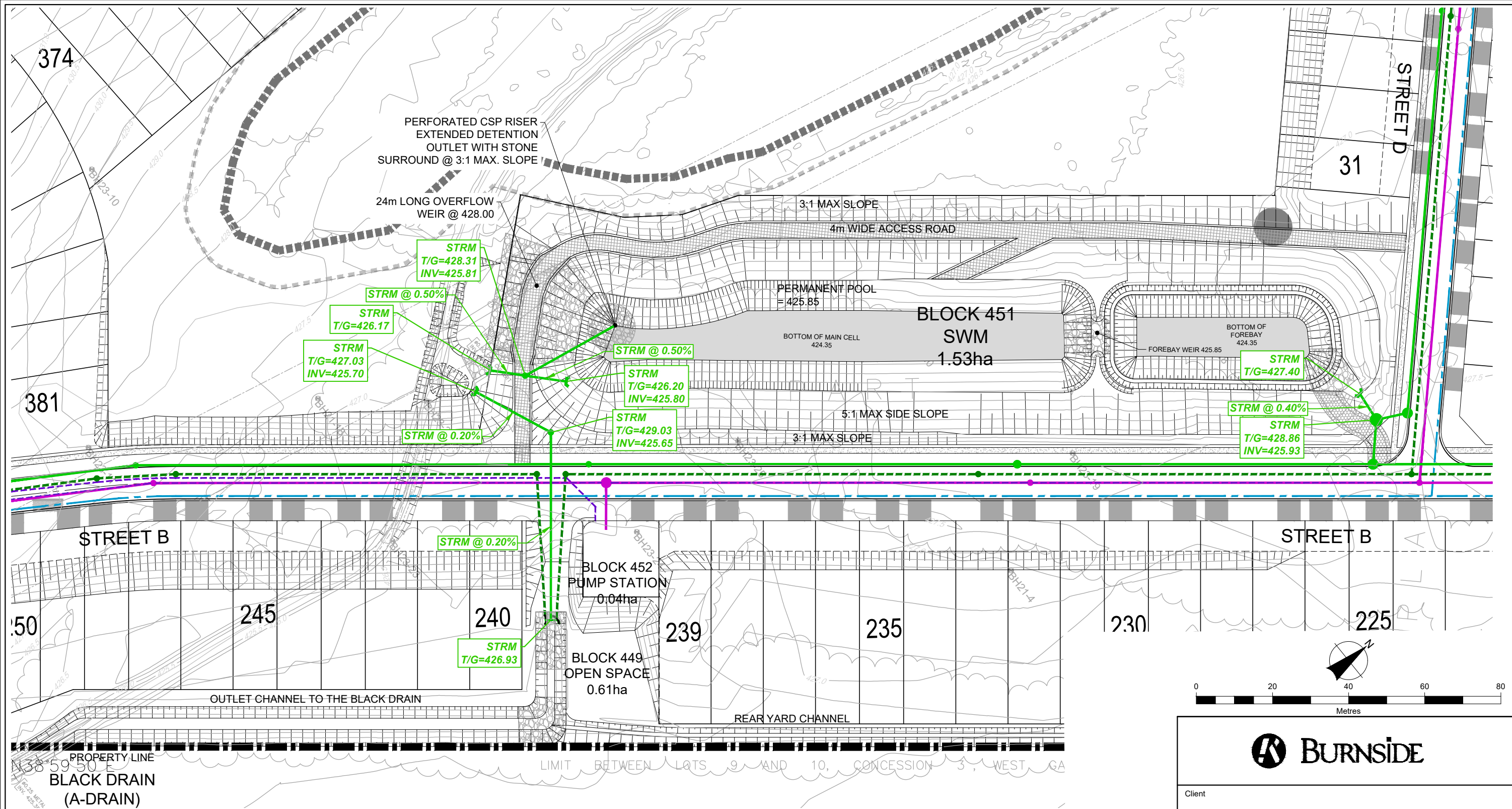
BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

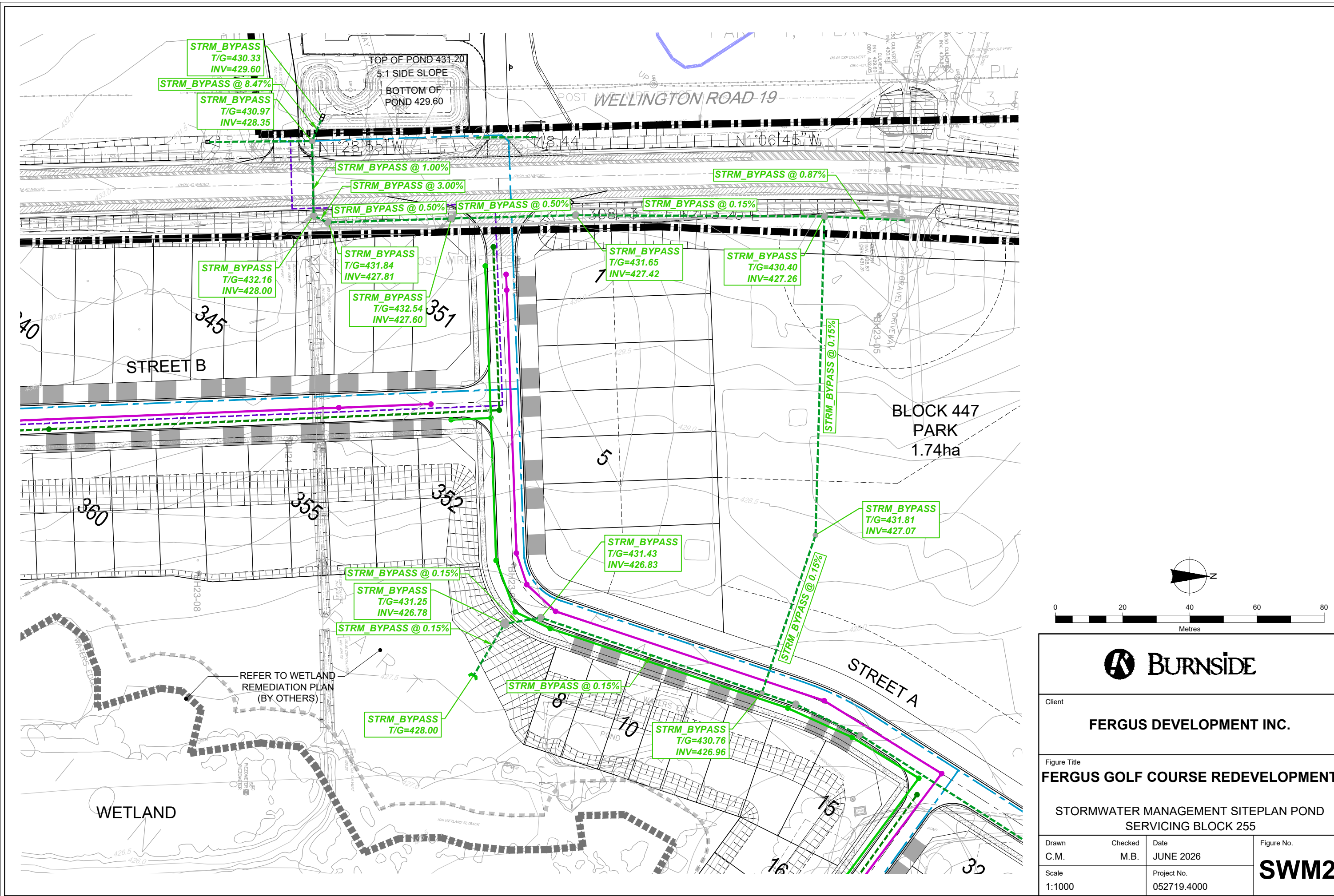


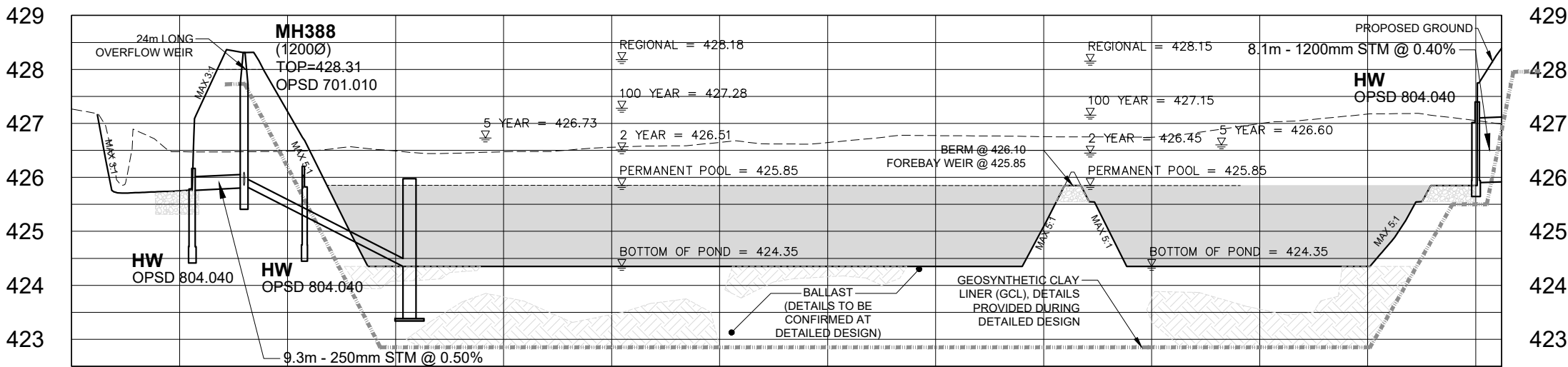
Drawings

Drawings

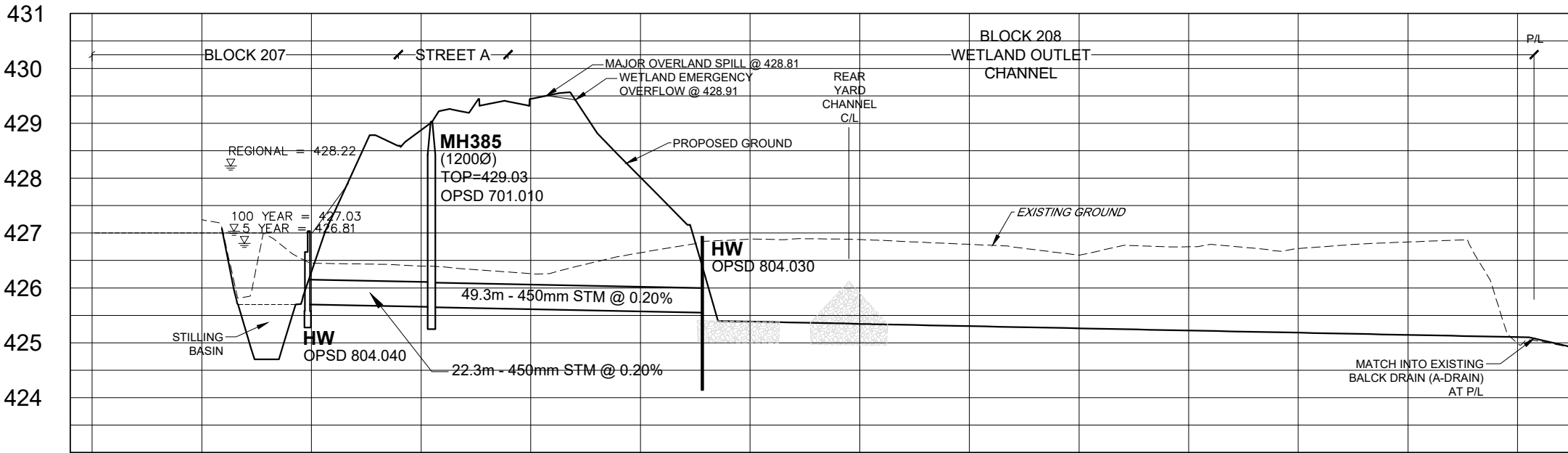


Client			
FERGUS DEVELOPMENT INC.			
Figure Title			
FERGUS GOLF COURSE REDEVELOPMENT			
STORMWATER MANAGEMENT POND PLAN BLOCK 451			
Drawn C.M.	Checked M.B.	Date JUNE 2026	Figure No. SWM1
Scale 1:1000	Project No. 052719.4000		

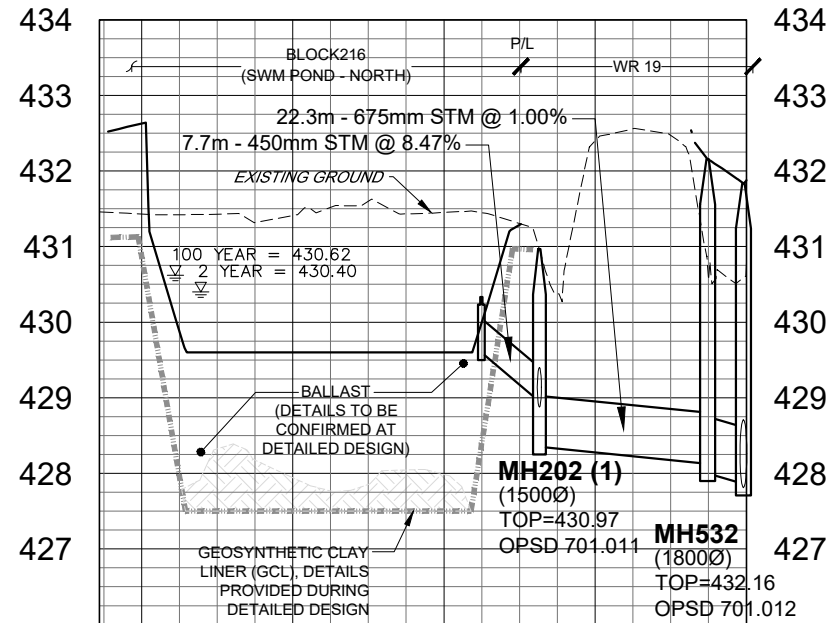




SOUTH SWM POND - SECTION A-A



WETLAND OUTLET - SECTION B-B



NORTH SWM POND - SECTION C-C

 BURNSIDE			
Client			
FERGUS DEVELOPMENT INC.			
Figure Title			
FERGUS GOLF COURSE REDEVELOPMENT			
STORMWATER MANAGEMENT POND SECTIONS			
Drawn	Checked	Date	Figure No.
C.M.	M.B.	JUNE 2026	
Scale	Project No.		
H1:1000 V1:100		052719.4000	SWM3

