Preliminary Stormwater Management Report

Trent Meadows Phase 1
HBNG (Norwood) Development Inc.
67 Mill St Norwood, Ontario
Township of Asphodel-Norwood

Engage Project Number 23104

Engage Engineering Ltd.
Issued for Rezoning and
Draft Plan Application
March 2024

Revision Summary

Revision No.	Revision Title	Date	Revision Summary
1	Issued for Draft Plan Application	March 15, 2024	Final

Land Acknowledgement

Engage Engineering would like to acknowledge that our concern is in the traditional territory of the Michi Saagiig Anishinaabe and is part of the land and people encompassed within Treaty #20 and the Williams Treaty. We believe it is important to acknowledge these treaties, as our projects and designs often have a lasting impact on the lands, waters, wildlife, and people of this territory. We thank our local First Nations and communities for their ongoing stewardship of these lands and waters and strive to centre their voices in our work and honor our treaty obligations. May we dedicate ourselves as treaty people to moving forward in the spirit of reconciliation and enduring collaboration.

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1.0 Introduction

1.1 Purpose

Engage Engineering Limited (Engage) has been retained by HBNG (Norwood) Developments Inc. to prepare a Preliminary Stormwater Management Report in support of the Draft Plan of Subdivision application for the Trent Meadows Phase 1 development. The proposed development is located at the municipal address of 67 Mill Street in the Township of Asphodel-Norwood (Township), County of Peterborough. The purpose of this Preliminary Stormwater Management Report is to support the development application. This report outlines the impacts the proposed development will have on the natural water cycle and proposes a preliminary plan of various stormwater management measures that are required to maintain post-development flows to pre-development levels, and achieve water quality objectives.

Recommendations made in this report will be in accordance with Otonabee Region Conservation Authority (ORCA) and Township requirements. The preliminary plan follows current stormwater management best practices and the Credit Valley Conservation Low Impact Development Stormwater Management Planning and Design Guide.

1.2 Background

This Preliminary Stormwater Management Report builds on, and should be read in conjunction with, recommendations made in the Functional Servicing Review and Master Drainage Plan prepared by D.M. Wills (July 2017). The report addresses comments prepared by both the ORCA and AECOM. This report will focus on the Mill Street Option 2 presented in the Master Drainage Plan for stormwater conveyance.

A previous Zoning By-law Amendment was approved for this site and the northern portion of the site (now known as phase 2) was rezoned through By-Law No. 2021-35 on June 22nd, 2021. This Preliminary Stormwater Management Report is updated to reflect the latest version of the Draft Plan. The methodology and general approach to stormwater management controls has not changed from the approved Draft Plan.

1.3 Site Description

The full subject development is 51.8 ha and has been divided into four phases. The location of the subject property and four phases are identified on the **Location Plan** attached as **Figure 1**.

Phase 1 of the development is the subject area of interest for this report. It is situated on the south side of Mill Street approximately 400m east of Highway 7. The municipal address for this phase is 67 Mill Street, Norwood. This area consists of 10.9 ha of vacant agricultural land. Norwood District Public School is south of the Phase 1 area and residential homes are along the western boundary. East of Phase 1 is the phase 3 area of the development, currently an agricultural field. The area north of Phase 1 consists of rural lots with plans for future development.

Phase 2 of the development is located on the north side of Mill Street, west of Asphodel 10th Line. The municipal address for this phase is 112 Mill Street, Norwood. This area consists of 9.2 ha of vacant agricultural land. Phase 2 is bounded by agricultural land to the north and east. South of Phase 2 is the Phase 3 area, currently agricultural land. West of Phase 2 are rural lots with plans for future development. This phase was included in the previously approved Plan of Condominium.

Phase 3 of the development is located west of Asphodel 10th Line. The municipal address for this phase is 2250 Asphodel 10th Line, Norwood. This phase consists of 18.1 ha of agricultural land. The area is bounded by agricultural lands from all directions. Phases 1, 2 and 4 are west, north, and south of Phase 3 respectively. A portion of this phase was in the previously approved Plan of Condominium.

Phase 4 of the development is located west of Asphodel 10th Line and North of County Road 42. The 13.6 ha area is agricultural land with a single house and various agricultural buildings. This phase is south of Phase 3 and is surrounded by agricultural lands. The agricultural field to the west of the Phase 4 area is scheduled for future development not associated with this project.

A segment of the property along the southeast boundary of the Phase 1 area is planned to be swapped for a portion of land within the Phase 3 area. The area that will be swapped out was included in the previous application and corresponding reports. For this report, the region designated to be swapped is not included within the subject site area. The segment of land included in the land swap can be identified on the **Draft Plan of Subdivision** included as **Figure 2.**

Figure 1 - Location Plan

2.0 Hydrologic Analysis

A hydrologic analysis of the existing conditions has been completed for the entire site, including the land allocated for all four development phases. The intent of the full analysis is to quantify the hydrologic function of the existing area and determine the allowable release rates for the various phases.

Additionally, the hydrologic analysis completed for this report includes the proposed post development conditions for the first phase of the project. The proposed conditions of the other phases will be analyzed in their respective reports at the time of future Draft Plan of Subdivision Applications. Post development conditions for this report will consist of the roads, building, landscaped areas, and other infrastructure required to complete Phase 1.

2.1 Hydrologic Model

As part of this study, a hydrologic model was developed using Visual OTTHYMO (VO) software for the development under existing conditions and Phase 1 proposed conditions. Additional modeling will be required for the other phases during their respective applications. The VO model was used to simulate peak flows from the site under both pre- and post-development conditions for a variety of storm distributions and durations, as well as to verify stormwater management storage requirements and performance. The model inputs and detailed output are included in **Appendix C**.

City of Peterborough rainfall data was used to develop the storm distributions in the model due to the vicinity to the subject site. Additionally, a comparison of various storm distributions was competed during the previous Plan of Condominium process by Engage. The previous repot concluded the six hour SCS design storm produced the greatest difference in peak flows and largest amount of storage required to control flows. The Timmins Storm data was used for the peak regional storm event.

A Geotechnical Investigation conducted by Soil Engineers Ltd. (September 2022), included in **Appendix I**, as well as the existing Master Drainage Plan Report developed by DM. Wills Associates (July 2017) were used to determine land use and soil types for the hydrologic model. The underlying soils are generally characterized as silty sand till or sandy silt which has a well drained drainage class. This type of soil is classified as Hydrologic Soils Group AB for the purposes of this report.

2.2 Existing Conditions

The existing site is approximately 51.8 ha of agricultural land, bounded by Asphodel 10th line to the east, residential properties, and open land to the west, and rural agricultural

land to the north and south. The topography and legal limits of the property are shown on the **Topographic Survey Plan** prepared by J.B. Fleguel Surveyors, which is included as **Figure 3**.

2.2.1 Existing Flow Routes

All excess runoff originating from the site ultimately reaches the Ouse River. Generally, there are three overland flow routes from the site to the river. The existing flow routes can be found on the **Pre-Development Catchment Area Plan** included as **Figure 4**.

Existing Flow Route 1 (EFR1): The first overland flow path generally collects water from the Phase 1 area and the northwest external catchment areas. The stormwater flows south, towards the Norwood School Districts yard, and eventually reaches a ditch inlet catchbasin on King Street. From the inlet, the water is conveyed through a storm sewer, ultimately entering the Ouse River at the Elm Street crossing.

Existing Flow Route 2 (EFR2): The second overland flow route collects excess runoff from the Phase 2 and 3 areas, and the large external catchment east of Asphodel 10th Line. The runoff flows overland from north to south, passing through two 600mm culverts under Alma St. South of Alma St., the channel becomes a more defined watercourse that is directed west towards Flora St. The water is conveyed under County Rd 45, through a 600mm culvert and a 900mm culvert before reaching the Ouse River.

Existing Flow Route 3 (EFR3): The third flow route collects runoff generated from the southern part of the Phase 4 lands. The runoff crosses under County Rd 42 through a culvert and flows into an existing private pond. From the pond, the water is directed west along County Rd 42, crossing back under the road through a culvert located west of the Alma St. intersection. The watercourse continues through the rear yards of properties off Baker St. before merging with the watercourse near Flora St.

A small section of the development within Phase 2, along the north boundary of the site, directs runoff towards the north. This area is within the Ouse River watershed.

According to the Master Drainage Plan prepared by D.M. Wills, moderate flooding has been observed within the Norwood District High School property, south of Phase 1, along Flow Route 1. Additionally, the report notes that according to ORCA, the homes located on Flora Street, along Flow Route 2 and Flow Route 3, observe flooding during major storm events. Additional floodplain modeling will be completed during Phase 3 and 4 of the development to ensure the downstream properties will not be negatively impacted by the development.

2.2.2 Existing Catchment Areas

Under the existing pre-development conditions, the site has nine (9) internal catchments areas and seven (7) external catchment areas that contributing to the site for a total of sixteen (16) catchment areas. These existing catchment areas and external catchment areas are shown on the **Pre-Development Catchment Area Plan**, included as **Figure 4**.

The topographic survey of the site was used to determine existing elevations, low points, locations of existing features on the site, and to establish a functional grading and servicing design for the proposed development of the site. Data from the South Central Ontario Orthophotography Project (SCOOP) 2013 Digital Elevation Model and the topographic survey was used to determine the external contributing catchment areas.

Existing external catchment area **EXT1** is 0.51 ha and includes drainage for a portion of rear yards of the properties fronting King Street. The yards drain onto the west portion of the subject site. Runoff from these yards drains from west to east toward EX3. The Landuse consists of grassed area and a small amount of wooded and impervious area. In the proposed conditions an infiltration trench and ditch inlet catch basin will be placed along the west property line to capture runoff generated from this area. The catchbasin is required because the rear yards and property boundary is lower than the top of the proposed SWM pond.

Existing external catchment area **EXT2** is 2.37 ha and includes drainage for an area northwest of the site. This area encompasses an existing house south of Mill St. that will remain through development. Runoff from this area drains from north to south into EX3 through a partially buried 400mm CSP culvert**.** The landuse consists of grass, pasture, and impervious areas.

Existing catchment area **EX3** is 3.45 ha and includes drainage for a western portion of the site. This area has a depressed area with a maximum ponding depth of 0.65m and storage volume of approximately 2740m^3. Runoff generated from this area will likely infiltrate into the depressed area or spill towards the south during large rainfalls. This area consists of mostly cropland.

Existing external catchment area **EXT4** is 4.81ha and includes drainage for an existing plan of subdivision north of the site. Although in the exiting condition not all of this area drains towards the subject site, AECOM (The previous Township Peer Review Engineer) requested in a previous application that existing plan of subdivision be included in the SWM analysis. This area drains from north to south over Mill Street towards EX5 and consists of grassed, cropland, impervious and wooded area.

Existing catchment area **EX5** is 6.00 ha and includes drainage for a southwest area of the site. Runoff generated from this area drains to the south towards the Norwood District Highschool and Community Centre. This area consists of mostly agricultural fields.

Existing external catchment area **EXT6** is a small 0.06 ha area located at the north part of the neighbouring plan of subdivision. Runoff from this area drains onto EX8. This area consists of agricultural area.

Existing external catchment area **EXT7** is a small 0.15 ha area part of the neighbouring plan of subdivision. This area drains to the south and consists of mostly agricultural area.

Existing catchment area **EX8** is a 0.76 ha area located at the north end of the development. Runoff from this area drains north off the site. This area consists of agricultural lands.

Existing catchment area **EX9** is 8.40 ha includes drainage for a large north area that makes up the majority of Phase 2. Runoff from this area drains from the north to the south into a 375mm HDPE culvert under Mill Street. Runoff from EX9 flows through EX10 and EX11, towards the Asphodel-Norwood Community Centre. The landuse of EX9 consists of mostly agricultural area. Runoff from this area contributes to a depressed area within EX10 that has a maximum ponding depth of 0.30m and has a storage volume of approximately 135m^3.

Existing catchment area **EX10** is 5.74 ha and includes drainage for an area of the subject site southeast of Mill Street. Runoff from this area drains from the north to the

south, through EX11**,** towards the Asphodel-Norwood Community Centre. This area consists of mostly agricultural land. There is a depressed area within EX10 that has a maximum ponding depth of 0.30m and has a storage volume of approximately 135m^3.

Existing catchment area **EX11** is 3.66 ha of agricultural land located in the center of the proposed development. Runoff from this catchment area drains towards the Asphodel-Norwood Community Centre.

Existing external catchment area **EXT12** is 27.72 ha and includes drainage for a large external area to the east of the subject site. This area drains east to west and contributes to EX9 through a 450mm HDPE culvert under 10th Line. Runoff from this area will eventually flow south towards the Asphodel-Norwood Community Centre and ultimately. This area consists of mostly agricultural area and a small amount of wooded area. This area contributes to a depressed area that has a maximum ponding depth of 0.30m and has a storage volume of approximately 135 m^3.

Existing external catchment area **EX13** is 4.75 ha of agricultural land located in the center of the proposed development. Runoff from this area flows towards the west across the fields onto the Norwood Agricultural Societies Lands.

Existing external catchment area **EX14** is 11.81 ha of agricultural land located in the center of the proposed development west of Asphodel 10th Line. Runoff generated from this area will flow overland from the east to west towards the neighbouring agricultural field. From the neighbouring field water will flow towards the culverts under Alma St.

Existing catchment area **EX15** is 7.08 ha of agricultural land located in the south of the development area. This area is composed of agricultural land with a single house and various agricultural buildings. The structures will be removed during the development of the site. Runoff generated from this area will flow south towards County Rd 42.

Existing external catchment area **EXT16** is 0.62 ha of agricultural land located at the corner of County Rd 42 and Asphodel 10th Line. Stormwater generated from this catchment flows into EX15.

The hydrologic parameters for the pre-development model are summarized in **Table 1** below. A complete list of the VO input data and area calculations are included in **Appendix A**.

Table 1 - Pre-Development Hydrological Parameters

Catchment	Flow Route	Area (ha)	CN*	TP (hr)	VO Command
EXT1	EFR1	0.51	54	0.11	NASHYD
EXT2	EFR1	2.37	61	0.31	NASHYD
EX3	EFR1	3.45	68	0.27	NASHYD
EXT4	EFR1	4.81	61	0.32	NASHYD
EX5	EFR1	6.00	68	0.30	NASHYD
EXT6	North	0.06	68	0.11	NASHYD
EXT7	EFR2	0.15	64	0.11	NASHYD
EX8	North	0.76	68	0.11	NASHYD
EX9	EFR2	8.40	68	0.48	NASHYD
EX10	EFR2	5.74	68	0.18	NASHYD
EX11	EFR2	3.66	68	0.30	NASHYD
EXT12	EFR2	27.72	69	0.48	NASHYD
EX13	EFR2	4.75	68	0.25	NASHYD
EX14	EFR2	11.81	68	0.33	NASHYD
EX15	EFR3	7.08	67	0.25	NASHYD
EXT16	EFR3	0.62	68	0.12	NASHYD

2.3 Proposed Conditions

Under proposed conditions, 10.8 ha will be developed for Phase 1. The Phase 1 development includes 152 single family homes and 12 townhomes. Various roads, walkways, underground infrastructure and stormwater control features will be constructed to support the development. A proposed wet pond located in the northwest stormwater block will provide quality and quantity controls for the site. Low Impact Development features will be constructed throughout Phase 1 to enhance water quality controls and provide infiltration volumes. The proposed development is shown on the **Draft Plan of Subdivision** prepared by MHBC, is included as **Figure 2**.

2.3.1 Proposed Flow Routes

All runoff generated from the site will ultimately reach the Ouse River. The proposed flow routes will vary from the existing conditions based on discussions with the Township and the Master Drainage Plan. Stormwater runoff generated from the large external area east of the site, as well as Phases 1 and 2 will be diverted along Mill Street instead of the EFR1 and EFR2. Two major flow routes are proposed to convey excess runoff from the site to the Ouse River. The flow routes can be found on the **Post-Development Catchment Area Plan** included as **Figure 5**

Proposed Flow Route 1 (PFR1): The first proposed flow route will convey controlled stormwater flows from the Phase 1 and Phase 2 lands and the surrounding external catchment areas. A small part of the Phase 3 lands along Mill St. is expected to follow PFR1 due to grading constraints. The stormwater will be captured and flow west through a storm sewer under Mill Street. The storm sewer will discharge into a new open channel west of Queen St. Additional details on the proposed onsite and offsite stormwater conveyance features can be found in section 3.3 and 3.4 of this report. Infrastructure enabling this flow route is proposed to be constructed during Phase 1 of the project.

Proposed Flow Route 2 (PFR2): The second proposed flow route will convey controlled flows from the central portion of the site including the Phase 3 and Phase 4 areas. This flow route will convey water from the site to the watercourse south of Alma Street. Infrastructure for this flow route is proposed to be constructed during the third phase of the project. Additional details on the proposed onsite and offsite stormwater conveyance features will be provided during the later phases of the project.

Along with the two major flow routes there are small catchments around the perimeter that will discharge from the site uncontrolled due to grading constraints.

The proposed flow routes are expected to help alleviate the moderate flooding observed within the Norwood District High School property and flooding affecting the houses on Flora Street. Additional floodplain modeling may be completed during later phases of the development to ensure the downstream properties will not be negatively impacted by PFR2.

2.3.2 Proposed Catchment Areas

Based on the proposed grading, the Phase 1 area was divided into two (2) catchment areas for the post-development hydrologic model. One additional catchment within the Phase 3 area for storm sewer sizing purposes. These catchments are shown on the **Post-Development Catchment Area Plan** included as **Figure 5**. The Post Development Catchment Area Plan includes the approximate catchment areas for the other three future phases. Additional details for PR4, PR5, PR6, PR7 and PR8 will be provided in the stormwater management reports for the future phases but are shown for clarification purposes.

Catchment area **PR1** consists of 10.00 ha and includes the proposed building lots, roads, pedestrian infrastructure, landscaped area and stormwater block for the subject site. Runoff from the catchment will be collected and conveyed to the proposed wet pond in the northwest corner of the development. The proposed wet pond is designed to provide the required quantity and quality controls. Various infiltration Low Impact Developments (LID) are proposed throughout the catchment.

Catchment area **PR2** consists of 0.83 ha and includes grassed area and a small amount of rooftop area from the rear yards of proposed single family homes at the south boundary of the site. Runoff from this catchment area will drain south towards the school and community centre. The release rate for the wet pond will be overcontrolled to account for runoff from this area.

Catchment area **PR3** consists of 0.73 ha and includes grassed areas, an entrance to Phase 3 and some impervious areas. Runoff from this catchment area will drain north towards Mill St. This proposed area is outside of the site limits for Phase 1 but was included because runoff from this catchment will contribute to PFR1.

The hydrologic parameters for the post-development model are summarized in **Table 2** below. A complete list of the VO input data is included in **Appendix A**.

Table 2 - Post-Development Hydrologic Parameters

Catchment	Flow Route	Area (ha)	CN*	TP (hr)	VO Command
PR1	PFR1	10.00	45	0.25	STANDHYD
PR2	South	0.83	45	0.11	STANDHYD
PR3	PFR1	0.73	45	0.11	STANDHYD

The percent impervious and percent directly connected impervious was conservatively calculated based on the lot sizes and maximum lot coverages from the Asphodel-Norwood zoning By-Law. These values will be updated during the detailed design phase to reflect the final site plan. The area calculation for PR1 can be found in **Appendix B**.

2.4 Existing and Proposed Peak Flows

The six hour SCS Type II storm distribution was selected to determine the highest peak flows and the required quantity control storage volumes. This design storm was selected because a comparison of various storm distributions competed during the previous draft plan concluded the six hour SCS design storm produced the greatest difference in peak flows and largest amount of storage required to control flows. This conclusion is similar to other distribution analysis's Engage has conducted for similar developments in Norwood.

The 2 year through 100 year SCS Type II storm events and Timmons storm event were modeled in VO. The peak flow results are summarized in **Tables 3, 4 and 5** below.

Table 3 – On Site Pre Development Catchment Area Peak Flows
6 hour SCS Type II (m^3/s)

Storm	EX3	EX5	EX8	EX9	EX10	EX11	EX13	EX14	EX15
2 Year	0.068	0.110	0.026	0.110	0.149	0.067	0.098	0.202	0.141
5 Year	0.127	0.205	0.048	0.205	0.274	0.125	0.182	0.374	0.261
10 Year	0.172	0.279	0.065	0.278	0.370	0.170	0.246	0.508	0.355
25 Year	0.234	0.381	0.088	0.38	0.504	0.232	0.337	0.694	0.487
50 Year	0.285	0.464	0.107	0.462	0.612	0.283	0.411	0.845	0.595
100 Year	0.338	0.551	0.127	0.549	0.724	0.336	0.489	1.005	0.708
Timmins	0.281	0.483	0.064	0.61	0.483	0.294	0.391	0.933	0.572

Table 4 – Off Site Catchment Area Peak Flows
6 hour SCS Type II (m^3/s)

Storm	EXT1	EXT2	EXT4	EXT6	EXT7	EXT12	EXT16
2 Year	0.011	0.033	0.065	0.002	0.005	0.378	0.021
5 Year	0.020	0.062	0.122	0.004	0.008	0.699	0.038
10 Year	0.028	0.085	0.168	0.005	0.012	0.949	0.051
25 Year	0.039	0.118	0.232	0.007	0.016	1.294	0.069
50 Year	0.047	0.144	0.286	0.009	0.019	1.573	0.084
100 Year	0.057	0.173	0.342	0.010	0.023	1.865	0.100
Timmins	0.033	0.165	0.333	0.005	0.012	2.053	0.052

**Table 5 – Post Development Catchment Area Peak Flows
6 hour SCS Type II (m^3/s)**

Storm	PR1	PR2	PR3
2 Year	0.837	0.015	0.062
5 Year	1.207	0.032	0.087
10 Year	1.468	0.045	0.105
25 Year	1.812	0.067	0.128
50 Year	2.080	0.084	0.146
100 Year	2.354	0.102	0.164
Timmins	0.907	0.062	0.061

Full detailed modeling outputs can be found in **Appendix C**.

2.5 Allowable Release Rate Calculations

The allowable release rates for the entire site were calculated at this stage of the development because the existing conditions that dictate the allowable release rates will not change for future phases. Additionally, allowable release rates were required for preliminary sizing of the conveyance system following PFR1.

There are three proposed wet ponds that will control and treat stormwater for the entire four phases of the development. The first pond will control stormwater from the Phase 1 area and is in the northwestern corner of the proposed development. The second pond will be in the southeast corner of Phase 2 near the intersection of Mill Street and Asphodel 10th Line. The second pond will control stormwater from the Phase 2 area. The third pond will be located at the west boundary of phase 3. This pond will control the stormwater for Phases 3 and 4. The location of the three ponds can be found on **Figure 6** the **Overall Plan**.

Three sets of allowable release rates have been determined for the 2-100 year design storms, based on the existing release rates of the corresponding catchment areas. The stormwater management strategy for each of the phases will be designed in a way that ensures the post development peak flows will be equal or less than the allowable peak flows.

The existing contributing catchment areas for Phase 1 are EXT1, EXT2, EX3, and EX5. Runoff from EXT4 will be captured along Mill St. and will not enter the site. An analysis

was completed for the low point on Mill St. within EX3 to determine its impact on the release rates. The local depression in EX3 has a maximum ponding depth of 0.65m and has a storage volume of approximately 2740m^3. Upon modelling the contributing areas (EXT1, EXT2, and EX3) and storage area in VO software, it was determined that runoff from the entire catchment area would infiltrate due to the large ponding area. The existing release rate of EX3 was not considered in the allowable release rate calculation and the contributing areas EXT1 and EXT2 were subtracted from the allowable release rate for Phase 1. An assumed infiltration rate of 10mm/hr was used as a release rate for the ponding area and is conservative for silty sand soils. The allowable release rates for Phase 1 are summarized in **Table 6**.

Table 6 – Allowable Release Rate Phase 1

Storm Event	EX5 (m^3/s)	EXT1+EXT2 (m^3/s)	Phase 1 Release Rate (m^3/s) (EX5 - (EXT1 + EXT2)
6hr SCS 2Yr	0.110	0.037	0.073
6hr SCS 5Yr	0.205	0.071	0.134
6hr SCS 10Yr	0.279	0.098	0.181
6hr SCS 25Yr	0.381	0.136	0.245
6hr SCS 50Yr	0.464	0.168	0.296
6hr SCS 100Yr	0.551	0.201	0.350

The existing contributing catchment areas for Phase 2 are EXT6, EXT7, EX8 and EX9. Runoff from EXT6 and EX8 is directed towards the north and has not been included in the allowable release rates for Phase 2. Runoff from EXT12 flows through the southeastern corner of the Phase 2 area but has not been included in the allowable release rates as it is proposed to be rerouted away from the Phase 2 area, through the proposed conveyance system under Mill St. The allowable release rates for Phase 2 will be used to design the stormwater management facilities for Phase 2 and are summarized in **Table 7**.

Table 7 – Allowable Release Rate Phase 2

Storm Event	Phase 2 Allowable Release Rate (m^3/s) (EXT7+EX9)
6hr SCS 2Yr	0.111
6hr SCS 5Yr	0.206
6hr SCS 10Yr	0.280
6hr SCS 25Yr	0.383
6hr SCS 50Yr	0.466
6hr SCS 100Yr	0.553

The existing contributing catchment areas for phase 3 and phase 4, the are EXT7, EX9, EX10, EX11, EXT12, EX13, EX14, EX15, and EXT16. Runoff from catchment areas

EXT7 and EX9 have not been included in the Phase 3 and Phase 4 allowable release rates because it will be controlled by stormwater management facilities within Phase 2 and rerouted to follow PFR1. Catchment area EXT12 has not been included in the release rate because it is proposed to be rerouted to follow PFR1. EX15 and EXT16 have not been included in the allowable release rates because they are in the southern portion of the Phase 4 area and drain south, towards EFR3.

An analysis was completed for the low point on within EX10 to determine its impact on the allowable release rates. The low area in EX10 has a depressed area with a depth of about 0.30m and has a storage volume of approximately $135m^3$. Upon modelling the contributing areas (EXT7, EX9, EX10, and EXT12) and storage volume in VO, it was determined that the peak flows in the 100 year event would only be reduced by $0.003m^3/s$ due to the large contributing area. This release rate was subtracted from the allowable release rates for Phase 3 & 4 to account for the infiltration from the existing low point. The allowable release rates for Phase 3 & 4 will be used to design the stormwater management facilities for the later phases and are summarized in **Table 8**.

Table 8 – Allowable Release Rate Phase 3 & 4

Storm Event	EX10+EX11+EX13 +EX14 (m^3/s)	Phase 3 & 4 Allowable Peak Flow (m^3/s) (EX10+EX11+EX13 +EX14 – 0.003)
6hr SCS 2Yr	0.516	0.513
6hr SCS 5Yr	0.955	0.952
6hr SCS 10Yr	1.294	1.291
6hr SCS 25Yr	1.767	1.764
6hr SCS 50Yr	2.151	2.148
6hr SCS 100Yr	2.554	2.551

Full detailed modeling outputs can be found in **Appendix C**.

The allowable release rates proposed for Phase 3 & 4 is significantly less than the actual peak flow rates directed towards EFR2 under existing conditions. The runoff from the external area east of the site (EXT12) and the Phase 2 area will be rerouted to

PFR1. The proposed flow route is expected to help alleviate the flooding affecting the houses along Flora Street.

3.0 Stormwater Management

A stormwater management strategy has been developed for Phase 1 to alleviate the impact the development will have on the natural water cycle. For the first phase of the development, a propose wet pond, LIDs and conveyance system will provide the required quantity and quality controls while maintaining the overall water balance.

3.1 Quantity Control Strategy

The results of the hydrologic analysis indicate the peak flow rates will be greater than the allowable rates in absence of any quantity controls. A wet pond is proposed to provide control of post development runoff to allowable pre development levels for Phase 1. **Figure 8** shows the proposed wet pond and associated details. VO model calculations were completed for the SWM facility to determine the storage volumes required to limit post-development flows to the allowable release rates. The intent of the analysis at this stage is to ensure the feasibility of a wet pond within the provided SWM block. The

exact dimensions of the wet pond will be determined during the detailed design phase when additional details are available.

To support the Draft Plan of Subdivision application, a proposed wet pond surface was developed in Autodesk Civil 3D. The surface was analyzed, and it was determined the pond has a total volume of 13500 m^3 below the emergency overflow weir. The model outputs are included in **Appendix C** and a summary of the results is included in **Table 9** below.

Through meetings and correspondence with AECOM and ORCA during the previous rezoning process, it was decided that double the 100 year storage volume would be provided in the wet pond facility to account for the lack of an existing overland flow route along Mill Street to the river. This approach will be maintained for this stormwater control strategy as a means of protecting adjacent properties from flooding. Meeting minutes are included in **Appendix I** for reference. It should be noted that this SWM pond for Phase 1, has an overland flow route down this section of Mill St, and this is now a very conservative assumption.

Table 9 – Phase 1 Quantity Calculations

Storm Event	Controlled Release Rate (m^3/s) (PR1 controlled)	Minimum Storage Volume Required (m^3)
6hr SCS 2 Yr	0.056	1441
6hr SCS 5 Yr	0.100	2002
6hr SCS 10 Yr	0.132	2392
6hr SCS 25 Yr	0.174	2899
6hr SCS 50 Yr	0.208	3289
6hr SCS 100 Yr	0.211	3723
Timmins	0.248	7244
Double 100 Year Storage		7446

To control post-development peak flows to below pre-development levels the proposed wet pond requires will require approximately 3723 m^3 of quantity control volume. Doubling the 100 year storage volume requires a total of 7446 m^3 of quantity control volume. The Regional Timmins event was analyzed through the proposed wet pond and the additional

storage will be more then sufficient to limit the regional events peak flow to the allowable 100 year flows.

The preliminary wet pond, located in the stormwater management block, has an approximate active volume of 9900 m^3 below the emergency overflow weir. The total volume of the pond is approximately 13500 m^3. The active storage volume provided is greater than the required volume, therefore it is possible to construct a wet pond within the proposed stormwater management block that will limit peak flows to allowable levels. Additional design details will be provided at the detailed design stage.

The wet pond will include an emergency overflow structure that will convey peak flow. This structure will be designed at the detailed design stage along with the outlet to the storm sewer along Mill Street.

Table 10 demonstrates the proposed discharge rates for Phase 1 will be below allowable release rates when accounting for the uncontrolled release rates for PR2.

Table 10 - Allowable vs. Proposed Release Rates

Storm Event	Allowable Release Rate (m^3/s)	Uncontrolled Release Rate (m^3/s) (PR1 + PR2)	Total Proposed Release Rate (m^3/s) (PR1 controlled + PR2)
6hr SCS 2 Yr	0.073	0.847	0.065
6hr SCS 5 Yr	0.134	1.234	0.115
6hr SCS 10 Yr	0.181	1.506	0.156
6hr SCS 25 Yr	0.245	1.878	0.206
6hr SCS 50 Yr	0.296	2.163	0.250
6hr SCS 100 Yr	0.350	2.456	0.297
Timmins	0.350	0.969	0.283

3.2 Quality Control Strategy

As the ultimate outlet is the Ouse River, quality control is provided in the proposed SWM facilities to an “Enhanced” level. Table 3.2 of the MOE SWM Planning & Design Manual was used to determine the quality storage volume requirements for each facility

as shown in **Table 11**. Water Quality calculations and overall pond sizing calculations are included in **Appendix D**

Table 11 - Quality Control Calculations

Description	Value
Catchment Name	PR1
Percent Impervious	56%
Required Storage Volume	184 m^3/ha
Contributing Catchment Area	10.00 ha
Quality Control Volume Required	1844 m^3
Extended Detention Volume (40 m^3/ha)	400 m^3
Required Permanent Pool	1444 m^3

The preliminary wet pond, designed at this stage of the development, has a bottom area of approximately 3100 m^2. The proposed wet pond will have a permanent pool at least 1m deep that will provide more than 3100 m^3 of quality control volume. This approximate volume is sufficient to provide the required permanent pool volume accounting for losses from a forebay berm and sediment accumulation. The pond will be designed with a bottom draw outlet that ensures the extended detention volume will have a drawdown time greater than 24 hours.

The proposed facilities will include a sediment forebay at the inlet location to improve pollutant removal and allow for proper maintenance of the SWM facility. The forebays will be designed using equations 4.5-4.9 of the MOE SWM Planning & Design Manual (MOESWPDM) during the detailed design stage.

In addition to the wet pond, low impact development measures will be implemented for the site to promote groundwater recharge and aide in quality and quantity control for the site. These measures are proposed to be infiltration trenches that will infiltrate rooftop and rear lot runoff. The LIDs will have an overflow connection to the storm sewer system. Locations for these infiltration trenches can be seen on the **Phase 1 Grading Plan** included as **Figure 7**. Additional information on the proposed LID facilities will be provided at the detailed design phase.

According to the Geotechnical Investigation, groundwater levels on the site range between 2.3m-3.7m below ground surface. Twenty-one (21) out of twenty-five (25) of the boreholes used for the geotechnical investigation remained dry upon completion of the investigation. No groundwater was observed at the monitoring well located within the proposed SWM block. Probable bedrock was observed at a depth of 4.2m (199.8m). This information is outlined in the geotechnical report which is included in **Appendix I**. A best-efforts approach will be taken to ensure a 1 m separation between LID features and the seasonally high groundwater elevation. The report suggests, given the native soils are relatively pervious, a 1.0 m thick impervious clay liner or geosynthetic clay liner will be required for the sides and bottom of the wet pond.

3.3 On-Site Stormwater Conveyance

Runoff from Phase 1 will be collected and conveyed to the proposed wet pond in one of two methods; surface drainage systems, including storm sewers and swales, and major overland flow routes.

On-Site Minor Storms
Minor storm events within the subject development, up to and including the 5-year storm, will be conveyed in the storm sewer system and in the side-yard and rear-yard swales. The storm sewer system will be designed in accordance with best practices and Township design standards with all sections of pipe operating below 80% capacity for the 5-year storm during the detailed design stage. In several locations within the development, rear-yard drainage is proposed to be directed to infiltration swales and have an overflow outlet directed to the SWM facilities or to the overland flow route/storm sewer network.

On-Site Major Storms
Major flows within the subject development including the 10 through 100-year storms, will be conveyed by overland flow routes to the SWM facilities. The overland flow routes are identified on the **Phase 1 Grading Plan** included as **Figure 7**. The internal roadways will serve as the major overland flow route for the development as the proposed grading directs the majority of the runoff toward the roads. All easements and blocks for drainage purposes will be sized to facilitate maintenance access and future replacement of the linear pipework during the detailed design stage.

3.4 Off-Site Stormwater Conveyance

Mill Street is proposed to be regraded and constructed with an urban cross section to provide an overland flow route past the existing highpoint on Mill Street. The highpoint is

identified on the **Mill Street Plan and Profile Details** included as **Figure 12**. Major and minor flows for external areas including up to the 100-year storm event surrounding the site and the outflow from the proposed stormwater management facilities will be conveyed through a proposed storm sewer on Mill Street. The storm sewer system was designed to limit all sections of pipe operating below 80% capacity for the 100-year storm and is included in **Appendix E**. The proposed storm sewer can be seen on the **Mill Street Plan and Profile Details** included as **Figure 10-13**. Regional flow events were also analyzed and peak flows that were higher in the regional event than the 100 year event were accounted for in the storm sewer design sheet as was the case for area EXT12.

Conveyance Swales

There are two external swales proposed for the subject development: one to the east of the Mill Street and 10th Line intersection and one at the outlet of the Mill Street storm sewer. Flows will be conveyed in the 10th Line conveyance swale from catchment area

EXT12 as shown on the **Post-Development Catchment Area Plan** included as **Figure 5**. The proposed swale at the outlet of the Mill Street storm sewer will convey flows both external and internal site flows to the Ouse River. Calculations demonstrating the sizing and capacity of the swales are included in **Appendix F** and summarized in **Table 12** below**.** This swale location and details are identified on the **Mill Street Outlet Conveyance Swale Details** included as **Figure 9**.

Table 12 - Swale Capacity

Channel	Characteristics	Cross Sectional Area (m^2)	Peak Flow Rate (m^3/s)	Percent Capacity at Peak Flow	Velocity (m/s)
EXT12	Trapezoidal; 3:1 side slope, 0.5m wide, 0.5% long (average) slope; 1.0m deep	3.5	2.05	90%	0.63
Mill St Outlet to Ouse River	Trapezoidal; 3:1 side slope, 0.5m wide, 1.0% long (avg) slope; 1.3m deep	5.72	3.46	79%	0.96

To protect against erosion in the conveyance swale a permanent erosion control blanket and additional erosion protection will be specified for the Mill Street storm sewer outlet conveyance swale. Full details will be provided during the detailed design stage.

3.5 Water Balance

Water balance calculations were completed comparing the pre and post development infiltration volumes for the site using the methodology outlined in the MOE SWPDM. The Geotechnical Report prepared by Soil Engineering Ltd. (September 2022) was used to determine land use and soil types for the hydrologic model. According to the geotechnical report, the underlying soils are generally characterized as sandy silt for the purpose of the water balance.

Pre Development – this scenario considered the site in its current land use and cover, which is predominantly agricultural grassed area.

Post Development – this scenario considered the site without any LID/infiltration techniques. Only the grass areas were considered in calculating infiltration. This scenario is meant to convey the change in infiltration if the site were developed using a traditional SWM approach.

Post Development with Enhancements – this scenario included the grass areas and the proposed infiltration techniques summarized below. This scenario is meant to demonstrate the anticipated improvements in infiltration that can be achieved for this site with the implementation of LID infiltration techniques.

The proposed enhancements for this site include directing 50% of rooftop runoff areas to infiltration trenches.

The calculations for each scenario are included in **Appendix G** and summarized in **Table 13**.

Table 13 - Annual Infiltration Volumes

Scenario	Annual Infiltration (m^3)	Percent Change
Pre Development	14509	-
Post Development	7695	44%
Post Development with Enhancements	12665	87%

The results indicate that in the absence of any infiltration techniques, the development of the site would result in 44% of the current annual infiltration volume. This difference will disrupt the water balance and baseflows leaving the site.

With the proposed LID SWM enhancements, the post development infiltration will be improved to 87% of the predevelopment volume. Various infiltration trenches are proposed throughout the development to distribute the infiltration volume and replicate existing conditions. These infiltration trenches will have sufficient storage volume required to infiltrate runoff from most rain events and allow rear yard and rooftop runoff, that is essentially clean water, to re-charge groundwater throughout the subject site. These trenches are proposed in various locations as seen on the **Phase 1 Grading Plan** included as **Figure 7**. In the event that these trenches become saturated they will have an overflow outlet to the storm sewer system to prevent ponding in rear lot yards. Further details will be provided at the detailed design stage regarding these features.

4.0 Operation and Maintenance

Proper operation and maintenance have an important impact on the long-term performance of stormwater management facilities and features. A detailed Operation and Maintenance Manual will be prepared during the detailed design submission.

5.0 Erosion and Sediment Control

The development of the site will result in a large area of exposed native soils which has the potential to erode and contribute sediment to downstream receivers. To mitigate

these effects, an erosion and sediment control strategy will be developed for the site at the detailed design phase. The strategy will incorporate best practices as outlined in the *Erosion and Sediment Control Guidelines for Urban Construction, GGHCA.*

In preparing the plan, consideration will be given to the multi-barrier approach of first reducing erosion where possible and then containing sediment on site. The Erosion and Sediment Control plan will incorporate several sedimentation control measures including perimeter silt fencing, interceptor swales, straw bale check dams and use of the proposed pond as a temporary sediment pond. The pond will be sized to provide the necessary sediment removal for the entire site; the additional measures including straw bale flow checks will provide a secondary level of control and are part of the treatment train approach for the ESC plan. During the detailed design stage an ESC Report and Plan will be developed in accordance with the appropriate guidelines.

6.0 Summary

The impervious surfaces within the Trent Meadows Phase 1 Development will increase runoff rates and has the potential to increase sediment and contaminant loading downstream. To mitigate these effects, a stormwater management strategy is proposed that incorporates a wet pond and LIDs that will the required provide quantity and quality control. The Stormwater management facilities will control the post-development release rates to below the pre-development levels for all storm distributions and durations. The wet ponds will provide an enhanced level of quality control. The proposed SWM strategy will ensure that the proposed development does not have a negative impact on downstream receivers.

In addition to the pond, low impact development measures will be implemented for the site in order to promote groundwater recharge and aide in quality and quantity control for the site. The preferred alternative of upgrading Mill Street and installing a storm sewer system capable of handling the 100-Year storm event will allow for an adequate outlet for the entire site and external catchment areas. This option also directs a significant amount of drainage away from the Norwood District High School, the Asphodel Community Centre and houses on Flora Street that are currently experiencing flooding.

Prepared by:

Logan Mattern
Engineering Intern

Reviewed by:

Brad Parsons, P. Eng.
Water Resources Manager

Figure 2: Draft Plan of Subdivision

Draft Plan of Subdivision

Notes

ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN. TOPOGRAPHIC INFORMATION BY KRCMAR SURVEYORS, September 18, 2023.

Legal Description

Part Lot J Plan 6 Norwood And Part Lots 17 & 18 Concession 9 Asphodel Part 2, 45r17405
TOWNSHIP OF ASPHODEL-NORWOOD,
COUNTY OF PETERBOROUGH

Owner's Certificate

I HEREBY AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED TO SUBMIT THIS PLAN FOR APPROVAL.

DATE: _____ _____
HBNG (Norwood) Developments Inc.

Surveyor's Certificate

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LAND TO BE SUBDIVIDED ON THIS PLAN AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN.

DATE: _____ _____
XXX- O.L.S.
XXXX

Key Plan

Notes:

Townhouses are 6.0m deep except at the end and middle of rows where an additional setback of 1.2m has been applied.

Sight triangles are 5m by 5m at local intersections.

Street lengths are as follows:
Street A = 558.19m, Street B = 321.08m, Street C = 132.34m, Street D = 234.92m, Street E = 111.99m

Revision No.	Date	Issued / Revision	By
Additional Information Required Under Section 51(17) of the Planning Act R.S.O. 1990, c.P.13 as Amended			
A. As Shown		B. As Shown	C. As Shown
D. Residential, Retirement Residence, Park, Stormwater Management, Open Space			
E. As Shown		F. As Shown	
G. As Shown		H. Municipal Water Supply	I. Bondhead Sandy Loam
J. As Shown		K. All Services As Required	L. As Shown

LAND USE SCHEDULE

LAND USE	LOT/BLOCK	AREA (ha)	UNITS
7.6m SINGLES	BLOCKS 122-126	0.765	31
11.0m SINGLES □	LOTS 2-17, 57-69,76-79 84-85, 90-93, 95-101,103-104, 106-115, 121	2.072	59
12.2m SINGLES △	LOTS 1, 54-55, 80-83 86-89,116-120	0.598	16
15.24m SINGLES ○	LOTS 18-53,70-75, 94,102, 105	2.370	45
SPECIAL LOT	LOT 56	0.075	1
6.0m TOWNS	BLOCKS 127, 128	0.230	12
LAND SWAP	BLOCK 129	2.895	-
WALKWAY	BLOCKS 130, 131	0.028	-
ROAD WIDENING	BLOCKS 132, 133	0.179	-
DRAINAGE	BLOCKS 134, 135, 136	0.117	-
0.3m RESERVES	BLOCKS 137, 138	0.001	-
SWM	BLOCK 139	1.778	-
ROADS	A-E	2.774	-
TOTAL	-	13.88	164

25' (7.6m) Singles
36' (11.0m) Singles
40' (12.2m) Singles
50' (15.2m) Singles
6.0m Towns

MHBC | PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE

Stamp	
Date	February 13, 2024
File No.	1604D
Plan Scale	1:1000 (Arch D)
Drawn By	P.B., Y.Y.
Checked By	D.M.
Other	
Project	Trent Meadows Phase 1
File Name	Draft Plan of Subdivision
Dwg No.	1 of 1

Scale Bar
0 10 25 50 100 200m

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

N:\1604D - Crowley Farms, Norwood\6 - Tech Production\CAD

Figure 3: Topographic Survey Plan

METRIC: DISTANCES AND COORDINATES SHOWN HEREON ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

CAUTION: THIS IS NOT A PLAN OF SURVEY

TOPOGRAPHIC DETAIL OF
PART OF BLOCK J, REGISTERED PLAN No. 6
AND PART OF LOT 17, CONCESSION 9
GEOGRAPHIC VILLAGE OF NORWOOD

TOWNSHIP OF ASPHODEL-NORWOOD

COUNTY OF PETERBOROUGH

0 30 90 150

SCALE: 1:1500

DATE: JANUARY 29, 2018

LEGEND

INV. . . . . DENOTES INVERT
. . . . DENOTES FIRE HYDRANT
WV . . . . DENOTES WATER VALVE

J. B. FLEGUEL SURVEYORS
44 CLEMENTI ST., BOX 70
LAKEFIELD, ON K0L 2H0
PHONE: 705-652-6198
FAX: 705-652-1647
JBFLEGUEL@KAWARTHASURVEYOR.COM

PROJ. # 5820_TOPO

Figure 4: Pre Development Catchment Area Plan

EX8
0.30 | 0.759

EXT6
0.15 | 0.062

EXT7
0.15 | 0.153

EXT4
0.17 | 4.810

EX9
0.22 | 8.397

EXT2
0.18 | 2.369

EXISTING 375mm Ø
CSP CULVERT

MILL STREET HIGH POINT
ELEVATION = 210.40m

EXISTING 450mm Ø
HDPE CULVERT

EXISTING 450mm Ø
HDPE CULVERT

EXT12
0.24 | 27.719

MILL STREET

EXISTING 375mm Ø
HDPE CULVERT

EX5
0.22 | 6.005

EX10
0.30 | 5.743

EXT1
0.24 | 0.510

EX3
0.22 | 3.448

EXISTING LOWPOINT STORAGE
VOLUME ≈ 135m³

EXISTING LOWPOINT STORAGE
VOLUME ≈ 2741m³

EX11
0.30 | 3.659

Land Swap

ASPHODEL-10TH LINE

KING STREET

QUEEN STREET

EXISTING FLOW ROUTE 1

EX13
0.30 | 4.747

ELM STREET

EX14
0.30 | 11.813

EXT16
0.30 | 0.619

EX15
0.30 | 7.080

ALMA STREET

EXISTING 2 x 600mm Ø
CSP CULVERT WITH
HDPE EXTENSIONS

COUNTY ROAD 42

EXISTING FLOW ROUTE 2

EXISTING FLOW ROUTE 3

NORTH

LEGEND

- SITE BOUNDARY
- CATCHMENT BOUNDARY
- EXTERNAL CATCHMENT BOUNDARY
- OVERLAND FLOW DIRECTION
- PR1 — CATCHMENT NAME
- RUNOFF COEFFICIENT: 0.79 | AREA (ha): 0.231

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TRENT MEADOWS.

FIGURE 4 - PRE-DEVELOPMENT CATCHMENT AREA PLAN

DRAWN:	APPROVED:	SCALE:	DATE:	PROJECT No.:
L.MATTERN	B.PARSONS	1:2000	01-10-24	23104

Figure 5: Post Development Catchment Area Plan

PR4
- | -

EXT6
0.15 | 0.062

EXT7
0.15 | 0.153

EXT4
0.17 | 4.810

EXT2
0.18 | 2.369

PR5
- | -

PR6
- | -

EXT12
0.24 | 27.719

PROPOSED FLOW ROUTE 1

MILL STREET

EXT1
0.24 | 0.510

PR1
0.57 | 10.005

PROPOSED WET POND

PR3
0.49 | 0.733

ASPHODEL 10TH LINE

PR2
0.49 | 0.830

Land Swap

PR7
- | -

QUEEN STREET

KING STREET

ELM STREET

ALMA STREET

PROPOSED FLOW ROUTE 2

COUNTY ROAD 42

PR3
- | -

NORTH

NOTE: PR4, PR5, PR6, PR7, ARE SHOWN FOR CONCEPTUAL PURPOSESES. DETAILS ON THESE AREAS WILL BE PROVIDED IN THEIR CORRESPONDING REPORTS

LEGEND

- SITE BOUNDARY
- CATCHMENT BOUNDARY
- EXTERNAL CATCHMENT BOUNDARY
- OVERLAND FLOW DIRECTION

PR1 — CATCHMENT NAME
RUNOFF COEFFICIENT — 0.79 | 0.231 — AREA (ha)

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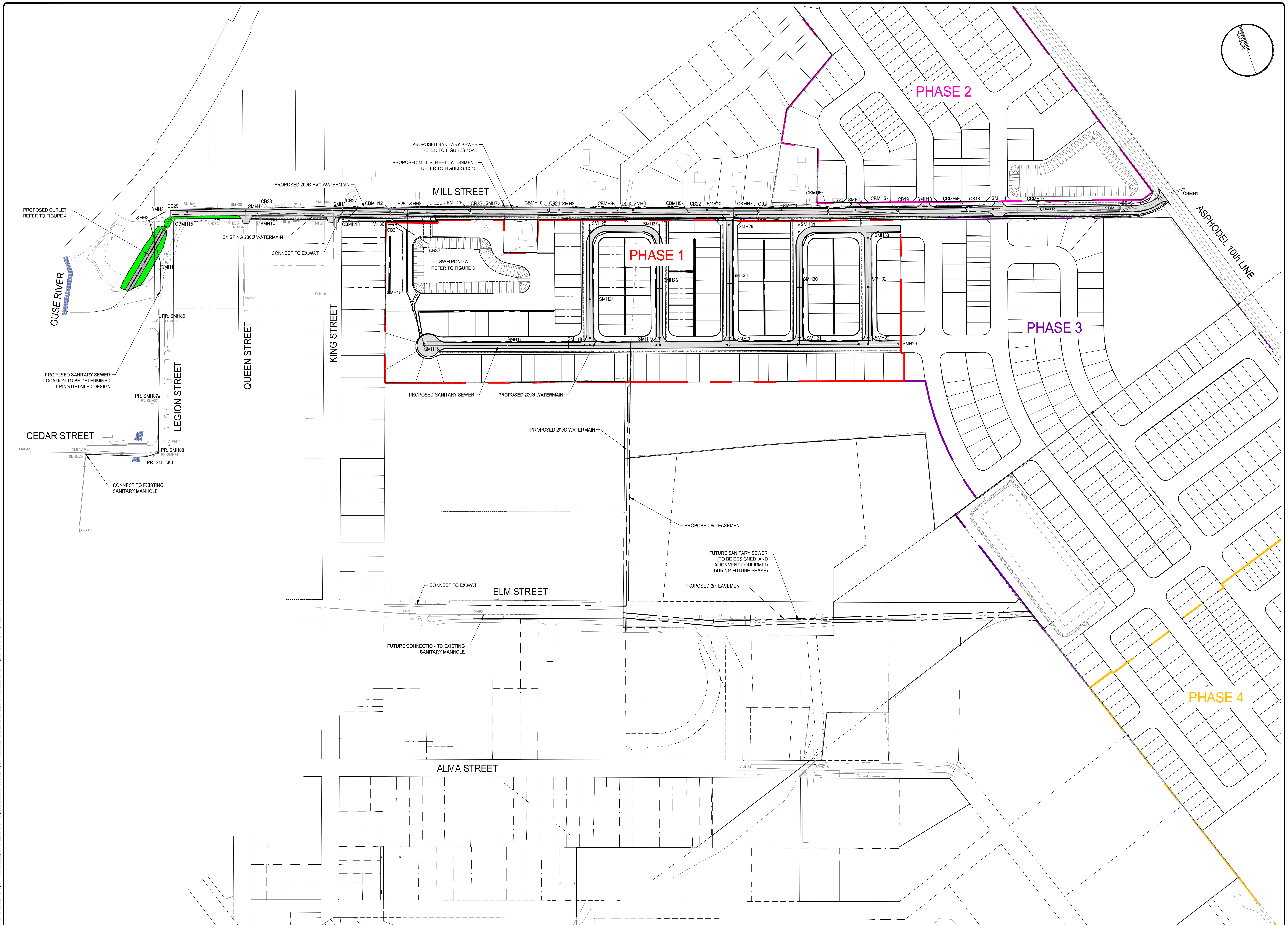
FIGURE 5 - POST-DEVELOPMENT CATCHMENT AREA PLAN

DRAWN:	APPROVED:	SCALE:	DATE:	PROJECT No.:
L.MATTERN	B.PARSONS	1:2000	01-10-24	23104

Figure 6: Overall Servicing Plan



23104-OP1

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SURVEY

BENCHMARK

NOTES:

No.	REVISION	BY	DATE
1.	ISSUED FOR REZONING	SD	24/03/15

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TRENT MEADOWS PHASE 1

TOWN OF NORWOOD

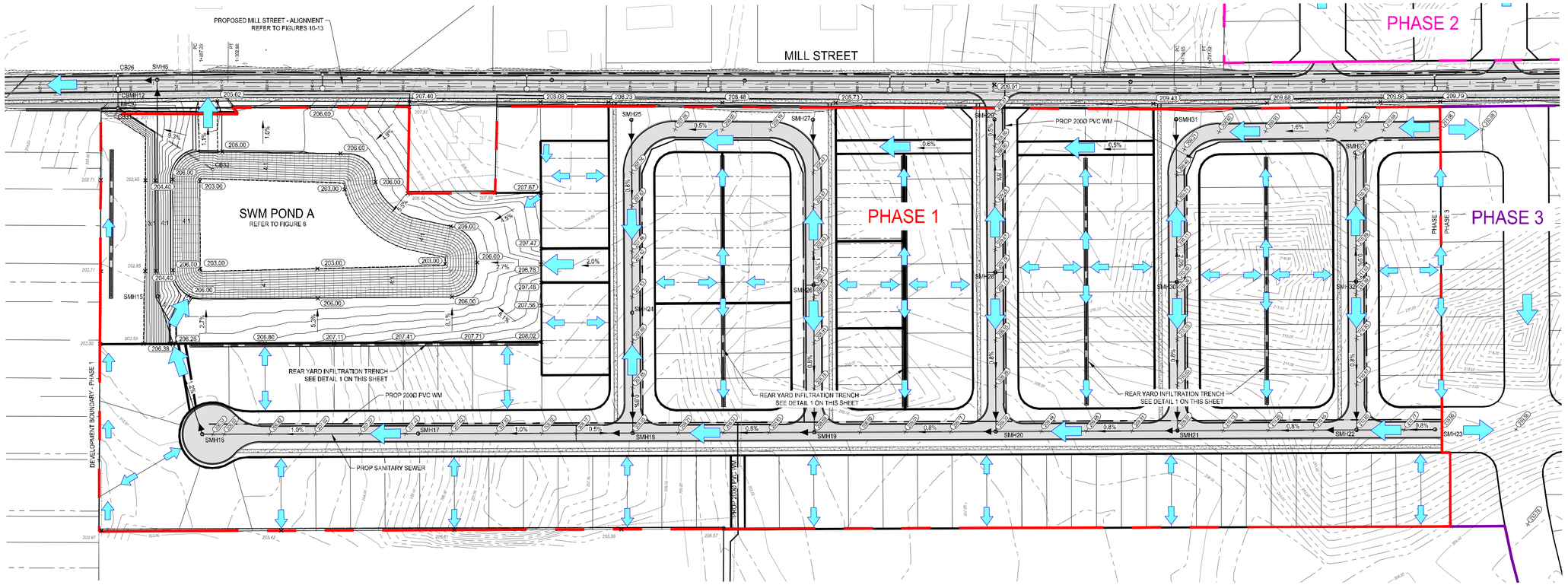
PRELIMINARY OVERALL SERVICING PLAN

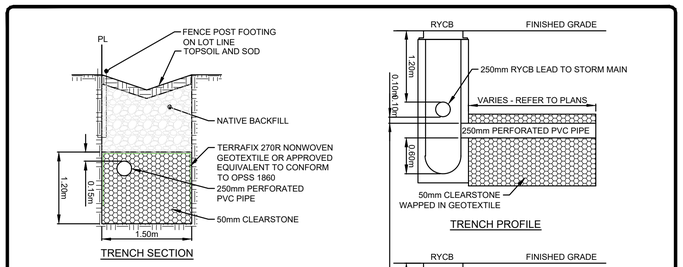
TOWN OF NORWOOD

DRAWN BY: S,DINGMAN
DESIGNED BY: S.DINGMAN
APPROVED BY: B.PARSONS
DATE: 2024-02-23
STAMP: LICENSED PROFESSIONAL ENGINEER B.T.PARSONS 100213434 2024-03-15 PROVINCE OF ONTARIO
SCALE: 1:2000

PROJECT NUMBER:	SHEET NAME:	SHEET:
23104	F6	1 of 9

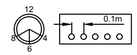
Figure 7: Phase 1 Grading Plan





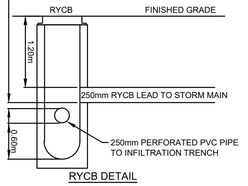
TRENCH SECTION

TRENCH PROFILE



250mm SDR35 PVC PIPE WITH
25mm PERFORATIONS EVERY
100mm @ 4, 6 AND 8 O'CLOCK

PERFORATED PIPE DETAIL



RYCB DETAIL

1

REAR YARD INFILTRATION TRENCH

SCALE: N.T.S

SURVEY

BENCHMARK

NOTES:

No.	REVISION	BY	DATE
1.	ISSUED FOR REZONING	SD	24/03/15

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TRENT MEADOWS PHASE 1

TOWN OF NORWOOD

PHASE 1 PRELIMINARY GRADING PLAN

TOWN OF NORWOOD

DRAWN BY:	S.DINGMAN
DESIGNED BY:	S.DINGMAN
APPROVED BY:	B.PARSONS
DATE:	2024-02-23
SCALE:	1:1000

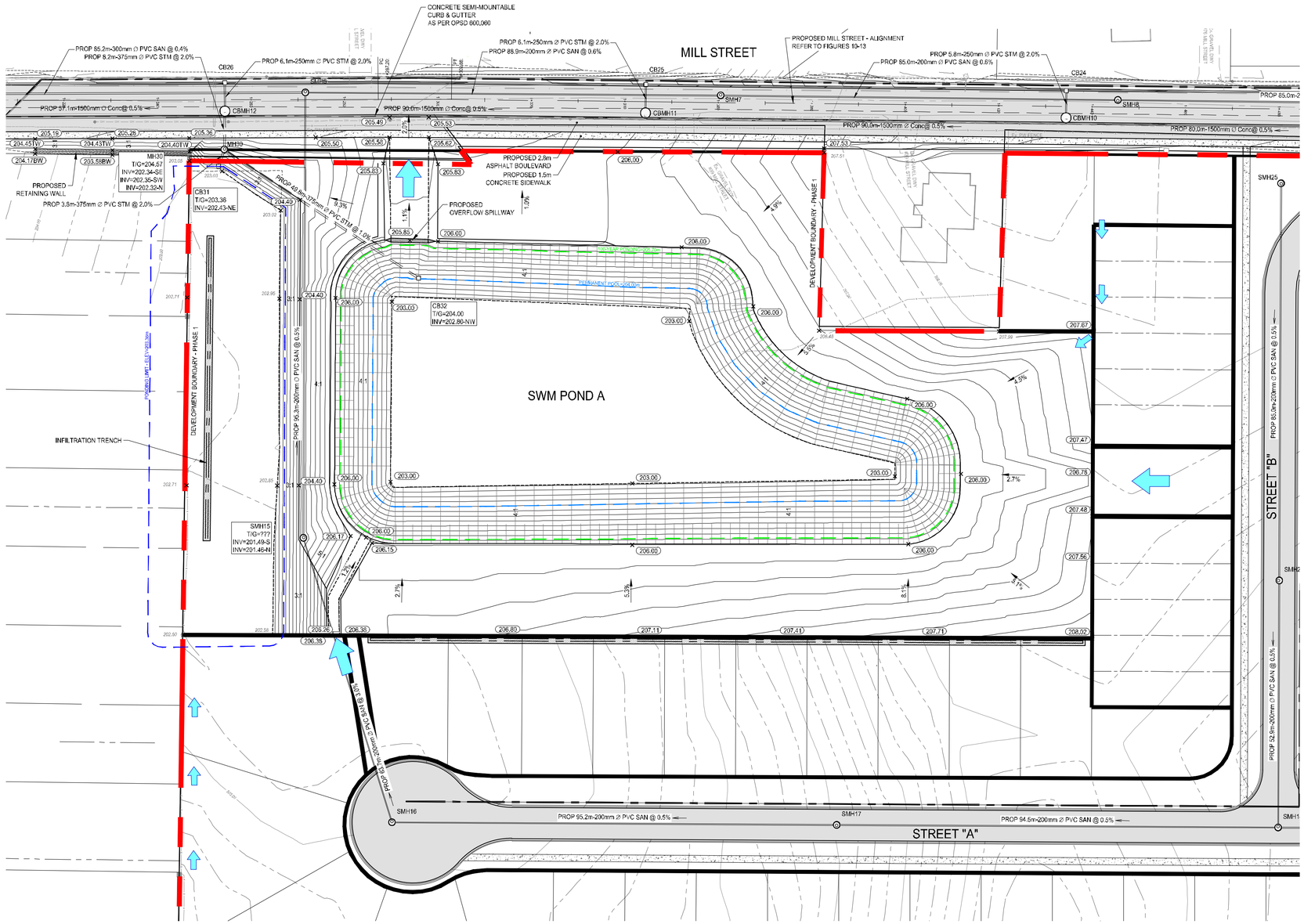
STAMP: LICENSED PROFESSIONAL ENGINEER — B.T.PARSONS — 100213434 — 2024-03-15 — PROVINCE OF ONTARIO

PROJECT NUMBER:	SHEET NAME:	SHEET:
23104	F7	2 of 9

23104-GP1

Date: Mar. 15, 2024 - 3:47 pm Plotted by: sdingman File name: S:\01 - Projects\2023\23104- 67 & 117 MB B & 165D County Road 42 Norwood Subdivision\02 Design\01 - Drawings\01 - Current Drawings\23104-GP1.dwg

Figure 8: Wet Pond ‘A’ Plan



SURVEY

BENCHMARK

NOTES:

No.	REVISION	BY	DATE
1.	ISSUED FOR REZONING	SD	24/03/15

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TRENT MEADOWS PHASE 1

TOWN OF NORWOOD

PRELIMINARY SWM POND "A" PLAN

TOWN OF NORWOOD

DRAWN BY:	S.DINGMAN
DESIGNED BY:	S.DINGMAN
APPROVED BY:	B.PARSONS
DATE:	2024-02-23
SCALE:	1:250H 1:50V

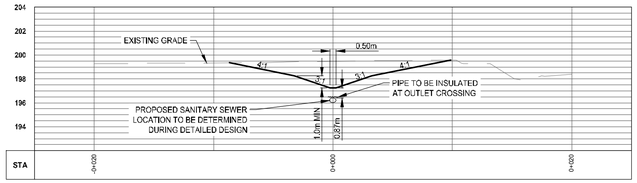
STAMP: LICENSED PROFESSIONAL ENGINEER — B.T.PARSONS — 100213434 — 2024-03-15 — PROVINCE OF ONTARIO

PROJECT NUMBER:	SHEET NAME:	SHEET:
23104	F8	3 of 9

23104-POND A
Date: Mar. 13, 2024 - 3:49 pm Plotted by: sdingman File name: S:\01 - Projects\2020\23104- 47 & 1152 Mill St & 1552 County Road 42 Norwood Subdivision\02 Design\01 - Drawings\01 - Current Drawings\23104-Pond A.dwg

Figure 9: Mill Street Outlet Conveyance Swale Details

OUTLET SWALE - STA 0+037.50



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TRENT MEADOWS PHASE 1

TOWN OF NORWOOD

FIGURE 9 PRELIMINARY OUTLET PLAN

TOWN OF NORWOOD

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APPROVED BY: B.PARSONS	
DATE: 2024-02-23	
SCALE: 1:250	

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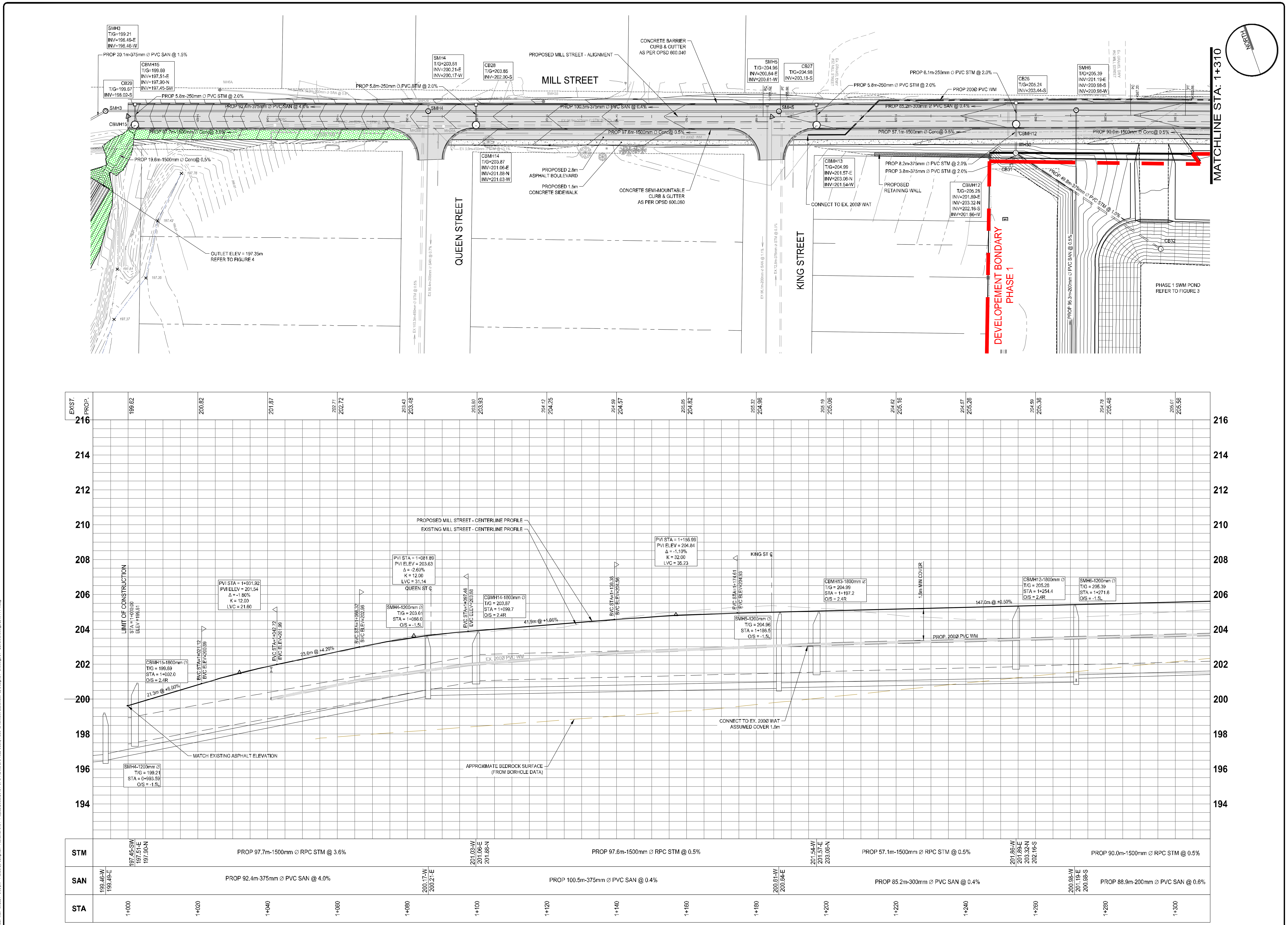
23104	F9	4 of 9

23104-FIGURE 9 - OUTLET PLAN
Date: Mar. 13, 2024 - 3:53 pm Plotted by: sdingman File name: S:\01 - Projects\2023\23104- ET & HT MB B & 1552 County Road 42 Norwood Subdivision\02 Design\01 - Drawings\01 - Current Drawings\23104-Figure 9 - Outlet Plan.dwg

Figure 10-13: Mill Street Plan and Profile Details



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TOWN OF NORWOOD

MILL STREET PRELIMINARY PLAN & PROFILE STA 1+000 - 1+310

TOWN OF NORWOOD

DRAWN BY: S.DINGMAN

DESIGNED BY: S.DINGMAN

APPROVED BY: B.PARSONS

DATE: 2024-02-23

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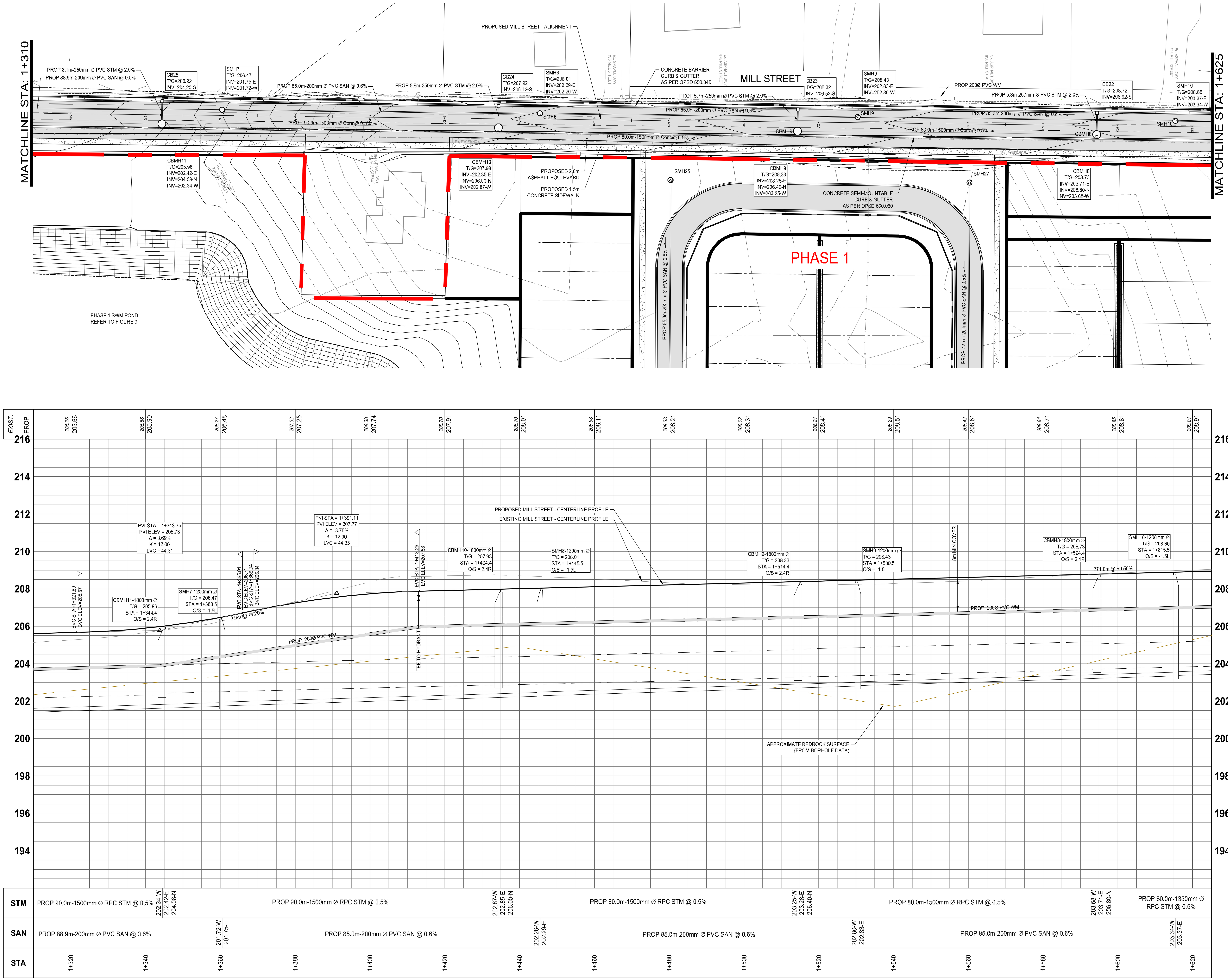
SCALE: 1:500H 1:100V

PROJECT NUMBER: 23104

SHEET NAME: F10

SHEET: 5 of 9

23104-PP1



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TRENT MEADOWS PHASE 1

TOWN OF NORWOOD

MILL STREET PRELIMINARY PLAN & PROFILE STA 1+310 - 1+625

TOWN OF NORWOOD

DRAWN BY: S,DINGMAN

DESIGNED BY: S.DINGMAN

APPROVED BY: B.PARSONS

DATE: 2024-02-23

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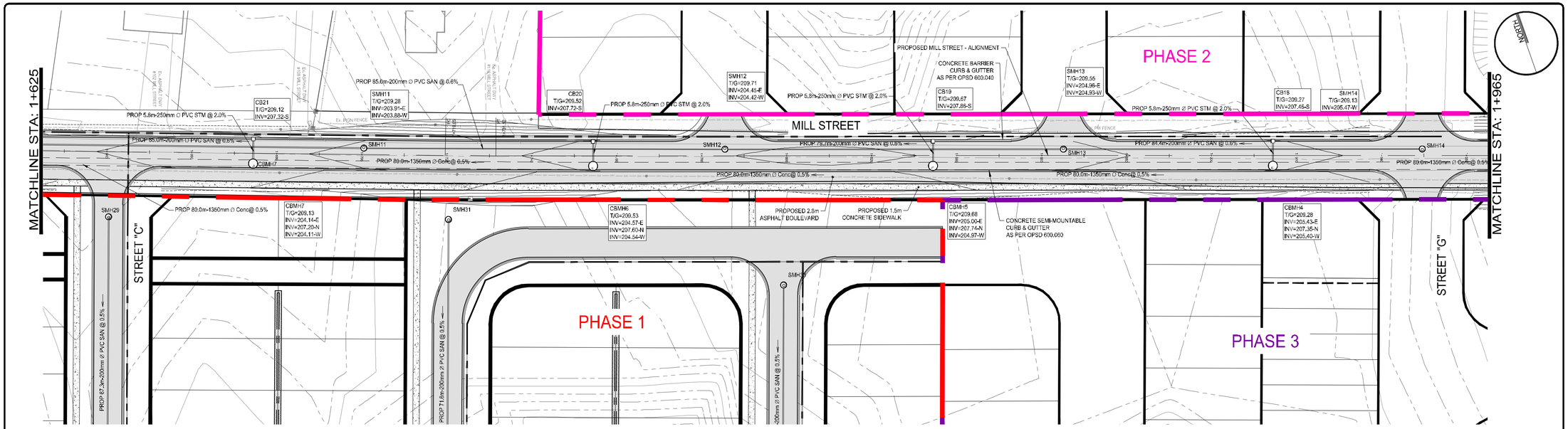
SCALE: 1:500H 1:100V

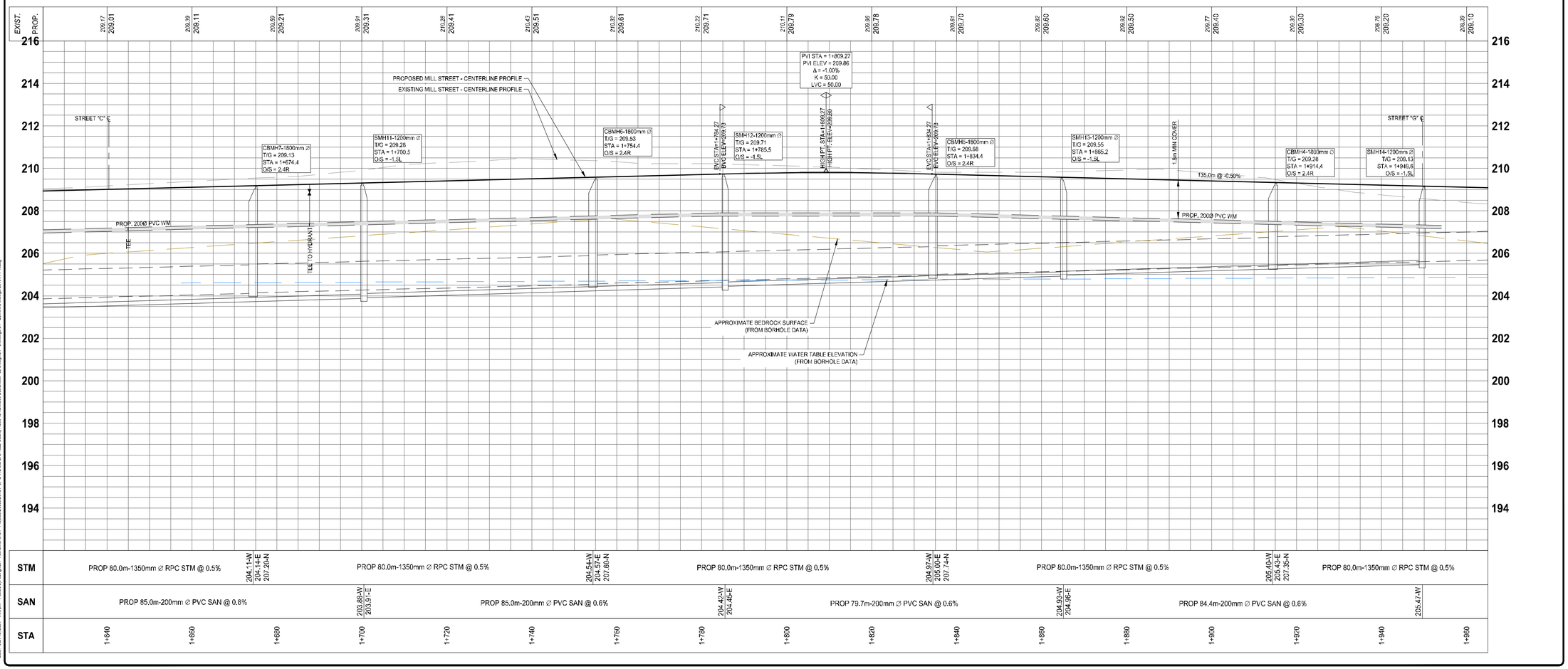
PROJECT NUMBER: 23104

SHEET NAME: F11

SHEET: 6 of 9

23104-PP1





STM	PROP 80.0m-1350mm ∅ RPC STM @ 0.5% | 204.11-W 204.14-E 207.20-N | PROP 80.0m-1350mm ∅ RPC STM @ 0.5% | 204.54-W 204.57-E 207.60-N | PROP 80.0m-1350mm ∅ RPC STM @ 0.5% | 204.97-W 205.00-E 207.74-N | PROP 80.0m-1350mm ∅ RPC STM @ 0.5% | 205.40-W 205.43-E 207.35-N | PROP 80.0m-1350mm ∅ RPC STM @ 0.5%
SAN	PROP 85.0m-200mm ∅ PVC SAN @ 0.6% | 203.88-W 203.91-E | PROP 85.0m-200mm ∅ PVC SAN @ 0.6% | 204.42-W 204.45-E | PROP 79.7m-200mm ∅ PVC SAN @ 0.6% | 204.99-W 204.95-E | PROP 84.4m-200mm ∅ PVC SAN @ 0.6% | 205.47-W
STA	1+640 · 1+660 · 1+680 · 1+700 · 1+720 · 1+740 · 1+760 · 1+780 · 1+800 · 1+820 · 1+840 · 1+860 · 1+880 · 1+900 · 1+920 · 1+940 · 1+960

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TOWN OF NORWOOD

MILL STREET PRELIMINARY PLAN & PROFILE STA 1+625 - 1+965

TOWN OF NORWOOD

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DESIGNED BY:	S.DINGMAN
APPROVED BY:	B.PARSONS
DATE:	2024-02-23
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23104	F12	7 of 9

23104-PP1

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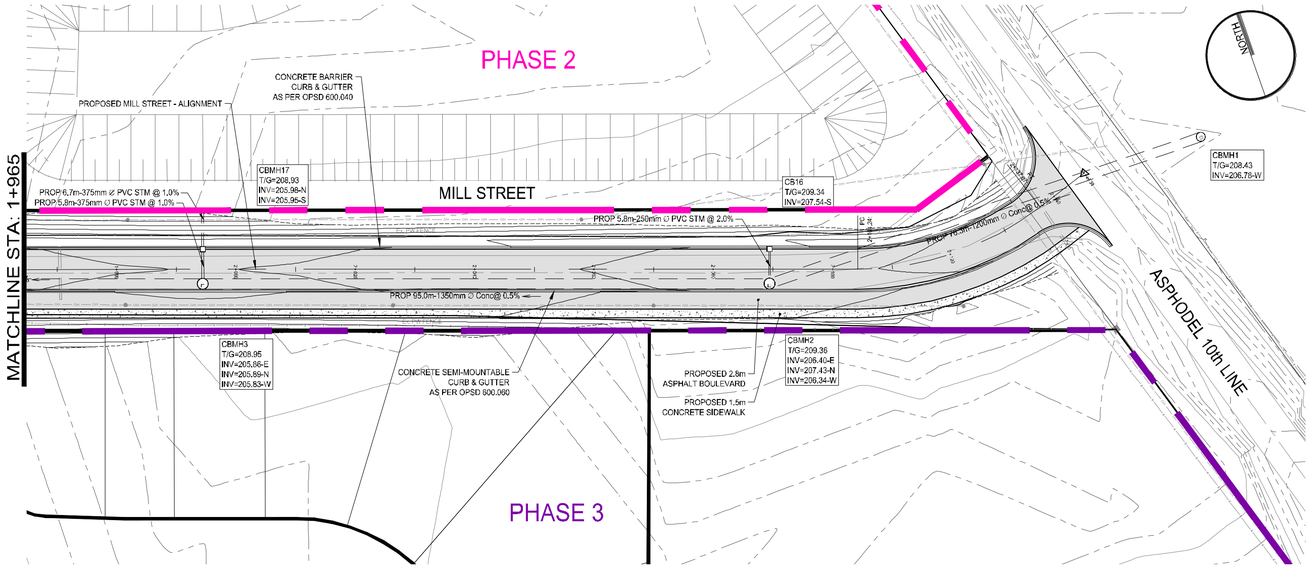
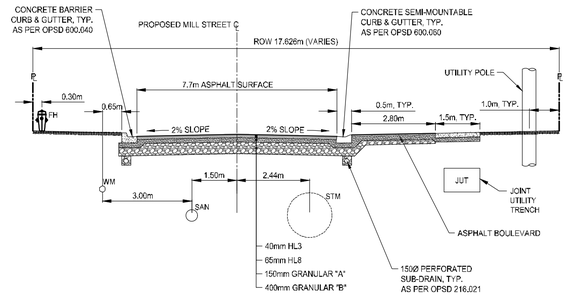
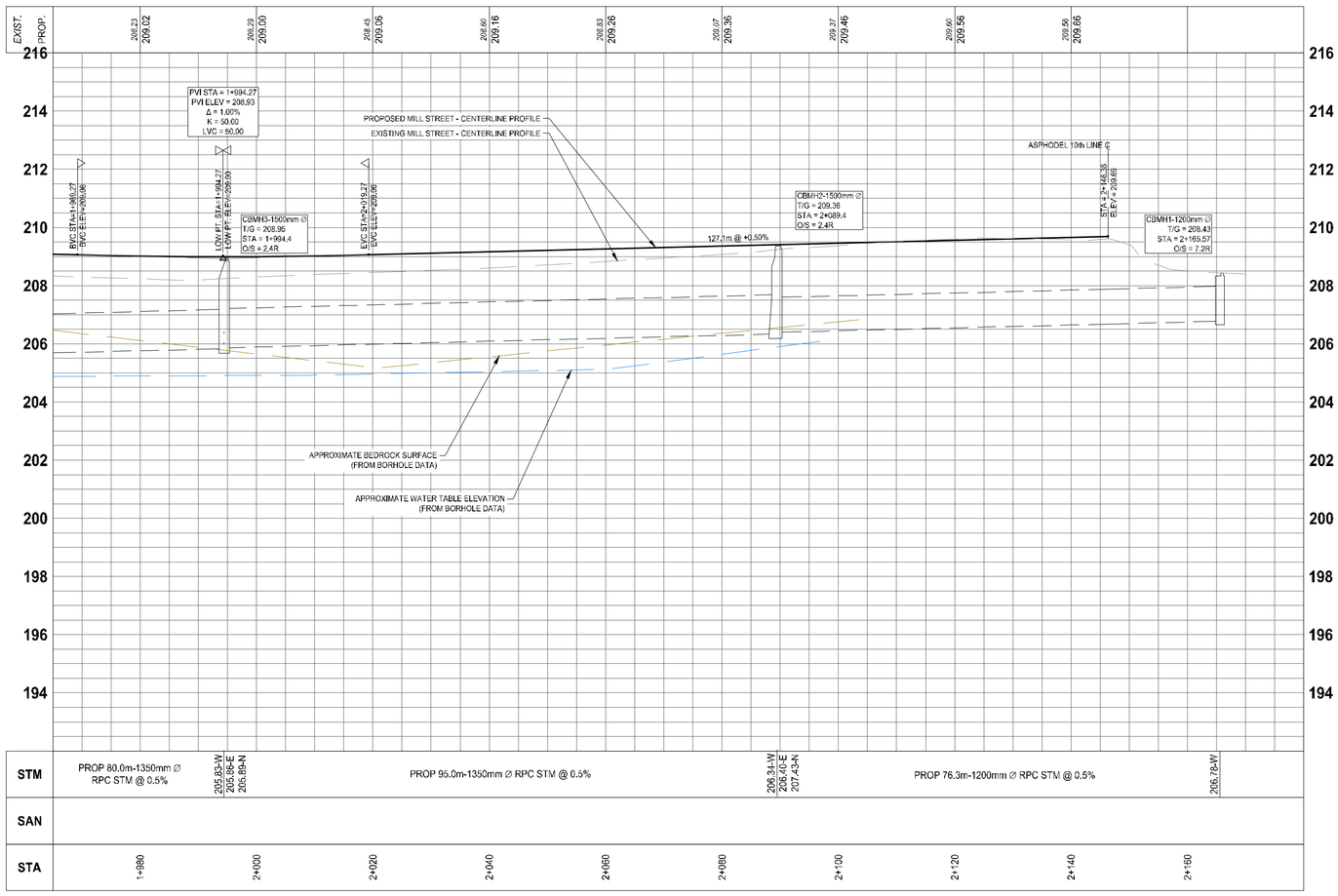




PROPOSED MILL STREET - TYPICAL SECTION
SCALE: 1:100



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TRENT MEADOWS PHASE 1

TOWN OF NORWOOD

MILL STREET PRELIMINARY PLAN & PROFILE STA 1+965 - 2-150

TOWN OF NORWOOD

DRAWN BY: S.DINGMAN
DESIGNED BY: S.DINGMAN
APPROVED BY: B.PARSONS
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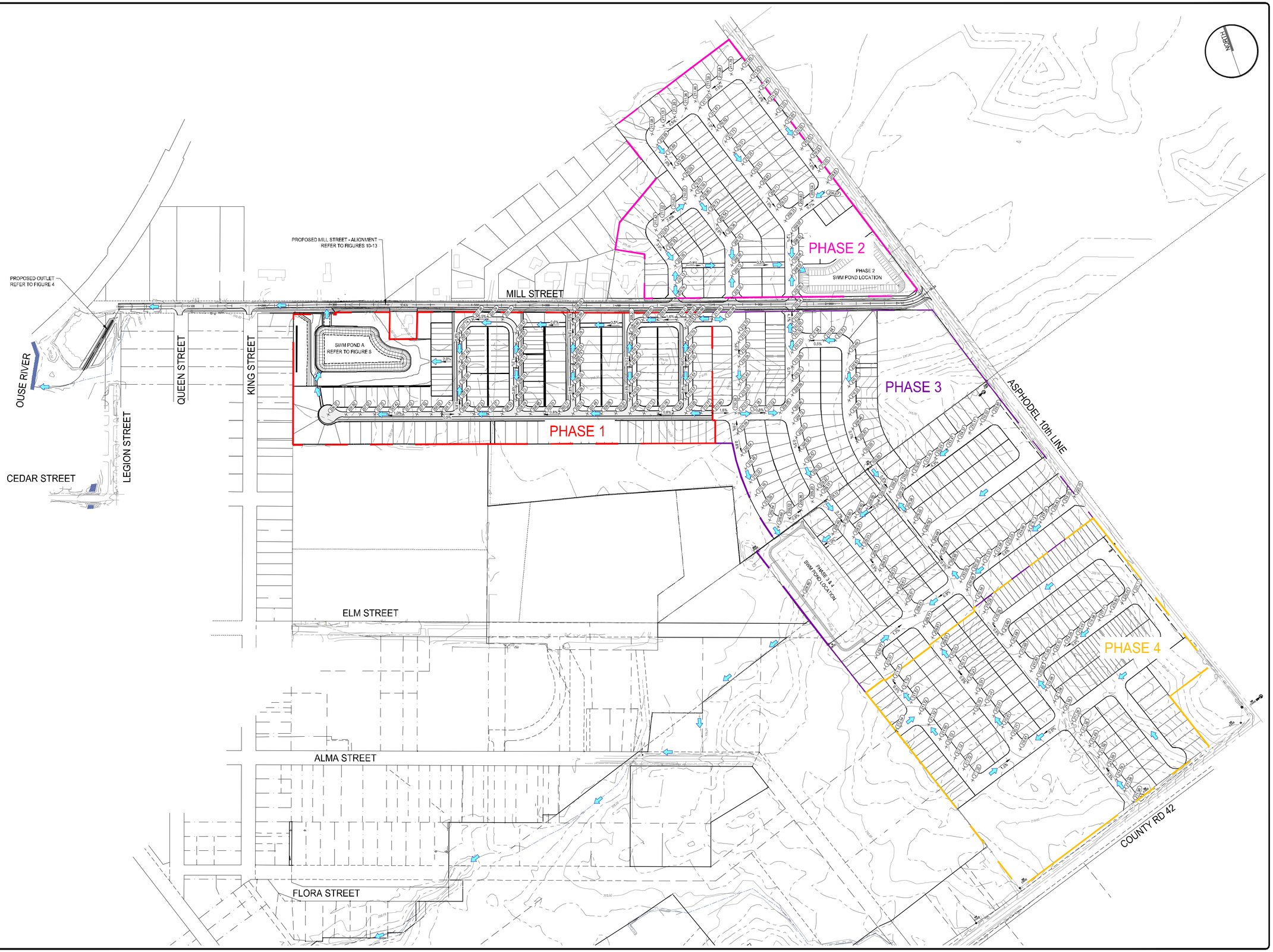
PROJECT NUMBER:	SHEET NAME:	SHEET:
23104	F13	8 of 9

23104-PP1
Date: Mar. 15, 2024 - 4:01 pm Plotted by: sdingman File source: S:\01 - Projects\23000\23104 - 67 & 112 Mill St & 1562 County Road 42 Norwood Subdivision\02 Design\01 - Drawings\01 - Current Drawings\23104-PP1.dwg

Figure 14: Overall Conceptual Grading Plan



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TRENT MEADOWS PHASE 1

TOWN OF NORWOOD

CONCEPTUAL OVERALL GRADING PLAN

TOWN OF NORWOOD

DRAWN BY:	S.DINGMAN
DESIGNED BY:	S.DINGMAN
APPROVED BY:	B.PARSONS
DATE:	2024-02-23
SCALE:	1:2500

STAMP: LICENSED PROFESSIONAL ENGINEER — B.T.PARSONS — 100213434 — 2024-03-15 — PROVINCE OF ONTARIO

PROJECT NUMBER:	SHEET NAME:	SHEET:
23104	F14	9 of 9

23104-CGP
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Appendix A: Hydrologic Parameters

Hydrologic Model and Catchment Summary

Project Name: Trent Meadows
Project No: 23104
Designed By: LM
Date: 2024-02-16

Catchment Name		Land Use and Areas (ha)								Hydrologic Calculations										
Name	Description	Wetland CN = 82	Grass CN = 50	Gravel CN = 81	Crop & Other Unimproved Land CN = 70	Pasture & Other Unimproved Land CN = 62	Woodlands and Forests CN = 54	Impervious CN = 98	Total	CN Weighted	CN Weighted | Pervious Areas	Percent Impervious	Directly Connected Impervious	Soils Group	Total Length (m)	Average Slope: Overall (%)	Time of Concentration (Minimum 10 Minutes)	Time to Peak (Hours)	Recession Period (k)	Composite Runoff Coefficient
EXT1		0.000	0.360	0.000	0.000	0.000	0.081	0.069	0.510	57	51	13.5%	14%	AB	31	3.5%	10.3	0.11	1.26	0.24
EXT2		0.000	0.000	0.137	0.000	2.078	0.000	0.154	2.369	65	63	6.5%	7%	AB	133	2.0%	27.5	0.31	2.92	0.18
EX3		0.000	0.000	0.035	3.413	0.000	0.000	0.000	3.448	70	70	0.0%	0%	AB	175	4.0%	23.9	0.27	1.78	0.22
EXT4		0.000	0.000	0.245	0.000	3.925	0.355	0.285	4.810	65	62	5.9%	6%	AB	220	3.9%	28.7	0.32	1.97	0.17
EX5		0.000	0.000	0.000	6.005	0.000	0.000	0.000	6.005	70	70	0.0%	0%	AB	241	4.5%	27.1	0.30	1.84	0.22
EXT6		0.000	0.000	0.000	0.000	0.062	0.000	0.000	0.062	62	62	0.0%	0%	AB	21	6.5%	10.0	0.11	0.45	0.15
EXT7		0.000	0.000	0.000	0.000	0.129	0.024	0.000	0.153	61	61	0.0%	0%	AB	24	6.3%	10.0	0.11	0.58	0.15
EX8		0.000	0.000	0.000	0.759	0.000	0.000	0.000	0.759	70	70	0.0%	0%	AB	36	8.4%	10.0	0.11	0.66	0.30
EX9		0.000	0.000	0.000	8.212	0.185	0.000	0.000	8.397	70	70	0.0%	0%	AB	337	1.8%	43.5	0.48	4.32	0.22
EX10		0.000	0.000	0.000	5.743	0.000	0.000	0.000	5.743	70	70	0.0%	0%	AB	167	8.5%	16.6	0.18	1.07	0.30
EX11		0.000	0.000	0.000	3.659	0.000	0.000	0.000	3.659	70	70	0.0%	0%	AB	314	5.3%	26.7	0.30	1.43	0.30
EXT12		0.000	0.000	0.000	25.974	0.000	0.626	1.119	27.719	71	70	4.0%	4%	AB	605	4.0%	43.4	0.48	2.94	0.24
EX13		0.000	0.000	0.000	4.747	0.000	0.000	0.000	4.747	70	70	0.0%	0%	AB	225	5.5%	22.3	0.25	1.47	0.30
EX14		0.000	0.000	0.000	11.813	0.000	0.000	0.000	11.813	70	70	0.0%	0%	AB	417	6.0%	29.5	0.33	1.70	0.30
EX15		0.000	0.420	0.102	6.316	0.000	0.142	0.100	7.080	69	69	1.4%	1%	AB	270	7.2%	22.2	0.25	1.29	0.30
EXT16		0.000	0.000	0.000	0.619	0.000	0.000	0.000	0.619	70	70	0.0%	0%	AB	71	8.0%	11.1	0.12	0.66	0.30
PR1		0.000	4.422	0.000	0.000	0.000	0.000	5.583	10.005	77	50	55.8%	43%	AB	610	3.0%	22.2	0.25	2.93	0.57
PR2		0.000	0.457	0.000	0.000	0.000	0.000	0.373	0.830	72	50	44.9%	45%	AB	10	2.0%	10.0	0.11	2.27	0.49
PR3		0.000	0.403	0.000	0.000	0.000	0.000	0.330	0.733	72	50	45.0%	45%	AB	15	3.0%	10.0	0.11	1.56	0.49

Visual OTTHYMO Input Parameters

Project Name: Trent Meadows **Designed By:** LM

Project No: 23104 **Date:** 2024-02-16

Parameter	Description	EXT1	EXT2	EX3	EXT4	EX5
COMMAND	STANDHYD or NASHYD	NASHYD	NASHYD	NASHYD	NASHYD	NASHYD
AREA	Catchment Area (ha)	0.510	2.369	3.448	4.810	6.005
DT	Time Step Increment (min)	5	5	5	5	5
TIMP	Total Impervious Area (%)	13.5%	6.5%	0.0%	5.9%	0.0%
XIMP	Directly Connected Impervious Area (%)	13.5%	6.5%	0.0%	5.9%	0.0%
DWF	Dry Weather Flow (m^3/s)	0	0	0	0	0
CN	Pervious Weighted Curve Number	51	63	70	62	70
LOSS[1]	Modified CN*	54	61	68	61	68
IA	Initial Abstraction (Pervious)	5.0	5.0	5.0	5.0	5.0
TP	Unit Hydrograph Time to Peak (Hr)	0.11	0.31	0.27	0.32	0.30
K	Williams Recession Period (Hr)	1.26	2.92	1.78	1.97	1.84
SLPP	Average Slope Pervious Area (%)	3.5%	2.0%	4.0%	3.9%	4.5%
LGP	Overland Flow Length Pervious Area (m)	31	133	175	220	241
MNP	Manning's Roughness Coefficient (Pervious)	-	-	-	-	-
SCP	Storage Coefficient Pervious Area	-	-	-	-	-
DPSI	Depression Storage Impervious Area (mm/hr)	-	-	-	-	-
SLPI	Average Slope Impervious Area (%)					
LGI	Impervious Overland Flow Length √(A/1.5) x 100 (m)	-	-	-	-	-
MNI	Manning's Roughness Coefficient (Impervious)	-	-	-	-	-
SCI	Storage Coefficient Impervious Area	-	-	-	-	-
RAIN	Optional Rainfall Intensity (mm/hr)	-	-	-	-	-

Notes:

1. CN values based on Design Chart 1.09 in MTO Drainage Manual
2. Modified CN derived from IA and CN using functionality in Visual OTTHYMO v6
3. Initial abstraction values derived from UNESCO Manual on Drainage in Urban Areas, 1987.
4. TC calculated using Airport Equation for C<0.4 and Bransby Williams for C>0.4.
5. Time to Peak estimated at 0.67Tc.

Visual OTTHYMO Input Parameters

Project Name: Trent Meadows **Designed By:** LM

Project No: 23104 **Date:** 2024-02-16

Parameter	Description	EXT6	EXT7	EX8	EX9	EX10
COMMAND	STANDHYD or NASHYD	NASHYD	NASHYD	NASHYD	NASHYD	NASHYD
AREA	Catchment Area (ha)	0.062	0.153	0.759	8.397	5.743
DT	Time Step Increment (min)	5	5	5	5	5
TIMP	Total Impervious Area (%)	0.0%	0.0%	0.0%	0.0%	0.0%
XIMP	Directly Connected Impervious Area (%)	0.0%	0.0%	0.0%	0.0%	0.0%
DWF	Dry Weather Flow (m^3/s)	0	0	0	0	0
CN	Pervious Weighted Curve Number	62	61	70	70	70
LOSS[1]	Modified CN*	68	64	68	68	68
IA	Initial Abstraction (Pervious)	5.0	5.0	5.0	5.0	5.0
TP	Unit Hydrograph Time to Peak (Hr)	0.11	0.11	0.11	0.48	0.18
K	Williams Recession Period (Hr)	0.45	0.58	0.66	4.32	1.07
SLPP	Average Slope Pervious Area (%)	6.5%	6.3%	8.4%	1.8%	8.5%
LGP	Overland Flow Length Pervious Area (m)	21	24	36	337	167
MNP	Manning's Roughness Coefficient (Pervious)	-	-	-	-	-
SCP	Storage Coefficient Pervious Area	-	-	-	-	-
DPSI	Depression Storage Impervious Area (mm/hr)	-	-	-	-	-
SLPI	Average Slope Impervious Area (%)					
LGI	Impervious Overland Flow Length √(A/1.5) x 100 (m)	-	-	-	-	-
MNI	Manning's Roughness Coefficient (Impervious)	-	-	-	-	-
SCI	Storage Coefficient Impervious Area	-	-	-	-	-
RAIN	Optional Rainfall Intensity (mm/hr)	-	-	-	-	-

Notes:

1. CN values based on Design Chart 1.09 in MTO Drainage Manual
2. Modified CN derived from IA and CN using functionality in Visual OTTHYMO v6
3. Initial abstraction values derived from UNESCO Manual on Drainage in Urban Areas, 198
4. TC calculated using Airport Equation for C<0.4 and Bransby Williams for C>0.4.
5. Time to Peak estimated at 0.67Tc.

Visual OTTHYMO Input Parameters

Project Name: Trent Meadows **Designed By:** LM

Project No: 23104 **Date:** 2024-02-16

Parameter	Description	EX11	EXT12	EX13	EX14	EX15
COMMAND	STANDHYD or NASHYD	NASHYD	NASHYD	NASHYD	NASHYD	NASHYD
AREA	Catchment Area (ha)	3.659	27.719	4.747	11.813	7.080
DT	Time Step Increment (min)	5	5	5	5	5
TIMP	Total Impervious Area (%)	0.0%	4.0%	0.0%	0.0%	1.4%
XIMP	Directly Connected Impervious Area (%)	0.0%	4.0%	0.0%	0.0%	1.4%
DWF	Dry Weather Flow (m^3/s)	0	0	0	0	0
CN	Pervious Weighted Curve Number	70	70	70	70	69
LOSS[1]	Modified CN*	68	69	68	68	67
IA	Initial Abstraction (Pervious)	5.0	5.0	5.0	5.0	5.0
TP	Unit Hydrograph Time to Peak (Hr)	0.30	0.48	0.25	0.33	0.25
K	Williams Recession Period (Hr)	1.43	2.94	1.47	1.70	1.29
SLPP	Average Slope Pervious Area (%)	5.3%	4.0%	5.5%	6.0%	7.2%
LGP	Overland Flow Length Pervious Area (m)	314	605	225	417	270
MNP	Manning's Roughness Coefficient (Pervious)	-	-	-	-	-
SCP	Storage Coefficient Pervious Area	-	-	-	-	-
DPSI	Depression Storage Impervious Area (mm/hr)	-	-	-	-	-
SLPI	Average Slope Impervious Area (%)					
LGI	Impervious Overland Flow Length √(A/1.5) x 100 (m)	-	-	-	-	-
MNI	Manning's Roughness Coefficient (Impervious)	-	-	-	-	-
SCI	Storage Coefficient Impervious Area	-	-	-	-	-
RAIN	Optional Rainfall Intensity (mm/hr)	-	-	-	-	-

Notes:

1. CN values based on Design Chart 1.09 in MTO Drainage Manual
2. Modified CN derived from IA and CN using functionality in Visual OTTHYMO v6
3. Initial abstraction values derived from UNESCO Manual on Drainage in Urban Areas, 198
4. TC calculated using Airport Equation for C<0.4 and Bransby Williams for C>0.4.
5. Time to Peak estimated at 0.67Tc.

Visual OTTHYMO Input Parameters

Project Name: Trent Meadows **Designed By:** LM

Project No: 23104 **Date:** 2024-02-16

Parameter	Description	EXT16	PR1	PR2	PR3
COMMAND	STANDHYD or NASHYD	NASHYD	STANDHYD	STANDHYD	STANDHYD
AREA	Catchment Area (ha)	0.619	10.005	0.830	0.733
DT	Time Step Increment (min)	5	5	5	5
TIMP	Total Impervious Area (%)	0.0%	55.8%	44.9%	45.0%
XIMP	Directly Connected Impervious Area (%)	0.0%	43.0%	0.0%	45.0%
DWF	Dry Weather Flow (m^3/s)	0	0	0	0
CN	Pervious Weighted Curve Number	70	50	50	50
LOSS[1]	Modified CN*	38	45	45	45
IA	Initial Abstraction (Pervious)	5.0	5.0	5.0	5.0
TP	Unit Hydrograph Time to Peak (Hr)	0.12	0.25	0.11	0.11
K	Williams Recession Period (Hr)	0.66	2.93	2.27	1.56
SLPP	Average Slope Pervious Area (%)	8.0%	2.0%	2.0%	2.0%
LGP	Overland Flow Length Pervious Area (m)	71	10	40	15
MNP	Manning's Roughness Coefficient (Pervious)	-	0.25	0.25	0.25
SCP	Storage Coefficient Pervious Area	-	0	0	0
DPSI	Depression Storage Impervious Area (mm/hr)	-	1	1	1
SLPI	Average Slope Impervious Area (%)		2.0%	2.0%	1.0%
LGI	Impervious Overland Flow Length √(A/1.5) x 100 (m)	-	258.26	74.39	69.90
MNI	Manning's Roughness Coefficient (Impervious)	-	0.013	0.013	0.013
SCI	Storage Coefficient Impervious Area	-	0	0	0
RAIN	Optional Rainfall Intensity (mm/hr)	-	0	0	0

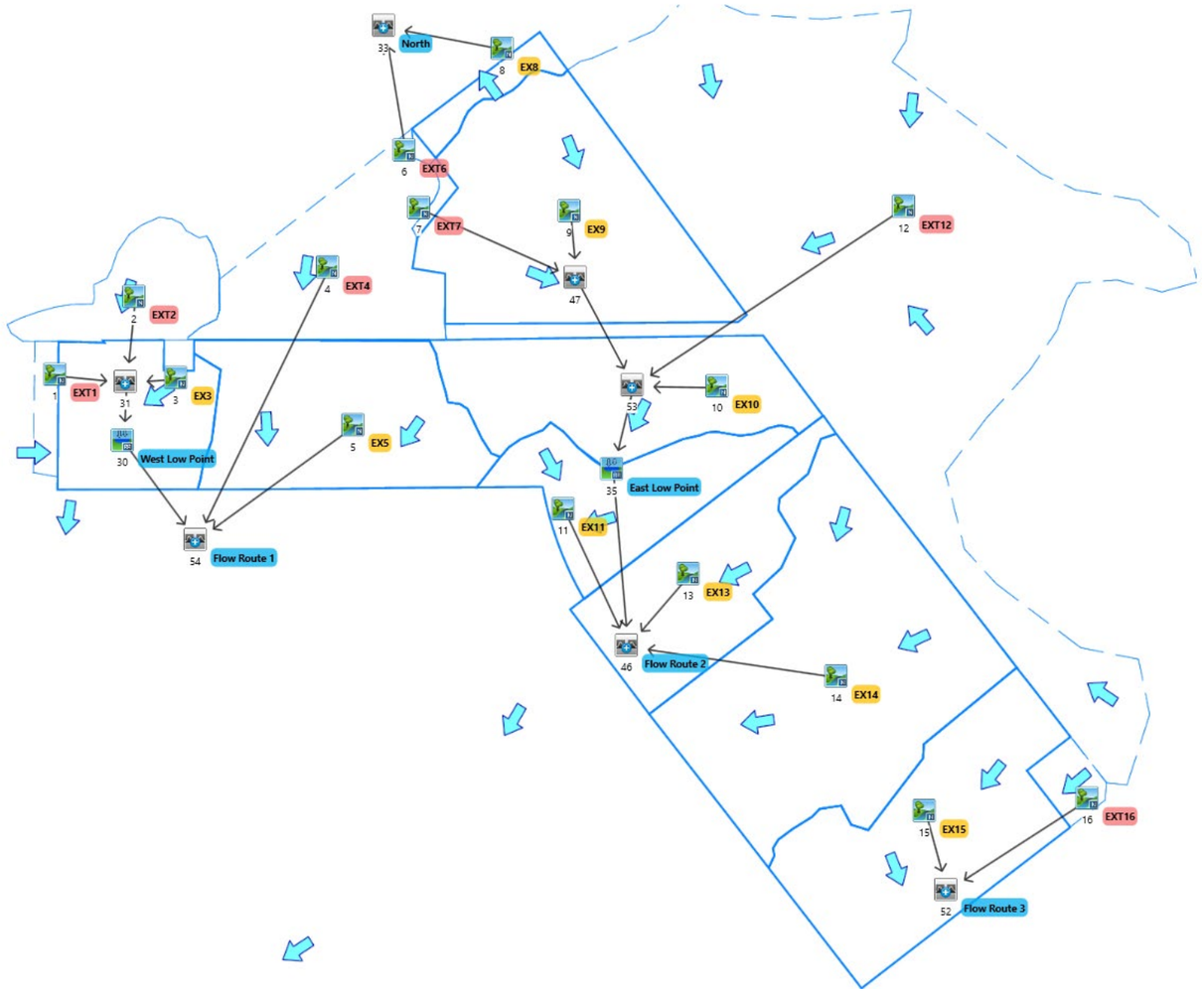
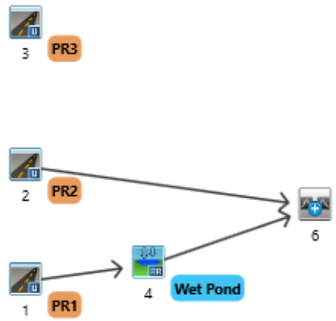
Notes:

1. CN values based on Design Chart 1.09 in MTO Drainage Manual
2. Modified CN derived from IA and CN using functionality in Visual OTTHYMO v6
3. Initial abstraction values derived from UNESCO Manual on Drainage in Urban Areas, 198
4. TC calculated using Airport Equation for C<0.4 and Bransby Williams for C>0.4.
5. Time to Peak estimated at 0.67Tc.

Visual OTTHYMO Model

Project Name: Trent Meadows
Project No: 23104

Designed By: LM
Date: 2024-02-16

PRE-DEVELOPMENT MODEL	POST-DEVELOPMENT MODEL
	

Appendix B: Area Calculations

PERCENT IMPERVIOUS AREA CALCUATIONS PR1

Project Name: Trent Meadows

Project No.: 23104

Surface Type	Number	Length (m)	Width (m)	Unit Area (m^2) [1]	Total Area (m^2)
Townhomes	12			99.0	1188.0
Townhome Driveways	12	6	3	18.0	216.0
50' (15.2m) Homes[5]	34			207.0	7038.0
50' (15.2m) Home Driveways	46	6	6	36.0	1656.0
40' (12.2m) Homes[5]	15.5			164.7	2552.9
40' (12.2m) Home Driveways	16	6	6	36.0	576.0
36' (11.0m) Homes[5]	51			157.5	8032.5
36' (11.0m) Home Driveways	59	6	6	36.0	2124.0
25' (7.6m) Homes	31			105.8	3278.3
25' (7.6m) Home Driveways	31	6	6	36.0	1116.0
20m Right of Way Pavement	0	1342	12		16104.0
Sidewalk [2]	0	2684	1.8		4831.2
SWM Facility					7120.0
Subtotal Impervious					55832.8
Directly Connected Impervious					43190.4
Pervious					44221.2
Drainage Area Total					100054.0
Roof Area for Water Balance [3]					11044.8

% Impervious 56%

% Directly Connected Impervious [4] 43%

1. Values for unit areas of buildings were derived from maximum lot within the zoning by-law
2. Sidewalks were assumed to be on either side of every road as per the Residential Development Vision report.
3. 50% of the Roof Areas are to be directed to infiltration trenches
4. Directly connected impervious area conservatively calculated using sidewalk, roadway and 75% of rooftop areas.
5. Homes with drainage split along south boundary counted as 0.5 units

Appendix C: Visual OTTHYMO Detailed Results

Pre-Development Results

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

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       V    V   I    SS     U   U   A A   L
        V  V    I      SS   U   U  AAAAA  L
         V V    I       SS  U   U  A   A  L
          VV    I    SSSSS   UUUU   A   A  LLLLL

        OOO   TTTTT  TTTTT  H   H  Y   Y  M   M   OOO    TM
       O   O    T      T    H   H   Y Y   MM MM  O   O
       O   O    T      T    H   H    Y    M M M  O   O
       O   O    T      T    HHHHH    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 6.2.2015\VO2\voin.dat
  Output  filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\0c6a3f3b-5
  Summary filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\0c6a3f3b-5

DATE: 02-16-2024                          TIME: 03:17:55

USER:



COMMENTS: _____________________________________________________________

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

  ************************************************
  ** SIMULATION : 1 - Ptbo_SCS_6hr_2yr          **
  ************************************************

-----------------------
|    READ STORM       |    Filename: C:\Users\lmattern\AppD
|                     |              ata\Local\Temp\
|                     |              a41db5fc-4f1a-47c6-b168-7af52acbbd15\153db3ea
| Ptotal= 38.75 mm    |    Comments: Ptbo_SCS_6hr_2yr
-----------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.00    1.60 |  1.50    3.90 |  3.00    8.50 |  4.50    2.30
               0.25    1.60 |  1.75    3.90 |  3.25    8.50 |  4.75    2.30
               0.50    2.30 |  2.00    4.60 |  3.50    3.90 |  5.00    1.60
               0.75    2.30 |  2.25    4.60 |  3.75    3.90 |  5.25    1.60
               1.00    2.30 |  2.50   23.20 |  4.00    3.10 |  5.50    1.60
               1.25    2.30 |  2.75   60.40 |  4.25    3.10 |  5.75    1.60

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

-----------------------
| CALIB               |
| NASHYD   (  0006)|   Area     (ha)=   0.06   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)=   0.11

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


                    ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    1.60 | 1.583    3.90 | 3.083    8.50 |  4.58    2.30
               0.167    1.60 | 1.667    3.90 | 3.167    8.50 |  4.67    2.30
               0.250    1.60 | 1.750    3.90 | 3.250    8.50 |  4.75    2.30
               0.333    1.60 | 1.833    3.90 | 3.333    8.50 |  4.83    2.30
               0.417    1.60 | 1.917    3.90 | 3.417    8.50 |  4.92    2.30
               0.500    1.60 | 2.000    3.90 | 3.500    8.50 |  5.00    2.30
               0.583    2.30 | 2.083    4.60 | 3.583    3.90 |  5.08    1.60
               0.667    2.30 | 2.167    4.60 | 3.667    3.90 |  5.17    1.60
               0.750    2.30 | 2.250    4.60 | 3.750    3.90 |  5.25    1.60
               0.833    2.30 | 2.333    4.60 | 3.833    3.90 |  5.33    1.60
               0.917    2.30 | 2.417    4.60 | 3.917    3.90 |  5.42    1.60
               1.000    2.30 | 2.500    4.60 | 4.000    3.90 |  5.50    1.60
               1.083    2.30 | 2.583   23.20 | 4.083    3.10 |  5.58    1.60
               1.167    2.30 | 2.667   23.20 | 4.167    3.10 |  5.67    1.60
               1.250    2.30 | 2.750   23.20 | 4.250    3.10 |  5.75    1.60
               1.333    2.30 | 2.833   60.40 | 4.333    3.10 |  5.83    1.60
               1.417    2.30 | 2.917   60.40 | 4.417    3.10 |  5.92    1.60
               1.500    2.30 | 3.000   60.40 | 4.500    3.10 |  6.00    1.60

     Unit Hyd Qpeak  (cms)=   0.022

     PEAK FLOW       (cms)=   0.002 (i)
     TIME TO PEAK    (hrs)=   3.000
     RUNOFF VOLUME    (mm)=   7.292
     TOTAL RAINFALL   (mm)=  38.750
     RUNOFF COEFFICIENT   =   0.188

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

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-----------------------
| CALIB               |
| NASHYD   (  0008)|   Area     (ha)=   0.76   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)=   0.11

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


                    ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    1.60 | 1.583    3.90 | 3.083    8.50 |  4.58    2.30
               0.167    1.60 | 1.667    3.90 | 3.167    8.50 |  4.67    2.30
               0.250    1.60 | 1.750    3.90 | 3.250    8.50 |  4.75    2.30
               0.333    1.60 | 1.833    3.90 | 3.333    8.50 |  4.83    2.30
               0.417    1.60 | 1.917    3.90 | 3.417    8.50 |  4.92    2.30
               0.500    1.60 | 2.000    3.90 | 3.500    8.50 |  5.00    2.30
               0.583    2.30 | 2.083    4.60 | 3.583    3.90 |  5.08    1.60
               0.667    2.30 | 2.167    4.60 | 3.667    3.90 |  5.17    1.60
               0.750    2.30 | 2.250    4.60 | 3.750    3.90 |  5.25    1.60
               0.833    2.30 | 2.333    4.60 | 3.833    3.90 |  5.33    1.60
               0.917    2.30 | 2.417    4.60 | 3.917    3.90 |  5.42    1.60
               1.000    2.30 | 2.500    4.60 | 4.000    3.90 |  5.50    1.60
               1.083    2.30 | 2.583   23.20 | 4.083    3.10 |  5.58    1.60
               1.167    2.30 | 2.667   23.20 | 4.167    3.10 |  5.67    1.60
               1.250    2.30 | 2.750   23.20 | 4.250    3.10 |  5.75    1.60
               1.333    2.30 | 2.833   60.40 | 4.333    3.10 |  5.83    1.60
               1.417    2.30 | 2.917   60.40 | 4.417    3.10 |  5.92    1.60
               1.500    2.30 | 3.000   60.40 | 4.500    3.10 |  6.00    1.60

     Unit Hyd Qpeak  (cms)=   0.264

     PEAK FLOW       (cms)=   0.026 (i)
     TIME TO PEAK    (hrs)=   3.000
     RUNOFF VOLUME    (mm)=   7.294
     TOTAL RAINFALL   (mm)=  38.750
     RUNOFF COEFFICIENT   =   0.188

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

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-----------------------
| ADD HYD  (  0033)|
|   1 +  2 =   3   |                AREA     QPEAK    TPEAK      R.V.
-------------------                (ha)     (cms)    (hrs)      (mm)
          ID1= 1 (  0006):      0.06    0.002     3.00      7.29
        + ID2= 2 (  0008):      0.76    0.026     3.00      7.29
          ==========================================================
          ID = 3 (  0033):      0.82    0.029     3.00      7.29

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-----------------------
| CALIB               |
| NASHYD   (  0010)|   Area     (ha)=   5.74   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)=   0.18

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


                    ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    1.60 | 1.583    3.90 | 3.083    8.50 |  4.58    2.30
               0.167    1.60 | 1.667    3.90 | 3.167    8.50 |  4.67    2.30
               0.250    1.60 | 1.750    3.90 | 3.250    8.50 |  4.75    2.30
```

0.333	1.60	1.833	3.90	3.333	8.50	4.83	2.30
0.417	1.60	1.917	3.90	3.417	8.50	4.92	2.30
0.500	1.60	2.000	3.90	3.500	8.50	5.00	2.30
0.583	2.30	2.083	4.60	3.583	3.90	5.08	1.60
0.667	2.30	2.167	4.60	3.667	3.90	5.17	1.60
0.750	2.30	2.250	4.60	3.750	3.90	5.25	1.60
0.833	2.30	2.333	4.60	3.833	3.90	5.33	1.60
0.917	2.30	2.417	4.60	3.917	3.90	5.42	1.60
1.000	2.30	2.500	4.60	4.000	3.90	5.50	1.60
1.083	2.30	2.583	23.20	4.083	3.10	5.58	1.60
1.167	2.30	2.667	23.20	4.167	3.10	5.67	1.60
1.250	2.30	2.750	23.20	4.250	3.10	5.75	1.60
1.333	2.30	2.833	60.40	4.333	3.10	5.83	1.60
1.417	2.30	2.917	60.40	4.417	3.10	5.92	1.60
1.500	2.30	3.000	60.40	4.500	3.10	6.00	1.60

Unit Hyd Qpeak (cms)= 1.219

PEAK FLOW (cms)= 0.149 (i)
TIME TO PEAK (hrs)= 3.083
RUNOFF VOLUME (mm)= 7.410
TOTAL RAINFALL (mm)= 38.750
RUNOFF COEFFICIENT = 0.191

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

CALIB								
NASHYD (0012)	Area (ha)= 27.72	Curve Number (CN)= 69.0						
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00						
	U.H. Tp(hrs)= 0.48							

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.60	1.583	3.90	3.083	8.50	4.58	2.30
0.167	1.60	1.667	3.90	3.167	8.50	4.67	2.30
0.250	1.60	1.750	3.90	3.250	8.50	4.75	2.30
0.333	1.60	1.833	3.90	3.333	8.50	4.83	2.30
0.417	1.60	1.917	3.90	3.417	8.50	4.92	2.30
0.500	1.60	2.000	3.90	3.500	8.50	5.00	2.30
0.583	2.30	2.083	4.60	3.583	3.90	5.08	1.60
0.667	2.30	2.167	4.60	3.667	3.90	5.17	1.60
0.750	2.30	2.250	4.60	3.750	3.90	5.25	1.60
0.833	2.30	2.333	4.60	3.833	3.90	5.33	1.60
0.917	2.30	2.417	4.60	3.917	3.90	5.42	1.60
1.000	2.30	2.500	4.60	4.000	3.90	5.50	1.60
1.083	2.30	2.583	23.20	4.083	3.10	5.58	1.60
1.167	2.30	2.667	23.20	4.167	3.10	5.67	1.60
1.250	2.30	2.750	23.20	4.250	3.10	5.75	1.60
1.333	2.30	2.833	60.40	4.333	3.10	5.83	1.60
1.417	2.30	2.917	60.40	4.417	3.10	5.92	1.60
1.500	2.30	3.000	60.40	4.500	3.10	6.00	1.60

Unit Hyd Qpeak (cms)= 2.206

PEAK FLOW (cms)= 0.378 (i)
TIME TO PEAK (hrs)= 3.417
RUNOFF VOLUME (mm)= 7.703
TOTAL RAINFALL (mm)= 38.750
RUNOFF COEFFICIENT = 0.199

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

CALIB								
NASHYD (0007)	Area (ha)= 0.15	Curve Number (CN)= 64.0						
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00						
	U.H. Tp(hrs)= 0.11							

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.60	1.583	3.90	3.083	8.50	4.58	2.30
0.167	1.60	1.667	3.90	3.167	8.50	4.67	2.30
0.250	1.60	1.750	3.90	3.250	8.50	4.75	2.30

0.333	1.60	1.833	3.90	3.333	8.50	4.83	2.30
0.417	1.60	1.917	3.90	3.417	8.50	4.92	2.30
0.500	1.60	2.000	3.90	3.500	8.50	5.00	2.30
0.583	2.30	2.083	4.60	3.583	3.90	5.08	1.60
0.667	2.30	2.167	4.60	3.667	3.90	5.17	1.60
0.750	2.30	2.250	4.60	3.750	3.90	5.25	1.60
0.833	2.30	2.333	4.60	3.833	3.90	5.33	1.60
0.917	2.30	2.417	4.60	3.917	3.90	5.42	1.60
1.000	2.30	2.500	4.60	4.000	3.90	5.50	1.60
1.083	2.30	2.583	23.20	4.083	3.10	5.58	1.60
1.167	2.30	2.667	23.20	4.167	3.10	5.67	1.60
1.250	2.30	2.750	23.20	4.250	3.10	5.75	1.60
1.333	2.30	2.833	60.40	4.333	3.10	5.83	1.60
1.417	2.30	2.917	60.40	4.417	3.10	5.92	1.60
1.500	2.30	3.000	60.40	4.500	3.10	6.00	1.60

Unit Hyd Qpeak (cms)= 0.053

PEAK FLOW (cms)= 0.005 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 6.328
TOTAL RAINFALL (mm)= 38.750
RUNOFF COEFFICIENT = 0.163

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

CALIB								
NASHYD (0009)	Area (ha)= 8.40	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)= 0.48							

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.60	1.583	3.90	3.083	8.50	4.58	2.30
0.167	1.60	1.667	3.90	3.167	8.50	4.67	2.30
0.250	1.60	1.750	3.90	3.250	8.50	4.75	2.30
0.333	1.60	1.833	3.90	3.333	8.50	4.83	2.30
0.417	1.60	1.917	3.90	3.417	8.50	4.92	2.30
0.500	1.60	2.000	3.90	3.500	8.50	5.00	2.30
0.583	2.30	2.083	4.60	3.583	3.90	5.08	1.60
0.667	2.30	2.167	4.60	3.667	3.90	5.17	1.60
0.750	2.30	2.250	4.60	3.750	3.90	5.25	1.60
0.833	2.30	2.333	4.60	3.833	3.90	5.33	1.60
0.917	2.30	2.417	4.60	3.917	3.90	5.42	1.60
1.000	2.30	2.500	4.60	4.000	3.90	5.50	1.60
1.083	2.30	2.583	23.20	4.083	3.10	5.58	1.60
1.167	2.30	2.667	23.20	4.167	3.10	5.67	1.60
1.250	2.30	2.750	23.20	4.250	3.10	5.75	1.60
1.333	2.30	2.833	60.40	4.333	3.10	5.83	1.60
1.417	2.30	2.917	60.40	4.417	3.10	5.92	1.60
1.500	2.30	3.000	60.40	4.500	3.10	6.00	1.60

Unit Hyd Qpeak (cms)= 0.668

PEAK FLOW (cms)= 0.110 (i)
TIME TO PEAK (hrs)= 3.417
RUNOFF VOLUME (mm)= 7.431
TOTAL RAINFALL (mm)= 38.750
RUNOFF COEFFICIENT = 0.192

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

ADD HYD (0047)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0007):	0.15	0.005	3.00	6.33
+ ID2= 2 (0009):	8.40	0.110	3.42	7.43
ID = 3 (0047):	8.55	0.111	3.42	7.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0053)

```
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
--------------------          (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  0010):      5.74     0.149     3.08      7.41
      + ID2= 2 (  0012):     27.72     0.378     3.42      7.70
        ==========================================================
        ID = 3 (  0053):     33.46     0.445     3.33      7.65

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

```
| ADD HYD  (  0053)|
|  3 +  2 =  1     |          AREA     QPEAK     TPEAK      R.V.
--------------------          (ha)     (cms)     (hrs)      (mm)
        ID1= 3 (  0053):     33.46     0.445     3.33      7.65
      + ID2= 2 (  0047):      8.55     0.111     3.42      7.41
        ==========================================================
        ID = 1 (  0053):     42.01     0.554     3.33      7.60

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

```
| RESERVOIR(  0035)|     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     |   2.0910       0.0135

                                AREA      QPEAK      TPEAK        R.V.
                                (ha)      (cms)      (hrs)        (mm)
   INFLOW : ID= 2 (  0053)     42.012     0.554       3.33        7.60
   OUTFLOW: ID= 1 (  0035)     42.012     0.553       3.33        7.60

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 99.84
                  TIME SHIFT OF PEAK FLOW        (min)=  0.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0036
```

```
| CALIB            |
| NASHYD   (  0011)|   Area     (ha)=   3.66   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)=   0.30
```

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.60	1.583	3.90	3.083	8.50	4.58	2.30
0.167	1.60	1.667	3.90	3.167	8.50	4.67	2.30
0.250	1.60	1.750	3.90	3.250	8.50	4.75	2.30
0.333	1.60	1.833	3.90	3.333	8.50	4.83	2.30
0.417	1.60	1.917	3.90	3.417	8.50	4.92	2.30
0.500	1.60	2.000	3.90	3.500	8.50	5.00	2.30
0.583	2.30	2.083	4.60	3.583	3.90	5.08	1.60
0.667	2.30	2.167	4.60	3.667	3.90	5.17	1.60
0.750	2.30	2.250	4.60	3.750	3.90	5.25	1.60
0.833	2.30	2.333	4.60	3.833	3.90	5.33	1.60
0.917	2.30	2.417	4.60	3.917	3.90	5.42	1.60
1.000	2.30	2.500	4.60	4.000	3.90	5.50	1.60
1.083	2.30	2.583	23.20	4.083	3.10	5.58	1.60
1.167	2.30	2.667	23.20	4.167	3.10	5.67	1.60
1.250	2.30	2.750	23.20	4.250	3.10	5.75	1.60
1.333	2.30	2.833	60.40	4.333	3.10	5.83	1.60
1.417	2.30	2.917	60.40	4.417	3.10	5.92	1.60
1.500	2.30	3.000	60.40	4.500	3.10	6.00	1.60

```
     Unit Hyd Qpeak  (cms)=   0.466

     PEAK FLOW       (cms)=   0.067 (i)
     TIME TO PEAK    (hrs)=   3.167
     RUNOFF VOLUME    (mm)=   7.428
     TOTAL RAINFALL   (mm)=  38.750
     RUNOFF COEFFICIENT   =   0.192

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

```
| CALIB            |
| NASHYD   (  0013)|   Area     (ha)=   4.75   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)=   0.25

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.60	1.583	3.90	3.083	8.50	4.58	2.30
0.167	1.60	1.667	3.90	3.167	8.50	4.67	2.30
0.250	1.60	1.750	3.90	3.250	8.50	4.75	2.30
0.333	1.60	1.833	3.90	3.333	8.50	4.83	2.30
0.417	1.60	1.917	3.90	3.417	8.50	4.92	2.30
0.500	1.60	2.000	3.90	3.500	8.50	5.00	2.30
0.583	2.30	2.083	4.60	3.583	3.90	5.08	1.60
0.667	2.30	2.167	4.60	3.667	3.90	5.17	1.60
0.750	2.30	2.250	4.60	3.750	3.90	5.25	1.60
0.833	2.30	2.333	4.60	3.833	3.90	5.33	1.60
0.917	2.30	2.417	4.60	3.917	3.90	5.42	1.60
1.000	2.30	2.500	4.60	4.000	3.90	5.50	1.60
1.083	2.30	2.583	23.20	4.083	3.10	5.58	1.60
1.167	2.30	2.667	23.20	4.167	3.10	5.67	1.60
1.250	2.30	2.750	23.20	4.250	3.10	5.75	1.60
1.333	2.30	2.833	60.40	4.333	3.10	5.83	1.60
1.417	2.30	2.917	60.40	4.417	3.10	5.92	1.60
1.500	2.30	3.000	60.40	4.500	3.10	6.00	1.60

```
     Unit Hyd Qpeak  (cms)=   0.725

     PEAK FLOW       (cms)=   0.098 (i)
     TIME TO PEAK    (hrs)=   3.167
     RUNOFF VOLUME    (mm)=   7.425
     TOTAL RAINFALL   (mm)=  38.750
     RUNOFF COEFFICIENT   =   0.192

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

```
| CALIB            |
| NASHYD   (  0014)|   Area     (ha)=  11.81   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)=   0.33
```

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.60	1.583	3.90	3.083	8.50	4.58	2.30
0.167	1.60	1.667	3.90	3.167	8.50	4.67	2.30
0.250	1.60	1.750	3.90	3.250	8.50	4.75	2.30
0.333	1.60	1.833	3.90	3.333	8.50	4.83	2.30
0.417	1.60	1.917	3.90	3.417	8.50	4.92	2.30
0.500	1.60	2.000	3.90	3.500	8.50	5.00	2.30
0.583	2.30	2.083	4.60	3.583	3.90	5.08	1.60
0.667	2.30	2.167	4.60	3.667	3.90	5.17	1.60
0.750	2.30	2.250	4.60	3.750	3.90	5.25	1.60
0.833	2.30	2.333	4.60	3.833	3.90	5.33	1.60
0.917	2.30	2.417	4.60	3.917	3.90	5.42	1.60
1.000	2.30	2.500	4.60	4.000	3.90	5.50	1.60
1.083	2.30	2.583	23.20	4.083	3.10	5.58	1.60
1.167	2.30	2.667	23.20	4.167	3.10	5.67	1.60
1.250	2.30	2.750	23.20	4.250	3.10	5.75	1.60
1.333	2.30	2.833	60.40	4.333	3.10	5.83	1.60
1.417	2.30	2.917	60.40	4.417	3.10	5.92	1.60
1.500	2.30	3.000	60.40	4.500	3.10	6.00	1.60

```
     Unit Hyd Qpeak  (cms)=   1.367

     PEAK FLOW       (cms)=   0.202 (i)
     TIME TO PEAK    (hrs)=   3.250
     RUNOFF VOLUME    (mm)=   7.429
     TOTAL RAINFALL   (mm)=  38.750
     RUNOFF COEFFICIENT   =   0.192

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

```
| ADD HYD  (  0046)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
```

	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0011):	3.66	0.067	3.17	7.43
+ ID2= 2 (0013):	4.75	0.098	3.17	7.43
ID = 3 (0046):	8.41	0.165	3.17	7.43

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0046)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0046):	8.41	0.165	3.17	7.43
+ ID2= 2 (0014):	11.81	0.202	3.25	7.43
ID = 1 (0046):	20.22	0.364	3.17	7.43

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0046)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0046):	20.22	0.364	3.17	7.43
+ ID2= 2 (0035):	42.01	0.553	3.33	7.60
ID = 3 (0046):	62.23	0.898	3.25	7.55

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
NASHYD (0015) | ID= 1 DT= 5.0 min

Area (ha)= 7.08 Curve Number (CN)= 67.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.25

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.60	1.583	3.90	3.083	8.50	4.58	2.30
0.167	1.60	1.667	3.90	3.167	8.50	4.67	2.30
0.250	1.60	1.750	3.90	3.250	8.50	4.75	2.30
0.333	1.60	1.833	3.90	3.333	8.50	4.83	2.30
0.417	1.60	1.917	3.90	3.417	8.50	4.92	2.30
0.500	1.60	2.000	3.90	3.500	8.50	5.00	2.30
0.583	2.30	2.083	4.60	3.583	3.90	5.08	1.60
0.667	2.30	2.167	4.60	3.667	3.90	5.17	1.60
0.750	2.30	2.250	4.60	3.750	3.90	5.25	1.60
0.833	2.30	2.333	4.60	3.833	3.90	5.33	1.60
0.917	2.30	2.417	4.60	3.917	3.90	5.42	1.60
1.000	2.30	2.500	4.60	4.000	3.90	5.50	1.60
1.083	2.30	2.583	23.20	4.083	3.10	5.58	1.60
1.167	2.30	2.667	23.20	4.167	3.10	5.67	1.60
1.250	2.30	2.750	23.20	4.250	3.10	5.75	1.60
1.333	2.30	2.833	60.40	4.333	3.10	5.83	1.60
1.417	2.30	2.917	60.40	4.417	3.10	5.92	1.60
1.500	2.30	3.000	60.40	4.500	3.10	6.00	1.60

Unit Hyd Qpeak (cms)= 1.082

PEAK FLOW (cms)= 0.141 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 7.165
TOTAL RAINFALL (mm)= 38.750
RUNOFF COEFFICIENT = 0.185

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

CALIB
NASHYD (0016) | ID= 1 DT= 5.0 min

Area (ha)= 0.62 Curve Number (CN)= 68.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.12

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.60	1.583	3.90	3.083	8.50	4.58	2.30
0.167	1.60	1.667	3.90	3.167	8.50	4.67	2.30
0.250	1.60	1.750	3.90	3.250	8.50	4.75	2.30
0.333	1.60	1.833	3.90	3.333	8.50	4.83	2.30
0.417	1.60	1.917	3.90	3.417	8.50	4.92	2.30
0.500	1.60	2.000	3.90	3.500	8.50	5.00	2.30
0.583	2.30	2.083	4.60	3.583	3.90	5.08	1.60
0.667	2.30	2.167	4.60	3.667	3.90	5.17	1.60
0.750	2.30	2.250	4.60	3.750	3.90	5.25	1.60
0.833	2.30	2.333	4.60	3.833	3.90	5.33	1.60
0.917	2.30	2.417	4.60	3.917	3.90	5.42	1.60
1.000	2.30	2.500	4.60	4.000	3.90	5.50	1.60
1.083	2.30	2.583	23.20	4.083	3.10	5.58	1.60
1.167	2.30	2.667	23.20	4.167	3.10	5.67	1.60
1.250	2.30	2.750	23.20	4.250	3.10	5.75	1.60
1.333	2.30	2.833	60.40	4.333	3.10	5.83	1.60
1.417	2.30	2.917	60.40	4.417	3.10	5.92	1.60
1.500	2.30	3.000	60.40	4.500	3.10	6.00	1.60

Unit Hyd Qpeak (cms)= 0.197

PEAK FLOW (cms)= 0.021 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 7.332
TOTAL RAINFALL (mm)= 38.750
RUNOFF COEFFICIENT = 0.189

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

ADD HYD (0052)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0015):	7.08	0.141	3.17	7.16
+ ID2= 2 (0016):	0.62	0.021	3.00	7.33
ID = 3 (0052):	7.70	0.156	3.08	7.18

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
NASHYD (0001) | ID= 1 DT= 5.0 min

Area (ha)= 0.51 Curve Number (CN)= 54.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.11

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.60	1.583	3.90	3.083	8.50	4.58	2.30
0.167	1.60	1.667	3.90	3.167	8.50	4.67	2.30
0.250	1.60	1.750	3.90	3.250	8.50	4.75	2.30
0.333	1.60	1.833	3.90	3.333	8.50	4.83	2.30
0.417	1.60	1.917	3.90	3.417	8.50	4.92	2.30
0.500	1.60	2.000	3.90	3.500	8.50	5.00	2.30
0.583	2.30	2.083	4.60	3.583	3.90	5.08	1.60
0.667	2.30	2.167	4.60	3.667	3.90	5.17	1.60
0.750	2.30	2.250	4.60	3.750	3.90	5.25	1.60
0.833	2.30	2.333	4.60	3.833	3.90	5.33	1.60
0.917	2.30	2.417	4.60	3.917	3.90	5.42	1.60
1.000	2.30	2.500	4.60	4.000	3.90	5.50	1.60
1.083	2.30	2.583	23.20	4.083	3.10	5.58	1.60
1.167	2.30	2.667	23.20	4.167	3.10	5.67	1.60
1.250	2.30	2.750	23.20	4.250	3.10	5.75	1.60
1.333	2.30	2.833	60.40	4.333	3.10	5.83	1.60
1.417	2.30	2.917	60.40	4.417	3.10	5.92	1.60
1.500	2.30	3.000	60.40	4.500	3.10	6.00	1.60

Unit Hyd Qpeak (cms)= 0.177

PEAK FLOW (cms)= 0.011 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 4.470
TOTAL RAINFALL (mm)= 38.750
RUNOFF COEFFICIENT = 0.115

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

CALIB					
NASHYD (0002)	Area	(ha)=	2.37	Curve Number	(CN)= 61.0
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00
	U.H. Tp(hrs)=		0.31		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.60	1.583	3.90	3.083	8.50	4.58	2.30
0.167	1.60	1.667	3.90	3.167	8.50	4.67	2.30
0.250	1.60	1.750	3.90	3.250	8.50	4.75	2.30
0.333	1.60	1.833	3.90	3.333	8.50	4.83	2.30
0.417	1.60	1.917	3.90	3.417	8.50	4.92	2.30
0.500	1.60	2.000	3.90	3.500	8.50	5.00	2.30
0.583	2.30	2.083	4.60	3.583	3.90	5.08	1.60
0.667	2.30	2.167	4.60	3.667	3.90	5.17	1.60
0.750	2.30	2.250	4.60	3.750	3.90	5.25	1.60
0.833	2.30	2.333	4.60	3.833	3.90	5.33	1.60
0.917	2.30	2.417	4.60	3.917	3.90	5.42	1.60
1.000	2.30	2.500	4.60	4.000	3.90	5.50	1.60
1.083	2.30	2.583	23.20	4.083	3.10	5.58	1.60
1.167	2.30	2.667	23.20	4.167	3.10	5.67	1.60
1.250	2.30	2.750	23.20	4.250	3.10	5.75	1.60
1.333	2.30	2.833	60.40	4.333	3.10	5.83	1.60
1.417	2.30	2.917	60.40	4.417	3.10	5.92	1.60
1.500	2.30	3.000	60.40	4.500	3.10	6.00	1.60

Unit Hyd Qpeak (cms)= 0.292

PEAK FLOW (cms)= 0.033 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 5.805
TOTAL RAINFALL (mm)= 38.750
RUNOFF COEFFICIENT = 0.150

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

CALIB					
NASHYD (0003)	Area	(ha)=	3.45	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)=		0.27		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.60	1.583	3.90	3.083	8.50	4.58	2.30
0.167	1.60	1.667	3.90	3.167	8.50	4.67	2.30
0.250	1.60	1.750	3.90	3.250	8.50	4.75	2.30
0.333	1.60	1.833	3.90	3.333	8.50	4.83	2.30
0.417	1.60	1.917	3.90	3.417	8.50	4.92	2.30
0.500	1.60	2.000	3.90	3.500	8.50	5.00	2.30
0.583	2.30	2.083	4.60	3.583	3.90	5.08	1.60
0.667	2.30	2.167	4.60	3.667	3.90	5.17	1.60
0.750	2.30	2.250	4.60	3.750	3.90	5.25	1.60
0.833	2.30	2.333	4.60	3.833	3.90	5.33	1.60
0.917	2.30	2.417	4.60	3.917	3.90	5.42	1.60
1.000	2.30	2.500	4.60	4.000	3.90	5.50	1.60
1.083	2.30	2.583	23.20	4.083	3.10	5.58	1.60
1.167	2.30	2.667	23.20	4.167	3.10	5.67	1.60
1.250	2.30	2.750	23.20	4.250	3.10	5.75	1.60
1.333	2.30	2.833	60.40	4.333	3.10	5.83	1.60
1.417	2.30	2.917	60.40	4.417	3.10	5.92	1.60
1.500	2.30	3.000	60.40	4.500	3.10	6.00	1.60

Unit Hyd Qpeak (cms)= 0.488

PEAK FLOW (cms)= 0.068 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 7.427
TOTAL RAINFALL (mm)= 38.750
RUNOFF COEFFICIENT = 0.192

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

ADD HYD (0031)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0001):	0.51	0.011	3.00	4.47
	+ ID2= 2 (0002):	2.37	0.033	3.17	5.80
	ID = 3 (0031):	2.88	0.037	3.17	5.57

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0031)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1	ID1= 3 (0031):	2.88	0.037	3.17	5.57
	+ ID2= 2 (0003):	3.45	0.068	3.17	7.43
	ID = 1 (0031):	6.33	0.106	3.17	6.58

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0030)	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	0.4390	0.2741
	0.0000	0.2739	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0031)	6.327	0.106	3.17	6.58
OUTFLOW: ID= 1 (0030)	6.327	0.000	0.00	0.00

PEAK FLOW REDUCTION [Qout/Qin](%)= 0.00
TIME SHIFT OF PEAK FLOW (min)=******
MAXIMUM STORAGE USED (ha.m.)= 0.0416

CALIB					
NASHYD (0005)	Area	(ha)=	6.01	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)=		0.30		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.60	1.583	3.90	3.083	8.50	4.58	2.30
0.167	1.60	1.667	3.90	3.167	8.50	4.67	2.30
0.250	1.60	1.750	3.90	3.250	8.50	4.75	2.30
0.333	1.60	1.833	3.90	3.333	8.50	4.83	2.30
0.417	1.60	1.917	3.90	3.417	8.50	4.92	2.30
0.500	1.60	2.000	3.90	3.500	8.50	5.00	2.30
0.583	2.30	2.083	4.60	3.583	3.90	5.08	1.60
0.667	2.30	2.167	4.60	3.667	3.90	5.17	1.60
0.750	2.30	2.250	4.60	3.750	3.90	5.25	1.60
0.833	2.30	2.333	4.60	3.833	3.90	5.33	1.60
0.917	2.30	2.417	4.60	3.917	3.90	5.42	1.60
1.000	2.30	2.500	4.60	4.000	3.90	5.50	1.60
1.083	2.30	2.583	23.20	4.083	3.10	5.58	1.60
1.167	2.30	2.667	23.20	4.167	3.10	5.67	1.60
1.250	2.30	2.750	23.20	4.250	3.10	5.75	1.60
1.333	2.30	2.833	60.40	4.333	3.10	5.83	1.60
1.417	2.30	2.917	60.40	4.417	3.10	5.92	1.60
1.500	2.30	3.000	60.40	4.500	3.10	6.00	1.60

Unit Hyd Qpeak (cms)= 0.765

PEAK FLOW (cms)= 0.110 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 7.428
TOTAL RAINFALL (mm)= 38.750
RUNOFF COEFFICIENT = 0.192

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

CALIB					
NASHYD (0004)	Area	(ha)=	4.81	Curve Number	(CN)= 61.0
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00
	U.H. Tp(hrs)=		0.32		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.60	1.583	3.90	3.083	8.50	4.58	2.30
0.167	1.60	1.667	3.90	3.167	8.50	4.67	2.30
0.250	1.60	1.750	3.90	3.250	8.50	4.75	2.30
0.333	1.60	1.833	3.90	3.333	8.50	4.83	2.30
0.417	1.60	1.917	3.90	3.417	8.50	4.92	2.30
0.500	1.60	2.000	3.90	3.500	8.50	5.00	2.30
0.583	2.30	2.083	4.60	3.583	3.90	5.08	1.60
0.667	2.30	2.167	4.60	3.667	3.90	5.17	1.60
0.750	2.30	2.250	4.60	3.750	3.90	5.25	1.60
0.833	2.30	2.333	4.60	3.833	3.90	5.33	1.60
0.917	2.30	2.417	4.60	3.917	3.90	5.42	1.60
1.000	2.30	2.500	4.60	4.000	3.90	5.50	1.60
1.083	2.30	2.583	23.20	4.083	3.10	5.58	1.60
1.167	2.30	2.667	23.20	4.167	3.10	5.67	1.60
1.250	2.30	2.750	23.20	4.250	3.10	5.75	1.60
1.333	2.30	2.833	60.40	4.333	3.10	5.83	1.60
1.417	2.30	2.917	60.40	4.417	3.10	5.92	1.60
1.500	2.30	3.000	60.40	4.500	3.10	6.00	1.60

Unit Hyd Qpeak (cms)= 0.574

PEAK FLOW (cms)= 0.065 (i)
TIME TO PEAK (hrs)= 3.250
RUNOFF VOLUME (mm)= 5.805
TOTAL RAINFALL (mm)= 38.750
RUNOFF COEFFICIENT = 0.150

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

ADD HYD (0054)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0030):	6.33	0.000	0.00	0.00
	+ ID2= 2 (0004):	4.81	0.065	3.25	5.81
	ID = 3 (0054):	11.14	0.065	3.25	2.51

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0054)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1	ID1= 3 (0054):	11.14	0.065	3.25	2.51
	+ ID2= 2 (0005):	6.01	0.110	3.17	7.43
	ID = 1 (0054):	17.14	0.174	3.17	4.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
V    V   I    SSSSS  U   U    A     L              (v 6.2.2015)
V    V   I    SS     U   U   A A    L
 V  V    I      SS   U   U  AAAAA   L
 V  V    I       SS  U   U A     A  L
  VV     I    SSSSS  UUUUU A     A  LLLLL

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

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2.2015\VO2\voin.dat
Output filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\8a6cd481-7
Summary filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\8a6cd481-7

DATE: 02-16-2024 TIME: 03:17:56

USER:

COMMENTS: _____

```
**************************************************
** SIMULATION : 2 - Ptbo_SCS_6hr_5yr            **
**************************************************
```

READ STORM	Filename: C:\Users\lmattern\AppD ata\Local\Temp\ a41db5fc-4f1a-47c6-b168-7af52acbbd15\1a371601
Ptotal= 52.44 mm	Comments: Ptbo_SCS_6hr_5yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	2.10	1.50	5.20	3.00	11.50	4.50	3.20
0.25	2.10	1.75	5.20	3.25	11.50	4.75	3.20
0.50	3.20	2.00	6.30	3.50	5.20	5.00	2.10
0.75	3.20	2.25	6.30	3.75	5.20	5.25	2.10
1.00	3.20	2.50	31.40	4.00	4.20	5.50	2.10
1.25	3.20	2.75	81.78	4.25	4.20	5.75	2.10

CALIB					
NASHYD (0006)	Area	(ha)=	0.06	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)=		0.11		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.10	1.583	5.20	3.083	11.50	4.58	3.20
0.167	2.10	1.667	5.20	3.167	11.50	4.67	3.20
0.250	2.10	1.750	5.20	3.250	11.50	4.75	3.20
0.333	2.10	1.833	5.20	3.333	11.50	4.83	3.20
0.417	2.10	1.917	5.20	3.417	11.50	4.92	3.20
0.500	2.10	2.000	5.20	3.500	11.50	5.00	3.20
0.583	3.20	2.083	6.30	3.583	5.20	5.08	2.10
0.667	3.20	2.167	6.30	3.667	5.20	5.17	2.10
0.750	3.20	2.250	6.30	3.750	5.20	5.25	2.10
0.833	3.20	2.333	6.30	3.833	5.20	5.33	2.10
0.917	3.20	2.417	6.30	3.917	5.20	5.42	2.10
1.000	3.20	2.500	6.30	4.000	5.20	5.50	2.10
1.083	3.20	2.583	31.40	4.083	4.20	5.58	2.10
1.167	3.20	2.667	31.40	4.167	4.20	5.67	2.10
1.250	3.20	2.750	31.40	4.250	4.20	5.75	2.10
1.333	3.20	2.833	81.78	4.333	4.20	5.83	2.10
1.417	3.20	2.917	81.78	4.417	4.20	5.92	2.10
1.500	3.20	3.000	81.78	4.500	4.20	6.00	2.10

Unit Hyd Qpeak (cms)= 0.022

PEAK FLOW (cms)= 0.004 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 13.229
TOTAL RAINFALL (mm)= 52.445
RUNOFF COEFFICIENT = 0.252

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

```
| CALIB                |
| NASHYD   (  0008)|   Area     (ha)=   0.76   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)=   0.11

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

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.10	1.583	5.20	3.083	11.50	4.58	3.20
0.167	2.10	1.667	5.20	3.167	11.50	4.67	3.20
0.250	2.10	1.750	5.20	3.250	11.50	4.75	3.20
0.333	2.10	1.833	5.20	3.333	11.50	4.83	3.20
0.417	2.10	1.917	5.20	3.417	11.50	4.92	3.20
0.500	2.10	2.000	5.20	3.500	11.50	5.00	3.20
0.583	3.20	2.083	6.30	3.583	5.20	5.08	2.10
0.667	3.20	2.167	6.30	3.667	5.20	5.17	2.10
0.750	3.20	2.250	6.30	3.750	5.20	5.25	2.10
0.833	3.20	2.333	6.30	3.833	5.20	5.33	2.10
0.917	3.20	2.417	6.30	3.917	5.20	5.42	2.10
1.000	3.20	2.500	6.30	4.000	5.20	5.50	2.10
1.083	3.20	2.583	31.40	4.083	4.20	5.58	2.10
1.167	3.20	2.667	31.40	4.167	4.20	5.67	2.10
1.250	3.20	2.750	31.40	4.250	4.20	5.75	2.10
1.333	3.20	2.833	81.78	4.333	4.20	5.83	2.10
1.417	3.20	2.917	81.78	4.417	4.20	5.92	2.10
1.500	3.20	3.000	81.78	4.500	4.20	6.00	2.10

```
     Unit Hyd Qpeak  (cms)=   0.264

     PEAK FLOW       (cms)=   0.048 (i)
     TIME TO PEAK    (hrs)=   3.000
     RUNOFF VOLUME    (mm)=  13.233
     TOTAL RAINFALL   (mm)=  52.445
     RUNOFF COEFFICIENT   =   0.252

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

```
| ADD HYD  (  0033)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
--------------------          (ha)     (cms)     (hrs)      (mm)
       ID1= 1 (  0006):      0.06     0.004      3.00     13.23
     + ID2= 2 (  0008):      0.76     0.048      3.00     13.23
       ==========================================================
       ID = 3 (  0033):      0.82     0.052      3.00     13.23

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

```
| CALIB                |
| NASHYD   (  0010)|   Area     (ha)=   5.74   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)=   0.18

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

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.10	1.583	5.20	3.083	11.50	4.58	3.20
0.167	2.10	1.667	5.20	3.167	11.50	4.67	3.20
0.250	2.10	1.750	5.20	3.250	11.50	4.75	3.20
0.333	2.10	1.833	5.20	3.333	11.50	4.83	3.20
0.417	2.10	1.917	5.20	3.417	11.50	4.92	3.20
0.500	2.10	2.000	5.20	3.500	11.50	5.00	3.20
0.583	3.20	2.083	6.30	3.583	5.20	5.08	2.10
0.667	3.20	2.167	6.30	3.667	5.20	5.17	2.10
0.750	3.20	2.250	6.30	3.750	5.20	5.25	2.10
0.833	3.20	2.333	6.30	3.833	5.20	5.33	2.10
0.917	3.20	2.417	6.30	3.917	5.20	5.42	2.10
1.000	3.20	2.500	6.30	4.000	5.20	5.50	2.10
1.083	3.20	2.583	31.40	4.083	4.20	5.58	2.10
1.167	3.20	2.667	31.40	4.167	4.20	5.67	2.10
1.250	3.20	2.750	31.40	4.250	4.20	5.75	2.10
1.333	3.20	2.833	81.78	4.333	4.20	5.83	2.10
1.417	3.20	2.917	81.78	4.417	4.20	5.92	2.10
1.500	3.20	3.000	81.78	4.500	4.20	6.00	2.10


```
     Unit Hyd Qpeak  (cms)=   1.219

     PEAK FLOW       (cms)=   0.274 (i)
     TIME TO PEAK    (hrs)=   3.083
     RUNOFF VOLUME    (mm)=  13.443
     TOTAL RAINFALL   (mm)=  52.445
     RUNOFF COEFFICIENT   =   0.256

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

```
| CALIB                |
| NASHYD   (  0012)|   Area     (ha)=  27.72   Curve Number    (CN)= 69.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H.  Tp(hrs)=   0.48

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

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.10	1.583	5.20	3.083	11.50	4.58	3.20
0.167	2.10	1.667	5.20	3.167	11.50	4.67	3.20
0.250	2.10	1.750	5.20	3.250	11.50	4.75	3.20
0.333	2.10	1.833	5.20	3.333	11.50	4.83	3.20
0.417	2.10	1.917	5.20	3.417	11.50	4.92	3.20
0.500	2.10	2.000	5.20	3.500	11.50	5.00	3.20
0.583	3.20	2.083	6.30	3.583	5.20	5.08	2.10
0.667	3.20	2.167	6.30	3.667	5.20	5.17	2.10
0.750	3.20	2.250	6.30	3.750	5.20	5.25	2.10
0.833	3.20	2.333	6.30	3.833	5.20	5.33	2.10
0.917	3.20	2.417	6.30	3.917	5.20	5.42	2.10
1.000	3.20	2.500	6.30	4.000	5.20	5.50	2.10
1.083	3.20	2.583	31.40	4.083	4.20	5.58	2.10
1.167	3.20	2.667	31.40	4.167	4.20	5.67	2.10
1.250	3.20	2.750	31.40	4.250	4.20	5.75	2.10
1.333	3.20	2.833	81.78	4.333	4.20	5.83	2.10
1.417	3.20	2.917	81.78	4.417	4.20	5.92	2.10
1.500	3.20	3.000	81.78	4.500	4.20	6.00	2.10

```
     Unit Hyd Qpeak  (cms)=   2.206

     PEAK FLOW       (cms)=   0.699 (i)
     TIME TO PEAK    (hrs)=   3.417
     RUNOFF VOLUME    (mm)=  13.932
     TOTAL RAINFALL   (mm)=  52.445
     RUNOFF COEFFICIENT   =   0.266

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

```
| CALIB                |
| NASHYD   (  0007)|   Area     (ha)=   0.15   Curve Number    (CN)= 64.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H.  Tp(hrs)=   0.11

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

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.10	1.583	5.20	3.083	11.50	4.58	3.20
0.167	2.10	1.667	5.20	3.167	11.50	4.67	3.20
0.250	2.10	1.750	5.20	3.250	11.50	4.75	3.20
0.333	2.10	1.833	5.20	3.333	11.50	4.83	3.20
0.417	2.10	1.917	5.20	3.417	11.50	4.92	3.20
0.500	2.10	2.000	5.20	3.500	11.50	5.00	3.20
0.583	3.20	2.083	6.30	3.583	5.20	5.08	2.10
0.667	3.20	2.167	6.30	3.667	5.20	5.17	2.10
0.750	3.20	2.250	6.30	3.750	5.20	5.25	2.10
0.833	3.20	2.333	6.30	3.833	5.20	5.33	2.10
0.917	3.20	2.417	6.30	3.917	5.20	5.42	2.10
1.000	3.20	2.500	6.30	4.000	5.20	5.50	2.10
1.083	3.20	2.583	31.40	4.083	4.20	5.58	2.10
1.167	3.20	2.667	31.40	4.167	4.20	5.67	2.10
1.250	3.20	2.750	31.40	4.250	4.20	5.75	2.10
1.333	3.20	2.833	81.78	4.333	4.20	5.83	2.10
1.417	3.20	2.917	81.78	4.417	4.20	5.92	2.10
1.500	3.20	3.000	81.78	4.500	4.20	6.00	2.10

Unit Hyd Qpeak (cms)= 0.053

PEAK FLOW (cms)= 0.008 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 11.609
TOTAL RAINFALL (mm)= 52.445
RUNOFF COEFFICIENT = 0.221

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

| CALIB | NASHYD (0009) | ID= 1 DT= 5.0 min |

Area (ha)= 8.40 Curve Number (CN)= 68.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.48

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.10	1.583	5.20	3.083	11.50	4.58	3.20
0.167	2.10	1.667	5.20	3.167	11.50	4.67	3.20
0.250	2.10	1.750	5.20	3.250	11.50	4.75	3.20
0.333	2.10	1.833	5.20	3.333	11.50	4.83	3.20
0.417	2.10	1.917	5.20	3.417	11.50	4.92	3.20
0.500	2.10	2.000	5.20	3.500	11.50	5.00	3.20
0.583	3.20	2.083	6.30	3.583	5.20	5.08	2.10
0.667	3.20	2.167	6.30	3.667	5.20	5.17	2.10
0.750	3.20	2.250	6.30	3.750	5.20	5.25	2.10
0.833	3.20	2.333	6.30	3.833	5.20	5.33	2.10
0.917	3.20	2.417	6.30	3.917	5.20	5.42	2.10
1.000	3.20	2.500	6.30	4.000	5.20	5.50	2.10
1.083	3.20	2.583	31.40	4.083	4.20	5.58	2.10
1.167	3.20	2.667	31.40	4.167	4.20	5.67	2.10
1.250	3.20	2.750	31.40	4.250	4.20	5.75	2.10
1.333	3.20	2.833	81.78	4.333	4.20	5.83	2.10
1.417	3.20	2.917	81.78	4.417	4.20	5.92	2.10
1.500	3.20	3.000	81.78	4.500	4.20	6.00	2.10

Unit Hyd Qpeak (cms)= 0.668

PEAK FLOW (cms)= 0.205 (i)
TIME TO PEAK (hrs)= 3.417
RUNOFF VOLUME (mm)= 13.480
TOTAL RAINFALL (mm)= 52.445
RUNOFF COEFFICIENT = 0.257

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

| ADD HYD (0047) | 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0007):	0.15	0.008	3.00	11.61
+ ID2= 2 (0009):	8.40	0.205	3.42	13.48
ID = 3 (0047):	8.55	0.206	3.42	13.45

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (0053) | 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):	5.74	0.274	3.08	13.44
+ ID2= 2 (0012):	27.72	0.699	3.42	13.93
ID = 3 (0053):	33.46	0.827	3.25	13.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (0053) | 3 + 2 = 1 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0053):	33.46	0.827	3.25	13.85
+ ID2= 2 (0047):	8.55	0.206	3.42	13.45

ID = 1 (0053):	42.01	1.028	3.33	13.77

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| RESERVOIR(0035) | 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	2.0910	0.0135

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0053)	42.012	1.028	3.33	13.77
OUTFLOW: ID= 1 (0035)	42.012	1.028	3.33	13.77

PEAK FLOW REDUCTION [Qout/Qin](%)= 99.99
TIME SHIFT OF PEAK FLOW (min)= 0.00
MAXIMUM STORAGE USED (ha.m.)= 0.0066

| CALIB | NASHYD (0011) | ID= 1 DT= 5.0 min |

Area (ha)= 3.66 Curve Number (CN)= 68.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.30

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.10	1.583	5.20	3.083	11.50	4.58	3.20
0.167	2.10	1.667	5.20	3.167	11.50	4.67	3.20
0.250	2.10	1.750	5.20	3.250	11.50	4.75	3.20
0.333	2.10	1.833	5.20	3.333	11.50	4.83	3.20
0.417	2.10	1.917	5.20	3.417	11.50	4.92	3.20
0.500	2.10	2.000	5.20	3.500	11.50	5.00	3.20
0.583	3.20	2.083	6.30	3.583	5.20	5.08	2.10
0.667	3.20	2.167	6.30	3.667	5.20	5.17	2.10
0.750	3.20	2.250	6.30	3.750	5.20	5.25	2.10
0.833	3.20	2.333	6.30	3.833	5.20	5.33	2.10
0.917	3.20	2.417	6.30	3.917	5.20	5.42	2.10
1.000	3.20	2.500	6.30	4.000	5.20	5.50	2.10
1.083	3.20	2.583	31.40	4.083	4.20	5.58	2.10
1.167	3.20	2.667	31.40	4.167	4.20	5.67	2.10
1.250	3.20	2.750	31.40	4.250	4.20	5.75	2.10
1.333	3.20	2.833	81.78	4.333	4.20	5.83	2.10
1.417	3.20	2.917	81.78	4.417	4.20	5.92	2.10
1.500	3.20	3.000	81.78	4.500	4.20	6.00	2.10

Unit Hyd Qpeak (cms)= 0.466

PEAK FLOW (cms)= 0.125 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 13.476
TOTAL RAINFALL (mm)= 52.445
RUNOFF COEFFICIENT = 0.257

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

| CALIB | NASHYD (0013) | ID= 1 DT= 5.0 min |

Area (ha)= 4.75 Curve Number (CN)= 68.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.25

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.10	1.583	5.20	3.083	11.50	4.58	3.20
0.167	2.10	1.667	5.20	3.167	11.50	4.67	3.20
0.250	2.10	1.750	5.20	3.250	11.50	4.75	3.20
0.333	2.10	1.833	5.20	3.333	11.50	4.83	3.20
0.417	2.10	1.917	5.20	3.417	11.50	4.92	3.20
0.500	2.10	2.000	5.20	3.500	11.50	5.00	3.20
0.583	3.20	2.083	6.30	3.583	5.20	5.08	2.10
0.667	3.20	2.167	6.30	3.667	5.20	5.17	2.10

0.750	3.20	2.250	6.30	3.750	5.20	5.25	2.10
0.833	3.20	2.333	6.30	3.833	5.20	5.33	2.10
0.917	3.20	2.417	6.30	3.917	5.20	5.42	2.10
1.000	3.20	2.500	6.30	4.000	5.20	5.50	2.10
1.083	3.20	2.583	31.40	4.083	4.20	5.58	2.10
1.167	3.20	2.667	31.40	4.167	4.20	5.67	2.10
1.250	3.20	2.750	31.40	4.250	4.20	5.75	2.10
1.333	3.20	2.833	81.78	4.333	4.20	5.83	2.10
1.417	3.20	2.917	81.78	4.417	4.20	5.92	2.10
1.500	3.20	3.000	81.78	4.500	4.20	6.00	2.10

Unit Hyd Qpeak (cms)= 0.725

PEAK FLOW (cms)= 0.182 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 13.470
TOTAL RAINFALL (mm)= 52.445
RUNOFF COEFFICIENT = 0.257

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

CALIB					
NASHYD (0014)	Area (ha)= 11.81	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)= 0.33	

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.10	1.583	5.20	3.083	11.50	4.58	3.20
0.167	2.10	1.667	5.20	3.167	11.50	4.67	3.20
0.250	2.10	1.750	5.20	3.250	11.50	4.75	3.20
0.333	2.10	1.833	5.20	3.333	11.50	4.83	3.20
0.417	2.10	1.917	5.20	3.417	11.50	4.92	3.20
0.500	2.10	2.000	5.20	3.500	11.50	5.00	3.20
0.583	3.20	2.083	6.30	3.583	5.20	5.08	2.10
0.667	3.20	2.167	6.30	3.667	5.20	5.17	2.10
0.750	3.20	2.250	6.30	3.750	5.20	5.25	2.10
0.833	3.20	2.333	6.30	3.833	5.20	5.33	2.10
0.917	3.20	2.417	6.30	3.917	5.20	5.42	2.10
1.000	3.20	2.500	6.30	4.000	5.20	5.50	2.10
1.083	3.20	2.583	31.40	4.083	4.20	5.58	2.10
1.167	3.20	2.667	31.40	4.167	4.20	5.67	2.10
1.250	3.20	2.750	31.40	4.250	4.20	5.75	2.10
1.333	3.20	2.833	81.78	4.333	4.20	5.83	2.10
1.417	3.20	2.917	81.78	4.417	4.20	5.92	2.10
1.500	3.20	3.000	81.78	4.500	4.20	6.00	2.10

Unit Hyd Qpeak (cms)= 1.367

PEAK FLOW (cms)= 0.374 (i)
TIME TO PEAK (hrs)= 3.250
RUNOFF VOLUME (mm)= 13.478
TOTAL RAINFALL (mm)= 52.445
RUNOFF COEFFICIENT = 0.257

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

ADD HYD (0046)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0011):	3.66	0.125	3.17	13.48
+ ID2= 2 (0013):	4.75	0.182	3.17	13.47
ID = 3 (0046):	8.41	0.306	3.17	13.47

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0046)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0046):	8.41	0.306	3.17	13.47
+ ID2= 2 (0014):	11.81	0.374	3.25	13.48

ID = 1 (0046):	20.22	0.677	3.17	13.48

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0046)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0046):	20.22	0.677	3.17	13.48
+ ID2= 2 (0035):	42.01	1.028	3.33	13.77
ID = 3 (0046):	62.23	1.672	3.25	13.67

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB					
NASHYD (0015)	Area (ha)= 7.08	Curve Number (CN)= 67.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.25	

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.10	1.583	5.20	3.083	11.50	4.58	3.20
0.167	2.10	1.667	5.20	3.167	11.50	4.67	3.20
0.250	2.10	1.750	5.20	3.250	11.50	4.75	3.20
0.333	2.10	1.833	5.20	3.333	11.50	4.83	3.20
0.417	2.10	1.917	5.20	3.417	11.50	4.92	3.20
0.500	2.10	2.000	5.20	3.500	11.50	5.00	3.20
0.583	3.20	2.083	6.30	3.583	5.20	5.08	2.10
0.667	3.20	2.167	6.30	3.667	5.20	5.17	2.10
0.750	3.20	2.250	6.30	3.750	5.20	5.25	2.10
0.833	3.20	2.333	6.30	3.833	5.20	5.33	2.10
0.917	3.20	2.417	6.30	3.917	5.20	5.42	2.10
1.000	3.20	2.500	6.30	4.000	5.20	5.50	2.10
1.083	3.20	2.583	31.40	4.083	4.20	5.58	2.10
1.167	3.20	2.667	31.40	4.167	4.20	5.67	2.10
1.250	3.20	2.750	31.40	4.250	4.20	5.75	2.10
1.333	3.20	2.833	81.78	4.333	4.20	5.83	2.10
1.417	3.20	2.917	81.78	4.417	4.20	5.92	2.10
1.500	3.20	3.000	81.78	4.500	4.20	6.00	2.10

Unit Hyd Qpeak (cms)= 1.082

PEAK FLOW (cms)= 0.261 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 13.035
TOTAL RAINFALL (mm)= 52.445
RUNOFF COEFFICIENT = 0.249

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

CALIB					
NASHYD (0016)	Area (ha)= 0.62	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)= 0.12	

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.10	1.583	5.20	3.083	11.50	4.58	3.20
0.167	2.10	1.667	5.20	3.167	11.50	4.67	3.20
0.250	2.10	1.750	5.20	3.250	11.50	4.75	3.20
0.333	2.10	1.833	5.20	3.333	11.50	4.83	3.20
0.417	2.10	1.917	5.20	3.417	11.50	4.92	3.20
0.500	2.10	2.000	5.20	3.500	11.50	5.00	3.20
0.583	3.20	2.083	6.30	3.583	5.20	5.08	2.10
0.667	3.20	2.167	6.30	3.667	5.20	5.17	2.10
0.750	3.20	2.250	6.30	3.750	5.20	5.25	2.10
0.833	3.20	2.333	6.30	3.833	5.20	5.33	2.10
0.917	3.20	2.417	6.30	3.917	5.20	5.42	2.10
1.000	3.20	2.500	6.30	4.000	5.20	5.50	2.10
1.083	3.20	2.583	31.40	4.083	4.20	5.58	2.10
1.167	3.20	2.667	31.40	4.167	4.20	5.67	2.10

1.250	3.20	2.750	31.40	4.250	4.20	5.75	2.10
1.333	3.20	2.833	81.78	4.333	4.20	5.83	2.10
1.417	3.20	2.917	81.78	4.417	4.20	5.92	2.10
1.500	3.20	3.000	81.78	4.500	4.20	6.00	2.10

Unit Hyd Qpeak (cms)= 0.197

PEAK FLOW (cms)= 0.038 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 13.301
TOTAL RAINFALL (mm)= 52.445
RUNOFF COEFFICIENT = 0.254

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

ADD HYD (0052)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0015):	7.08	0.261	3.17	13.04
+ ID2= 2 (0016):	0.62	0.038	3.00	13.30
ID = 3 (0052):	7.70	0.291	3.08	13.06

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
NASHYD (0001) | ID= 1 DT= 5.0 min

Area (ha)= 0.51 Curve Number (CN)= 54.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.11

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.10	1.583	5.20	3.083	11.50	4.58	3.20
0.167	2.10	1.667	5.20	3.167	11.50	4.67	3.20
0.250	2.10	1.750	5.20	3.250	11.50	4.75	3.20
0.333	2.10	1.833	5.20	3.333	11.50	4.83	3.20
0.417	2.10	1.917	5.20	3.417	11.50	4.92	3.20
0.500	2.10	2.000	5.20	3.500	11.50	5.00	3.20
0.583	3.20	2.083	6.30	3.583	5.20	5.08	2.10
0.667	3.20	2.167	6.30	3.667	5.20	5.17	2.10
0.750	3.20	2.250	6.30	3.750	5.20	5.25	2.10
0.833	3.20	2.333	6.30	3.833	5.20	5.33	2.10
0.917	3.20	2.417	6.30	3.917	5.20	5.42	2.10
1.000	3.20	2.500	6.30	4.000	5.20	5.50	2.10
1.083	3.20	2.583	31.40	4.083	4.20	5.58	2.10
1.167	3.20	2.667	31.40	4.167	4.20	5.67	2.10
1.250	3.20	2.750	31.40	4.250	4.20	5.75	2.10
1.333	3.20	2.833	81.78	4.333	4.20	5.83	2.10
1.417	3.20	2.917	81.78	4.417	4.20	5.92	2.10
1.500	3.20	3.000	81.78	4.500	4.20	6.00	2.10

Unit Hyd Qpeak (cms)= 0.177

PEAK FLOW (cms)= 0.020 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 8.375
TOTAL RAINFALL (mm)= 52.445
RUNOFF COEFFICIENT = 0.160

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

CALIB
NASHYD (0002) | ID= 1 DT= 5.0 min

Area (ha)= 2.37 Curve Number (CN)= 61.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.31

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.10	1.583	5.20	3.083	11.50	4.58	3.20
0.167	2.10	1.667	5.20	3.167	11.50	4.67	3.20

0.250	2.10	1.750	5.20	3.250	11.50	4.75	3.20
0.333	2.10	1.833	5.20	3.333	11.50	4.83	3.20
0.417	2.10	1.917	5.20	3.417	11.50	4.92	3.20
0.500	2.10	2.000	5.20	3.500	11.50	5.00	3.20
0.583	3.20	2.083	6.30	3.583	5.20	5.08	2.10
0.667	3.20	2.167	6.30	3.667	5.20	5.17	2.10
0.750	3.20	2.250	6.30	3.750	5.20	5.25	2.10
0.833	3.20	2.333	6.30	3.833	5.20	5.33	2.10
0.917	3.20	2.417	6.30	3.917	5.20	5.42	2.10
1.000	3.20	2.500	6.30	4.000	5.20	5.50	2.10
1.083	3.20	2.583	31.40	4.083	4.20	5.58	2.10
1.167	3.20	2.667	31.40	4.167	4.20	5.67	2.10
1.250	3.20	2.750	31.40	4.250	4.20	5.75	2.10
1.333	3.20	2.833	81.78	4.333	4.20	5.83	2.10
1.417	3.20	2.917	81.78	4.417	4.20	5.92	2.10
1.500	3.20	3.000	81.78	4.500	4.20	6.00	2.10

Unit Hyd Qpeak (cms)= 0.292

PEAK FLOW (cms)= 0.062 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 10.724
TOTAL RAINFALL (mm)= 52.445
RUNOFF COEFFICIENT = 0.204

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

CALIB
NASHYD (0003) | ID= 1 DT= 5.0 min

Area (ha)= 3.45 Curve Number (CN)= 68.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.27

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.10	1.583	5.20	3.083	11.50	4.58	3.20
0.167	2.10	1.667	5.20	3.167	11.50	4.67	3.20
0.250	2.10	1.750	5.20	3.250	11.50	4.75	3.20
0.333	2.10	1.833	5.20	3.333	11.50	4.83	3.20
0.417	2.10	1.917	5.20	3.417	11.50	4.92	3.20
0.500	2.10	2.000	5.20	3.500	11.50	5.00	3.20
0.583	3.20	2.083	6.30	3.583	5.20	5.08	2.10
0.667	3.20	2.167	6.30	3.667	5.20	5.17	2.10
0.750	3.20	2.250	6.30	3.750	5.20	5.25	2.10
0.833	3.20	2.333	6.30	3.833	5.20	5.33	2.10
0.917	3.20	2.417	6.30	3.917	5.20	5.42	2.10
1.000	3.20	2.500	6.30	4.000	5.20	5.50	2.10
1.083	3.20	2.583	31.40	4.083	4.20	5.58	2.10
1.167	3.20	2.667	31.40	4.167	4.20	5.67	2.10
1.250	3.20	2.750	31.40	4.250	4.20	5.75	2.10
1.333	3.20	2.833	81.78	4.333	4.20	5.83	2.10
1.417	3.20	2.917	81.78	4.417	4.20	5.92	2.10
1.500	3.20	3.000	81.78	4.500	4.20	6.00	2.10

Unit Hyd Qpeak (cms)= 0.488

PEAK FLOW (cms)= 0.127 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 13.473
TOTAL RAINFALL (mm)= 52.445
RUNOFF COEFFICIENT = 0.257

(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 (0001):	0.51	0.020	3.00	8.37
+ ID2= 2 (0002):	2.37	0.062	3.17	10.72
ID = 3 (0031):	2.88	0.071	3.08	10.31

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):      2.88    0.071     3.08     10.31
     + ID2= 2 (  0003):      3.45    0.127     3.17     13.47
       ==========================================================
       ID = 1 (  0031):      6.33    0.197     3.17     12.03

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

```
| RESERVOIR(  0030)|      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    |   0.4390      0.2741
                          0.0000     0.2739    |   0.0000      0.0000

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0031)      6.327     0.197      3.17      12.03
   OUTFLOW: ID= 1 (  0030)      6.327     0.000      0.00       0.00

                PEAK   FLOW   REDUCTION [Qout/Qin](%)=   0.00
                TIME SHIFT OF PEAK FLOW          (min)=******
                MAXIMUM  STORAGE   USED        (ha.m.)=  0.0761
```

```
| CALIB            |
| NASHYD  (  0005)|   Area     (ha)=   6.01   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)=   0.30

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

                          ---- TRANSFORMED HYETOGRAPH ----
 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
0.083    2.10 | 1.583    5.20 | 3.083   11.50 |  4.58    3.20
0.167    2.10 | 1.667    5.20 | 3.167   11.50 |  4.67    3.20
0.250    2.10 | 1.750    5.20 | 3.250   11.50 |  4.75    3.20
0.333    2.10 | 1.833    5.20 | 3.333   11.50 |  4.83    3.20
0.417    2.10 | 1.917    5.20 | 3.417   11.50 |  4.92    3.20
0.500    2.10 | 2.000    5.20 | 3.500   11.50 |  5.00    3.20
0.583    3.20 | 2.083    6.30 | 3.583    5.20 |  5.08    2.10
0.667    3.20 | 2.167    6.30 | 3.667    5.20 |  5.17    2.10
0.750    3.20 | 2.250    6.30 | 3.750    5.20 |  5.25    2.10
0.833    3.20 | 2.333    6.30 | 3.833    5.20 |  5.33    2.10
0.917    3.20 | 2.417    6.30 | 3.917    5.20 |  5.42    2.10
1.000    3.20 | 2.500    6.30 | 4.000    5.20 |  5.50    2.10
1.083    3.20 | 2.583   31.40 | 4.083    4.20 |  5.58    2.10
1.167    3.20 | 2.667   31.40 | 4.167    4.20 |  5.67    2.10
1.250    3.20 | 2.750   31.40 | 4.250    4.20 |  5.75    2.10
1.333    3.20 | 2.833   81.78 | 4.333    4.20 |  5.83    2.10
1.417    3.20 | 2.917   81.78 | 4.417    4.20 |  5.92    2.10
1.500    3.20 | 3.000   81.78 | 4.500    4.20 |  6.00    2.10

    Unit Hyd Qpeak  (cms)=   0.765

    PEAK FLOW       (cms)=   0.205 (i)
    TIME TO PEAK    (hrs)=   3.167
    RUNOFF VOLUME    (mm)=  13.476
    TOTAL RAINFALL   (mm)=  52.445
    RUNOFF COEFFICIENT    =   0.257

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

```
| CALIB            |
| NASHYD  (  0004)|   Area     (ha)=   4.81   Curve Number    (CN)= 61.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
-------------------   U.H.  Tp(hrs)=   0.32

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

                          ---- TRANSFORMED HYETOGRAPH ----
 TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
0.083    2.10 | 1.583    5.20 | 3.083   11.50 |  4.58    3.20
0.167    2.10 | 1.667    5.20 | 3.167   11.50 |  4.67    3.20
```



```
0.250    2.10 | 1.750    5.20 | 3.250   11.50 |  4.75    3.20
0.333    2.10 | 1.833    5.20 | 3.333   11.50 |  4.83    3.20
0.417    2.10 | 1.917    5.20 | 3.417   11.50 |  4.92    3.20
0.500    2.10 | 2.000    5.20 | 3.500   11.50 |  5.00    3.20
0.583    3.20 | 2.083    6.30 | 3.583    5.20 |  5.08    2.10
0.667    3.20 | 2.167    6.30 | 3.667    5.20 |  5.17    2.10
0.750    3.20 | 2.250    6.30 | 3.750    5.20 |  5.25    2.10
0.833    3.20 | 2.333    6.30 | 3.833    5.20 |  5.33    2.10
0.917    3.20 | 2.417    6.30 | 3.917    5.20 |  5.42    2.10
1.000    3.20 | 2.500    6.30 | 4.000    5.20 |  5.50    2.10
1.083    3.20 | 2.583   31.40 | 4.083    4.20 |  5.58    2.10
1.167    3.20 | 2.667   31.40 | 4.167    4.20 |  5.67    2.10
1.250    3.20 | 2.750   31.40 | 4.250    4.20 |  5.75    2.10
1.333    3.20 | 2.833   81.78 | 4.333    4.20 |  5.83    2.10
1.417    3.20 | 2.917   81.78 | 4.417    4.20 |  5.92    2.10
1.500    3.20 | 3.000   81.78 | 4.500    4.20 |  6.00    2.10

    Unit Hyd Qpeak  (cms)=   0.574

    PEAK FLOW       (cms)=   0.122 (i)
    TIME TO PEAK    (hrs)=   3.250
    RUNOFF VOLUME    (mm)=  10.724
    TOTAL RAINFALL   (mm)=  52.445
    RUNOFF COEFFICIENT    =   0.204

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

```
| ADD HYD  (  0054)|
|   1 +  2 =  3    |          AREA     QPEAK    TPEAK      R.V.
-------------------           (ha)     (cms)    (hrs)      (mm)
       ID1= 1 (  0030):      6.33    0.000     0.00       0.00
     + ID2= 2 (  0004):      4.81    0.122     3.25      10.72
       ==========================================================
       ID = 3 (  0054):     11.14    0.122     3.25       4.63

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

```
| ADD HYD  (  0054)|
|   3 +  2 =  1    |          AREA     QPEAK    TPEAK      R.V.
-------------------           (ha)     (cms)    (hrs)      (mm)
       ID1= 3 (  0054):     11.14    0.122     3.25       4.63
     + ID2= 2 (  0005):      6.01    0.205     3.17      13.48
       ==========================================================
       ID = 1 (  0054):     17.14    0.327     3.17       7.73

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

```
       V    V   I    SSSSS  U   U    A     L                (v 6.2.2015)
       V    V   I    SS     U   U   A A    L
        V  V    I     SS    U   U   AAAAA  L
        V  V    I      SS   U   U   A   A  L
         VV     I    SSSSS  UUUUU   A   A  LLLLL

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


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2.2015\VO2\voin.dat
  Output  filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\4d7a1cc0-1
  Summary filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\4d7a1cc0-1

DATE: 02-16-2024                          TIME: 03:17:56

USER:



COMMENTS: _____
```

```
**************************************************
** SIMULATION : 3 - Ptbo_SCS_6hr_10yr           **
**************************************************

-----------------------
|    READ STORM       |    Filename: C:\Users\lmattern\AppD
|                     |              ata\Local\Temp\
|                     |              a41db5fc-4f1a-47c6-b168-7af52acbbd15\8d610b08
| Ptotal= 61.60 mm    |    Comments: Ptbo_SCS_6hr_10yr
-----------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	2.50	1.50	6.20	3.00	13.50	4.50	3.70
0.25	2.50	1.75	6.20	3.25	13.50	4.75	3.70
0.50	3.70	2.00	7.40	3.50	6.20	5.00	2.50
0.75	3.70	2.25	7.40	3.75	6.20	5.25	2.50
1.00	3.70	2.50	36.90	4.00	4.90	5.50	2.50
1.25	3.70	2.75	95.90	4.25	4.90	5.75	2.50

```
-----------------------
| CALIB               |
| NASHYD   (  0006)|   Area     (ha)=   0.06   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)=   0.11

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.50	1.583	6.20	3.083	13.50	4.58	3.70
0.167	2.50	1.667	6.20	3.167	13.50	4.67	3.70
0.250	2.50	1.750	6.20	3.250	13.50	4.75	3.70
0.333	2.50	1.833	6.20	3.333	13.50	4.83	3.70
0.417	2.50	1.917	6.20	3.417	13.50	4.92	3.70
0.500	2.50	2.000	6.20	3.500	13.50	5.00	3.70
0.583	3.70	2.083	7.40	3.583	6.20	5.08	2.50
0.667	3.70	2.167	7.40	3.667	6.20	5.17	2.50
0.750	3.70	2.250	7.40	3.750	6.20	5.25	2.50
0.833	3.70	2.333	7.40	3.833	6.20	5.33	2.50
0.917	3.70	2.417	7.40	3.917	6.20	5.42	2.50
1.000	3.70	2.500	7.40	4.000	6.20	5.50	2.50
1.083	3.70	2.583	36.90	4.083	4.90	5.58	2.50
1.167	3.70	2.667	36.90	4.167	4.90	5.67	2.50
1.250	3.70	2.750	36.90	4.250	4.90	5.75	2.50
1.333	3.70	2.833	95.90	4.333	4.90	5.83	2.50
1.417	3.70	2.917	95.90	4.417	4.90	5.92	2.50
1.500	3.70	3.000	95.90	4.500	4.90	6.00	2.50

```
     Unit Hyd Qpeak  (cms)=   0.022

     PEAK FLOW       (cms)=   0.005 (i)
     TIME TO PEAK    (hrs)=   3.000
     RUNOFF VOLUME    (mm)=  17.849
     TOTAL RAINFALL   (mm)=  61.600
     RUNOFF COEFFICIENT    =   0.290

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

-----------------------
| CALIB               |
| NASHYD   (  0008)|   Area     (ha)=   0.76   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)=   0.11

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.50	1.583	6.20	3.083	13.50	4.58	3.70
0.167	2.50	1.667	6.20	3.167	13.50	4.67	3.70
0.250	2.50	1.750	6.20	3.250	13.50	4.75	3.70
0.333	2.50	1.833	6.20	3.333	13.50	4.83	3.70
0.417	2.50	1.917	6.20	3.417	13.50	4.92	3.70
0.500	2.50	2.000	6.20	3.500	13.50	5.00	3.70
0.583	3.70	2.083	7.40	3.583	6.20	5.08	2.50
0.667	3.70	2.167	7.40	3.667	6.20	5.17	2.50
0.750	3.70	2.250	7.40	3.750	6.20	5.25	2.50
0.833	3.70	2.333	7.40	3.833	6.20	5.33	2.50
0.917	3.70	2.417	7.40	3.917	6.20	5.42	2.50
1.000	3.70	2.500	7.40	4.000	6.20	5.50	2.50
1.083	3.70	2.583	36.90	4.083	4.90	5.58	2.50
1.167	3.70	2.667	36.90	4.167	4.90	5.67	2.50
1.250	3.70	2.750	36.90	4.250	4.90	5.75	2.50
1.333	3.70	2.833	95.90	4.333	4.90	5.83	2.50
1.417	3.70	2.917	95.90	4.417	4.90	5.92	2.50
1.500	3.70	3.000	95.90	4.500	4.90	6.00	2.50


```
     Unit Hyd Qpeak  (cms)=   0.264

     PEAK FLOW       (cms)=   0.065 (i)
     TIME TO PEAK    (hrs)=   3.000
     RUNOFF VOLUME    (mm)=  17.854
     TOTAL RAINFALL   (mm)=  61.600
     RUNOFF COEFFICIENT    =   0.290

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

-----------------------
| ADD HYD  (  0033)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
-------------------          (ha)     (cms)     (hrs)      (mm)
       ID1= 1 (  0006):     0.06     0.005      3.00     17.85
     + ID2= 2 (  0008):     0.76     0.065      3.00     17.85
     ==========================================================
       ID = 3 (  0033):     0.82     0.070      3.00     17.85

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

-----------------------
| CALIB               |
| NASHYD   (  0010)|   Area     (ha)=   5.74   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)=   0.18

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.50	1.583	6.20	3.083	13.50	4.58	3.70
0.167	2.50	1.667	6.20	3.167	13.50	4.67	3.70
0.250	2.50	1.750	6.20	3.250	13.50	4.75	3.70
0.333	2.50	1.833	6.20	3.333	13.50	4.83	3.70
0.417	2.50	1.917	6.20	3.417	13.50	4.92	3.70
0.500	2.50	2.000	6.20	3.500	13.50	5.00	3.70
0.583	3.70	2.083	7.40	3.583	6.20	5.08	2.50
0.667	3.70	2.167	7.40	3.667	6.20	5.17	2.50
0.750	3.70	2.250	7.40	3.750	6.20	5.25	2.50
0.833	3.70	2.333	7.40	3.833	6.20	5.33	2.50
0.917	3.70	2.417	7.40	3.917	6.20	5.42	2.50
1.000	3.70	2.500	7.40	4.000	6.20	5.50	2.50
1.083	3.70	2.583	36.90	4.083	4.90	5.58	2.50
1.167	3.70	2.667	36.90	4.167	4.90	5.67	2.50
1.250	3.70	2.750	36.90	4.250	4.90	5.75	2.50
1.333	3.70	2.833	95.90	4.333	4.90	5.83	2.50
1.417	3.70	2.917	95.90	4.417	4.90	5.92	2.50
1.500	3.70	3.000	95.90	4.500	4.90	6.00	2.50

```
     Unit Hyd Qpeak  (cms)=   1.219

     PEAK FLOW       (cms)=   0.370 (i)
     TIME TO PEAK    (hrs)=   3.083
     RUNOFF VOLUME    (mm)=  18.137
     TOTAL RAINFALL   (mm)=  61.600
     RUNOFF COEFFICIENT    =   0.294

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

-----------------------
| CALIB               |
| NASHYD   (  0012)|   Area     (ha)=  27.72   Curve Number    (CN)= 69.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
-------------------   U.H.  Tp(hrs)=   0.48
```

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.50	1.583	6.20	3.083	13.50	4.58	3.70
0.167	2.50	1.667	6.20	3.167	13.50	4.67	3.70
0.250	2.50	1.750	6.20	3.250	13.50	4.75	3.70
0.333	2.50	1.833	6.20	3.333	13.50	4.83	3.70
0.417	2.50	1.917	6.20	3.417	13.50	4.92	3.70
0.500	2.50	2.000	6.20	3.500	13.50	5.00	3.70
0.583	3.70	2.083	7.40	3.583	6.20	5.08	2.50
0.667	3.70	2.167	7.40	3.667	6.20	5.17	2.50
0.750	3.70	2.250	7.40	3.750	6.20	5.25	2.50
0.833	3.70	2.333	7.40	3.833	6.20	5.33	2.50
0.917	3.70	2.417	7.40	3.917	6.20	5.42	2.50
1.000	3.70	2.500	7.40	4.000	6.20	5.50	2.50
1.083	3.70	2.583	36.90	4.083	4.90	5.58	2.50
1.167	3.70	2.667	36.90	4.167	4.90	5.67	2.50
1.250	3.70	2.750	36.90	4.250	4.90	5.75	2.50
1.333	3.70	2.833	95.90	4.333	4.90	5.83	2.50
1.417	3.70	2.917	95.90	4.417	4.90	5.92	2.50
1.500	3.70	3.000	95.90	4.500	4.90	6.00	2.50

Unit Hyd Qpeak (cms)= 2.206

PEAK FLOW (cms)= 0.949 (i)
TIME TO PEAK (hrs)= 3.417
RUNOFF VOLUME (mm)= 18.764
TOTAL RAINFALL (mm)= 61.600
RUNOFF COEFFICIENT = 0.305

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

CALIB NASHYD (0007)	Area (ha)= 0.15	Curve Number (CN)= 64.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.11	

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.50	1.583	6.20	3.083	13.50	4.58	3.70
0.167	2.50	1.667	6.20	3.167	13.50	4.67	3.70
0.250	2.50	1.750	6.20	3.250	13.50	4.75	3.70
0.333	2.50	1.833	6.20	3.333	13.50	4.83	3.70
0.417	2.50	1.917	6.20	3.417	13.50	4.92	3.70
0.500	2.50	2.000	6.20	3.500	13.50	5.00	3.70
0.583	3.70	2.083	7.40	3.583	6.20	5.08	2.50
0.667	3.70	2.167	7.40	3.667	6.20	5.17	2.50
0.750	3.70	2.250	7.40	3.750	6.20	5.25	2.50
0.833	3.70	2.333	7.40	3.833	6.20	5.33	2.50
0.917	3.70	2.417	7.40	3.917	6.20	5.42	2.50
1.000	3.70	2.500	7.40	4.000	6.20	5.50	2.50
1.083	3.70	2.583	36.90	4.083	4.90	5.58	2.50
1.167	3.70	2.667	36.90	4.167	4.90	5.67	2.50
1.250	3.70	2.750	36.90	4.250	4.90	5.75	2.50
1.333	3.70	2.833	95.90	4.333	4.90	5.83	2.50
1.417	3.70	2.917	95.90	4.417	4.90	5.92	2.50
1.500	3.70	3.000	95.90	4.500	4.90	6.00	2.50

Unit Hyd Qpeak (cms)= 0.053

PEAK FLOW (cms)= 0.012 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 15.763
TOTAL RAINFALL (mm)= 61.600
RUNOFF COEFFICIENT = 0.256

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

CALIB NASHYD (0009)	Area (ha)= 8.40	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)= 0.48	

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.50	1.583	6.20	3.083	13.50	4.58	3.70
0.167	2.50	1.667	6.20	3.167	13.50	4.67	3.70
0.250	2.50	1.750	6.20	3.250	13.50	4.75	3.70
0.333	2.50	1.833	6.20	3.333	13.50	4.83	3.70
0.417	2.50	1.917	6.20	3.417	13.50	4.92	3.70
0.500	2.50	2.000	6.20	3.500	13.50	5.00	3.70
0.583	3.70	2.083	7.40	3.583	6.20	5.08	2.50
0.667	3.70	2.167	7.40	3.667	6.20	5.17	2.50
0.750	3.70	2.250	7.40	3.750	6.20	5.25	2.50
0.833	3.70	2.333	7.40	3.833	6.20	5.33	2.50
0.917	3.70	2.417	7.40	3.917	6.20	5.42	2.50
1.000	3.70	2.500	7.40	4.000	6.20	5.50	2.50
1.083	3.70	2.583	36.90	4.083	4.90	5.58	2.50
1.167	3.70	2.667	36.90	4.167	4.90	5.67	2.50
1.250	3.70	2.750	36.90	4.250	4.90	5.75	2.50
1.333	3.70	2.833	95.90	4.333	4.90	5.83	2.50
1.417	3.70	2.917	95.90	4.417	4.90	5.92	2.50
1.500	3.70	3.000	95.90	4.500	4.90	6.00	2.50

Unit Hyd Qpeak (cms)= 0.668

PEAK FLOW (cms)= 0.278 (i)
TIME TO PEAK (hrs)= 3.417
RUNOFF VOLUME (mm)= 18.187
TOTAL RAINFALL (mm)= 61.600
RUNOFF COEFFICIENT = 0.295

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

ADD HYD (0047)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0007):		0.15	0.012	3.00	15.76
+ ID2= 2 (0009):		8.40	0.278	3.42	18.19
ID = 3 (0047):		8.55	0.280	3.42	18.14

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0053)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):		5.74	0.370	3.08	18.14
+ ID2= 2 (0012):		27.72	0.949	3.42	18.76
ID = 3 (0053):		33.46	1.125	3.25	18.66

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0053)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0053):		33.46	1.125	3.25	18.66
+ ID2= 2 (0047):		8.55	0.280	3.42	18.14
ID = 1 (0053):		42.01	1.396	3.33	18.55

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0035)	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	2.0910	0.0135

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0053)	42.012	1.396	3.33	18.55
OUTFLOW: ID= 1 (0035)	42.012	1.397	3.33	18.55

```
                    PEAK    FLOW    REDUCTION [Qout/Qin](%)=100.05
                    TIME SHIFT OF PEAK FLOW            (min)=  0.00
                    MAXIMUM  STORAGE    USED         (ha.m.)=  0.0090

     **** WARNING : HYDROGRAPH PEAK WAS NOT REDUCED.
                    CHECK OUTFLOW/STORAGE TABLE  OR REDUCE DT.
```

CALIB			
NASHYD (0011)	Area (ha)=	3.66	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)=	0.30	

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.50	1.583	6.20	3.083	13.50	4.58	3.70
0.167	2.50	1.667	6.20	3.167	13.50	4.67	3.70
0.250	2.50	1.750	6.20	3.250	13.50	4.75	3.70
0.333	2.50	1.833	6.20	3.333	13.50	4.83	3.70
0.417	2.50	1.917	6.20	3.417	13.50	4.92	3.70
0.500	2.50	2.000	6.20	3.500	13.50	5.00	3.70
0.583	3.70	2.083	7.40	3.583	6.20	5.08	2.50
0.667	3.70	2.167	7.40	3.667	6.20	5.17	2.50
0.750	3.70	2.250	7.40	3.750	6.20	5.25	2.50
0.833	3.70	2.333	7.40	3.833	6.20	5.33	2.50
0.917	3.70	2.417	7.40	3.917	6.20	5.42	2.50
1.000	3.70	2.500	7.40	4.000	6.20	5.50	2.50
1.083	3.70	2.583	36.90	4.083	4.90	5.58	2.50
1.167	3.70	2.667	36.90	4.167	4.90	5.67	2.50
1.250	3.70	2.750	36.90	4.250	4.90	5.75	2.50
1.333	3.70	2.833	95.90	4.333	4.90	5.83	2.50
1.417	3.70	2.917	95.90	4.417	4.90	5.92	2.50
1.500	3.70	3.000	95.90	4.500	4.90	6.00	2.50

```
     Unit Hyd Qpeak  (cms)=   0.466

     PEAK FLOW       (cms)=   0.170 (i)
     TIME TO PEAK    (hrs)=   3.167
     RUNOFF VOLUME    (mm)=  18.181
     TOTAL RAINFALL   (mm)=  61.600
     RUNOFF COEFFICIENT   =   0.295

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

CALIB			
NASHYD (0013)	Area (ha)=	4.75	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)=	0.25	

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.50	1.583	6.20	3.083	13.50	4.58	3.70
0.167	2.50	1.667	6.20	3.167	13.50	4.67	3.70
0.250	2.50	1.750	6.20	3.250	13.50	4.75	3.70
0.333	2.50	1.833	6.20	3.333	13.50	4.83	3.70
0.417	2.50	1.917	6.20	3.417	13.50	4.92	3.70
0.500	2.50	2.000	6.20	3.500	13.50	5.00	3.70
0.583	3.70	2.083	7.40	3.583	6.20	5.08	2.50
0.667	3.70	2.167	7.40	3.667	6.20	5.17	2.50
0.750	3.70	2.250	7.40	3.750	6.20	5.25	2.50
0.833	3.70	2.333	7.40	3.833	6.20	5.33	2.50
0.917	3.70	2.417	7.40	3.917	6.20	5.42	2.50
1.000	3.70	2.500	7.40	4.000	6.20	5.50	2.50
1.083	3.70	2.583	36.90	4.083	4.90	5.58	2.50
1.167	3.70	2.667	36.90	4.167	4.90	5.67	2.50
1.250	3.70	2.750	36.90	4.250	4.90	5.75	2.50
1.333	3.70	2.833	95.90	4.333	4.90	5.83	2.50
1.417	3.70	2.917	95.90	4.417	4.90	5.92	2.50
1.500	3.70	3.000	95.90	4.500	4.90	6.00	2.50

```
     Unit Hyd Qpeak  (cms)=   0.725

     PEAK FLOW       (cms)=   0.246 (i)
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```
     TIME TO PEAK    (hrs)=   3.083
     RUNOFF VOLUME    (mm)=  18.174
     TOTAL RAINFALL   (mm)=  61.600
     RUNOFF COEFFICIENT   =   0.295

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

CALIB			
NASHYD (0014)	Area (ha)=	11.81	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)=	0.33	

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.50	1.583	6.20	3.083	13.50	4.58	3.70
0.167	2.50	1.667	6.20	3.167	13.50	4.67	3.70
0.250	2.50	1.750	6.20	3.250	13.50	4.75	3.70
0.333	2.50	1.833	6.20	3.333	13.50	4.83	3.70
0.417	2.50	1.917	6.20	3.417	13.50	4.92	3.70
0.500	2.50	2.000	6.20	3.500	13.50	5.00	3.70
0.583	3.70	2.083	7.40	3.583	6.20	5.08	2.50
0.667	3.70	2.167	7.40	3.667	6.20	5.17	2.50
0.750	3.70	2.250	7.40	3.750	6.20	5.25	2.50
0.833	3.70	2.333	7.40	3.833	6.20	5.33	2.50
0.917	3.70	2.417	7.40	3.917	6.20	5.42	2.50
1.000	3.70	2.500	7.40	4.000	6.20	5.50	2.50
1.083	3.70	2.583	36.90	4.083	4.90	5.58	2.50
1.167	3.70	2.667	36.90	4.167	4.90	5.67	2.50
1.250	3.70	2.750	36.90	4.250	4.90	5.75	2.50
1.333	3.70	2.833	95.90	4.333	4.90	5.83	2.50
1.417	3.70	2.917	95.90	4.417	4.90	5.92	2.50
1.500	3.70	3.000	95.90	4.500	4.90	6.00	2.50

```
     Unit Hyd Qpeak  (cms)=   1.367

     PEAK FLOW       (cms)=   0.508 (i)
     TIME TO PEAK    (hrs)=   3.250
     RUNOFF VOLUME    (mm)=  18.184
     TOTAL RAINFALL   (mm)=  61.600
     RUNOFF COEFFICIENT   =   0.295

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

ADD HYD (0046)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0011):	3.66	0.170	3.17	18.18
+ ID2= 2 (0013):	4.75	0.246	3.08	18.17
ID = 3 (0046):	8.41	0.416	3.17	18.18

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0046)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0046):	8.41	0.416	3.17	18.18
+ ID2= 2 (0014):	11.81	0.508	3.25	18.18
ID = 1 (0046):	20.22	0.922	3.17	18.18

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0046)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0046):	20.22	0.922	3.17	18.18
+ ID2= 2 (0035):	42.01	1.397	3.33	18.55
ID = 3 (0046):	62.23	2.274	3.25	18.43

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB					
NASHYD (0015)	Area	(ha)=	7.08	Curve Number	(CN)= 67.0
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.	(N)= 3.00
	U.H. Tp(hrs)=		0.25		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.50	1.583	6.20	3.083	13.50	4.58	3.70
0.167	2.50	1.667	6.20	3.167	13.50	4.67	3.70
0.250	2.50	1.750	6.20	3.250	13.50	4.75	3.70
0.333	2.50	1.833	6.20	3.333	13.50	4.83	3.70
0.417	2.50	1.917	6.20	3.417	13.50	4.92	3.70
0.500	2.50	2.000	6.20	3.500	13.50	5.00	3.70
0.583	3.70	2.083	7.40	3.583	6.20	5.08	2.50
0.667	3.70	2.167	7.40	3.667	6.20	5.17	2.50
0.750	3.70	2.250	7.40	3.750	6.20	5.25	2.50
0.833	3.70	2.333	7.40	3.833	6.20	5.33	2.50
0.917	3.70	2.417	7.40	3.917	6.20	5.42	2.50
1.000	3.70	2.500	7.40	4.000	6.20	5.50	2.50
1.083	3.70	2.583	36.90	4.083	4.90	5.58	2.50
1.167	3.70	2.667	36.90	4.167	4.90	5.67	2.50
1.250	3.70	2.750	36.90	4.250	4.90	5.75	2.50
1.333	3.70	2.833	95.90	4.333	4.90	5.83	2.50
1.417	3.70	2.917	95.90	4.417	4.90	5.92	2.50
1.500	3.70	3.000	95.90	4.500	4.90	6.00	2.50

Unit Hyd Qpeak (cms)= 1.082

PEAK FLOW (cms)= 0.355 (i)
TIME TO PEAK (hrs)= 3.083
RUNOFF VOLUME (mm)= 17.617
TOTAL RAINFALL (mm)= 61.600
RUNOFF COEFFICIENT = 0.286

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

CALIB					
NASHYD (0016)	Area	(ha)=	0.62	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)=		0.12		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.50	1.583	6.20	3.083	13.50	4.58	3.70
0.167	2.50	1.667	6.20	3.167	13.50	4.67	3.70
0.250	2.50	1.750	6.20	3.250	13.50	4.75	3.70
0.333	2.50	1.833	6.20	3.333	13.50	4.83	3.70
0.417	2.50	1.917	6.20	3.417	13.50	4.92	3.70
0.500	2.50	2.000	6.20	3.500	13.50	5.00	3.70
0.583	3.70	2.083	7.40	3.583	6.20	5.08	2.50
0.667	3.70	2.167	7.40	3.667	6.20	5.17	2.50
0.750	3.70	2.250	7.40	3.750	6.20	5.25	2.50
0.833	3.70	2.333	7.40	3.833	6.20	5.33	2.50
0.917	3.70	2.417	7.40	3.917	6.20	5.42	2.50
1.000	3.70	2.500	7.40	4.000	6.20	5.50	2.50
1.083	3.70	2.583	36.90	4.083	4.90	5.58	2.50
1.167	3.70	2.667	36.90	4.167	4.90	5.67	2.50
1.250	3.70	2.750	36.90	4.250	4.90	5.75	2.50
1.333	3.70	2.833	95.90	4.333	4.90	5.83	2.50
1.417	3.70	2.917	95.90	4.417	4.90	5.92	2.50
1.500	3.70	3.000	95.90	4.500	4.90	6.00	2.50

Unit Hyd Qpeak (cms)= 0.197

PEAK FLOW (cms)= 0.051 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 17.945
TOTAL RAINFALL (mm)= 61.600
RUNOFF COEFFICIENT = 0.291

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

ADD HYD (0052)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0015):	7.08	0.355	3.08	17.62
	+ ID2= 2 (0016):	0.62	0.051	3.00	17.95
	ID = 3 (0052):	7.70	0.396	3.08	17.64

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB					
NASHYD (0001)	Area	(ha)=	0.51	Curve Number	(CN)= 54.0
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.	(N)= 3.00
	U.H. Tp(hrs)=		0.11		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.50	1.583	6.20	3.083	13.50	4.58	3.70
0.167	2.50	1.667	6.20	3.167	13.50	4.67	3.70
0.250	2.50	1.750	6.20	3.250	13.50	4.75	3.70
0.333	2.50	1.833	6.20	3.333	13.50	4.83	3.70
0.417	2.50	1.917	6.20	3.417	13.50	4.92	3.70
0.500	2.50	2.000	6.20	3.500	13.50	5.00	3.70
0.583	3.70	2.083	7.40	3.583	6.20	5.08	2.50
0.667	3.70	2.167	7.40	3.667	6.20	5.17	2.50
0.750	3.70	2.250	7.40	3.750	6.20	5.25	2.50
0.833	3.70	2.333	7.40	3.833	6.20	5.33	2.50
0.917	3.70	2.417	7.40	3.917	6.20	5.42	2.50
1.000	3.70	2.500	7.40	4.000	6.20	5.50	2.50
1.083	3.70	2.583	36.90	4.083	4.90	5.58	2.50
1.167	3.70	2.667	36.90	4.167	4.90	5.67	2.50
1.250	3.70	2.750	36.90	4.250	4.90	5.75	2.50
1.333	3.70	2.833	95.90	4.333	4.90	5.83	2.50
1.417	3.70	2.917	95.90	4.417	4.90	5.92	2.50
1.500	3.70	3.000	95.90	4.500	4.90	6.00	2.50

Unit Hyd Qpeak (cms)= 0.177

PEAK FLOW (cms)= 0.028 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 11.520
TOTAL RAINFALL (mm)= 61.600
RUNOFF COEFFICIENT = 0.187

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

CALIB					
NASHYD (0002)	Area	(ha)=	2.37	Curve Number	(CN)= 61.0
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.	(N)= 3.00
	U.H. Tp(hrs)=		0.31		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.50	1.583	6.20	3.083	13.50	4.58	3.70
0.167	2.50	1.667	6.20	3.167	13.50	4.67	3.70
0.250	2.50	1.750	6.20	3.250	13.50	4.75	3.70
0.333	2.50	1.833	6.20	3.333	13.50	4.83	3.70
0.417	2.50	1.917	6.20	3.417	13.50	4.92	3.70
0.500	2.50	2.000	6.20	3.500	13.50	5.00	3.70
0.583	3.70	2.083	7.40	3.583	6.20	5.08	2.50
0.667	3.70	2.167	7.40	3.667	6.20	5.17	2.50
0.750	3.70	2.250	7.40	3.750	6.20	5.25	2.50
0.833	3.70	2.333	7.40	3.833	6.20	5.33	2.50
0.917	3.70	2.417	7.40	3.917	6.20	5.42	2.50
1.000	3.70	2.500	7.40	4.000	6.20	5.50	2.50
1.083	3.70	2.583	36.90	4.083	4.90	5.58	2.50
1.167	3.70	2.667	36.90	4.167	4.90	5.67	2.50
1.250	3.70	2.750	36.90	4.250	4.90	5.75	2.50
1.333	3.70	2.833	95.90	4.333	4.90	5.83	2.50

1.417	3.70	2.917	95.90	4.417	4.90	5.92	2.50
1.500	3.70	3.000	95.90	4.500	4.90	6.00	2.50

Unit Hyd Qpeak (cms)= 0.292

PEAK FLOW (cms)= 0.085 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 14.623
TOTAL RAINFALL (mm)= 61.600
RUNOFF COEFFICIENT = 0.237

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

CALIB					
NASHYD (0003)	Area (ha)=	3.45	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)=	0.27			

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.50	1.583	6.20	3.083	13.50	4.58	3.70
0.167	2.50	1.667	6.20	3.167	13.50	4.67	3.70
0.250	2.50	1.750	6.20	3.250	13.50	4.75	3.70
0.333	2.50	1.833	6.20	3.333	13.50	4.83	3.70
0.417	2.50	1.917	6.20	3.417	13.50	4.92	3.70
0.500	2.50	2.000	6.20	3.500	13.50	5.00	3.70
0.583	3.70	2.083	7.40	3.583	6.20	5.08	2.50
0.667	3.70	2.167	7.40	3.667	6.20	5.17	2.50
0.750	3.70	2.250	7.40	3.750	6.20	5.25	2.50
0.833	3.70	2.333	7.40	3.833	6.20	5.33	2.50
0.917	3.70	2.417	7.40	3.917	6.20	5.42	2.50
1.000	3.70	2.500	7.40	4.000	6.20	5.50	2.50
1.083	3.70	2.583	36.90	4.083	4.90	5.58	2.50
1.167	3.70	2.667	36.90	4.167	4.90	5.67	2.50
1.250	3.70	2.750	36.90	4.250	4.90	5.75	2.50
1.333	3.70	2.833	95.90	4.333	4.90	5.83	2.50
1.417	3.70	2.917	95.90	4.417	4.90	5.92	2.50
1.500	3.70	3.000	95.90	4.500	4.90	6.00	2.50

Unit Hyd Qpeak (cms)= 0.488

PEAK FLOW (cms)= 0.172 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 18.178
TOTAL RAINFALL (mm)= 61.600
RUNOFF COEFFICIENT = 0.295

(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 (0001):	0.51	0.028	3.00	11.52
	+ ID2= 2 (0002):	2.37	0.085	3.17	14.62
	ID = 3 (0031):	2.88	0.098	3.08	14.07

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):	2.88	0.098	3.08	14.07
	+ ID2= 2 (0003):	3.45	0.172	3.17	18.18
	ID = 1 (0031):	6.33	0.269	3.17	16.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0030)	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	0.4390	0.2741
	0.0000	0.2739	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0031)	6.327	0.269	3.17	16.31
OUTFLOW: ID= 1 (0030)	6.327	0.000	0.00	0.00

PEAK FLOW REDUCTION [Qout/Qin](%)= 0.00
TIME SHIFT OF PEAK FLOW (min)=******
MAXIMUM STORAGE USED (ha.m.)= 0.1032

CALIB					
NASHYD (0005)	Area (ha)=	6.01	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)=	0.30			

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.50	1.583	6.20	3.083	13.50	4.58	3.70
0.167	2.50	1.667	6.20	3.167	13.50	4.67	3.70
0.250	2.50	1.750	6.20	3.250	13.50	4.75	3.70
0.333	2.50	1.833	6.20	3.333	13.50	4.83	3.70
0.417	2.50	1.917	6.20	3.417	13.50	4.92	3.70
0.500	2.50	2.000	6.20	3.500	13.50	5.00	3.70
0.583	3.70	2.083	7.40	3.583	6.20	5.08	2.50
0.667	3.70	2.167	7.40	3.667	6.20	5.17	2.50
0.750	3.70	2.250	7.40	3.750	6.20	5.25	2.50
0.833	3.70	2.333	7.40	3.833	6.20	5.33	2.50
0.917	3.70	2.417	7.40	3.917	6.20	5.42	2.50
1.000	3.70	2.500	7.40	4.000	6.20	5.50	2.50
1.083	3.70	2.583	36.90	4.083	4.90	5.58	2.50
1.167	3.70	2.667	36.90	4.167	4.90	5.67	2.50
1.250	3.70	2.750	36.90	4.250	4.90	5.75	2.50
1.333	3.70	2.833	95.90	4.333	4.90	5.83	2.50
1.417	3.70	2.917	95.90	4.417	4.90	5.92	2.50
1.500	3.70	3.000	95.90	4.500	4.90	6.00	2.50

Unit Hyd Qpeak (cms)= 0.765

PEAK FLOW (cms)= 0.279 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 18.182
TOTAL RAINFALL (mm)= 61.600
RUNOFF COEFFICIENT = 0.295

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

CALIB					
NASHYD (0004)	Area (ha)=	4.81	Curve Number (CN)=	61.0	
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00	
	U.H. Tp(hrs)=	0.32			

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.50	1.583	6.20	3.083	13.50	4.58	3.70
0.167	2.50	1.667	6.20	3.167	13.50	4.67	3.70
0.250	2.50	1.750	6.20	3.250	13.50	4.75	3.70
0.333	2.50	1.833	6.20	3.333	13.50	4.83	3.70
0.417	2.50	1.917	6.20	3.417	13.50	4.92	3.70
0.500	2.50	2.000	6.20	3.500	13.50	5.00	3.70
0.583	3.70	2.083	7.40	3.583	6.20	5.08	2.50
0.667	3.70	2.167	7.40	3.667	6.20	5.17	2.50
0.750	3.70	2.250	7.40	3.750	6.20	5.25	2.50
0.833	3.70	2.333	7.40	3.833	6.20	5.33	2.50
0.917	3.70	2.417	7.40	3.917	6.20	5.42	2.50
1.000	3.70	2.500	7.40	4.000	6.20	5.50	2.50
1.083	3.70	2.583	36.90	4.083	4.90	5.58	2.50
1.167	3.70	2.667	36.90	4.167	4.90	5.67	2.50
1.250	3.70	2.750	36.90	4.250	4.90	5.75	2.50
1.333	3.70	2.833	95.90	4.333	4.90	5.83	2.50

1.417	3.70	2.917	95.90	4.417	4.90	5.92	2.50
1.500	3.70	3.000	95.90	4.500	4.90	6.00	2.50

Unit Hyd Qpeak (cms)= 0.574

PEAK FLOW (cms)= 0.168 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 14.624
TOTAL RAINFALL (mm)= 61.600
RUNOFF COEFFICIENT = 0.237

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

ADD HYD (0054)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0030):		6.33	0.000	0.00	0.00
+ ID2= 2 (0004):		4.81	0.168	3.17	14.62
ID = 3 (0054):		11.14	0.168	3.17	6.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0054)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0054):		11.14	0.168	3.17	6.32
+ ID2= 2 (0005):		6.01	0.279	3.17	18.18
ID = 1 (0054):		17.14	0.446	3.17	10.47

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
       V    V   I    SSSSS  U   U    A     L              (v 6.2.2015)
       V    V   I    SS     U   U   A A    L
        V  V    I      SS   U   U  AAAAA   L
        V  V    I       SS  U   U  A   A   L
         VV     I    SSSSS  UUUUU  A   A   LLLLL

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

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2.2015\VO2\voin.dat
Output filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\049c2faf-f
Summary filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\049c2faf-f

DATE: 02-16-2024 TIME: 03:17:56

USER:

COMMENTS: _____

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  ************************************************
  ** SIMULATION : 4 - Ptbo_SCS_6hr_25yr          **
  ************************************************
```

READ STORM	Filename: C:\Users\lmattern\AppD ata\Local\Temp\ a41db5fc-4f1a-47c6-b168-7af52acbbd15\87edc8f5
Ptotal= 72.90 mm	Comments: Ptbo_SCS_6hr_25yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	2.90	1.50	7.30	3.00	16.00	4.50	4.40
0.25	2.90	1.75	7.30	3.25	16.00	4.75	4.40
0.50	4.40	2.00	8.80	3.50	7.30	5.00	2.90
0.75	4.40	2.25	8.80	3.75	7.30	5.25	2.90
1.00	4.40	2.50	43.70	4.00	5.80	5.50	2.90
1.25	4.40	2.75	113.70	4.25	5.80	5.75	2.90

CALIB			
NASHYD (0006)	Area (ha)=	0.06	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)=	0.11	

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90
0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

Unit Hyd Qpeak (cms)= 0.022

PEAK FLOW (cms)= 0.007 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 24.139
TOTAL RAINFALL (mm)= 72.900
RUNOFF COEFFICIENT = 0.331

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

CALIB			
NASHYD (0008)	Area (ha)=	0.76	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)=	0.11	

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90
0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

Unit Hyd Qpeak (cms)= 0.264

PEAK FLOW (cms)= 0.088 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 24.145
TOTAL RAINFALL (mm)= 72.900
RUNOFF COEFFICIENT = 0.331

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

ADD HYD (0033)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0006):		0.06	0.007	3.00	24.14
+ ID2= 2 (0008):		0.76	0.088	3.00	24.15
ID = 3 (0033):		0.82	0.096	3.00	24.14

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB NASHYD (0010)	Area (ha)= 5.74	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)= 0.18	

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90
0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

Unit Hyd Qpeak (cms)= 1.219

PEAK FLOW (cms)= 0.504 (i)
TIME TO PEAK (hrs)= 3.083
RUNOFF VOLUME (mm)= 24.528
TOTAL RAINFALL (mm)= 72.900
RUNOFF COEFFICIENT = 0.336

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

CALIB NASHYD (0012)	Area (ha)= 27.72	Curve Number (CN)= 69.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.48	

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90
0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

Unit Hyd Qpeak (cms)= 2.206

PEAK FLOW (cms)= 1.294 (i)
TIME TO PEAK (hrs)= 3.417
RUNOFF VOLUME (mm)= 25.328
TOTAL RAINFALL (mm)= 72.900
RUNOFF COEFFICIENT = 0.347

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

CALIB NASHYD (0007)	Area (ha)= 0.15	Curve Number (CN)= 64.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.11	

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90
0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

Unit Hyd Qpeak (cms)= 0.053

PEAK FLOW (cms)= 0.016 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 21.469
TOTAL RAINFALL (mm)= 72.900
RUNOFF COEFFICIENT = 0.295

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

CALIB NASHYD (0009)	Area (ha)= 8.40	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)= 0.48	

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90

0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

Unit Hyd Qpeak (cms)= 0.668

PEAK FLOW (cms)= 0.380 (i)
TIME TO PEAK (hrs)= 3.417
RUNOFF VOLUME (mm)= 24.597
TOTAL RAINFALL (mm)= 72.900
RUNOFF COEFFICIENT = 0.337

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

ADD HYD (0047)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0007):	0.15	0.016	3.00	21.47
+ ID2= 2 (0009):	8.40	0.380	3.42	24.60
ID = 3 (0047):	8.55	0.383	3.42	24.54

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0053)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):	5.74	0.504	3.08	24.53
+ ID2= 2 (0012):	27.72	1.294	3.42	25.33
ID = 3 (0053):	33.46	1.538	3.25	25.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0053)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0053):	33.46	1.538	3.25	25.19
+ ID2= 2 (0047):	8.55	0.383	3.42	24.54
ID = 1 (0053):	42.01	1.905	3.33	25.06

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0035) 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	2.0910	0.0135

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0053)	42.012	1.905	3.33	25.06
OUTFLOW: ID= 1 (0035)	42.012	1.907	3.33	25.06

PEAK FLOW REDUCTION [Qout/Qin](%)=100.11
TIME SHIFT OF PEAK FLOW (min)= 0.00
MAXIMUM STORAGE USED (ha.m.)= 0.0123

**** WARNING : HYDROGRAPH PEAK WAS NOT REDUCED.
CHECK OUTFLOW/STORAGE TABLE OR REDUCE DT.

CALIB
NASHYD (0011)
ID= 1 DT= 5.0 min

Area (ha)= 3.66 Curve Number (CN)= 68.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.30

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90
0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

Unit Hyd Qpeak (cms)= 0.466

PEAK FLOW (cms)= 0.232 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 24.588
TOTAL RAINFALL (mm)= 72.900
RUNOFF COEFFICIENT = 0.337

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

CALIB
NASHYD (0013)
ID= 1 DT= 5.0 min

Area (ha)= 4.75 Curve Number (CN)= 68.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.25

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90
0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

Unit Hyd Qpeak (cms)= 0.725

PEAK FLOW (cms)= 0.337 (i)
TIME TO PEAK (hrs)= 3.083
RUNOFF VOLUME (mm)= 24.578
TOTAL RAINFALL (mm)= 72.900
RUNOFF COEFFICIENT = 0.337

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

CALIB
NASHYD (0014)
ID= 1 DT= 5.0 min

Area (ha)= 11.81 Curve Number (CN)= 68.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.33

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90
0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

Unit Hyd Qpeak (cms)= 1.367

PEAK FLOW (cms)= 0.694 (i)
TIME TO PEAK (hrs)= 3.250
RUNOFF VOLUME (mm)= 24.592
TOTAL RAINFALL (mm)= 72.900
RUNOFF COEFFICIENT = 0.337

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

ADD HYD (0046)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0011):	3.66	0.232	3.17	24.59
+ ID2= 2 (0013):	4.75	0.337	3.08	24.58
ID = 3 (0046):	8.41	0.567	3.17	24.58

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0046)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0046):	8.41	0.567	3.17	24.58
+ ID2= 2 (0014):	11.81	0.694	3.25	24.59
ID = 1 (0046):	20.22	1.260	3.17	24.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0046)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0046):	20.22	1.260	3.17	24.59
+ ID2= 2 (0035):	42.01	1.907	3.33	25.06
ID = 3 (0046):	62.23	3.108	3.25	24.91

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB
NASHYD (0015)
ID= 1 DT= 5.0 min

Area (ha)= 7.08 Curve Number (CN)= 67.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.25

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

---- TRANSFORMED HYETOGRAPH ----

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

0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90
0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

Unit Hyd Qpeak (cms)= 1.082

PEAK FLOW (cms)= 0.487 (i)
TIME TO PEAK (hrs)= 3.083
RUNOFF VOLUME (mm)= 23.869
TOTAL RAINFALL (mm)= 72.900
RUNOFF COEFFICIENT = 0.327

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

CALIB
NASHYD (0016)
ID= 1 DT= 5.0 min

Area (ha)= 0.62 Curve Number (CN)= 68.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.12

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90
0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

Unit Hyd Qpeak (cms)= 0.197

PEAK FLOW (cms)= 0.069 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 24.269
TOTAL RAINFALL (mm)= 72.900
RUNOFF COEFFICIENT = 0.333

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

ADD HYD (0052)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0015):	7.08	0.487	3.08	23.87
+ ID2= 2 (0016):	0.62	0.069	3.00	24.27
ID = 3 (0052):	7.70	0.542	3.08	23.90

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| CALIB                |
| NASHYD   (  0001)|   Area     (ha)=   0.51   Curve Number    (CN)= 54.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
---------------------   U.H.  Tp(hrs)=   0.11
```

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90
0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

Unit Hyd Qpeak (cms)= 0.177

PEAK FLOW (cms)= 0.039 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 15.920
TOTAL RAINFALL (mm)= 72.900
RUNOFF COEFFICIENT = 0.218

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

```
| CALIB                |
| NASHYD   (  0002)|   Area     (ha)=   2.37   Curve Number    (CN)= 61.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
---------------------   U.H.  Tp(hrs)=   0.31
```

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90
0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

Unit Hyd Qpeak (cms)= 0.292

PEAK FLOW (cms)= 0.118 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 20.013
TOTAL RAINFALL (mm)= 72.900
RUNOFF COEFFICIENT = 0.275

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

```
| CALIB                |
| NASHYD   (  0003)|   Area     (ha)=   3.45   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)=   0.27
```

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90
0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

Unit Hyd Qpeak (cms)= 0.488

PEAK FLOW (cms)= 0.234 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 24.584
TOTAL RAINFALL (mm)= 72.900
RUNOFF COEFFICIENT = 0.337

(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 (0001):	0.51	0.039	3.00	15.92
+ ID2= 2 (0002):	2.37	0.118	3.17	20.01
ID = 3 (0031):	2.88	0.136	3.08	19.29

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):	2.88	0.136	3.08	19.29
+ ID2= 2 (0003):	3.45	0.234	3.17	24.58
ID = 1 (0031):	6.33	0.369	3.17	22.17

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
| RESERVOIR(  0030)|   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	0.4390	0.2741
0.0000	0.2739	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0031)	6.327	0.369	3.17	22.17
OUTFLOW: ID= 1 (0030)	6.327	0.000	0.00	0.00

PEAK FLOW REDUCTION [Qout/Qin](%)= 0.00
TIME SHIFT OF PEAK FLOW (min)=******
MAXIMUM STORAGE USED (ha.m.)= 0.1403

CALIB					
NASHYD (0005)	Area (ha)=	6.01	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)=	0.30			

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90
0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

Unit Hyd Qpeak (cms)= 0.765

PEAK FLOW (cms)= 0.381 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 24.588
TOTAL RAINFALL (mm)= 72.900
RUNOFF COEFFICIENT = 0.337

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

CALIB					
NASHYD (0004)	Area (ha)=	4.81	Curve Number (CN)=	61.0	
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00	
	U.H. Tp(hrs)=	0.32			

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90
0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

Unit Hyd Qpeak (cms)= 0.574

PEAK FLOW (cms)= 0.232 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 20.014
TOTAL RAINFALL (mm)= 72.900
RUNOFF COEFFICIENT = 0.275

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

ADD HYD (0054)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0030):		6.33	0.000	0.00	0.00
+ ID2= 2 (0004):		4.81	0.232	3.17	20.01
ID = 3 (0054):		11.14	0.232	3.17	8.64

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0054)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0054):		11.14	0.232	3.17	8.64
+ ID2= 2 (0005):		6.01	0.381	3.17	24.59
ID = 1 (0054):		17.14	0.613	3.17	14.23

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

==========

```
      V    V   I    SSSSS  U   U    A     L              (v 6.2.2015)
      V    V   I    SS     U   U   A A    L
       V  V    I     SS    U   U  AAAAA   L
        VV     I    SSSSS  UUUUU  A   A   LLLLL

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

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2.2015\VO2\voin.dat
Output filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\f0ed642e-7
Summary filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\f0ed642e-7

DATE: 02-16-2024 TIME: 03:17:57

USER:

COMMENTS: _____

```
  ************************************************
  ** SIMULATION : 5 - Ptbo_SCS_6hr_50yr          **
  ************************************************
```

READ STORM	Filename: C:\Users\lmattern\AppD ata\Local\Temp\ a41db57c-4f1a-47c6-b168-7af52acbbd15\44b13d48
Ptotal= 81.47 mm	Comments: Ptbo_SCS_6hr_50yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	3.30	1.50	8.10	3.00	17.90	4.50	4.90
0.25	3.30	1.75	8.10	3.25	17.90	4.75	4.90
0.50	4.90	2.00	9.80	3.50	8.10	5.00	3.30
0.75	4.90	2.25	9.80	3.75	8.10	5.25	3.30
1.00	4.90	2.50	48.90	4.00	6.50	5.50	3.30
1.25	4.90	2.75	127.00	4.25	6.50	5.75	3.30

CALIB					
NASHYD (0006)	Area (ha)=	0.06	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)=   0.11
```

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.30	1.583	8.10	3.083	17.90	4.58	4.90
0.167	3.30	1.667	8.10	3.167	17.90	4.67	4.90
0.250	3.30	1.750	8.10	3.250	17.90	4.75	4.90
0.333	3.30	1.833	8.10	3.333	17.90	4.83	4.90
0.417	3.30	1.917	8.10	3.417	17.90	4.92	4.90
0.500	3.30	2.000	8.10	3.500	17.90	5.00	4.90
0.583	4.90	2.083	9.80	3.583	8.10	5.08	3.30
0.667	4.90	2.167	9.80	3.667	8.10	5.17	3.30
0.750	4.90	2.250	9.80	3.750	8.10	5.25	3.30
0.833	4.90	2.333	9.80	3.833	8.10	5.33	3.30
0.917	4.90	2.417	9.80	3.917	8.10	5.42	3.30
1.000	4.90	2.500	9.80	4.000	8.10	5.50	3.30
1.083	4.90	2.583	48.90	4.083	6.50	5.58	3.30
1.167	4.90	2.667	48.90	4.167	6.50	5.67	3.30
1.250	4.90	2.750	48.90	4.250	6.50	5.75	3.30
1.333	4.90	2.833	127.00	4.333	6.50	5.83	3.30
1.417	4.90	2.917	127.00	4.417	6.50	5.92	3.30
1.500	4.90	3.000	127.00	4.500	6.50	6.00	3.30

```
     Unit Hyd Qpeak  (cms)=    0.022

     PEAK FLOW       (cms)=    0.009 (i)
     TIME TO PEAK    (hrs)=    3.000
     RUNOFF VOLUME    (mm)=   29.286
     TOTAL RAINFALL   (mm)=   81.475
     RUNOFF COEFFICIENT    =    0.359

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

```
--------------------------
| CALIB                  |
| NASHYD   (  0008)|   Area     (ha)=   0.76   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)=   0.11
```

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.30	1.583	8.10	3.083	17.90	4.58	4.90
0.167	3.30	1.667	8.10	3.167	17.90	4.67	4.90
0.250	3.30	1.750	8.10	3.250	17.90	4.75	4.90
0.333	3.30	1.833	8.10	3.333	17.90	4.83	4.90
0.417	3.30	1.917	8.10	3.417	17.90	4.92	4.90
0.500	3.30	2.000	8.10	3.500	17.90	5.00	4.90
0.583	4.90	2.083	9.80	3.583	8.10	5.08	3.30
0.667	4.90	2.167	9.80	3.667	8.10	5.17	3.30
0.750	4.90	2.250	9.80	3.750	8.10	5.25	3.30
0.833	4.90	2.333	9.80	3.833	8.10	5.33	3.30
0.917	4.90	2.417	9.80	3.917	8.10	5.42	3.30
1.000	4.90	2.500	9.80	4.000	8.10	5.50	3.30
1.083	4.90	2.583	48.90	4.083	6.50	5.58	3.30
1.167	4.90	2.667	48.90	4.167	6.50	5.67	3.30
1.250	4.90	2.750	48.90	4.250	6.50	5.75	3.30
1.333	4.90	2.833	127.00	4.333	6.50	5.83	3.30
1.417	4.90	2.917	127.00	4.417	6.50	5.92	3.30
1.500	4.90	3.000	127.00	4.500	6.50	6.00	3.30

```
     Unit Hyd Qpeak  (cms)=    0.264

     PEAK FLOW       (cms)=    0.107 (i)
     TIME TO PEAK    (hrs)=    3.000
     RUNOFF VOLUME    (mm)=   29.289
     TOTAL RAINFALL   (mm)=   81.475
     RUNOFF COEFFICIENT    =    0.359

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

```
--------------------------------------
| ADD HYD  (  0033)|
```



```
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
--------------------          (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  0006):      0.06     0.009      3.00     29.29
      + ID2= 2 (  0008):      0.76     0.107      3.00     29.29
      ========================================================
        ID = 3 (  0033):      0.82     0.116      3.00     29.29
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
--------------------------
| CALIB                  |
| NASHYD   (  0010)|   Area     (ha)=   5.74   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)=   0.18
```

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.30	1.583	8.10	3.083	17.90	4.58	4.90
0.167	3.30	1.667	8.10	3.167	17.90	4.67	4.90
0.250	3.30	1.750	8.10	3.250	17.90	4.75	4.90
0.333	3.30	1.833	8.10	3.333	17.90	4.83	4.90
0.417	3.30	1.917	8.10	3.417	17.90	4.92	4.90
0.500	3.30	2.000	8.10	3.500	17.90	5.00	4.90
0.583	4.90	2.083	9.80	3.583	8.10	5.08	3.30
0.667	4.90	2.167	9.80	3.667	8.10	5.17	3.30
0.750	4.90	2.250	9.80	3.750	8.10	5.25	3.30
0.833	4.90	2.333	9.80	3.833	8.10	5.33	3.30
0.917	4.90	2.417	9.80	3.917	8.10	5.42	3.30
1.000	4.90	2.500	9.80	4.000	8.10	5.50	3.30
1.083	4.90	2.583	48.90	4.083	6.50	5.58	3.30
1.167	4.90	2.667	48.90	4.167	6.50	5.67	3.30
1.250	4.90	2.750	48.90	4.250	6.50	5.75	3.30
1.333	4.90	2.833	127.00	4.333	6.50	5.83	3.30
1.417	4.90	2.917	127.00	4.417	6.50	5.92	3.30
1.500	4.90	3.000	127.00	4.500	6.50	6.00	3.30

```
     Unit Hyd Qpeak  (cms)=    1.219

     PEAK FLOW       (cms)=    0.612 (i)
     TIME TO PEAK    (hrs)=    3.083
     RUNOFF VOLUME    (mm)=   29.753
     TOTAL RAINFALL   (mm)=   81.475
     RUNOFF COEFFICIENT    =    0.365

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

```
--------------------------
| CALIB                  |
| NASHYD   (  0012)|   Area     (ha)=  27.72   Curve Number    (CN)= 69.0
|ID= 1 DT= 5.0 min |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.48
```

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.30	1.583	8.10	3.083	17.90	4.58	4.90
0.167	3.30	1.667	8.10	3.167	17.90	4.67	4.90
0.250	3.30	1.750	8.10	3.250	17.90	4.75	4.90
0.333	3.30	1.833	8.10	3.333	17.90	4.83	4.90
0.417	3.30	1.917	8.10	3.417	17.90	4.92	4.90
0.500	3.30	2.000	8.10	3.500	17.90	5.00	4.90
0.583	4.90	2.083	9.80	3.583	8.10	5.08	3.30
0.667	4.90	2.167	9.80	3.667	8.10	5.17	3.30
0.750	4.90	2.250	9.80	3.750	8.10	5.25	3.30
0.833	4.90	2.333	9.80	3.833	8.10	5.33	3.30
0.917	4.90	2.417	9.80	3.917	8.10	5.42	3.30
1.000	4.90	2.500	9.80	4.000	8.10	5.50	3.30
1.083	4.90	2.583	48.90	4.083	6.50	5.58	3.30
1.167	4.90	2.667	48.90	4.167	6.50	5.67	3.30
1.250	4.90	2.750	48.90	4.250	6.50	5.75	3.30
1.333	4.90	2.833	127.00	4.333	6.50	5.83	3.30
1.417	4.90	2.917	127.00	4.417	6.50	5.92	3.30
1.500	4.90	3.000	127.00	4.500	6.50	6.00	3.30

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     Unit Hyd Qpeak  (cms)=    2.206
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PEAK FLOW (cms)= 1.573 (i)
TIME TO PEAK (hrs)= 3.417
RUNOFF VOLUME (mm)= 30.684
TOTAL RAINFALL (mm)= 81.475
RUNOFF COEFFICIENT = 0.377

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

| CALIB NASHYD (0007) | Area (ha)= 0.15 Curve Number (CN)= 64.0
|ID= 1 DT= 5.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
| | U.H. Tp(hrs)= 0.11

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.30	1.583	8.10	3.083	17.90	4.58	4.90
0.167	3.30	1.667	8.10	3.167	17.90	4.67	4.90
0.250	3.30	1.750	8.10	3.250	17.90	4.75	4.90
0.333	3.30	1.833	8.10	3.333	17.90	4.83	4.90
0.417	3.30	1.917	8.10	3.417	17.90	4.92	4.90
0.500	3.30	2.000	8.10	3.500	17.90	5.00	4.90
0.583	4.90	2.083	9.80	3.583	8.10	5.08	3.30
0.667	4.90	2.167	9.80	3.667	8.10	5.17	3.30
0.750	4.90	2.250	9.80	3.750	8.10	5.25	3.30
0.833	4.90	2.333	9.80	3.833	8.10	5.33	3.30
0.917	4.90	2.417	9.80	3.917	8.10	5.42	3.30
1.000	4.90	2.500	9.80	4.000	8.10	5.50	3.30
1.083	4.90	2.583	48.90	4.083	6.50	5.58	3.30
1.167	4.90	2.667	48.90	4.167	6.50	5.67	3.30
1.250	4.90	2.750	48.90	4.250	6.50	5.75	3.30
1.333	4.90	2.833	127.00	4.333	6.50	5.83	3.30
1.417	4.90	2.917	127.00	4.417	6.50	5.92	3.30
1.500	4.90	3.000	127.00	4.500	6.50	6.00	3.30

Unit Hyd Qpeak (cms)= 0.053

PEAK FLOW (cms)= 0.019 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 26.170
TOTAL RAINFALL (mm)= 81.475
RUNOFF COEFFICIENT = 0.321

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

| CALIB NASHYD (0009) | Area (ha)= 8.40 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)= 0.48

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.30	1.583	8.10	3.083	17.90	4.58	4.90
0.167	3.30	1.667	8.10	3.167	17.90	4.67	4.90
0.250	3.30	1.750	8.10	3.250	17.90	4.75	4.90
0.333	3.30	1.833	8.10	3.333	17.90	4.83	4.90
0.417	3.30	1.917	8.10	3.417	17.90	4.92	4.90
0.500	3.30	2.000	8.10	3.500	17.90	5.00	4.90
0.583	4.90	2.083	9.80	3.583	8.10	5.08	3.30
0.667	4.90	2.167	9.80	3.667	8.10	5.17	3.30
0.750	4.90	2.250	9.80	3.750	8.10	5.25	3.30
0.833	4.90	2.333	9.80	3.833	8.10	5.33	3.30
0.917	4.90	2.417	9.80	3.917	8.10	5.42	3.30
1.000	4.90	2.500	9.80	4.000	8.10	5.50	3.30
1.083	4.90	2.583	48.90	4.083	6.50	5.58	3.30
1.167	4.90	2.667	48.90	4.167	6.50	5.67	3.30
1.250	4.90	2.750	48.90	4.250	6.50	5.75	3.30
1.333	4.90	2.833	127.00	4.333	6.50	5.83	3.30
1.417	4.90	2.917	127.00	4.417	6.50	5.92	3.30
1.500	4.90	3.000	127.00	4.500	6.50	6.00	3.30

Unit Hyd Qpeak (cms)= 0.668

PEAK FLOW (cms)= 0.462 (i)
TIME TO PEAK (hrs)= 3.417
RUNOFF VOLUME (mm)= 29.836
TOTAL RAINFALL (mm)= 81.475
RUNOFF COEFFICIENT = 0.366

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

ADD HYD (0047)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0007):	0.15	0.019	3.00	26.17
+ ID2= 2 (0009):	8.40	0.462	3.42	29.84
ID = 3 (0047):	8.55	0.466	3.42	29.77

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0053)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0010):	5.74	0.612	3.08	29.75
+ ID2= 2 (0012):	27.72	1.573	3.42	30.68
ID = 3 (0053):	33.46	1.874	3.25	30.52

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0053)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
3 + 2 = 1				
ID1= 3 (0053):	33.46	1.874	3.25	30.52
+ ID2= 2 (0047):	8.55	0.466	3.42	29.77
ID = 1 (0053):	42.01	2.319	3.33	30.37

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0035)	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	2.0910	0.0135

**** WARNING : STORAGE-DISCHARGE TABLE WAS EXCEEDED.

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0053)	42.012	2.319	3.33	30.37
OUTFLOW: ID= 1 (0035)	42.012	2.322	3.33	30.37

PEAK FLOW REDUCTION [Qout/Qin](%)=100.15
TIME SHIFT OF PEAK FLOW (min)= 0.00
MAXIMUM STORAGE USED (ha.m.)= 0.0149

**** WARNING : HYDROGRAPH PEAK WAS NOT REDUCED.
CHECK OUTFLOW/STORAGE TABLE OR REDUCE DT.

| CALIB NASHYD (0011) | Area (ha)= 3.66 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)= 0.30

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.30	1.583	8.10	3.083	17.90	4.58	4.90
0.167	3.30	1.667	8.10	3.167	17.90	4.67	4.90
0.250	3.30	1.750	8.10	3.250	17.90	4.75	4.90
0.333	3.30	1.833	8.10	3.333	17.90	4.83	4.90
0.417	3.30	1.917	8.10	3.417	17.90	4.92	4.90
0.500	3.30	2.000	8.10	3.500	17.90	5.00	4.90
0.583	4.90	2.083	9.80	3.583	8.10	5.08	3.30

0.667	4.90	2.167	9.80	3.667	8.10	5.17	3.30
0.750	4.90	2.250	9.80	3.750	8.10	5.25	3.30
0.833	4.90	2.333	9.80	3.833	8.10	5.33	3.30
0.917	4.90	2.417	9.80	3.917	8.10	5.42	3.30
1.000	4.90	2.500	9.80	4.000	8.10	5.50	3.30
1.083	4.90	2.583	48.90	4.083	6.50	5.58	3.30
1.167	4.90	2.667	48.90	4.167	6.50	5.67	3.30
1.250	4.90	2.750	48.90	4.250	6.50	5.75	3.30
1.333	4.90	2.833	127.00	4.333	6.50	5.83	3.30
1.417	4.90	2.917	127.00	4.417	6.50	5.92	3.30
1.500	4.90	3.000	127.00	4.500	6.50	6.00	3.30

Unit Hyd Qpeak (cms)= 0.466

PEAK FLOW (cms)= 0.283 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 29.827
TOTAL RAINFALL (mm)= 81.475
RUNOFF COEFFICIENT = 0.366

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

CALIB							
NASHYD (0013)	Area (ha)= 4.75	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)= 0.25						

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.30	1.583	8.10	3.083	17.90	4.58	4.90
0.167	3.30	1.667	8.10	3.167	17.90	4.67	4.90
0.250	3.30	1.750	8.10	3.250	17.90	4.75	4.90
0.333	3.30	1.833	8.10	3.333	17.90	4.83	4.90
0.417	3.30	1.917	8.10	3.417	17.90	4.92	4.90
0.500	3.30	2.000	8.10	3.500	17.90	5.00	4.90
0.583	4.90	2.083	9.80	3.583	8.10	5.08	3.30
0.667	4.90	2.167	9.80	3.667	8.10	5.17	3.30
0.750	4.90	2.250	9.80	3.750	8.10	5.25	3.30
0.833	4.90	2.333	9.80	3.833	8.10	5.33	3.30
0.917	4.90	2.417	9.80	3.917	8.10	5.42	3.30
1.000	4.90	2.500	9.80	4.000	8.10	5.50	3.30
1.083	4.90	2.583	48.90	4.083	6.50	5.58	3.30
1.167	4.90	2.667	48.90	4.167	6.50	5.67	3.30
1.250	4.90	2.750	48.90	4.250	6.50	5.75	3.30
1.333	4.90	2.833	127.00	4.333	6.50	5.83	3.30
1.417	4.90	2.917	127.00	4.417	6.50	5.92	3.30
1.500	4.90	3.000	127.00	4.500	6.50	6.00	3.30

Unit Hyd Qpeak (cms)= 0.725

PEAK FLOW (cms)= 0.411 (i)
TIME TO PEAK (hrs)= 3.083
RUNOFF VOLUME (mm)= 29.814
TOTAL RAINFALL (mm)= 81.475
RUNOFF COEFFICIENT = 0.366

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

CALIB							
NASHYD (0014)	Area (ha)= 11.81	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)= 0.33						

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.30	1.583	8.10	3.083	17.90	4.58	4.90
0.167	3.30	1.667	8.10	3.167	17.90	4.67	4.90
0.250	3.30	1.750	8.10	3.250	17.90	4.75	4.90
0.333	3.30	1.833	8.10	3.333	17.90	4.83	4.90
0.417	3.30	1.917	8.10	3.417	17.90	4.92	4.90
0.500	3.30	2.000	8.10	3.500	17.90	5.00	4.90
0.583	4.90	2.083	9.80	3.583	8.10	5.08	3.30

0.667	4.90	2.167	9.80	3.667	8.10	5.17	3.30
0.750	4.90	2.250	9.80	3.750	8.10	5.25	3.30
0.833	4.90	2.333	9.80	3.833	8.10	5.33	3.30
0.917	4.90	2.417	9.80	3.917	8.10	5.42	3.30
1.000	4.90	2.500	9.80	4.000	8.10	5.50	3.30
1.083	4.90	2.583	48.90	4.083	6.50	5.58	3.30
1.167	4.90	2.667	48.90	4.167	6.50	5.67	3.30
1.250	4.90	2.750	48.90	4.250	6.50	5.75	3.30
1.333	4.90	2.833	127.00	4.333	6.50	5.83	3.30
1.417	4.90	2.917	127.00	4.417	6.50	5.92	3.30
1.500	4.90	3.000	127.00	4.500	6.50	6.00	3.30

Unit Hyd Qpeak (cms)= 1.367

PEAK FLOW (cms)= 0.845 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 29.830
TOTAL RAINFALL (mm)= 81.475
RUNOFF COEFFICIENT = 0.366

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

ADD HYD (0046)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0011):	3.66	0.283	3.17	29.83
+ ID2= 2 (0013):	4.75	0.411	3.08	29.81
ID = 3 (0046):	8.41	0.690	3.17	29.82

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0046)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0046):	8.41	0.690	3.17	29.82
+ ID2= 2 (0014):	11.81	0.845	3.17	29.83
ID = 1 (0046):	20.22	1.536	3.17	29.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0046)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0046):	20.22	1.536	3.17	29.83
+ ID2= 2 (0035):	42.01	2.322	3.33	30.37
ID = 3 (0046):	62.23	3.786	3.25	30.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB							
NASHYD (0015)	Area (ha)= 7.08	Curve Number (CN)= 67.0					
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00					
	U.H. Tp(hrs)= 0.25						

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.30	1.583	8.10	3.083	17.90	4.58	4.90
0.167	3.30	1.667	8.10	3.167	17.90	4.67	4.90
0.250	3.30	1.750	8.10	3.250	17.90	4.75	4.90
0.333	3.30	1.833	8.10	3.333	17.90	4.83	4.90
0.417	3.30	1.917	8.10	3.417	17.90	4.92	4.90
0.500	3.30	2.000	8.10	3.500	17.90	5.00	4.90
0.583	4.90	2.083	9.80	3.583	8.10	5.08	3.30
0.667	4.90	2.167	9.80	3.667	8.10	5.17	3.30
0.750	4.90	2.250	9.80	3.750	8.10	5.25	3.30
0.833	4.90	2.333	9.80	3.833	8.10	5.33	3.30
0.917	4.90	2.417	9.80	3.917	8.10	5.42	3.30
1.000	4.90	2.500	9.80	4.000	8.10	5.50	3.30
1.083	4.90	2.583	48.90	4.083	6.50	5.58	3.30

1.167	4.90	2.667	48.90	4.167	6.50	5.67	3.30
1.250	4.90	2.750	48.90	4.250	6.50	5.75	3.30
1.333	4.90	2.833	127.00	4.333	6.50	5.83	3.30
1.417	4.90	2.917	127.00	4.417	6.50	5.92	3.30
1.500	4.90	3.000	127.00	4.500	6.50	6.00	3.30

Unit Hyd Qpeak (cms)= 1.082

PEAK FLOW (cms)= 0.595 (i)
TIME TO PEAK (hrs)= 3.083
RUNOFF VOLUME (mm)= 28.990
TOTAL RAINFALL (mm)= 81.475
RUNOFF COEFFICIENT = 0.356

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

CALIB					
NASHYD (0016)	Area	(ha)=	0.62	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)=	0.12		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.30	1.583	8.10	3.083	17.90	4.58	4.90
0.167	3.30	1.667	8.10	3.167	17.90	4.67	4.90
0.250	3.30	1.750	8.10	3.250	17.90	4.75	4.90
0.333	3.30	1.833	8.10	3.333	17.90	4.83	4.90
0.417	3.30	1.917	8.10	3.417	17.90	4.92	4.90
0.500	3.30	2.000	8.10	3.500	17.90	5.00	4.90
0.583	4.90	2.083	9.80	3.583	8.10	5.08	3.30
0.667	4.90	2.167	9.80	3.667	8.10	5.17	3.30
0.750	4.90	2.250	9.80	3.750	8.10	5.25	3.30
0.833	4.90	2.333	9.80	3.833	8.10	5.33	3.30
0.917	4.90	2.417	9.80	3.917	8.10	5.42	3.30
1.000	4.90	2.500	9.80	4.000	8.10	5.50	3.30
1.083	4.90	2.583	48.90	4.083	6.50	5.58	3.30
1.167	4.90	2.667	48.90	4.167	6.50	5.67	3.30
1.250	4.90	2.750	48.90	4.250	6.50	5.75	3.30
1.333	4.90	2.833	127.00	4.333	6.50	5.83	3.30
1.417	4.90	2.917	127.00	4.417	6.50	5.92	3.30
1.500	4.90	3.000	127.00	4.500	6.50	6.00	3.30

Unit Hyd Qpeak (cms)= 0.197

PEAK FLOW (cms)= 0.084 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 29.439
TOTAL RAINFALL (mm)= 81.475
RUNOFF COEFFICIENT = 0.361

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

ADD HYD (0052)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0015):	7.08	0.595	3.08	28.99
	+ ID2= 2 (0016):	0.62	0.084	3.00	29.44
	ID = 3 (0052):	7.70	0.661	3.08	29.03

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB					
NASHYD (0001)	Area	(ha)=	0.51	Curve Number	(CN)= 54.0
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00
	U.H.	Tp(hrs)=	0.11		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.30	1.583	8.10	3.083	17.90	4.58	4.90

0.167	3.30	1.667	8.10	3.167	17.90	4.67	4.90
0.250	3.30	1.750	8.10	3.250	17.90	4.75	4.90
0.333	3.30	1.833	8.10	3.333	17.90	4.83	4.90
0.417	3.30	1.917	8.10	3.417	17.90	4.92	4.90
0.500	3.30	2.000	8.10	3.500	17.90	5.00	4.90
0.583	4.90	2.083	9.80	3.583	8.10	5.08	3.30
0.667	4.90	2.167	9.80	3.667	8.10	5.17	3.30
0.750	4.90	2.250	9.80	3.750	8.10	5.25	3.30
0.833	4.90	2.333	9.80	3.833	8.10	5.33	3.30
0.917	4.90	2.417	9.80	3.917	8.10	5.42	3.30
1.000	4.90	2.500	9.80	4.000	8.10	5.50	3.30
1.083	4.90	2.583	48.90	4.083	6.50	5.58	3.30
1.167	4.90	2.667	48.90	4.167	6.50	5.67	3.30
1.250	4.90	2.750	48.90	4.250	6.50	5.75	3.30
1.333	4.90	2.833	127.00	4.333	6.50	5.83	3.30
1.417	4.90	2.917	127.00	4.417	6.50	5.92	3.30
1.500	4.90	3.000	127.00	4.500	6.50	6.00	3.30

Unit Hyd Qpeak (cms)= 0.177

PEAK FLOW (cms)= 0.047 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 19.603
TOTAL RAINFALL (mm)= 81.475
RUNOFF COEFFICIENT = 0.241

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

CALIB					
NASHYD (0002)	Area	(ha)=	2.37	Curve Number	(CN)= 61.0
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00
	U.H.	Tp(hrs)=	0.31		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.30	1.583	8.10	3.083	17.90	4.58	4.90
0.167	3.30	1.667	8.10	3.167	17.90	4.67	4.90
0.250	3.30	1.750	8.10	3.250	17.90	4.75	4.90
0.333	3.30	1.833	8.10	3.333	17.90	4.83	4.90
0.417	3.30	1.917	8.10	3.417	17.90	4.92	4.90
0.500	3.30	2.000	8.10	3.500	17.90	5.00	4.90
0.583	4.90	2.083	9.80	3.583	8.10	5.08	3.30
0.667	4.90	2.167	9.80	3.667	8.10	5.17	3.30
0.750	4.90	2.250	9.80	3.750	8.10	5.25	3.30
0.833	4.90	2.333	9.80	3.833	8.10	5.33	3.30
0.917	4.90	2.417	9.80	3.917	8.10	5.42	3.30
1.000	4.90	2.500	9.80	4.000	8.10	5.50	3.30
1.083	4.90	2.583	48.90	4.083	6.50	5.58	3.30
1.167	4.90	2.667	48.90	4.167	6.50	5.67	3.30
1.250	4.90	2.750	48.90	4.250	6.50	5.75	3.30
1.333	4.90	2.833	127.00	4.333	6.50	5.83	3.30
1.417	4.90	2.917	127.00	4.417	6.50	5.92	3.30
1.500	4.90	3.000	127.00	4.500	6.50	6.00	3.30

Unit Hyd Qpeak (cms)= 0.292

PEAK FLOW (cms)= 0.144 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 24.475
TOTAL RAINFALL (mm)= 81.475
RUNOFF COEFFICIENT = 0.300

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

CALIB					
NASHYD (0003)	Area	(ha)=	3.45	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)=	0.27		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.30	1.583	8.10	3.083	17.90	4.58	4.90

0.167	3.30	1.667	8.10	3.167	17.90	4.67	4.90
0.250	3.30	1.750	8.10	3.250	17.90	4.75	4.90
0.333	3.30	1.833	8.10	3.333	17.90	4.83	4.90
0.417	3.30	1.917	8.10	3.417	17.90	4.92	4.90
0.500	3.30	2.000	8.10	3.500	17.90	5.00	4.90
0.583	4.90	2.083	9.80	3.583	8.10	5.08	3.30
0.667	4.90	2.167	9.80	3.667	8.10	5.17	3.30
0.750	4.90	2.250	9.80	3.750	8.10	5.25	3.30
0.833	4.90	2.333	9.80	3.833	8.10	5.33	3.30
0.917	4.90	2.417	9.80	3.917	8.10	5.42	3.30
1.000	4.90	2.500	9.80	4.000	8.10	5.50	3.30
1.083	4.90	2.583	48.90	4.083	6.50	5.58	3.30
1.167	4.90	2.667	48.90	4.167	6.50	5.67	3.30
1.250	4.90	2.750	48.90	4.250	6.50	5.75	3.30
1.333	4.90	2.833	127.00	4.333	6.50	5.83	3.30
1.417	4.90	2.917	127.00	4.417	6.50	5.92	3.30
1.500	4.90	3.000	127.00	4.500	6.50	6.00	3.30

Unit Hyd Qpeak (cms)= 0.488

PEAK FLOW (cms)= 0.285 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 29.821
TOTAL RAINFALL (mm)= 81.475
RUNOFF COEFFICIENT = 0.366

(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 (0001):		0.51	0.047	3.00	19.60
+ ID2= 2 (0002):		2.37	0.144	3.17	24.48
ID = 3 (0031):		2.88	0.168	3.08	23.61

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):		2.88	0.168	3.08	23.61
+ ID2= 2 (0003):		3.45	0.285	3.17	29.82
ID = 1 (0031):		6.33	0.451	3.17	27.00

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0030)	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	0.4390	0.2741
	0.0000	0.2739	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0031)	6.327	0.451	3.17	27.00
OUTFLOW: ID= 1 (0030)	6.327	0.000	0.00	0.00

PEAK FLOW REDUCTION [Qout/Qin](%)= 0.00
TIME SHIFT OF PEAK FLOW (min)=******
MAXIMUM STORAGE USED (ha.m.)= 0.1708

CALIB					
NASHYD (0005)	Area	(ha)=	6.01	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)=		0.30		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.30	1.583	8.10	3.083	17.90	4.58	4.90

0.167	3.30	1.667	8.10	3.167	17.90	4.67	4.90
0.250	3.30	1.750	8.10	3.250	17.90	4.75	4.90
0.333	3.30	1.833	8.10	3.333	17.90	4.83	4.90
0.417	3.30	1.917	8.10	3.417	17.90	4.92	4.90
0.500	3.30	2.000	8.10	3.500	17.90	5.00	4.90
0.583	4.90	2.083	9.80	3.583	8.10	5.08	3.30
0.667	4.90	2.167	9.80	3.667	8.10	5.17	3.30
0.750	4.90	2.250	9.80	3.750	8.10	5.25	3.30
0.833	4.90	2.333	9.80	3.833	8.10	5.33	3.30
0.917	4.90	2.417	9.80	3.917	8.10	5.42	3.30
1.000	4.90	2.500	9.80	4.000	8.10	5.50	3.30
1.083	4.90	2.583	48.90	4.083	6.50	5.58	3.30
1.167	4.90	2.667	48.90	4.167	6.50	5.67	3.30
1.250	4.90	2.750	48.90	4.250	6.50	5.75	3.30
1.333	4.90	2.833	127.00	4.333	6.50	5.83	3.30
1.417	4.90	2.917	127.00	4.417	6.50	5.92	3.30
1.500	4.90	3.000	127.00	4.500	6.50	6.00	3.30

Unit Hyd Qpeak (cms)= 0.765

PEAK FLOW (cms)= 0.464 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 29.827
TOTAL RAINFALL (mm)= 81.475
RUNOFF COEFFICIENT = 0.366

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

CALIB					
NASHYD (0004)	Area	(ha)=	4.81	Curve Number	(CN)= 61.0
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00
	U.H. Tp(hrs)=		0.32		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.30	1.583	8.10	3.083	17.90	4.58	4.90
0.167	3.30	1.667	8.10	3.167	17.90	4.67	4.90
0.250	3.30	1.750	8.10	3.250	17.90	4.75	4.90
0.333	3.30	1.833	8.10	3.333	17.90	4.83	4.90
0.417	3.30	1.917	8.10	3.417	17.90	4.92	4.90
0.500	3.30	2.000	8.10	3.500	17.90	5.00	4.90
0.583	4.90	2.083	9.80	3.583	8.10	5.08	3.30
0.667	4.90	2.167	9.80	3.667	8.10	5.17	3.30
0.750	4.90	2.250	9.80	3.750	8.10	5.25	3.30
0.833	4.90	2.333	9.80	3.833	8.10	5.33	3.30
0.917	4.90	2.417	9.80	3.917	8.10	5.42	3.30
1.000	4.90	2.500	9.80	4.000	8.10	5.50	3.30
1.083	4.90	2.583	48.90	4.083	6.50	5.58	3.30
1.167	4.90	2.667	48.90	4.167	6.50	5.67	3.30
1.250	4.90	2.750	48.90	4.250	6.50	5.75	3.30
1.333	4.90	2.833	127.00	4.333	6.50	5.83	3.30
1.417	4.90	2.917	127.00	4.417	6.50	5.92	3.30
1.500	4.90	3.000	127.00	4.500	6.50	6.00	3.30

Unit Hyd Qpeak (cms)= 0.574

PEAK FLOW (cms)= 0.286 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 24.476
TOTAL RAINFALL (mm)= 81.475
RUNOFF COEFFICIENT = 0.300

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

ADD HYD (0054)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0030):		6.33	0.000	0.00	0.00
+ ID2= 2 (0004):		4.81	0.286	3.17	24.48
ID = 3 (0054):		11.14	0.286	3.17	10.57

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
-------------------
| ADD HYD  (  0054)|
|   3 +  2 =  1    |          AREA     QPEAK     TPEAK      R.V.
-------------------            (ha)     (cms)     (hrs)      (mm)
       ID1= 3 (  0054):     11.14    0.286      3.17      10.57
     + ID2= 2 (  0005):      6.01    0.464      3.17      29.83
       ==========================================================
       ID = 1 (  0054):     17.14    0.750      3.17      17.32

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

```
       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2.2015\VO2\voin.dat
  Output  filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\ec068055-e
  Summary filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\ec068055-e

DATE: 02-16-2024                          TIME: 03:17:57

USER:


COMMENTS: _____________________________________________________
```

```
  ************************************************
  ** SIMULATION : 6 - Ptbo_SCS_6hr_100yr        **
  ************************************************
```

```
-------------------
|     READ STORM    |    Filename: C:\Users\lmattern\AppD
|                   |              ata\Local\Temp\
|                   |              a41db5fc-4f1a-47c6-b168-7af52acbbd15\ecd87068
| Ptotal= 89.93 mm  |    Comments: Ptbo_SCS_6hr_100yr
-------------------
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	3.60	1.50	9.00	3.00	19.80	4.50	5.40
0.25	3.60	1.75	9.00	3.25	19.80	4.75	5.40
0.50	5.40	2.00	10.80	3.50	9.00	5.00	3.60
0.75	5.40	2.25	10.80	3.75	9.00	5.25	3.60
1.00	5.40	2.50	53.90	4.00	7.20	5.50	3.60
1.25	5.40	2.75	140.20	4.25	7.20	5.75	3.60

```
-------------------
| CALIB             |
| NASHYD  (  0006)  |   Area     (ha)=   0.06   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)=   0.11

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.60	1.583	9.00	3.083	19.80	4.58	5.40
0.167	3.60	1.667	9.00	3.167	19.80	4.67	5.40
0.250	3.60	1.750	9.00	3.250	19.80	4.75	5.40
0.333	3.60	1.833	9.00	3.333	19.80	4.83	5.40
0.417	3.60	1.917	9.00	3.417	19.80	4.92	5.40
0.500	3.60	2.000	9.00	3.500	19.80	5.00	5.40
0.583	5.40	2.083	10.80	3.583	9.00	5.08	3.60
0.667	5.40	2.167	10.80	3.667	9.00	5.17	3.60
0.750	5.40	2.250	10.80	3.750	9.00	5.25	3.60
0.833	5.40	2.333	10.80	3.833	9.00	5.33	3.60
0.917	5.40	2.417	10.80	3.917	9.00	5.42	3.60
1.000	5.40	2.500	10.80	4.000	9.00	5.50	3.60
1.083	5.40	2.583	53.90	4.083	7.20	5.58	3.60
1.167	5.40	2.667	53.90	4.167	7.20	5.67	3.60
1.250	5.40	2.750	53.90	4.250	7.20	5.75	3.60
1.333	5.40	2.833	140.20	4.333	7.20	5.83	3.60
1.417	5.40	2.917	140.20	4.417	7.20	5.92	3.60
1.500	5.40	3.000	140.20	4.500	7.20	6.00	3.60

```
     Unit Hyd Qpeak  (cms)=    0.022

     PEAK FLOW       (cms)=    0.010 (i)
     TIME TO PEAK    (hrs)=    3.000
     RUNOFF VOLUME    (mm)=   34.623
     TOTAL RAINFALL   (mm)=   89.925
     RUNOFF COEFFICIENT    =    0.385

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

```
-------------------
| CALIB             |
| NASHYD  (  0008)  |   Area     (ha)=   0.76   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)=   0.11

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.60	1.583	9.00	3.083	19.80	4.58	5.40
0.167	3.60	1.667	9.00	3.167	19.80	4.67	5.40
0.250	3.60	1.750	9.00	3.250	19.80	4.75	5.40
0.333	3.60	1.833	9.00	3.333	19.80	4.83	5.40
0.417	3.60	1.917	9.00	3.417	19.80	4.92	5.40
0.500	3.60	2.000	9.00	3.500	19.80	5.00	5.40
0.583	5.40	2.083	10.80	3.583	9.00	5.08	3.60
0.667	5.40	2.167	10.80	3.667	9.00	5.17	3.60
0.750	5.40	2.250	10.80	3.750	9.00	5.25	3.60
0.833	5.40	2.333	10.80	3.833	9.00	5.33	3.60
0.917	5.40	2.417	10.80	3.917	9.00	5.42	3.60
1.000	5.40	2.500	10.80	4.000	9.00	5.50	3.60
1.083	5.40	2.583	53.90	4.083	7.20	5.58	3.60
1.167	5.40	2.667	53.90	4.167	7.20	5.67	3.60
1.250	5.40	2.750	53.90	4.250	7.20	5.75	3.60
1.333	5.40	2.833	140.20	4.333	7.20	5.83	3.60
1.417	5.40	2.917	140.20	4.417	7.20	5.92	3.60
1.500	5.40	3.000	140.20	4.500	7.20	6.00	3.60

```
     Unit Hyd Qpeak  (cms)=    0.264

     PEAK FLOW       (cms)=    0.127 (i)
     TIME TO PEAK    (hrs)=    3.000
     RUNOFF VOLUME    (mm)=   34.626
     TOTAL RAINFALL   (mm)=   89.925
     RUNOFF COEFFICIENT    =    0.385

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

```
-------------------
| ADD HYD  (  0033)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
-------------------            (ha)     (cms)     (hrs)      (mm)
       ID1= 1 (  0006):      0.06    0.010      3.00      34.62
     + ID2= 2 (  0008):      0.76    0.127      3.00      34.63
       ==========================================================
       ID = 3 (  0033):      0.82    0.137      3.00      34.63

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

```
-------------------
| CALIB             |
| NASHYD  (  0010)  |   Area     (ha)=   5.74   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)= 0.18

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.60	1.583	9.00	3.083	19.80	4.58	5.40
0.167	3.60	1.667	9.00	3.167	19.80	4.67	5.40
0.250	3.60	1.750	9.00	3.250	19.80	4.75	5.40
0.333	3.60	1.833	9.00	3.333	19.80	4.83	5.40
0.417	3.60	1.917	9.00	3.417	19.80	4.92	5.40
0.500	3.60	2.000	9.00	3.500	19.80	5.00	5.40
0.583	5.40	2.083	10.80	3.583	9.00	5.08	3.60
0.667	5.40	2.167	10.80	3.667	9.00	5.17	3.60
0.750	5.40	2.250	10.80	3.750	9.00	5.25	3.60
0.833	5.40	2.333	10.80	3.833	9.00	5.33	3.60
0.917	5.40	2.417	10.80	3.917	9.00	5.42	3.60
1.000	5.40	2.500	10.80	4.000	9.00	5.50	3.60
1.083	5.40	2.583	53.90	4.083	7.20	5.58	3.60
1.167	5.40	2.667	53.90	4.167	7.20	5.67	3.60
1.250	5.40	2.750	53.90	4.250	7.20	5.75	3.60
1.333	5.40	2.833	140.20	4.333	7.20	5.83	3.60
1.417	5.40	2.917	140.20	4.417	7.20	5.92	3.60
1.500	5.40	3.000	140.20	4.500	7.20	6.00	3.60

Unit Hyd Qpeak (cms)= 1.219

PEAK FLOW (cms)= 0.724 (i)
TIME TO PEAK (hrs)= 3.083
RUNOFF VOLUME (mm)= 35.175
TOTAL RAINFALL (mm)= 89.925
RUNOFF COEFFICIENT = 0.391

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

CALIB	NASHYD (0012)	ID= 1 DT= 5.0 min

Area (ha)= 27.72 Curve Number (CN)= 69.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.48

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.60	1.583	9.00	3.083	19.80	4.58	5.40
0.167	3.60	1.667	9.00	3.167	19.80	4.67	5.40
0.250	3.60	1.750	9.00	3.250	19.80	4.75	5.40
0.333	3.60	1.833	9.00	3.333	19.80	4.83	5.40
0.417	3.60	1.917	9.00	3.417	19.80	4.92	5.40
0.500	3.60	2.000	9.00	3.500	19.80	5.00	5.40
0.583	5.40	2.083	10.80	3.583	9.00	5.08	3.60
0.667	5.40	2.167	10.80	3.667	9.00	5.17	3.60
0.750	5.40	2.250	10.80	3.750	9.00	5.25	3.60
0.833	5.40	2.333	10.80	3.833	9.00	5.33	3.60
0.917	5.40	2.417	10.80	3.917	9.00	5.42	3.60
1.000	5.40	2.500	10.80	4.000	9.00	5.50	3.60
1.083	5.40	2.583	53.90	4.083	7.20	5.58	3.60
1.167	5.40	2.667	53.90	4.167	7.20	5.67	3.60
1.250	5.40	2.750	53.90	4.250	7.20	5.75	3.60
1.333	5.40	2.833	140.20	4.333	7.20	5.83	3.60
1.417	5.40	2.917	140.20	4.417	7.20	5.92	3.60
1.500	5.40	3.000	140.20	4.500	7.20	6.00	3.60

Unit Hyd Qpeak (cms)= 2.206

PEAK FLOW (cms)= 1.865 (i)
TIME TO PEAK (hrs)= 3.417
RUNOFF VOLUME (mm)= 36.233
TOTAL RAINFALL (mm)= 89.925
RUNOFF COEFFICIENT = 0.403

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

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

Area (ha)= 0.15 Curve Number (CN)= 64.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00

---------- U.H. Tp(hrs)= 0.11

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.60	1.583	9.00	3.083	19.80	4.58	5.40
0.167	3.60	1.667	9.00	3.167	19.80	4.67	5.40
0.250	3.60	1.750	9.00	3.250	19.80	4.75	5.40
0.333	3.60	1.833	9.00	3.333	19.80	4.83	5.40
0.417	3.60	1.917	9.00	3.417	19.80	4.92	5.40
0.500	3.60	2.000	9.00	3.500	19.80	5.00	5.40
0.583	5.40	2.083	10.80	3.583	9.00	5.08	3.60
0.667	5.40	2.167	10.80	3.667	9.00	5.17	3.60
0.750	5.40	2.250	10.80	3.750	9.00	5.25	3.60
0.833	5.40	2.333	10.80	3.833	9.00	5.33	3.60
0.917	5.40	2.417	10.80	3.917	9.00	5.42	3.60
1.000	5.40	2.500	10.80	4.000	9.00	5.50	3.60
1.083	5.40	2.583	53.90	4.083	7.20	5.58	3.60
1.167	5.40	2.667	53.90	4.167	7.20	5.67	3.60
1.250	5.40	2.750	53.90	4.250	7.20	5.75	3.60
1.333	5.40	2.833	140.20	4.333	7.20	5.83	3.60
1.417	5.40	2.917	140.20	4.417	7.20	5.92	3.60
1.500	5.40	3.000	140.20	4.500	7.20	6.00	3.60

Unit Hyd Qpeak (cms)= 0.053

PEAK FLOW (cms)= 0.023 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 31.075
TOTAL RAINFALL (mm)= 89.925
RUNOFF COEFFICIENT = 0.346

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

CALIB	NASHYD (0009)	ID= 1 DT= 5.0 min

Area (ha)= 8.40 Curve Number (CN)= 68.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.48

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.60	1.583	9.00	3.083	19.80	4.58	5.40
0.167	3.60	1.667	9.00	3.167	19.80	4.67	5.40
0.250	3.60	1.750	9.00	3.250	19.80	4.75	5.40
0.333	3.60	1.833	9.00	3.333	19.80	4.83	5.40
0.417	3.60	1.917	9.00	3.417	19.80	4.92	5.40
0.500	3.60	2.000	9.00	3.500	19.80	5.00	5.40
0.583	5.40	2.083	10.80	3.583	9.00	5.08	3.60
0.667	5.40	2.167	10.80	3.667	9.00	5.17	3.60
0.750	5.40	2.250	10.80	3.750	9.00	5.25	3.60
0.833	5.40	2.333	10.80	3.833	9.00	5.33	3.60
0.917	5.40	2.417	10.80	3.917	9.00	5.42	3.60
1.000	5.40	2.500	10.80	4.000	9.00	5.50	3.60
1.083	5.40	2.583	53.90	4.083	7.20	5.58	3.60
1.167	5.40	2.667	53.90	4.167	7.20	5.67	3.60
1.250	5.40	2.750	53.90	4.250	7.20	5.75	3.60
1.333	5.40	2.833	140.20	4.333	7.20	5.83	3.60
1.417	5.40	2.917	140.20	4.417	7.20	5.92	3.60
1.500	5.40	3.000	140.20	4.500	7.20	6.00	3.60

Unit Hyd Qpeak (cms)= 0.668

PEAK FLOW (cms)= 0.549 (i)
TIME TO PEAK (hrs)= 3.417
RUNOFF VOLUME (mm)= 35.273
TOTAL RAINFALL (mm)= 89.925
RUNOFF COEFFICIENT = 0.392

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

ADD HYD (0047)	1 + 2 = 3

AREA QPEAK TPEAK R.V.

```
--------------------          (ha)    (cms)    (hrs)     (mm)
        ID1= 1 (  0007):      0.15    0.023     3.00    31.08
      + ID2= 2 (  0009):      8.40    0.549     3.42    35.27
        ==========================================================
        ID = 3 (  0047):      8.55    0.553     3.42    35.20

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

```
| ADD HYD  (  0053)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
--------------------          (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  0010):      5.74     0.724     3.08     35.17
      + ID2= 2 (  0012):     27.72     1.865     3.42     36.23
        ==========================================================
        ID = 3 (  0053):     33.46     2.225     3.25     36.05

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

```
| ADD HYD  (  0053)|
|   3 +  2 =  1    |          AREA     QPEAK     TPEAK      R.V.
--------------------          (ha)     (cms)     (hrs)      (mm)
        ID1= 3 (  0053):     33.46     2.225     3.25     36.05
      + ID2= 2 (  0047):      8.55     0.553     3.42     35.20
        ==========================================================
        ID = 1 (  0053):     42.01     2.751     3.25     35.88

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

```
| RESERVOIR(  0035)|      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    |   2.0910       0.0135
     **** WARNING : STORAGE-DISCHARGE TABLE WAS EXCEEDED.

                                AREA      QPEAK      TPEAK        R.V.
                                (ha)      (cms)      (hrs)        (mm)
   INFLOW : ID= 2 (  0053)      42.012      2.751       3.25       35.88
   OUTFLOW: ID= 1 (  0035)      42.012      2.755       3.33       35.88

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=100.14
                    TIME SHIFT OF PEAK FLOW          (min)=  5.00
                    MAXIMUM  STORAGE   USED        (ha.m.)=  0.0179

     **** WARNING : HYDROGRAPH PEAK WAS NOT REDUCED.
                    CHECK OUTFLOW/STORAGE TABLE  OR REDUCE DT.
```

```
| CALIB            |
| NASHYD   (  0011)|   Area     (ha)=   3.66   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)=   0.30

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

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.60	1.583	9.00	3.083	19.80	4.58	5.40
0.167	3.60	1.667	9.00	3.167	19.80	4.67	5.40
0.250	3.60	1.750	9.00	3.250	19.80	4.75	5.40
0.333	3.60	1.833	9.00	3.333	19.80	4.83	5.40
0.417	3.60	1.917	9.00	3.417	19.80	4.92	5.40
0.500	3.60	2.000	9.00	3.500	19.80	5.00	5.40
0.583	5.40	2.083	10.80	3.583	9.00	5.08	3.60
0.667	5.40	2.167	10.80	3.667	9.00	5.17	3.60
0.750	5.40	2.250	10.80	3.750	9.00	5.25	3.60
0.833	5.40	2.333	10.80	3.833	9.00	5.33	3.60
0.917	5.40	2.417	10.80	3.917	9.00	5.42	3.60
1.000	5.40	2.500	10.80	4.000	9.00	5.50	3.60
1.083	5.40	2.583	53.90	4.083	7.20	5.58	3.60
1.167	5.40	2.667	53.90	4.167	7.20	5.67	3.60
1.250	5.40	2.750	53.90	4.250	7.20	5.75	3.60
1.333	5.40	2.833	140.20	4.333	7.20	5.83	3.60
1.417	5.40	2.917	140.20	4.417	7.20	5.92	3.60
1.500	5.40	3.000	140.20	4.500	7.20	6.00	3.60

```
     Unit Hyd Qpeak  (cms)=   0.466
```



```
     PEAK FLOW       (cms)=   0.336 (i)
     TIME TO PEAK    (hrs)=   3.167
     RUNOFF VOLUME    (mm)=  35.262
     TOTAL RAINFALL   (mm)=  89.925
     RUNOFF COEFFICIENT   =   0.392

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

```
| CALIB            |
| NASHYD   (  0013)|   Area     (ha)=   4.75   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)=   0.25

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

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.60	1.583	9.00	3.083	19.80	4.58	5.40
0.167	3.60	1.667	9.00	3.167	19.80	4.67	5.40
0.250	3.60	1.750	9.00	3.250	19.80	4.75	5.40
0.333	3.60	1.833	9.00	3.333	19.80	4.83	5.40
0.417	3.60	1.917	9.00	3.417	19.80	4.92	5.40
0.500	3.60	2.000	9.00	3.500	19.80	5.00	5.40
0.583	5.40	2.083	10.80	3.583	9.00	5.08	3.60
0.667	5.40	2.167	10.80	3.667	9.00	5.17	3.60
0.750	5.40	2.250	10.80	3.750	9.00	5.25	3.60
0.833	5.40	2.333	10.80	3.833	9.00	5.33	3.60
0.917	5.40	2.417	10.80	3.917	9.00	5.42	3.60
1.000	5.40	2.500	10.80	4.000	9.00	5.50	3.60
1.083	5.40	2.583	53.90	4.083	7.20	5.58	3.60
1.167	5.40	2.667	53.90	4.167	7.20	5.67	3.60
1.250	5.40	2.750	53.90	4.250	7.20	5.75	3.60
1.333	5.40	2.833	140.20	4.333	7.20	5.83	3.60
1.417	5.40	2.917	140.20	4.417	7.20	5.92	3.60
1.500	5.40	3.000	140.20	4.500	7.20	6.00	3.60

```
     Unit Hyd Qpeak  (cms)=   0.725

     PEAK FLOW       (cms)=   0.489 (i)
     TIME TO PEAK    (hrs)=   3.083
     RUNOFF VOLUME    (mm)=  35.248
     TOTAL RAINFALL   (mm)=  89.925
     RUNOFF COEFFICIENT   =   0.392

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

```
| CALIB            |
| NASHYD   (  0014)|   Area     (ha)=  11.81   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)=   0.33

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

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.60	1.583	9.00	3.083	19.80	4.58	5.40
0.167	3.60	1.667	9.00	3.167	19.80	4.67	5.40
0.250	3.60	1.750	9.00	3.250	19.80	4.75	5.40
0.333	3.60	1.833	9.00	3.333	19.80	4.83	5.40
0.417	3.60	1.917	9.00	3.417	19.80	4.92	5.40
0.500	3.60	2.000	9.00	3.500	19.80	5.00	5.40
0.583	5.40	2.083	10.80	3.583	9.00	5.08	3.60
0.667	5.40	2.167	10.80	3.667	9.00	5.17	3.60
0.750	5.40	2.250	10.80	3.750	9.00	5.25	3.60
0.833	5.40	2.333	10.80	3.833	9.00	5.33	3.60
0.917	5.40	2.417	10.80	3.917	9.00	5.42	3.60
1.000	5.40	2.500	10.80	4.000	9.00	5.50	3.60
1.083	5.40	2.583	53.90	4.083	7.20	5.58	3.60
1.167	5.40	2.667	53.90	4.167	7.20	5.67	3.60
1.250	5.40	2.750	53.90	4.250	7.20	5.75	3.60
1.333	5.40	2.833	140.20	4.333	7.20	5.83	3.60
1.417	5.40	2.917	140.20	4.417	7.20	5.92	3.60
1.500	5.40	3.000	140.20	4.500	7.20	6.00	3.60

```
     Unit Hyd Qpeak  (cms)=   1.367
```

PEAK FLOW (cms)= 1.005 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 35.266
TOTAL RAINFALL (mm)= 89.925
RUNOFF COEFFICIENT = 0.392

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

ADD HYD (0046)	1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 1 (0011):		3.66	0.336	3.17	35.26
	+ ID2= 2 (0013):		4.75	0.489	3.08	35.25
	ID = 3 (0046):		8.41	0.819	3.17	35.25

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0046)	3 + 2 = 1		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 3 (0046):		8.41	0.819	3.17	35.25
	+ ID2= 2 (0014):		11.81	1.005	3.17	35.27
	ID = 1 (0046):		20.22	1.824	3.17	35.26

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0046)	1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 1 (0046):		20.22	1.824	3.17	35.26
	+ ID2= 2 (0035):		42.01	2.755	3.33	35.88
	ID = 3 (0046):		62.23	4.493	3.25	35.68

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	NASHYD (0015)	ID= 1 DT= 5.0 min	Area (ha)= 7.08	Ia (mm)= 5.00	U.H. Tp(hrs)= 0.25	Curve Number (CN)= 67.0	# 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	3.60	1.583	9.00	3.083	19.80	4.58	5.40
0.167	3.60	1.667	9.00	3.167	19.80	4.67	5.40
0.250	3.60	1.750	9.00	3.250	19.80	4.75	5.40
0.333	3.60	1.833	9.00	3.333	19.80	4.83	5.40
0.417	3.60	1.917	9.00	3.417	19.80	4.92	5.40
0.500	3.60	2.000	9.00	3.500	19.80	5.00	5.40
0.583	5.40	2.083	10.80	3.583	9.00	5.08	3.60
0.667	5.40	2.167	10.80	3.667	9.00	5.17	3.60
0.750	5.40	2.250	10.80	3.750	9.00	5.25	3.60
0.833	5.40	2.333	10.80	3.833	9.00	5.33	3.60
0.917	5.40	2.417	10.80	3.917	9.00	5.42	3.60
1.000	5.40	2.500	10.80	4.000	9.00	5.50	3.60
1.083	5.40	2.583	53.90	4.083	7.20	5.58	3.60
1.167	5.40	2.667	53.90	4.167	7.20	5.67	3.60
1.250	5.40	2.750	53.90	4.250	7.20	5.75	3.60
1.333	5.40	2.833	140.20	4.333	7.20	5.83	3.60
1.417	5.40	2.917	140.20	4.417	7.20	5.92	3.60
1.500	5.40	3.000	140.20	4.500	7.20	6.00	3.60

Unit Hyd Qpeak (cms)= 1.082

PEAK FLOW (cms)= 0.708 (i)
TIME TO PEAK (hrs)= 3.083
RUNOFF VOLUME (mm)= 34.312
TOTAL RAINFALL (mm)= 89.925
RUNOFF COEFFICIENT = 0.382

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

CALIB	NASHYD (0016)	ID= 1 DT= 5.0 min	Area (ha)= 0.62	Ia (mm)= 5.00	U.H. Tp(hrs)= 0.12	Curve Number (CN)= 68.0	# 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	3.60	1.583	9.00	3.083	19.80	4.58	5.40
0.167	3.60	1.667	9.00	3.167	19.80	4.67	5.40
0.250	3.60	1.750	9.00	3.250	19.80	4.75	5.40
0.333	3.60	1.833	9.00	3.333	19.80	4.83	5.40
0.417	3.60	1.917	9.00	3.417	19.80	4.92	5.40
0.500	3.60	2.000	9.00	3.500	19.80	5.00	5.40
0.583	5.40	2.083	10.80	3.583	9.00	5.08	3.60
0.667	5.40	2.167	10.80	3.667	9.00	5.17	3.60
0.750	5.40	2.250	10.80	3.750	9.00	5.25	3.60
0.833	5.40	2.333	10.80	3.833	9.00	5.33	3.60
0.917	5.40	2.417	10.80	3.917	9.00	5.42	3.60
1.000	5.40	2.500	10.80	4.000	9.00	5.50	3.60
1.083	5.40	2.583	53.90	4.083	7.20	5.58	3.60
1.167	5.40	2.667	53.90	4.167	7.20	5.67	3.60
1.250	5.40	2.750	53.90	4.250	7.20	5.75	3.60
1.333	5.40	2.833	140.20	4.333	7.20	5.83	3.60
1.417	5.40	2.917	140.20	4.417	7.20	5.92	3.60
1.500	5.40	3.000	140.20	4.500	7.20	6.00	3.60

Unit Hyd Qpeak (cms)= 0.197

PEAK FLOW (cms)= 0.100 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 34.804
TOTAL RAINFALL (mm)= 89.925
RUNOFF COEFFICIENT = 0.387

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

ADD HYD (0052)	1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
	ID1= 1 (0015):		7.08	0.708	3.08	34.31
	+ ID2= 2 (0016):		0.62	0.100	3.00	34.80
	ID = 3 (0052):		7.70	0.786	3.08	34.35

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	NASHYD (0001)	ID= 1 DT= 5.0 min	Area (ha)= 0.51	Ia (mm)= 5.00	U.H. Tp(hrs)= 0.11	Curve Number (CN)= 54.0	# 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	3.60	1.583	9.00	3.083	19.80	4.58	5.40
0.167	3.60	1.667	9.00	3.167	19.80	4.67	5.40
0.250	3.60	1.750	9.00	3.250	19.80	4.75	5.40
0.333	3.60	1.833	9.00	3.333	19.80	4.83	5.40
0.417	3.60	1.917	9.00	3.417	19.80	4.92	5.40
0.500	3.60	2.000	9.00	3.500	19.80	5.00	5.40
0.583	5.40	2.083	10.80	3.583	9.00	5.08	3.60
0.667	5.40	2.167	10.80	3.667	9.00	5.17	3.60
0.750	5.40	2.250	10.80	3.750	9.00	5.25	3.60
0.833	5.40	2.333	10.80	3.833	9.00	5.33	3.60
0.917	5.40	2.417	10.80	3.917	9.00	5.42	3.60
1.000	5.40	2.500	10.80	4.000	9.00	5.50	3.60
1.083	5.40	2.583	53.90	4.083	7.20	5.58	3.60
1.167	5.40	2.667	53.90	4.167	7.20	5.67	3.60

1.250	5.40	2.750	53.90	4.250	7.20	5.75	3.60
1.333	5.40	2.833	140.20	4.333	7.20	5.83	3.60
1.417	5.40	2.917	140.20	4.417	7.20	5.92	3.60
1.500	5.40	3.000	140.20	4.500	7.20	6.00	3.60

Unit Hyd Qpeak (cms)= 0.177

PEAK FLOW (cms)= 0.057 (i)
TIME TO PEAK (hrs)= 3.000
RUNOFF VOLUME (mm)= 23.497
TOTAL RAINFALL (mm)= 89.925
RUNOFF COEFFICIENT = 0.261

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

CALIB					
NASHYD (0002)	Area	(ha)=	2.37	Curve Number	(CN)= 61.0
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)=		0.31		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.60	1.583	9.00	3.083	19.80	4.58	5.40
0.167	3.60	1.667	9.00	3.167	19.80	4.67	5.40
0.250	3.60	1.750	9.00	3.250	19.80	4.75	5.40
0.333	3.60	1.833	9.00	3.333	19.80	4.83	5.40
0.417	3.60	1.917	9.00	3.417	19.80	4.92	5.40
0.500	3.60	2.000	9.00	3.500	19.80	5.00	5.40
0.583	5.40	2.083	10.80	3.583	9.00	5.08	3.60
0.667	5.40	2.167	10.80	3.667	9.00	5.17	3.60
0.750	5.40	2.250	10.80	3.750	9.00	5.25	3.60
0.833	5.40	2.333	10.80	3.833	9.00	5.33	3.60
0.917	5.40	2.417	10.80	3.917	9.00	5.42	3.60
1.000	5.40	2.500	10.80	4.000	9.00	5.50	3.60
1.083	5.40	2.583	53.90	4.083	7.20	5.58	3.60
1.167	5.40	2.667	53.90	4.167	7.20	5.67	3.60
1.250	5.40	2.750	53.90	4.250	7.20	5.75	3.60
1.333	5.40	2.833	140.20	4.333	7.20	5.83	3.60
1.417	5.40	2.917	140.20	4.417	7.20	5.92	3.60
1.500	5.40	3.000	140.20	4.500	7.20	6.00	3.60

Unit Hyd Qpeak (cms)= 0.292

PEAK FLOW (cms)= 0.173 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 29.152
TOTAL RAINFALL (mm)= 89.925
RUNOFF COEFFICIENT = 0.324

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

CALIB					
NASHYD (0003)	Area	(ha)=	3.45	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)=		0.27		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.60	1.583	9.00	3.083	19.80	4.58	5.40
0.167	3.60	1.667	9.00	3.167	19.80	4.67	5.40
0.250	3.60	1.750	9.00	3.250	19.80	4.75	5.40
0.333	3.60	1.833	9.00	3.333	19.80	4.83	5.40
0.417	3.60	1.917	9.00	3.417	19.80	4.92	5.40
0.500	3.60	2.000	9.00	3.500	19.80	5.00	5.40
0.583	5.40	2.083	10.80	3.583	9.00	5.08	3.60
0.667	5.40	2.167	10.80	3.667	9.00	5.17	3.60
0.750	5.40	2.250	10.80	3.750	9.00	5.25	3.60
0.833	5.40	2.333	10.80	3.833	9.00	5.33	3.60
0.917	5.40	2.417	10.80	3.917	9.00	5.42	3.60
1.000	5.40	2.500	10.80	4.000	9.00	5.50	3.60
1.083	5.40	2.583	53.90	4.083	7.20	5.58	3.60
1.167	5.40	2.667	53.90	4.167	7.20	5.67	3.60

1.250	5.40	2.750	53.90	4.250	7.20	5.75	3.60
1.333	5.40	2.833	140.20	4.333	7.20	5.83	3.60
1.417	5.40	2.917	140.20	4.417	7.20	5.92	3.60
1.500	5.40	3.000	140.20	4.500	7.20	6.00	3.60

Unit Hyd Qpeak (cms)= 0.488

PEAK FLOW (cms)= 0.338 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 35.255
TOTAL RAINFALL (mm)= 89.925
RUNOFF COEFFICIENT = 0.392

(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 (0001):	0.51	0.057	3.00	23.50
+ ID2= 2 (0002):	2.37	0.173	3.17	29.15
ID = 3 (0031):	2.88	0.201	3.08	28.15

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):	2.88	0.201	3.08	28.15
+ ID2= 2 (0003):	3.45	0.338	3.17	35.25
ID = 1 (0031):	6.33	0.536	3.17	32.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0030)	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	0.4390	0.2741
	0.0000	0.2739	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0031)	6.327	0.536	3.17	32.02
OUTFLOW: ID= 1 (0030)	6.327	0.000	0.00	0.00

PEAK FLOW REDUCTION [Qout/Qin](%)= 0.00
TIME SHIFT OF PEAK FLOW (min)=******
MAXIMUM STORAGE USED (ha.m.)= 0.0026

CALIB					
NASHYD (0005)	Area	(ha)=	6.01	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)=		0.30		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.60	1.583	9.00	3.083	19.80	4.58	5.40
0.167	3.60	1.667	9.00	3.167	19.80	4.67	5.40
0.250	3.60	1.750	9.00	3.250	19.80	4.75	5.40
0.333	3.60	1.833	9.00	3.333	19.80	4.83	5.40
0.417	3.60	1.917	9.00	3.417	19.80	4.92	5.40
0.500	3.60	2.000	9.00	3.500	19.80	5.00	5.40
0.583	5.40	2.083	10.80	3.583	9.00	5.08	3.60
0.667	5.40	2.167	10.80	3.667	9.00	5.17	3.60
0.750	5.40	2.250	10.80	3.750	9.00	5.25	3.60
0.833	5.40	2.333	10.80	3.833	9.00	5.33	3.60
0.917	5.40	2.417	10.80	3.917	9.00	5.42	3.60
1.000	5.40	2.500	10.80	4.000	9.00	5.50	3.60
1.083	5.40	2.583	53.90	4.083	7.20	5.58	3.60
1.167	5.40	2.667	53.90	4.167	7.20	5.67	3.60

1.250	5.40	2.750	53.90	4.250	7.20	5.75	3.60
1.333	5.40	2.833	140.20	4.333	7.20	5.83	3.60
1.417	5.40	2.917	140.20	4.417	7.20	5.92	3.60
1.500	5.40	3.000	140.20	4.500	7.20	6.00	3.60

Unit Hyd Qpeak (cms)= 0.765

PEAK FLOW (cms)= 0.551 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 35.262
TOTAL RAINFALL (mm)= 89.925
RUNOFF COEFFICIENT = 0.392

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

CALIB					
NASHYD (0004)	Area	(ha)=	4.81	Curve Number	(CN)= 61.0
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.(N)=	3.00
	U.H. Tp(hrs)=		0.32		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.60	1.583	9.00	3.083	19.80	4.58	5.40
0.167	3.60	1.667	9.00	3.167	19.80	4.67	5.40
0.250	3.60	1.750	9.00	3.250	19.80	4.75	5.40
0.333	3.60	1.833	9.00	3.333	19.80	4.83	5.40
0.417	3.60	1.917	9.00	3.417	19.80	4.92	5.40
0.500	3.60	2.000	9.00	3.500	19.80	5.00	5.40
0.583	5.40	2.083	10.80	3.583	9.00	5.08	3.60
0.667	5.40	2.167	10.80	3.667	9.00	5.17	3.60
0.750	5.40	2.250	10.80	3.750	9.00	5.25	3.60
0.833	5.40	2.333	10.80	3.833	9.00	5.33	3.60
0.917	5.40	2.417	10.80	3.917	9.00	5.42	3.60
1.000	5.40	2.500	10.80	4.000	9.00	5.50	3.60
1.083	5.40	2.583	53.90	4.083	7.20	5.58	3.60
1.167	5.40	2.667	53.90	4.167	7.20	5.67	3.60
1.250	5.40	2.750	53.90	4.250	7.20	5.75	3.60
1.333	5.40	2.833	140.20	4.333	7.20	5.83	3.60
1.417	5.40	2.917	140.20	4.417	7.20	5.92	3.60
1.500	5.40	3.000	140.20	4.500	7.20	6.00	3.60

Unit Hyd Qpeak (cms)= 0.574

PEAK FLOW (cms)= 0.342 (i)
TIME TO PEAK (hrs)= 3.167
RUNOFF VOLUME (mm)= 29.153
TOTAL RAINFALL (mm)= 89.925
RUNOFF COEFFICIENT = 0.324

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

ADD HYD (0054)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0030):	6.33	0.000	0.00	0.00
+ ID2= 2 (0004):	4.81	0.342	3.17	29.15
ID = 3 (0054):	11.14	0.342	3.17	12.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0054)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0054):	11.14	0.342	3.17	12.59
+ ID2= 2 (0005):	6.01	0.551	3.17	35.26
ID = 1 (0054):	17.14	0.893	3.17	20.53

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

FINISH


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V    V   I    SSSSS  U   U    A    L                (v 6.2.2015)
V    V   I    SS     U   U   A A   L
 V  V    I      SS   U   U  AAAAA  L
 V  V    I       SS  U   U  A   A  L
  VV     I    SSSSS   UUUUU  A   A  LLLLL

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2.2015\VO2\voin.dat
Output filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\7ea92e6f-b
Summary filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\7ea92e6f-b

DATE: 02-16-2024 TIME: 03:17:55

USER:

COMMENTS: _____

** SIMULATION : TImmins Storm **

READ STORM	Filename: C:\Users\lmattern\AppD ata\Local\Temp\ a41db5fc-4f1a-47c6-b168-7af52acbbd15\88ed268f
Ptotal=193.00 mm	Comments: Timmins Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	15.00	3.00	3.00	6.00	43.00	9.00	13.00
1.00	20.00	4.00	5.00	7.00	20.00	10.00	13.00
2.00	10.00	5.00	20.00	8.00	23.00	11.00	8.00

CALIB					
NASHYD (0006)	Area	(ha)=	0.06	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)=		0.11		

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	15.00	3.083	3.00	6.083	43.00	9.08	13.00
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.250	15.00	3.250	3.00	6.250	43.00	9.25	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.417	15.00	3.417	3.00	6.417	43.00	9.42	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.583	15.00	3.583	3.00	6.583	43.00	9.58	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.750	15.00	3.750	3.00	6.750	43.00	9.75	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
0.917	15.00	3.917	3.00	6.917	43.00	9.92	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.083	20.00	4.083	5.00	7.083	20.00	10.08	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.250	20.00	4.250	5.00	7.250	20.00	10.25	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00

1.417	20.00	4.417	5.00	7.417	20.00	10.42	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.583	20.00	4.583	5.00	7.583	20.00	10.58	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.750	20.00	4.750	5.00	7.750	20.00	10.75	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
1.917	20.00	4.917	5.00	7.917	20.00	10.92	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.083	10.00	5.083	20.00	8.083	23.00	11.08	8.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.250	10.00	5.250	20.00	8.250	23.00	11.25	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.417	10.00	5.417	20.00	8.417	23.00	11.42	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.583	10.00	5.583	20.00	8.583	23.00	11.58	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.750	10.00	5.750	20.00	8.750	23.00	11.75	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 0.022

PEAK FLOW (cms)= 0.005 (i)
TIME TO PEAK (hrs)= 7.000
RUNOFF VOLUME (mm)= 112.810
TOTAL RAINFALL (mm)= 193.000
RUNOFF COEFFICIENT = 0.585

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

CALIB					
NASHYD (0008)	Area	(ha)=	0.76	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)=		0.11		

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	15.00	3.083	3.00	6.083	43.00	9.08	13.00
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.250	15.00	3.250	3.00	6.250	43.00	9.25	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.417	15.00	3.417	3.00	6.417	43.00	9.42	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.583	15.00	3.583	3.00	6.583	43.00	9.58	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.750	15.00	3.750	3.00	6.750	43.00	9.75	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
0.917	15.00	3.917	3.00	6.917	43.00	9.92	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.083	20.00	4.083	5.00	7.083	20.00	10.08	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.250	20.00	4.250	5.00	7.250	20.00	10.25	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.417	20.00	4.417	5.00	7.417	20.00	10.42	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.583	20.00	4.583	5.00	7.583	20.00	10.58	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.750	20.00	4.750	5.00	7.750	20.00	10.75	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
1.917	20.00	4.917	5.00	7.917	20.00	10.92	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.083	10.00	5.083	20.00	8.083	23.00	11.08	8.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.250	10.00	5.250	20.00	8.250	23.00	11.25	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.417	10.00	5.417	20.00	8.417	23.00	11.42	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.583	10.00	5.583	20.00	8.583	23.00	11.58	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.750	10.00	5.750	20.00	8.750	23.00	11.75	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 0.264

PEAK FLOW (cms)= 0.064 (i)

TIME TO PEAK (hrs)= 7.000
RUNOFF VOLUME (mm)= 112.814
TOTAL RAINFALL (mm)= 193.000
RUNOFF COEFFICIENT = 0.585

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

ADD HYD (0033)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0006):	0.06	0.005	7.00	112.81
	+ ID2= 2 (0008):	0.76	0.064	7.00	112.81
	ID = 3 (0033):	0.82	0.069	7.00	112.81

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB					
NASHYD (0010)	Area	(ha)=	5.74	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)=		0.18		

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	15.00	3.083	3.00	6.083	43.00	9.08	13.00
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.250	15.00	3.250	3.00	6.250	43.00	9.25	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.417	15.00	3.417	3.00	6.417	43.00	9.42	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.583	15.00	3.583	3.00	6.583	43.00	9.58	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.750	15.00	3.750	3.00	6.750	43.00	9.75	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
0.917	15.00	3.917	3.00	6.917	43.00	9.92	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.083	20.00	4.083	5.00	7.083	20.00	10.08	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.250	20.00	4.250	5.00	7.250	20.00	10.25	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.417	20.00	4.417	5.00	7.417	20.00	10.42	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.583	20.00	4.583	5.00	7.583	20.00	10.58	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.750	20.00	4.750	5.00	7.750	20.00	10.75	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
1.917	20.00	4.917	5.00	7.917	20.00	10.92	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.083	10.00	5.083	20.00	8.083	23.00	11.08	8.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.250	10.00	5.250	20.00	8.250	23.00	11.25	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.417	10.00	5.417	20.00	8.417	23.00	11.42	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.583	10.00	5.583	20.00	8.583	23.00	11.58	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.750	10.00	5.750	20.00	8.750	23.00	11.75	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 1.219

PEAK FLOW (cms)= 0.483 (i)
TIME TO PEAK (hrs)= 7.000
RUNOFF VOLUME (mm)= 114.600
TOTAL RAINFALL (mm)= 193.000
RUNOFF COEFFICIENT = 0.594

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

CALIB					
NASHYD (0012)	Area	(ha)=	27.72	Curve Number	(CN)= 69.0
ID= 1 DT= 5.0 min	Ia	(mm)=	5.00	# of Linear Res.(N)= 3.00	

---------- U.H. Tp(hrs)= 0.48

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	15.00	3.083	3.00	6.083	43.00	9.08	13.00
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.250	15.00	3.250	3.00	6.250	43.00	9.25	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.417	15.00	3.417	3.00	6.417	43.00	9.42	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.583	15.00	3.583	3.00	6.583	43.00	9.58	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.750	15.00	3.750	3.00	6.750	43.00	9.75	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
0.917	15.00	3.917	3.00	6.917	43.00	9.92	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.083	20.00	4.083	5.00	7.083	20.00	10.08	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.250	20.00	4.250	5.00	7.250	20.00	10.25	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.417	20.00	4.417	5.00	7.417	20.00	10.42	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.583	20.00	4.583	5.00	7.583	20.00	10.58	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.750	20.00	4.750	5.00	7.750	20.00	10.75	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
1.917	20.00	4.917	5.00	7.917	20.00	10.92	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.083	10.00	5.083	20.00	8.083	23.00	11.08	8.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.250	10.00	5.250	20.00	8.250	23.00	11.25	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.417	10.00	5.417	20.00	8.417	23.00	11.42	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.583	10.00	5.583	20.00	8.583	23.00	11.58	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.750	10.00	5.750	20.00	8.750	23.00	11.75	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 2.206

PEAK FLOW (cms)= 2.053 (i)
TIME TO PEAK (hrs)= 7.167
RUNOFF VOLUME (mm)= 116.981
TOTAL RAINFALL (mm)= 193.000
RUNOFF COEFFICIENT = 0.606

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

CALIB NASHYD (0007) ID= 1 DT= 5.0 min	Area (ha)= 0.15 Curve Number (CN)= 64.0 Ia (mm)= 5.00 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.11

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	15.00	3.083	3.00	6.083	43.00	9.08	13.00
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.250	15.00	3.250	3.00	6.250	43.00	9.25	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.417	15.00	3.417	3.00	6.417	43.00	9.42	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.583	15.00	3.583	3.00	6.583	43.00	9.58	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.750	15.00	3.750	3.00	6.750	43.00	9.75	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
0.917	15.00	3.917	3.00	6.917	43.00	9.92	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.083	20.00	4.083	5.00	7.083	20.00	10.08	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.250	20.00	4.250	5.00	7.250	20.00	10.25	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00

1.417	20.00	4.417	5.00	7.417	20.00	10.42	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.583	20.00	4.583	5.00	7.583	20.00	10.58	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.750	20.00	4.750	5.00	7.750	20.00	10.75	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
1.917	20.00	4.917	5.00	7.917	20.00	10.92	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.083	10.00	5.083	20.00	8.083	23.00	11.08	8.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.250	10.00	5.250	20.00	8.250	23.00	11.25	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.417	10.00	5.417	20.00	8.417	23.00	11.42	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.583	10.00	5.583	20.00	8.583	23.00	11.58	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.750	10.00	5.750	20.00	8.750	23.00	11.75	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 0.053

PEAK FLOW (cms)= 0.012 (i)
TIME TO PEAK (hrs)= 7.000
RUNOFF VOLUME (mm)= 104.852
TOTAL RAINFALL (mm)= 193.000
RUNOFF COEFFICIENT = 0.543

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

CALIB NASHYD (0009) ID= 1 DT= 5.0 min	Area (ha)= 8.40 Curve Number (CN)= 68.0 Ia (mm)= 5.00 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.48

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	15.00	3.083	3.00	6.083	43.00	9.08	13.00
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.250	15.00	3.250	3.00	6.250	43.00	9.25	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.417	15.00	3.417	3.00	6.417	43.00	9.42	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.583	15.00	3.583	3.00	6.583	43.00	9.58	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.750	15.00	3.750	3.00	6.750	43.00	9.75	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
0.917	15.00	3.917	3.00	6.917	43.00	9.92	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.083	20.00	4.083	5.00	7.083	20.00	10.08	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.250	20.00	4.250	5.00	7.250	20.00	10.25	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.417	20.00	4.417	5.00	7.417	20.00	10.42	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.583	20.00	4.583	5.00	7.583	20.00	10.58	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.750	20.00	4.750	5.00	7.750	20.00	10.75	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
1.917	20.00	4.917	5.00	7.917	20.00	10.92	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.083	10.00	5.083	20.00	8.083	23.00	11.08	8.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.250	10.00	5.250	20.00	8.250	23.00	11.25	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.417	10.00	5.417	20.00	8.417	23.00	11.42	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.583	10.00	5.583	20.00	8.583	23.00	11.58	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.750	10.00	5.750	20.00	8.750	23.00	11.75	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 0.668

PEAK FLOW (cms)= 0.610 (i)

```
      TIME TO PEAK     (hrs)=   7.167
      RUNOFF VOLUME     (mm)= 114.922
      TOTAL RAINFALL    (mm)= 193.000
      RUNOFF COEFFICIENT    =   0.595

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

------------------------------------------------------------------------------------------------------------------------
--------------------
| ADD HYD  (  0047)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
--------------------          (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  0007):      0.15     0.012     7.00    104.85
      + ID2= 2 (  0009):      8.40     0.610     7.17    114.92
        ================================================
        ID = 3 (  0047):      8.55     0.618     7.17    114.74

      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| ADD HYD  (  0053)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
--------------------          (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (  0010):      5.74     0.483     7.00    114.60
      + ID2= 2 (  0012):     27.72     2.053     7.17    116.98
        ================================================
        ID = 3 (  0053):     33.46     2.488     7.08    116.57

      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
------------------------------------------------------------------------------------------------------------------------
--------------------
| ADD HYD  (  0053)|
|   3 +  2 =  1    |          AREA     QPEAK     TPEAK      R.V.
--------------------          (ha)     (cms)     (hrs)      (mm)
        ID1= 3 (  0053):     33.46     2.488     7.08    116.57
      + ID2= 2 (  0047):      8.55     0.618     7.17    114.74
        ================================================
        ID = 1 (  0053):     42.01     3.104     7.08    116.20

      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
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--------------------
| RESERVOIR(  0035)|     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    |   2.0910       0.0135
      **** WARNING : STORAGE-DISCHARGE TABLE WAS EXCEEDED.

                                AREA      QPEAK      TPEAK        R.V.
                               (ha)      (cms)      (hrs)        (mm)
   INFLOW : ID= 2 (  0053)     42.012      3.104       7.08      116.20
   OUTFLOW: ID= 1 (  0035)     42.012      3.104       7.08      116.20

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)= 99.98
                  TIME SHIFT OF PEAK FLOW          (min)=  0.00
                  MAXIMUM  STORAGE   USED        (ha.m.)=  0.0200
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| CALIB            |
| NASHYD   (  0011)|   Area     (ha)=   3.66   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)=   0.30

        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   15.00  |  3.083    3.00  |  6.083   43.00  |  9.08   13.00
     0.167   15.00  |  3.167    3.00  |  6.167   43.00  |  9.17   13.00
     0.250   15.00  |  3.250    3.00  |  6.250   43.00  |  9.25   13.00
     0.333   15.00  |  3.333    3.00  |  6.333   43.00  |  9.33   13.00
     0.417   15.00  |  3.417    3.00  |  6.417   43.00  |  9.42   13.00
     0.500   15.00  |  3.500    3.00  |  6.500   43.00  |  9.50   13.00
     0.583   15.00  |  3.583    3.00  |  6.583   43.00  |  9.58   13.00
     0.667   15.00  |  3.667    3.00  |  6.667   43.00  |  9.67   13.00
     0.750   15.00  |  3.750    3.00  |  6.750   43.00  |  9.75   13.00
     0.833   15.00  |  3.833    3.00  |  6.833   43.00  |  9.83   13.00
     0.917   15.00  |  3.917    3.00  |  6.917   43.00  |  9.92   13.00
     1.000   15.00  |  4.000    3.00  |  7.000   43.00  |  10.00  13.00
     1.083   20.00  |  4.083    5.00  |  7.083   20.00  |  10.08  13.00
     1.167   20.00  |  4.167    5.00  |  7.167   20.00  |  10.17  13.00
     1.250   20.00  |  4.250    5.00  |  7.250   20.00  |  10.25  13.00
     1.333   20.00  |  4.333    5.00  |  7.333   20.00  |  10.33  13.00
     1.417   20.00  |  4.417    5.00  |  7.417   20.00  |  10.42  13.00
     1.500   20.00  |  4.500    5.00  |  7.500   20.00  |  10.50  13.00
     1.583   20.00  |  4.583    5.00  |  7.583   20.00  |  10.58  13.00
     1.667   20.00  |  4.667    5.00  |  7.667   20.00  |  10.67  13.00
     1.750   20.00  |  4.750    5.00  |  7.750   20.00  |  10.75  13.00
     1.833   20.00  |  4.833    5.00  |  7.833   20.00  |  10.83  13.00
     1.917   20.00  |  4.917    5.00  |  7.917   20.00  |  10.92  13.00
     2.000   20.00  |  5.000    5.00  |  8.000   20.00  |  11.00  13.00
     2.083   10.00  |  5.083   20.00  |  8.083   23.00  |  11.08   8.00
     2.167   10.00  |  5.167   20.00  |  8.167   23.00  |  11.17   8.00
     2.250   10.00  |  5.250   20.00  |  8.250   23.00  |  11.25   8.00
     2.333   10.00  |  5.333   20.00  |  8.333   23.00  |  11.33   8.00
     2.417   10.00  |  5.417   20.00  |  8.417   23.00  |  11.42   8.00
     2.500   10.00  |  5.500   20.00  |  8.500   23.00  |  11.50   8.00
     2.583   10.00  |  5.583   20.00  |  8.583   23.00  |  11.58   8.00
     2.667   10.00  |  5.667   20.00  |  8.667   23.00  |  11.67   8.00
     2.750   10.00  |  5.750   20.00  |  8.750   23.00  |  11.75   8.00
     2.833   10.00  |  5.833   20.00  |  8.833   23.00  |  11.83   8.00
     2.917   10.00  |  5.917   20.00  |  8.917   23.00  |  11.92   8.00
     3.000   10.00  |  6.000   20.00  |  9.000   23.00  |  12.00   8.00

      Unit Hyd Qpeak  (cms)=   0.466

      PEAK FLOW      (cms)=   0.294 (i)
      TIME TO PEAK   (hrs)=   7.000
      RUNOFF VOLUME   (mm)= 114.884
      TOTAL RAINFALL  (mm)= 193.000
      RUNOFF COEFFICIENT  =   0.595

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

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| CALIB            |
| NASHYD   (  0013)|   Area     (ha)=   4.75   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)=   0.25

        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   15.00  |  3.083    3.00  |  6.083   43.00  |  9.08   13.00
     0.167   15.00  |  3.167    3.00  |  6.167   43.00  |  9.17   13.00
     0.250   15.00  |  3.250    3.00  |  6.250   43.00  |  9.25   13.00
     0.333   15.00  |  3.333    3.00  |  6.333   43.00  |  9.33   13.00
     0.417   15.00  |  3.417    3.00  |  6.417   43.00  |  9.42   13.00
     0.500   15.00  |  3.500    3.00  |  6.500   43.00  |  9.50   13.00
     0.583   15.00  |  3.583    3.00  |  6.583   43.00  |  9.58   13.00
     0.667   15.00  |  3.667    3.00  |  6.667   43.00  |  9.67   13.00
     0.750   15.00  |  3.750    3.00  |  6.750   43.00  |  9.75   13.00
     0.833   15.00  |  3.833    3.00  |  6.833   43.00  |  9.83   13.00
     0.917   15.00  |  3.917    3.00  |  6.917   43.00  |  9.92   13.00
     1.000   15.00  |  4.000    3.00  |  7.000   43.00  |  10.00  13.00
     1.083   20.00  |  4.083    5.00  |  7.083   20.00  |  10.08  13.00
     1.167   20.00  |  4.167    5.00  |  7.167   20.00  |  10.17  13.00
     1.250   20.00  |  4.250    5.00  |  7.250   20.00  |  10.25  13.00
     1.333   20.00  |  4.333    5.00  |  7.333   20.00  |  10.33  13.00
     1.417   20.00  |  4.417    5.00  |  7.417   20.00  |  10.42  13.00
     1.500   20.00  |  4.500    5.00  |  7.500   20.00  |  10.50  13.00
     1.583   20.00  |  4.583    5.00  |  7.583   20.00  |  10.58  13.00
     1.667   20.00  |  4.667    5.00  |  7.667   20.00  |  10.67  13.00
     1.750   20.00  |  4.750    5.00  |  7.750   20.00  |  10.75  13.00
     1.833   20.00  |  4.833    5.00  |  7.833   20.00  |  10.83  13.00
     1.917   20.00  |  4.917    5.00  |  7.917   20.00  |  10.92  13.00
     2.000   20.00  |  5.000    5.00  |  8.000   20.00  |  11.00  13.00
     2.083   10.00  |  5.083   20.00  |  8.083   23.00  |  11.08   8.00
     2.167   10.00  |  5.167   20.00  |  8.167   23.00  |  11.17   8.00
     2.250   10.00  |  5.250   20.00  |  8.250   23.00  |  11.25   8.00
     2.333   10.00  |  5.333   20.00  |  8.333   23.00  |  11.33   8.00
     2.417   10.00  |  5.417   20.00  |  8.417   23.00  |  11.42   8.00
     2.500   10.00  |  5.500   20.00  |  8.500   23.00  |  11.50   8.00
     2.583   10.00  |  5.583   20.00  |  8.583   23.00  |  11.58   8.00
     2.667   10.00  |  5.667   20.00  |  8.667   23.00  |  11.67   8.00
     2.750   10.00  |  5.750   20.00  |  8.750   23.00  |  11.75   8.00
     2.833   10.00  |  5.833   20.00  |  8.833   23.00  |  11.83   8.00
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2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 0.725

PEAK FLOW (cms)= 0.391 (i)
TIME TO PEAK (hrs)= 7.000
RUNOFF VOLUME (mm)= 114.837
TOTAL RAINFALL (mm)= 193.000
RUNOFF COEFFICIENT = 0.595

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

CALIB			
NASHYD (0014)	Area (ha)=	11.81	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)=	0.33	

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	15.00	3.083	3.00	6.083	43.00	9.08	13.00
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.250	15.00	3.250	3.00	6.250	43.00	9.25	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.417	15.00	3.417	3.00	6.417	43.00	9.42	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.583	15.00	3.583	3.00	6.583	43.00	9.58	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.750	15.00	3.750	3.00	6.750	43.00	9.75	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
0.917	15.00	3.917	3.00	6.917	43.00	9.92	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.083	20.00	4.083	5.00	7.083	20.00	10.08	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.250	20.00	4.250	5.00	7.250	20.00	10.25	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.417	20.00	4.417	5.00	7.417	20.00	10.42	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.583	20.00	4.583	5.00	7.583	20.00	10.58	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.750	20.00	4.750	5.00	7.750	20.00	10.75	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
1.917	20.00	4.917	5.00	7.917	20.00	10.92	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.083	10.00	5.083	20.00	8.083	23.00	11.08	8.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.250	10.00	5.250	20.00	8.250	23.00	11.25	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.417	10.00	5.417	20.00	8.417	23.00	11.42	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.583	10.00	5.583	20.00	8.583	23.00	11.58	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.750	10.00	5.750	20.00	8.750	23.00	11.75	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 1.367

PEAK FLOW (cms)= 0.933 (i)
TIME TO PEAK (hrs)= 7.000
RUNOFF VOLUME (mm)= 114.898
TOTAL RAINFALL (mm)= 193.000
RUNOFF COEFFICIENT = 0.595

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

ADD HYD (0046)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0011):	3.66	0.294	7.00	114.88
+ ID2= 2 (0013):	4.75	0.391	7.00	114.84
ID = 3 (0046):	8.41	0.685	7.00	114.86

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0046)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0046):	8.41	0.685	7.00	114.86
+ ID2= 2 (0014):	11.81	0.933	7.00	114.90
ID = 1 (0046):	20.22	1.618	7.00	114.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0046)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0046):	20.22	1.618	7.00	114.88
+ ID2= 2 (0035):	42.01	3.104	7.08	116.20
ID = 3 (0046):	62.23	4.709	7.08	115.77

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB			
NASHYD (0015)	Area (ha)=	7.08	Curve Number (CN)= 67.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.25	

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	15.00	3.083	3.00	6.083	43.00	9.08	13.00
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.250	15.00	3.250	3.00	6.250	43.00	9.25	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.417	15.00	3.417	3.00	6.417	43.00	9.42	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.583	15.00	3.583	3.00	6.583	43.00	9.58	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.750	15.00	3.750	3.00	6.750	43.00	9.75	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
0.917	15.00	3.917	3.00	6.917	43.00	9.92	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.083	20.00	4.083	5.00	7.083	20.00	10.08	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.250	20.00	4.250	5.00	7.250	20.00	10.25	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.417	20.00	4.417	5.00	7.417	20.00	10.42	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.583	20.00	4.583	5.00	7.583	20.00	10.58	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.750	20.00	4.750	5.00	7.750	20.00	10.75	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
1.917	20.00	4.917	5.00	7.917	20.00	10.92	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.083	10.00	5.083	20.00	8.083	23.00	11.08	8.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.250	10.00	5.250	20.00	8.250	23.00	11.25	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.417	10.00	5.417	20.00	8.417	23.00	11.42	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.583	10.00	5.583	20.00	8.583	23.00	11.58	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.750	10.00	5.750	20.00	8.750	23.00	11.75	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 1.082

PEAK FLOW (cms)= 0.572 (i)
TIME TO PEAK (hrs)= 7.000
RUNOFF VOLUME (mm)= 112.792
TOTAL RAINFALL (mm)= 193.000
RUNOFF COEFFICIENT = 0.584

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

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| CALIB             |
| NASHYD  (  0016)  |   Area     (ha)=   0.62   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)=   0.12
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NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	15.00	3.083	3.00	6.083	43.00	9.08	13.00
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.250	15.00	3.250	3.00	6.250	43.00	9.25	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.417	15.00	3.417	3.00	6.417	43.00	9.42	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.583	15.00	3.583	3.00	6.583	43.00	9.58	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.750	15.00	3.750	3.00	6.750	43.00	9.75	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
0.917	15.00	3.917	3.00	6.917	43.00	9.92	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.083	20.00	4.083	5.00	7.083	20.00	10.08	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.250	20.00	4.250	5.00	7.250	20.00	10.25	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.417	20.00	4.417	5.00	7.417	20.00	10.42	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.583	20.00	4.583	5.00	7.583	20.00	10.58	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.750	20.00	4.750	5.00	7.750	20.00	10.75	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
1.917	20.00	4.917	5.00	7.917	20.00	10.92	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.083	10.00	5.083	20.00	8.083	23.00	11.08	8.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.250	10.00	5.250	20.00	8.250	23.00	11.25	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.417	10.00	5.417	20.00	8.417	23.00	11.42	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.583	10.00	5.583	20.00	8.583	23.00	11.58	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.750	10.00	5.750	20.00	8.750	23.00	11.75	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 0.197

PEAK FLOW (cms)= 0.052 (i)
TIME TO PEAK (hrs)= 7.000
RUNOFF VOLUME (mm)= 113.394
TOTAL RAINFALL (mm)= 193.000
RUNOFF COEFFICIENT = 0.588

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

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---------------------
| ADD HYD  (  0052) |
|   1 +  2 =  3     |          AREA     QPEAK     TPEAK      R.V.
---------------------           (ha)     (cms)     (hrs)      (mm)
      ID1= 1 (  0015):        7.08     0.572      7.00    112.79
    + ID2= 2 (  0016):        0.62     0.052      7.00    113.39
      ==========================================================
      ID = 3 (  0052):        7.70     0.624      7.00    112.84
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NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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---------------------
| CALIB             |
| NASHYD  (  0001)  |   Area     (ha)=   0.51   Curve Number    (CN)= 54.0
|ID= 1 DT= 5.0 min  |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
---------------------   U.H. Tp(hrs)=   0.11
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NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	15.00	3.083	3.00	6.083	43.00	9.08	13.00
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.250	15.00	3.250	3.00	6.250	43.00	9.25	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.417	15.00	3.417	3.00	6.417	43.00	9.42	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.583	15.00	3.583	3.00	6.583	43.00	9.58	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.750	15.00	3.750	3.00	6.750	43.00	9.75	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
0.917	15.00	3.917	3.00	6.917	43.00	9.92	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.083	20.00	4.083	5.00	7.083	20.00	10.08	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.250	20.00	4.250	5.00	7.250	20.00	10.25	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.417	20.00	4.417	5.00	7.417	20.00	10.42	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.583	20.00	4.583	5.00	7.583	20.00	10.58	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.750	20.00	4.750	5.00	7.750	20.00	10.75	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
1.917	20.00	4.917	5.00	7.917	20.00	10.92	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.083	10.00	5.083	20.00	8.083	23.00	11.08	8.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.250	10.00	5.250	20.00	8.250	23.00	11.25	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.417	10.00	5.417	20.00	8.417	23.00	11.42	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.583	10.00	5.583	20.00	8.583	23.00	11.58	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.750	10.00	5.750	20.00	8.750	23.00	11.75	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 0.177

PEAK FLOW (cms)= 0.033 (i)
TIME TO PEAK (hrs)= 7.000
RUNOFF VOLUME (mm)= 85.796
TOTAL RAINFALL (mm)= 193.000
RUNOFF COEFFICIENT = 0.445

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

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---------------------
| CALIB             |
| NASHYD  (  0002)  |   Area     (ha)=   2.37   Curve Number    (CN)= 61.0
|ID= 1 DT= 5.0 min  |   Ia       (mm)=   5.00   # of Linear Res.(N)= 3.00
---------------------   U.H. Tp(hrs)=   0.31
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NOTE: RAINFALL WAS TRANSFORMED TO 5.0 MIN. TIME STEP.

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	15.00	3.083	3.00	6.083	43.00	9.08	13.00
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.250	15.00	3.250	3.00	6.250	43.00	9.25	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.417	15.00	3.417	3.00	6.417	43.00	9.42	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.583	15.00	3.583	3.00	6.583	43.00	9.58	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.750	15.00	3.750	3.00	6.750	43.00	9.75	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
0.917	15.00	3.917	3.00	6.917	43.00	9.92	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.083	20.00	4.083	5.00	7.083	20.00	10.08	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.250	20.00	4.250	5.00	7.250	20.00	10.25	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.417	20.00	4.417	5.00	7.417	20.00	10.42	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.583	20.00	4.583	5.00	7.583	20.00	10.58	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.750	20.00	4.750	5.00	7.750	20.00	10.75	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00

1.917	20.00	4.917	5.00	7.917	20.00	10.92	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.083	10.00	5.083	20.00	8.083	23.00	11.08	8.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.250	10.00	5.250	20.00	8.250	23.00	11.25	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.417	10.00	5.417	20.00	8.417	23.00	11.42	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.583	10.00	5.583	20.00	8.583	23.00	11.58	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.750	10.00	5.750	20.00	8.750	23.00	11.75	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 0.292

PEAK FLOW (cms)= 0.165 (i)
TIME TO PEAK (hrs)= 7.000
RUNOFF VOLUME (mm)= 100.835
TOTAL RAINFALL (mm)= 193.000
RUNOFF COEFFICIENT = 0.522

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

CALIB			
NASHYD (0003)	Area (ha)=	3.45	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)=	0.27	

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	15.00	3.083	3.00	6.083	43.00	9.08	13.00
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.250	15.00	3.250	3.00	6.250	43.00	9.25	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.417	15.00	3.417	3.00	6.417	43.00	9.42	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.583	15.00	3.583	3.00	6.583	43.00	9.58	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.750	15.00	3.750	3.00	6.750	43.00	9.75	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
0.917	15.00	3.917	3.00	6.917	43.00	9.92	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.083	20.00	4.083	5.00	7.083	20.00	10.08	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.250	20.00	4.250	5.00	7.250	20.00	10.25	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.417	20.00	4.417	5.00	7.417	20.00	10.42	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.583	20.00	4.583	5.00	7.583	20.00	10.58	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.750	20.00	4.750	5.00	7.750	20.00	10.75	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
1.917	20.00	4.917	5.00	7.917	20.00	10.92	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.083	10.00	5.083	20.00	8.083	23.00	11.08	8.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.250	10.00	5.250	20.00	8.250	23.00	11.25	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.417	10.00	5.417	20.00	8.417	23.00	11.42	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.583	10.00	5.583	20.00	8.583	23.00	11.58	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.750	10.00	5.750	20.00	8.750	23.00	11.75	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 0.488

PEAK FLOW (cms)= 0.281 (i)
TIME TO PEAK (hrs)= 7.000
RUNOFF VOLUME (mm)= 114.861
TOTAL RAINFALL (mm)= 193.000
RUNOFF COEFFICIENT = 0.595

(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 (0001):	0.51	0.033	7.00	85.80
+ ID2= 2 (0002):	2.37	0.165	7.00	100.83
ID = 3 (0031):	2.88	0.198	7.00	98.17

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):	2.88	0.198	7.00	98.17
+ ID2= 2 (0003):	3.45	0.281	7.00	114.86
ID = 1 (0031):	6.33	0.479	7.00	107.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0030)	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	0.4390	0.2741
	0.0000	0.2739	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0031)	6.327	0.479	7.00	107.27
OUTFLOW: ID= 1 (0030)	6.327	0.701	7.25	63.98

PEAK FLOW REDUCTION [Qout/Qin](%)=146.27
TIME SHIFT OF PEAK FLOW (min)= 15.00
MAXIMUM STORAGE USED (ha.m.)= 0.3134

**** WARNING : HYDROGRAPH PEAK WAS NOT REDUCED.
CHECK OUTFLOW/STORAGE TABLE OR REDUCE DT.

CALIB			
NASHYD (0005)	Area (ha)=	6.01	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)=	0.30	

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	15.00	3.083	3.00	6.083	43.00	9.08	13.00
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.250	15.00	3.250	3.00	6.250	43.00	9.25	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.417	15.00	3.417	3.00	6.417	43.00	9.42	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.583	15.00	3.583	3.00	6.583	43.00	9.58	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.750	15.00	3.750	3.00	6.750	43.00	9.75	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
0.917	15.00	3.917	3.00	6.917	43.00	9.92	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.083	20.00	4.083	5.00	7.083	20.00	10.08	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.250	20.00	4.250	5.00	7.250	20.00	10.25	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.417	20.00	4.417	5.00	7.417	20.00	10.42	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.583	20.00	4.583	5.00	7.583	20.00	10.58	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.750	20.00	4.750	5.00	7.750	20.00	10.75	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
1.917	20.00	4.917	5.00	7.917	20.00	10.92	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.083	10.00	5.083	20.00	8.083	23.00	11.08	8.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00

2.250	10.00	5.250	20.00	8.250	23.00	11.25	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.417	10.00	5.417	20.00	8.417	23.00	11.42	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.583	10.00	5.583	20.00	8.583	23.00	11.58	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.750	10.00	5.750	20.00	8.750	23.00	11.75	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 0.765

PEAK FLOW (cms)= 0.483 (i)
TIME TO PEAK (hrs)= 7.000
RUNOFF VOLUME (mm)= 114.884
TOTAL RAINFALL (mm)= 193.000
RUNOFF COEFFICIENT = 0.595

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

CALIB					
NASHYD (0004)	Area (ha)=	4.81	Curve Number (CN)=	61.0	
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)=	3.00	
	U.H. Tp(hrs)=	0.32			

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	15.00	3.083	3.00	6.083	43.00	9.08	13.00
0.167	15.00	3.167	3.00	6.167	43.00	9.17	13.00
0.250	15.00	3.250	3.00	6.250	43.00	9.25	13.00
0.333	15.00	3.333	3.00	6.333	43.00	9.33	13.00
0.417	15.00	3.417	3.00	6.417	43.00	9.42	13.00
0.500	15.00	3.500	3.00	6.500	43.00	9.50	13.00
0.583	15.00	3.583	3.00	6.583	43.00	9.58	13.00
0.667	15.00	3.667	3.00	6.667	43.00	9.67	13.00
0.750	15.00	3.750	3.00	6.750	43.00	9.75	13.00
0.833	15.00	3.833	3.00	6.833	43.00	9.83	13.00
0.917	15.00	3.917	3.00	6.917	43.00	9.92	13.00
1.000	15.00	4.000	3.00	7.000	43.00	10.00	13.00
1.083	20.00	4.083	5.00	7.083	20.00	10.08	13.00
1.167	20.00	4.167	5.00	7.167	20.00	10.17	13.00
1.250	20.00	4.250	5.00	7.250	20.00	10.25	13.00
1.333	20.00	4.333	5.00	7.333	20.00	10.33	13.00
1.417	20.00	4.417	5.00	7.417	20.00	10.42	13.00
1.500	20.00	4.500	5.00	7.500	20.00	10.50	13.00
1.583	20.00	4.583	5.00	7.583	20.00	10.58	13.00
1.667	20.00	4.667	5.00	7.667	20.00	10.67	13.00
1.750	20.00	4.750	5.00	7.750	20.00	10.75	13.00
1.833	20.00	4.833	5.00	7.833	20.00	10.83	13.00
1.917	20.00	4.917	5.00	7.917	20.00	10.92	13.00
2.000	20.00	5.000	5.00	8.000	20.00	11.00	13.00
2.083	10.00	5.083	20.00	8.083	23.00	11.08	8.00
2.167	10.00	5.167	20.00	8.167	23.00	11.17	8.00
2.250	10.00	5.250	20.00	8.250	23.00	11.25	8.00
2.333	10.00	5.333	20.00	8.333	23.00	11.33	8.00
2.417	10.00	5.417	20.00	8.417	23.00	11.42	8.00
2.500	10.00	5.500	20.00	8.500	23.00	11.50	8.00
2.583	10.00	5.583	20.00	8.583	23.00	11.58	8.00
2.667	10.00	5.667	20.00	8.667	23.00	11.67	8.00
2.750	10.00	5.750	20.00	8.750	23.00	11.75	8.00
2.833	10.00	5.833	20.00	8.833	23.00	11.83	8.00
2.917	10.00	5.917	20.00	8.917	23.00	11.92	8.00
3.000	10.00	6.000	20.00	9.000	23.00	12.00	8.00

Unit Hyd Qpeak (cms)= 0.574

PEAK FLOW (cms)= 0.333 (i)
TIME TO PEAK (hrs)= 7.000
RUNOFF VOLUME (mm)= 100.839
TOTAL RAINFALL (mm)= 193.000
RUNOFF COEFFICIENT = 0.522

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

ADD HYD (0054)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0030):	6.33	0.701	7.25	63.98
+ ID2= 2 (0004):	4.81	0.333	7.00	100.84
ID = 3 (0054):	11.14	1.001	7.25	79.90

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0054)				
3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0054):	11.14	1.001	7.25	79.90
+ ID2= 2 (0005):	6.01	0.483	7.00	114.88
ID = 1 (0054):	17.14	1.422	7.25	92.15

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

Post-Development Results

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

       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       V    V   I    SS     U   U   A A   L
        V  V    I      SS   U   U  AAAAA  L
         V V    I       SS  U   U  A   A  L
          VV    I    SSSSS   UUUUU  A   A  LLLLL

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


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2.2015\VO2\voin.dat
  Output  filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\cef6041c-0
  Summary filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\cef6041c-0

DATE: 02-16-2024                          TIME: 03:21:39

USER:



COMMENTS: _____________________________________________________________

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

  ***************************************************
  ** SIMULATION : 01 Ptbo_SCS_6hr_2yr          **
  ***************************************************

-----------------------------
|    READ STORM     |    Filename: C:\Users\lmattern\AppD
|                   |              ata\Local\Temp\
|                   |              9184f6ae-5778-4d44-b28a-4ff007efe36b\153db3ea
| Ptotal= 38.75 mm  |    Comments: Ptbo_SCS_6hr_2yr
-----------------------------------------------------------------------------------------------------------------
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.00    1.60 |  1.50    3.90 |'  3.00    8.50 |  4.50    2.30
                 0.25    1.60 |  1.75    3.90 |'  3.25    8.50 |  4.75    2.30
                 0.50    2.30 |  2.00    4.60 |'  3.50    3.90 |  5.00    1.60
                 0.75    2.30 |  2.25    4.60 |'  3.75    3.90 |  5.25    1.60
                 1.00    2.30 |  2.50   23.20 |'  4.00    3.10 |  5.50    1.60
                 1.25    2.30 |  2.75   60.40 |'  4.25    3.10 |  5.75    1.60

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

-----------------------------
| CALIB             |
| STANDHYD (  0002) |   Area     (ha)=   0.83
|ID= 1 DT= 5.0 min  |   Total Imp(%)=  45.00   Dir. Conn.(%)=   0.10
-----------------------------------------------
                              IMPERVIOUS     PERVIOUS (i)
      Surface Area      (ha)=       0.37          0.46
      Dep. Storage      (mm)=       1.00          5.00
      Average Slope      (%)=       2.00          2.00
      Length             (m)=      74.39         40.00
      Mannings n            =      0.013         0.250

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


                          ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    1.60 | 1.583    3.90 | 3.083    8.50 |  4.58    2.30
                 0.167    1.60 | 1.667    3.90 | 3.167    8.50 |  4.67    2.30
                 0.250    1.60 | 1.750    3.90 | 3.250    8.50 |  4.75    2.30
                 0.333    1.60 | 1.833    3.90 | 3.333    8.50 |  4.83    2.30
                 0.417    1.60 | 1.917    3.90 | 3.417    8.50 |  4.92    2.30
                 0.500    1.60 | 2.000    3.90 | 3.500    8.50 |  5.00    2.30
                 0.583    2.30 | 2.083    4.60 | 3.583    3.90 |  5.08    1.60
                 0.667    2.30 | 2.167    4.60 | 3.667    3.90 |  5.17    1.60
                 0.750    2.30 | 2.250    4.60 | 3.750    3.90 |  5.25    1.60
                 0.833    2.30 | 2.333    4.60 | 3.833    3.90 |  5.33    1.60
                 0.917    2.30 | 2.417    4.60 | 3.917    3.90 |  5.42    1.60
                 1.000    2.30 | 2.500    4.60 | 4.000    3.90 |  5.50    1.60
                 1.083    2.30 | 2.583   23.20 | 4.083    3.10 |  5.58    1.60
                 1.167    2.30 | 2.667   23.20 | 4.167    3.10 |  5.67    1.60
                 1.250    2.30 | 2.750   23.20 | 4.250    3.10 |  5.75    1.60
                 1.333    2.30 | 2.833   60.40 | 4.333    3.10 |  5.83    1.60
                 1.417    2.30 | 2.917   60.40 | 4.417    3.10 |  5.92    1.60
                 1.500    2.30 | 3.000   60.40 | 4.500    3.10 |  6.00    1.60

      Max.Eff.Inten.(mm/hr)=       60.40         21.11
            over (min)             5.00         20.00
      Storage Coeff.  (min)=       2.13 (ii)    15.27 (ii)
      Unit Hyd. Tpeak (min)=       5.00         20.00
      Unit Hyd. peak  (cms)=       0.31          0.07
                                                          *TOTALS*
      PEAK FLOW         (cms)=     0.00          0.02       0.015 (iii)
      TIME TO PEAK      (hrs)=     3.00          3.17       3.17
      RUNOFF VOLUME      (mm)=    37.75          6.69       6.71
      TOTAL RAINFALL     (mm)=    38.75         38.75      38.75
      RUNOFF COEFFICIENT    =      0.97          0.17       0.17

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

        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  47.0    Ia = Dep. 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 (  0001) |   Area     (ha)=  10.01
|ID= 1 DT= 5.0 min  |   Total Imp(%)=  56.00   Dir. Conn.(%)=  43.00
-----------------------------------------------
                              IMPERVIOUS     PERVIOUS (i)
      Surface Area      (ha)=       5.60          4.40
      Dep. Storage      (mm)=       1.00          1.50
      Average Slope      (%)=       2.00          2.00
      Length             (m)=     258.26         10.00
      Mannings n            =      0.013         0.250

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


                          ---- TRANSFORMED HYETOGRAPH ----
                  TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                   hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                 0.083    1.60 | 1.583    3.90 | 3.083    8.50 |  4.58    2.30
                 0.167    1.60 | 1.667    3.90 | 3.167    8.50 |  4.67    2.30
                 0.250    1.60 | 1.750    3.90 | 3.250    8.50 |  4.75    2.30
                 0.333    1.60 | 1.833    3.90 | 3.333    8.50 |  4.83    2.30
                 0.417    1.60 | 1.917    3.90 | 3.417    8.50 |  4.92    2.30
                 0.500    1.60 | 2.000    3.90 | 3.500    8.50 |  5.00    2.30
                 0.583    2.30 | 2.083    4.60 | 3.583    3.90 |  5.08    1.60
                 0.667    2.30 | 2.167    4.60 | 3.667    3.90 |  5.17    1.60
                 0.750    2.30 | 2.250    4.60 | 3.750    3.90 |  5.25    1.60
                 0.833    2.30 | 2.333    4.60 | 3.833    3.90 |  5.33    1.60
                 0.917    2.30 | 2.417    4.60 | 3.917    3.90 |  5.42    1.60
                 1.000    2.30 | 2.500    4.60 | 4.000    3.90 |  5.50    1.60
                 1.083    2.30 | 2.583   23.20 | 4.083    3.10 |  5.58    1.60
                 1.167    2.30 | 2.667   23.20 | 4.167    3.10 |  5.67    1.60
                 1.250    2.30 | 2.750   23.20 | 4.250    3.10 |  5.75    1.60
                 1.333    2.30 | 2.833   60.40 | 4.333    3.10 |  5.83    1.60
                 1.417    2.30 | 2.917   60.40 | 4.417    3.10 |  5.92    1.60
                 1.500    2.30 | 3.000   60.40 | 4.500    3.10 |  6.00    1.60

      Max.Eff.Inten.(mm/hr)=       60.40         14.99
            over (min)             5.00         10.00
      Storage Coeff.  (min)=       4.49 (ii)     8.28 (ii)
      Unit Hyd. Tpeak (min)=       5.00         10.00
      Unit Hyd. peak  (cms)=       0.23          0.13
                                                          *TOTALS*
      PEAK FLOW         (cms)=     0.71          0.13       0.837 (iii)
      TIME TO PEAK      (hrs)=     3.00          3.08       3.00
      RUNOFF VOLUME      (mm)=    37.75          6.05      19.68
      TOTAL RAINFALL     (mm)=    38.75         38.75      38.75
      RUNOFF COEFFICIENT    =      0.97          0.16       0.51

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

```
      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN* =  50.0     Ia = Dep. 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(  0004)|     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     |   0.1740     0.2900
                          0.0560     0.1441     |   0.2080     0.3290
                          0.1000     0.2002     |   0.2110     0.3723
                          0.1320     0.2393     |   0.2500     0.7460

                                AREA      QPEAK      TPEAK       R.V.
                                (ha)      (cms)      (hrs)       (mm)
   INFLOW : ID= 2 (  0001)     10.005     0.837      3.00       19.68
   OUTFLOW: ID= 1 (  0004)     10.005     0.056      4.08       19.61

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  6.69
                  TIME SHIFT OF PEAK FLOW          (min)= 65.00
                  MAXIMUM  STORAGE   USED        (ha.m.)=  0.1441

--------------------------------------------------------------------------------
--------------------
| ADD HYD  (  0006)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
--------------------          (ha)      (cms)     (hrs)      (mm)
       ID1= 1 (  0002):      0.83    0.015      3.17       6.71
     + ID2= 2 (  0004):     10.01    0.056      4.08      19.61
       ================================================
       ID = 3 (  0006):     10.84    0.065      3.25      18.63

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

--------------------------------------------------------------------------------
--------------------
| CALIB            |
| STANDHYD (  0003)|   Area     (ha)=   0.73
|ID= 1 DT= 5.0 min |   Total Imp(%)=  45.00   Dir. Conn.(%)=  45.00
------------------------------------
                        IMPERVIOUS     PERVIOUS (i)
     Surface Area  (ha)=      0.33          0.40
     Dep. Storage  (mm)=      1.00          1.50
     Average Slope  (%)=      1.00          3.00
     Length         (m)=     69.90         15.00
     Mannings n      =       0.013         0.250

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


                        ---- TRANSFORMED HYETOGRAPH ----
     TIME    RAIN  |  TIME    RAIN  |'  TIME    RAIN  |  TIME    RAIN
      hrs   mm/hr  |   hrs   mm/hr  |'   hrs   mm/hr  |   hrs   mm/hr
    0.083    1.60  | 1.583    3.90  | 3.083    8.50  |  4.58    2.30
    0.167    1.60  | 1.667    3.90  | 3.167    8.50  |  4.67    2.30
    0.250    1.60  | 1.750    3.90  | 3.250    8.50  |  4.75    2.30
    0.333    1.60  | 1.833    3.90  | 3.333    8.50  |  4.83    2.30
    0.417    1.60  | 1.917    3.90  | 3.417    8.50  |  4.92    2.30
    0.500    1.60  | 2.000    3.90  | 3.500    8.50  |  5.00    2.30
    0.583    2.30  | 2.083    4.60  | 3.583    3.90  |  5.08    1.60
    0.667    2.30  | 2.167    4.60  | 3.667    3.90  |  5.17    1.60
    0.750    2.30  | 2.250    4.60  | 3.750    3.90  |  5.25    1.60
    0.833    2.30  | 2.333    4.60  | 3.833    3.90  |  5.33    1.60
    0.917    2.30  | 2.417    4.60  | 3.917    3.90  |  5.42    1.60
    1.000    2.30  | 2.500    4.60  | 4.000    3.90  |  5.50    1.60
    1.083    2.30  | 2.583   23.20  | 4.083    3.10  |  5.58    1.60
    1.167    2.30  | 2.667   23.20  | 4.167    3.10  |  5.67    1.60
    1.250    2.30  | 2.750   23.20  | 4.250    3.10  |  5.75    1.60
    1.333    2.30  | 2.833   60.40  | 4.333    3.10  |  5.83    1.60
    1.417    2.30  | 2.917   60.40  | 4.417    3.10  |  5.92    1.60
    1.500    2.30  | 3.000   60.40  | 4.500    3.10  |  6.00    1.60

     Max.Eff.Inten.(mm/hr)=      60.40          7.63
               over (min)          5.00         10.00
     Storage Coeff.  (min)=      2.52 (ii)     7.12 (ii)
     Unit Hyd. Tpeak (min)=      5.00         10.00
     Unit Hyd. peak  (cms)=      0.29          0.14
                                                      *TOTALS*
     PEAK FLOW       (cms)=      0.06          0.01          0.062 (iii)
     TIME TO PEAK    (hrs)=      3.00          3.00           3.00
```



```
     RUNOFF VOLUME    (mm)=      37.75          3.99          19.18
     TOTAL RAINFALL   (mm)=      38.75         38.75          38.75
     RUNOFF COEFFICIENT    =      0.97          0.10           0.49

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

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN* =  45.0     Ia = Dep. Storage  (Above)
     (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
          THAN THE STORAGE COEFFICIENT.
    (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

      V    V   I    SSSSS  U   U    A    L                (v 6.2.2015)
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
        VV     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    HHHHH    Y    M M M  O   O
      O   O    T      T    H   H    Y    M   M  O   O
       OOO     T      T    H   H    Y    M   M   OOO

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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2.2015\VO2\voin.dat
  Output  filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\b83c3abc-0
  Summary filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\b83c3abc-0

DATE: 02-16-2024                          TIME: 03:21:39

USER:


COMMENTS: _____

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

  **************************************************
  ** SIMULATION : 02 Ptbo_SCS_6hr_5yr           **
  **************************************************

------------------------------
|    READ STORM      |    Filename: C:\Users\lmattern\AppD
|                    |              ata\Local\Temp\
|                    |              9184f6ae-5778-4d44-b28a-4ff007efe36b\1a371601
| Ptotal= 52.44 mm   |    Comments: Ptbo_SCS_6hr_5yr
------------------------------
     TIME    RAIN  |  TIME    RAIN  |'  TIME    RAIN  |  TIME    RAIN
      hrs   mm/hr  |   hrs   mm/hr  |'   hrs   mm/hr  |   hrs   mm/hr
    0.00    2.10  |  1.50    5.20  |  3.00   11.50  |  4.50    3.20
    0.25    2.10  |  1.75    5.20  |  3.25   11.50  |  4.75    3.20
    0.50    3.20  |  2.00    6.30  |  3.50    5.20  |  5.00    2.10
    0.75    3.20  |  2.25    6.30  |  3.75    5.20  |  5.25    2.10
    1.00    3.20  |  2.50   31.40  |  4.00    4.20  |  5.50    2.10
    1.25    3.20  |  2.75   81.78  |  4.25    4.20  |  5.75    2.10

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

------------------------------
| CALIB            |
| STANDHYD (  0002)|   Area     (ha)=   0.83
|ID= 1 DT= 5.0 min |   Total Imp(%)=  45.00   Dir. Conn.(%)=   0.10
------------------------------------
                        IMPERVIOUS     PERVIOUS (i)
     Surface Area  (ha)=      0.37          0.46
     Dep. Storage  (mm)=      1.00          5.00
     Average Slope  (%)=      2.00          2.00
     Length         (m)=     74.39         40.00
     Mannings n      =       0.013         0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.10	1.583	5.20	3.083	11.50	4.58	3.20
0.167	2.10	1.667	5.20	3.167	11.50	4.67	3.20
0.250	2.10	1.750	5.20	3.250	11.50	4.75	3.20
0.333	2.10	1.833	5.20	3.333	11.50	4.83	3.20
0.417	2.10	1.917	5.20	3.417	11.50	4.92	3.20
0.500	2.10	2.000	5.20	3.500	11.50	5.00	3.20
0.583	3.20	2.083	6.30	3.583	5.20	5.08	2.10
0.667	3.20	2.167	6.30	3.667	5.20	5.17	2.10
0.750	3.20	2.250	6.30	3.750	5.20	5.25	2.10
0.833	3.20	2.333	6.30	3.833	5.20	5.33	2.10
0.917	3.20	2.417	6.30	3.917	5.20	5.42	2.10
1.000	3.20	2.500	6.30	4.000	5.20	5.50	2.10
1.083	3.20	2.583	31.40	4.083	4.20	5.58	2.10
1.167	3.20	2.667	31.40	4.167	4.20	5.67	2.10
1.250	3.20	2.750	31.40	4.250	4.20	5.75	2.10
1.333	3.20	2.833	81.78	4.333	4.20	5.83	2.10
1.417	3.20	2.917	81.78	4.417	4.20	5.92	2.10
1.500	3.20	3.000	81.78	4.500	4.20	6.00	2.10

Max.Eff.Inten.(mm/hr)=		81.78	42.11	
over (min)		5.00	15.00	
Storage Coeff. (min)=		1.88 (ii)	11.86 (ii)	
Unit Hyd. Tpeak (min)=		5.00	15.00	
Unit Hyd. peak (cms)=		0.32	0.09	
				TOTALS
PEAK FLOW	(cms)=	0.00	0.03	0.032 (iii)
TIME TO PEAK	(hrs)=	3.00	3.08	3.08
RUNOFF VOLUME	(mm)=	51.45	11.91	11.94
TOTAL RAINFALL	(mm)=	52.45	52.45	52.45
RUNOFF COEFFICIENT	=	0.98	0.23	0.23

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. 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 (0001)	Area (ha)= 10.01
ID= 1 DT= 5.0 min	Total Imp(%)= 56.00 Dir. Conn.(%)= 43.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	5.60	4.40
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	2.00	2.00
Length	(m)=	258.26	10.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.10	1.583	5.20	3.083	11.50	4.58	3.20
0.167	2.10	1.667	5.20	3.167	11.50	4.67	3.20
0.250	2.10	1.750	5.20	3.250	11.50	4.75	3.20
0.333	2.10	1.833	5.20	3.333	11.50	4.83	3.20
0.417	2.10	1.917	5.20	3.417	11.50	4.92	3.20
0.500	2.10	2.000	5.20	3.500	11.50	5.00	3.20
0.583	3.20	2.083	6.30	3.583	5.20	5.08	2.10
0.667	3.20	2.167	6.30	3.667	5.20	5.17	2.10
0.750	3.20	2.250	6.30	3.750	5.20	5.25	2.10
0.833	3.20	2.333	6.30	3.833	5.20	5.33	2.10
0.917	3.20	2.417	6.30	3.917	5.20	5.42	2.10
1.000	3.20	2.500	6.30	4.000	5.20	5.50	2.10
1.083	3.20	2.583	31.40	4.083	4.20	5.58	2.10
1.167	3.20	2.667	31.40	4.167	4.20	5.67	2.10
1.250	3.20	2.750	31.40	4.250	4.20	5.75	2.10
1.333	3.20	2.833	81.78	4.333	4.20	5.83	2.10
1.417	3.20	2.917	81.78	4.417	4.20	5.92	2.10
1.500	3.20	3.000	81.78	4.500	4.20	6.00	2.10

Max.Eff.Inten.(mm/hr)= 81.78 26.41

over (min)		5.00	10.00	
Storage Coeff. (min)=		3.97 (ii)	7.33 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.24	0.13	
				TOTALS
PEAK FLOW	(cms)=	0.96	0.24	1.207 (iii)
TIME TO PEAK	(hrs)=	3.00	3.00	3.00
RUNOFF VOLUME	(mm)=	51.45	10.63	28.18
TOTAL RAINFALL	(mm)=	52.45	52.45	52.45
RUNOFF COEFFICIENT	=	0.98	0.20	0.54

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 50.0 Ia = Dep. 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(0004)	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	0.1740	0.2900
0.0560	0.1441	0.2080	0.3290
0.1000	0.2002	0.2110	0.3723
0.1320	0.2393	0.2500	0.7460

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0001)		10.005	1.207	3.00	28.18
OUTFLOW: ID= 1 (0004)		10.005	0.100	3.75	28.12
	PEAK FLOW REDUCTION [Qout/Qin](%)=				8.28
	TIME SHIFT OF PEAK FLOW (min)=				45.00
	MAXIMUM STORAGE USED (ha.m.)=				0.2002

ADD HYD (0006)					
1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0002):		0.83	0.032	3.08	11.94
+ ID2= 2 (0004):		10.01	0.100	3.75	28.12
ID = 3 (0006):		10.84	0.115	3.17	26.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	
STANDHYD (0003)	Area (ha)= 0.73
ID= 1 DT= 5.0 min	Total Imp(%)= 45.00 Dir. Conn.(%)= 45.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.33	0.40
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	3.00
Length	(m)=	69.90	15.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.10	1.583	5.20	3.083	11.50	4.58	3.20
0.167	2.10	1.667	5.20	3.167	11.50	4.67	3.20
0.250	2.10	1.750	5.20	3.250	11.50	4.75	3.20
0.333	2.10	1.833	5.20	3.333	11.50	4.83	3.20
0.417	2.10	1.917	5.20	3.417	11.50	4.92	3.20
0.500	2.10	2.000	5.20	3.500	11.50	5.00	3.20
0.583	3.20	2.083	6.30	3.583	5.20	5.08	2.10
0.667	3.20	2.167	6.30	3.667	5.20	5.17	2.10
0.750	3.20	2.250	6.30	3.750	5.20	5.25	2.10
0.833	3.20	2.333	6.30	3.833	5.20	5.33	2.10
0.917	3.20	2.417	6.30	3.917	5.20	5.42	2.10
1.000	3.20	2.500	6.30	4.000	5.20	5.50	2.10
1.083	3.20	2.583	31.40	4.083	4.20	5.58	2.10
1.167	3.20	2.667	31.40	4.167	4.20	5.67	2.10

1.250	3.20	2.750	31.40	4.250	4.20	5.75	2.10
1.333	3.20	2.833	81.78	4.333	4.20	5.83	2.10
1.417	3.20	2.917	81.78	4.417	4.20	5.92	2.10
1.500	3.20	3.000	81.78	4.500	4.20	6.00	2.10

Max.Eff.Inten.(mm/hr)=	81.78	13.74	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.23 (ii)	6.31 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.30	0.15	
			TOTALS
PEAK FLOW (cms)=	0.07	0.01	0.087 (iii)
TIME TO PEAK (hrs)=	3.00	3.00	3.00
RUNOFF VOLUME (mm)=	51.44	7.18	27.10
TOTAL RAINFALL (mm)=	52.45	52.45	52.45
RUNOFF COEFFICIENT =	0.98	0.14	0.52

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 45.0 Ia = Dep. 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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       V    V   I    SSSSS  U   U    A    L              (v 6.2.2015)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
         VV     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    HHHHH    Y    M M M  O   O
       O   O     T      T    H   H    Y    M   M  O   O
        OOO      T      T    H   H    Y    M   M   OOO
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***** D E T A I L E D O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 6.2.2015\VO2\voin.dat
Output filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\ec38ce92-2
Summary filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\ec38ce92-2

DATE: 02-16-2024 TIME: 03:21:39

USER:

COMMENTS: _____

```
  ************************************************
  ** SIMULATION : 03 Ptbo_SCS_6hr_10yr          **
  ************************************************
```

READ STORM	Filename: C:\Users\lmattern\AppD ata\Local\Temp\ 9184f6ae-5778-4d44-b28a-4ff007efe36b\8d610b08
Ptotal= 61.60 mm	Comments: Ptbo_SCS_6hr_10yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	2.50	1.50	6.20	3.00	13.50	4.50	3.70
0.25	2.50	1.75	6.20	3.25	13.50	4.75	3.70
0.50	3.70	2.00	7.40	3.50	6.20	5.00	2.50
0.75	3.70	2.25	7.40	3.75	6.20	5.25	2.50
1.00	3.70	2.50	36.90	4.00	4.90	5.50	2.50
1.25	3.70	2.75	95.90	4.25	4.90	5.75	2.50

CALIB					
STANDHYD (0002)	Area	(ha)=	0.83		
ID= 1 DT= 5.0 min	Total Imp(%)=		45.00	Dir. Conn.(%)=	0.10

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.37	0.46
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	74.39	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.50	1.583	6.20	3.083	13.50	4.58	3.70
0.167	2.50	1.667	6.20	3.167	13.50	4.67	3.70
0.250	2.50	1.750	6.20	3.250	13.50	4.75	3.70
0.333	2.50	1.833	6.20	3.333	13.50	4.83	3.70
0.417	2.50	1.917	6.20	3.417	13.50	4.92	3.70
0.500	2.50	2.000	6.20	3.500	13.50	5.00	3.70
0.583	3.70	2.083	7.40	3.583	6.20	5.08	2.50
0.667	3.70	2.167	7.40	3.667	6.20	5.17	2.50
0.750	3.70	2.250	7.40	3.750	6.20	5.25	2.50
0.833	3.70	2.333	7.40	3.833	6.20	5.33	2.50
0.917	3.70	2.417	7.40	3.917	6.20	5.42	2.50
1.000	3.70	2.500	7.40	4.000	6.20	5.50	2.50
1.083	3.70	2.583	36.90	4.083	4.90	5.58	2.50
1.167	3.70	2.667	36.90	4.167	4.90	5.67	2.50
1.250	3.70	2.750	36.90	4.250	4.90	5.75	2.50
1.333	3.70	2.833	95.90	4.333	4.90	5.83	2.50
1.417	3.70	2.917	95.90	4.417	4.90	5.92	2.50
1.500	3.70	3.000	95.90	4.500	4.90	6.00	2.50

Max.Eff.Inten.(mm/hr)=	95.90	56.36		
over (min)	5.00	15.00		
Storage Coeff. (min)=	1.77 (ii)	10.64 (ii)		
Unit Hyd. Tpeak (min)=	5.00	15.00		
Unit Hyd. peak (cms)=	0.32	0.09		
			TOTALS	
PEAK FLOW (cms)=	0.00	0.04	0.045 (iii)	
TIME TO PEAK (hrs)=	3.00	3.08	3.08	
RUNOFF VOLUME (mm)=	60.60	15.99	16.03	
TOTAL RAINFALL (mm)=	61.60	61.60	61.60	
RUNOFF COEFFICIENT =	0.98	0.26	0.26	

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. 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 (0001)	Area	(ha)=	10.01		
ID= 1 DT= 5.0 min	Total Imp(%)=		56.00	Dir. Conn.(%)=	43.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	5.60	4.40
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	2.00	2.00
Length	(m)=	258.26	10.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.50	1.583	6.20	3.083	13.50	4.58	3.70
0.167	2.50	1.667	6.20	3.167	13.50	4.67	3.70
0.250	2.50	1.750	6.20	3.250	13.50	4.75	3.70
0.333	2.50	1.833	6.20	3.333	13.50	4.83	3.70
0.417	2.50	1.917	6.20	3.417	13.50	4.92	3.70
0.500	2.50	2.000	6.20	3.500	13.50	5.00	3.70
0.583	3.70	2.083	7.40	3.583	6.20	5.08	2.50

```
              0.667    3.70 | 2.167    7.40 | 3.667    6.20 |  5.17    2.50
              0.750    3.70 | 2.250    7.40 | 3.750    6.20 |  5.25    2.50
              0.833    3.70 | 2.333    7.40 | 3.833    6.20 |  5.33    2.50
              0.917    3.70 | 2.417    7.40 | 3.917    6.20 |  5.42    2.50
              1.000    3.70 | 2.500    7.40 | 4.000    6.20 |  5.50    2.50
              1.083    3.70 | 2.583   36.90 | 4.083    4.90 |  5.58    2.50
              1.167    3.70 | 2.667   36.90 | 4.167    4.90 |  5.67    2.50
              1.250    3.70 | 2.750   36.90 | 4.250    4.90 |  5.75    2.50
              1.333    3.70 | 2.833   95.90 | 4.333    4.90 |  5.83    2.50
              1.417    3.70 | 2.917   95.90 | 4.417    4.90 |  5.92    2.50
              1.500    3.70 | 3.000   95.90 | 4.500    4.90 |  6.00    2.50

     Max.Eff.Inten.(mm/hr)=       95.90         35.30
               over (min)          5.00         10.00
     Storage Coeff.  (min)=        3.73 (ii)    6.88 (ii)
     Unit Hyd. Tpeak (min)=        5.00         10.00
     Unit Hyd. peak  (cms)=        0.25          0.14
                                                          *TOTALS*
     PEAK FLOW       (cms)=        1.13          0.33       1.468 (iii)
     TIME TO PEAK    (hrs)=        3.00          3.00       3.00
     RUNOFF VOLUME    (mm)=       60.60         14.24      34.18
     TOTAL RAINFALL   (mm)=       61.60         61.60      61.60
     RUNOFF COEFFICIENT    =       0.98          0.23       0.55

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  50.0     Ia = Dep. 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(   0004)|     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    |   0.1740     0.2900
                          0.0560     0.1441    |   0.2080     0.3290
                          0.1000     0.2002    |   0.2110     0.3723
                          0.1320     0.2393    |   0.2500     0.7460

                                  AREA     QPEAK     TPEAK      R.V.
                                   (ha)     (cms)     (hrs)      (mm)
   INFLOW : ID= 2 (   0001)      10.005     1.468      3.00      34.18
   OUTFLOW: ID= 1 (   0004)      10.005     0.132      3.67      34.11

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=   8.99
                    TIME SHIFT OF PEAK FLOW          (min)= 40.00
                    MAXIMUM  STORAGE   USED        (ha.m.)=  0.2392

--------------------------------------------------------------------------------------------------------------------------------------------
--------------------
| ADD HYD   (   0006)|
|   1 +  2 =  3      |          AREA     QPEAK     TPEAK      R.V.
--------------------           (ha)     (cms)     (hrs)      (mm)
        ID1= 1 (   0002):      0.83     0.045      3.08      16.03
      + ID2= 2 (   0004):     10.01     0.132      3.67      34.11
        ==========================================================
        ID = 3 (   0006):     10.84     0.156      3.17      32.73

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| CALIB             |
| STANDHYD (   0003)|   Area     (ha)=   0.73
|ID= 1 DT= 5.0 min  |   Total Imp(%)=  45.00   Dir. Conn.(%)=  45.00
-------------------------------------
                          IMPERVIOUS     PERVIOUS (i)
     Surface Area     (ha)=      0.33          0.40
     Dep. Storage     (mm)=      1.00          1.50
     Average Slope     (%)=      1.00          3.00
     Length            (m)=     69.90         15.00
     Mannings n           =     0.013         0.250

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


                          ---- TRANSFORMED HYETOGRAPH ----
          TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
           hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
         0.083    2.50 | 1.583    6.20 | 3.083   13.50 |  4.58    3.70
```



```
              0.167    2.50 | 1.667    6.20 | 3.167   13.50 |  4.67    3.70
              0.250    2.50 | 1.750    6.20 | 3.250   13.50 |  4.75    3.70
              0.333    2.50 | 1.833    6.20 | 3.333   13.50 |  4.83    3.70
              0.417    2.50 | 1.917    6.20 | 3.417   13.50 |  4.92    3.70
              0.500    2.50 | 2.000    6.20 | 3.500   13.50 |  5.00    3.70
              0.583    3.70 | 2.083    7.40 | 3.583    6.20 |  5.08    2.50
              0.667    3.70 | 2.167    7.40 | 3.667    6.20 |  5.17    2.50
              0.750    3.70 | 2.250    7.40 | 3.750    6.20 |  5.25    2.50
              0.833    3.70 | 2.333    7.40 | 3.833    6.20 |  5.33    2.50
              0.917    3.70 | 2.417    7.40 | 3.917    6.20 |  5.42    2.50
              1.000    3.70 | 2.500    7.40 | 4.000    6.20 |  5.50    2.50
              1.083    3.70 | 2.583   36.90 | 4.083    4.90 |  5.58    2.50
              1.167    3.70 | 2.667   36.90 | 4.167    4.90 |  5.67    2.50
              1.250    3.70 | 2.750   36.90 | 4.250    4.90 |  5.75    2.50
              1.333    3.70 | 2.833   95.90 | 4.333    4.90 |  5.83    2.50
              1.417    3.70 | 2.917   95.90 | 4.417    4.90 |  5.92    2.50
              1.500    3.70 | 3.000   95.90 | 4.500    4.90 |  6.00    2.50

     Max.Eff.Inten.(mm/hr)=       95.90         18.61
               over (min)          5.00         10.00
     Storage Coeff.  (min)=        2.10 (ii)    5.92 (ii)
     Unit Hyd. Tpeak (min)=        5.00         10.00
     Unit Hyd. peak  (cms)=        0.31          0.15
                                                          *TOTALS*
     PEAK FLOW       (cms)=        0.09          0.02       0.105 (iii)
     TIME TO PEAK    (hrs)=        3.00          3.00       3.00
     RUNOFF VOLUME    (mm)=       60.60          9.75      32.63
     TOTAL RAINFALL   (mm)=       61.60         61.60      61.60
     RUNOFF COEFFICIENT    =       0.98          0.16       0.53

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  45.0     Ia = Dep. 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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============================================================================================================================================

       V     V   I    SSSSS  U   U    A    L                (v 6.2.2015)
       V     V   I    SS     U   U   A A   L
        V   V    I     SS    U   U  AAAAA  L
        V   V    I      SS   U   U  A   A  L
         VV      I    SSSSS  UUUUU  A   A  LLLLL

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

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

  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2.2015\VO2\voin.dat
  Output  filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\53a97b8e-2
  Summary filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\53a97b8e-2

DATE: 02-16-2024                          TIME: 03:21:39

USER:


COMMENTS: _____

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  ************************************************
  ** SIMULATION : 04 Ptbo_SCS_6hr_25yr           **
  ************************************************

-----------------------------
|     READ STORM      |     Filename: C:\Users\lmattern\AppD
|                     |               ata\Local\Temp\
|                     |               9184f6ae-5778-4d44-b28a-4ff007efe36b\87edc8f5
| Ptotal= 72.90 mm    |     Comments: Ptbo_SCS_6hr_25yr
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	2.90	1.50	7.30	3.00	16.00	4.50	4.40
0.25	2.90	1.75	7.30	3.25	16.00	4.75	4.40
0.50	4.40	2.00	8.80	3.50	7.30	5.00	2.90
0.75	4.40	2.25	8.80	3.75	7.30	5.25	2.90
1.00	4.40	2.50	43.70	4.00	5.80	5.50	2.90
1.25	4.40	2.75	113.70	4.25	5.80	5.75	2.90

CALIB	
STANDHYD (0002)	Area (ha)= 0.83
ID= 1 DT= 5.0 min	Total Imp(%)= 45.00 Dir. Conn.(%)= 0.10

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.37	0.46
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	74.39	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90
0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

				TOTALS
Max.Eff.Inten.(mm/hr)=		113.70	76.17	
over (min)		5.00	10.00	
Storage Coeff. (min)=		1.65 (ii)	9.52 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.32	0.12	
PEAK FLOW	(cms)=	0.00	0.07	0.067 (iii)
TIME TO PEAK	(hrs)=	3.00	3.08	3.08
RUNOFF VOLUME	(mm)=	71.90	21.60	21.64
TOTAL RAINFALL	(mm)=	72.90	72.90	72.90
RUNOFF COEFFICIENT	=	0.99	0.30	0.30

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. 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 (0001)	Area (ha)= 10.01
ID= 1 DT= 5.0 min	Total Imp(%)= 56.00 Dir. Conn.(%)= 43.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	5.60	4.40
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	2.00	2.00
Length	(m)=	258.26	10.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90
0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

				TOTALS
Max.Eff.Inten.(mm/hr)=		113.70	47.75	
over (min)		5.00	10.00	
Storage Coeff. (min)=		3.48 (ii)	6.43 (ii)	
Unit Hyd. Tpeak (min)=		5.00	10.00	
Unit Hyd. peak (cms)=		0.26	0.14	
PEAK FLOW	(cms)=	1.35	0.46	1.812 (iii)
TIME TO PEAK	(hrs)=	3.00	3.00	3.00
RUNOFF VOLUME	(mm)=	71.90	19.22	41.87
TOTAL RAINFALL	(mm)=	72.90	72.90	72.90
RUNOFF COEFFICIENT	=	0.99	0.26	0.57

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 50.0 Ia = Dep. 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(0004)	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	0.1740	0.2900
0.0560	0.1441	0.2080	0.3290
0.1000	0.2002	0.2110	0.3723
0.1320	0.2393	0.2500	0.7460

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0001)		10.005	1.812	3.00	41.87
OUTFLOW: ID= 1 (0004)		10.005	0.174	3.67	41.81
PEAK FLOW	REDUCTION [Qout/Qin](%)=				9.59
TIME SHIFT OF PEAK FLOW				(min)=	40.00
MAXIMUM STORAGE USED				(ha.m.)=	0.2899

ADD HYD (0006)					
1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0002):		0.83	0.067	3.08	21.64
+ ID2= 2 (0004):		10.01	0.174	3.67	41.81
ID = 3 (0006):		10.84	0.206	3.08	40.26

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

CALIB	
STANDHYD (0003)	Area (ha)= 0.73
ID= 1 DT= 5.0 min	Total Imp(%)= 45.00 Dir. Conn.(%)= 45.00

IMPERVIOUS PERVIOUS (i)

Surface Area	(ha)=	0.33	0.40
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	3.00
Length	(m)=	69.90	15.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.90	1.583	7.30	3.083	16.00	4.58	4.40
0.167	2.90	1.667	7.30	3.167	16.00	4.67	4.40
0.250	2.90	1.750	7.30	3.250	16.00	4.75	4.40
0.333	2.90	1.833	7.30	3.333	16.00	4.83	4.40
0.417	2.90	1.917	7.30	3.417	16.00	4.92	4.40
0.500	2.90	2.000	7.30	3.500	16.00	5.00	4.40
0.583	4.40	2.083	8.80	3.583	7.30	5.08	2.90
0.667	4.40	2.167	8.80	3.667	7.30	5.17	2.90
0.750	4.40	2.250	8.80	3.750	7.30	5.25	2.90
0.833	4.40	2.333	8.80	3.833	7.30	5.33	2.90
0.917	4.40	2.417	8.80	3.917	7.30	5.42	2.90
1.000	4.40	2.500	8.80	4.000	7.30	5.50	2.90
1.083	4.40	2.583	43.70	4.083	5.80	5.58	2.90
1.167	4.40	2.667	43.70	4.167	5.80	5.67	2.90
1.250	4.40	2.750	43.70	4.250	5.80	5.75	2.90
1.333	4.40	2.833	113.70	4.333	5.80	5.83	2.90
1.417	4.40	2.917	113.70	4.417	5.80	5.92	2.90
1.500	4.40	3.000	113.70	4.500	5.80	6.00	2.90

Max.Eff.Inten.(mm/hr)=		113.70	25.56	
over (min)		5.00	10.00	
Storage Coeff.	(min)=	1.96 (ii)	5.53 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	10.00	
Unit Hyd. peak	(cms)=	0.31	0.16	
				TOTALS
PEAK FLOW	(cms)=	0.10	0.02	0.128 (iii)
TIME TO PEAK	(hrs)=	3.00	3.00	3.00
RUNOFF VOLUME	(mm)=	71.90	13.35	39.69
TOTAL RAINFALL	(mm)=	72.90	72.90	72.90
RUNOFF COEFFICIENT	=	0.99	0.18	0.54

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 45.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
V    V   I    SSSSS  U   U    A    L                (v 6.2.2015)
V    V   I    SS     U   U   A A   L
 V  V    I     SS    U   U  AAAAA  L
 V  V    I      SS   U   U  A   A  L
  VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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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 6.2.2015\VO2\voin.dat
Output filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\d0a81d71-f
Summary filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\d0a81d71-f

DATE: 02-16-2024 TIME: 03:21:39

USER:

COMMENTS: _____

****
** SIMULATION : 05 Ptbo_SCS_6hr_50yr **
****

READ STORM
Ptotal= 81.47 mm

Filename: C:\Users\lmattern\AppD
ata\Local\Temp\
9184f6ae-5778-4d44-b28a-4ff007efe36b\44b13d48
Comments: Ptbo_SCS_6hr_50yr

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	3.30	1.50	8.10	3.00	17.90	4.50	4.90
0.25	3.30	1.75	8.10	3.25	17.90	4.75	4.90
0.50	4.90	2.00	9.80	3.50	8.10	5.00	3.30
0.75	4.90	2.25	9.80	3.75	8.10	5.25	3.30
1.00	4.90	2.50	48.90	4.00	6.50	5.50	3.30
1.25	4.90	2.75	127.00	4.25	6.50	5.75	3.30

CALIB
STANDHYD (0002)
ID= 1 DT= 5.0 min

Area (ha)= 0.83
Total Imp(%)= 45.00 Dir. Conn.(%)= 0.10

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.37	0.46
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	74.39	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.30	1.583	8.10	3.083	17.90	4.58	4.90
0.167	3.30	1.667	8.10	3.167	17.90	4.67	4.90
0.250	3.30	1.750	8.10	3.250	17.90	4.75	4.90
0.333	3.30	1.833	8.10	3.333	17.90	4.83	4.90
0.417	3.30	1.917	8.10	3.417	17.90	4.92	4.90
0.500	3.30	2.000	8.10	3.500	17.90	5.00	4.90
0.583	4.90	2.083	9.80	3.583	8.10	5.08	3.30
0.667	4.90	2.167	9.80	3.667	8.10	5.17	3.30
0.750	4.90	2.250	9.80	3.750	8.10	5.25	3.30
0.833	4.90	2.333	9.80	3.833	8.10	5.33	3.30
0.917	4.90	2.417	9.80	3.917	8.10	5.42	3.30
1.000	4.90	2.500	9.80	4.000	8.10	5.50	3.30
1.083	4.90	2.583	48.90	4.083	6.50	5.58	3.30
1.167	4.90	2.667	48.90	4.167	6.50	5.67	3.30
1.250	4.90	2.750	48.90	4.250	6.50	5.75	3.30
1.333	4.90	2.833	127.00	4.333	6.50	5.83	3.30
1.417	4.90	2.917	127.00	4.417	6.50	5.92	3.30
1.500	4.90	3.000	127.00	4.500	6.50	6.00	3.30

Max.Eff.Inten.(mm/hr)=		127.00	92.24	
over (min)		5.00	10.00	
Storage Coeff.	(min)=	1.58 (ii)	8.87 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	10.00	
Unit Hyd. peak	(cms)=	0.33	0.12	
				TOTALS
PEAK FLOW	(cms)=	0.00	0.08	0.084 (iii)
TIME TO PEAK	(hrs)=	3.00	3.00	3.00
RUNOFF VOLUME	(mm)=	80.48	26.21	26.26
TOTAL RAINFALL	(mm)=	81.48	81.48	81.48
RUNOFF COEFFICIENT	=	0.99	0.32	0.32

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. 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 (  0001)|   Area     (ha)=  10.01
|ID= 1 DT= 5.0 min |   Total Imp(%)=  56.00   Dir. Conn.(%)=  43.00
 ----------------------
                                IMPERVIOUS     PERVIOUS (i)
      Surface Area      (ha)=        5.60          4.40
      Dep. Storage      (mm)=        1.00          1.50
      Average Slope      (%)=        2.00          2.00
      Length             (m)=      258.26         10.00
      Mannings n            =       0.013         0.250

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


                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    3.30 | 1.583    8.10 | 3.083   17.90 |  4.58    4.90
               0.167    3.30 | 1.667    8.10 | 3.167   17.90 |  4.67    4.90
               0.250    3.30 | 1.750    8.10 | 3.250   17.90 |  4.75    4.90
               0.333    3.30 | 1.833    8.10 | 3.333   17.90 |  4.83    4.90
               0.417    3.30 | 1.917    8.10 | 3.417   17.90 |  4.92    4.90
               0.500    3.30 | 2.000    8.10 | 3.500   17.90 |  5.00    4.90
               0.583    4.90 | 2.083    9.80 | 3.583    8.10 |  5.08    3.30
               0.667    4.90 | 2.167    9.80 | 3.667    8.10 |  5.17    3.30
               0.750    4.90 | 2.250    9.80 | 3.750    8.10 |  5.25    3.30
               0.833    4.90 | 2.333    9.80 | 3.833    8.10 |  5.33    3.30
               0.917    4.90 | 2.417    9.80 | 3.917    8.10 |  5.42    3.30
               1.000    4.90 | 2.500    9.80 | 4.000    8.10 |  5.50    3.30
               1.083    4.90 | 2.583   48.90 | 4.083    6.50 |  5.58    3.30
               1.167    4.90 | 2.667   48.90 | 4.167    6.50 |  5.67    3.30
               1.250    4.90 | 2.750   48.90 | 4.250    6.50 |  5.75    3.30
               1.333    4.90 | 2.833  127.00 | 4.333    6.50 |  5.83    3.30
               1.417    4.90 | 2.917  127.00 | 4.417    6.50 |  5.92    3.30
               1.500    4.90 | 3.000  127.00 | 4.500    6.50 |  6.00    3.30

      Max.Eff.Inten.(mm/hr)=      127.00         57.92
            over (min)            5.00         10.00
      Storage Coeff.  (min)=      3.33 (ii)     6.15 (ii)
      Unit Hyd. Tpeak (min)=      5.00         10.00
      Unit Hyd. peak  (cms)=      0.26          0.15
                                                        *TOTALS*
      PEAK FLOW       (cms)=      1.51          0.57      2.080 (iii)
      TIME TO PEAK    (hrs)=      3.00          3.00         3.00
      RUNOFF VOLUME    (mm)=     80.48         23.34        47.91
      TOTAL RAINFALL   (mm)=     81.48         81.48        81.48
      RUNOFF COEFFICIENT   =      0.99          0.29         0.59

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  50.0     Ia = Dep. Storage   (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR(  0004)|       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    |   0.1740     0.2900
                             0.0560     0.1441    |   0.2080     0.3290
                             0.1000     0.2002    |   0.2110     0.3723
                             0.1320     0.2393    |   0.2500     0.7460

                                 AREA      QPEAK      TPEAK       R.V.
                                  (ha)      (cms)      (hrs)       (mm)
     INFLOW : ID= 2 (  0001)     10.005      2.080      3.00       47.91
     OUTFLOW: ID= 1 (  0004)     10.005      0.208      3.67       47.84

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=   9.98
                    TIME SHIFT OF PEAK FLOW          (min)= 40.00
                    MAXIMUM  STORAGE   USED        (ha.m.)=  0.3289

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 ----------------------
| ADD HYD  (  0006)|
|   1 +  2 =  3    |          AREA    QPEAK    TPEAK      R.V.
 ----------------------        (ha)    (cms)    (hrs)      (mm)
```



```
      ID1= 1 (  0002):     0.83   0.084      3.00     26.26
    + ID2= 2 (  0004):    10.01   0.208      3.67     47.84
      ==========================================================
      ID = 3 (  0006):    10.84   0.250      3.08     46.19

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.
---------------------------------------------------------------------------------------------------------------------------------
 ----------------------
| CALIB                |
| STANDHYD (  0003)|   Area     (ha)=   0.73
|ID= 1 DT= 5.0 min |   Total Imp(%)=  45.00   Dir. Conn.(%)=  45.00
 ----------------------
                                IMPERVIOUS     PERVIOUS (i)
      Surface Area      (ha)=        0.33          0.40
      Dep. Storage      (mm)=        1.00          1.50
      Average Slope      (%)=        1.00          3.00
      Length             (m)=       69.90         15.00
      Mannings n            =       0.013         0.250

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


                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                  hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    3.30 | 1.583    8.10 | 3.083   17.90 |  4.58    4.90
               0.167    3.30 | 1.667    8.10 | 3.167   17.90 |  4.67    4.90
               0.250    3.30 | 1.750    8.10 | 3.250   17.90 |  4.75    4.90
               0.333    3.30 | 1.833    8.10 | 3.333   17.90 |  4.83    4.90
               0.417    3.30 | 1.917    8.10 | 3.417   17.90 |  4.92    4.90
               0.500    3.30 | 2.000    8.10 | 3.500   17.90 |  5.00    4.90
               0.583    4.90 | 2.083    9.80 | 3.583    8.10 |  5.08    3.30
               0.667    4.90 | 2.167    9.80 | 3.667    8.10 |  5.17    3.30
               0.750    4.90 | 2.250    9.80 | 3.750    8.10 |  5.25    3.30
               0.833    4.90 | 2.333    9.80 | 3.833    8.10 |  5.33    3.30
               0.917    4.90 | 2.417    9.80 | 3.917    8.10 |  5.42    3.30
               1.000    4.90 | 2.500    9.80 | 4.000    8.10 |  5.50    3.30
               1.083    4.90 | 2.583   48.90 | 4.083    6.50 |  5.58    3.30
               1.167    4.90 | 2.667   48.90 | 4.167    6.50 |  5.67    3.30
               1.250    4.90 | 2.750   48.90 | 4.250    6.50 |  5.75    3.30
               1.333    4.90 | 2.833  127.00 | 4.333    6.50 |  5.83    3.30
               1.417    4.90 | 2.917  127.00 | 4.417    6.50 |  5.92    3.30
               1.500    4.90 | 3.000  127.00 | 4.500    6.50 |  6.00    3.30

      Max.Eff.Inten.(mm/hr)=      127.00         31.33
            over (min)            5.00         10.00
      Storage Coeff.  (min)=      1.87 (ii)     5.29 (ii)
      Unit Hyd. Tpeak (min)=      5.00         10.00
      Unit Hyd. peak  (cms)=      0.32          0.16
                                                        *TOTALS*
      PEAK FLOW       (cms)=      0.12          0.03      0.146 (iii)
      TIME TO PEAK    (hrs)=      3.00          3.00         3.00
      RUNOFF VOLUME    (mm)=     80.47         16.38        45.22
      TOTAL RAINFALL   (mm)=     81.48         81.48        81.48
      RUNOFF COEFFICIENT   =      0.99          0.20         0.56

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  45.0     Ia = Dep. Storage   (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

       V    V   I    SSSSS  U   U    A    L                  (v 6.2.2015)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

```
  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2.2015\VO2\voin.dat
  Output  filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\63bcd0f5-c
  Summary filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\63bcd0f5-c

DATE: 02-16-2024                          TIME: 03:21:39

USER:


COMMENTS: _____________________________________________________
```

```
  **********************************************
  ** SIMULATION : 06 Ptbo_SCS_6hr_100yr       **
  **********************************************
```

```
|    READ STORM     |    Filename: C:\Users\lmattern\AppD
|                   |              ata\Local\Temp\
|                   |              9184f6ae-5778-4d44-b28a-4ff007efe36b\ecd87068
| Ptotal= 89.93 mm  |    Comments: Ptbo_SCS_6hr_100yr
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.00	3.60	1.50	9.00	3.00	19.80	4.50	5.40
0.25	3.60	1.75	9.00	3.25	19.80	4.75	5.40
0.50	5.40	2.00	10.80	3.50	9.00	5.00	3.60
0.75	5.40	2.25	10.80	3.75	9.00	5.25	3.60
1.00	5.40	2.50	53.90	4.00	7.20	5.50	3.60
1.25	5.40	2.75	140.20	4.25	7.20	5.75	3.60

```
| CALIB                |
| STANDHYD (  0002)|   Area     (ha)=   0.83
|ID= 1 DT= 5.00 min |   Total  Imp(%)=  45.00   Dir. Conn.(%)=   0.10
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.37	0.46
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	2.00	2.00
Length	(m)=	74.39	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.60	1.583	9.00	3.083	19.80	4.58	5.40
0.167	3.60	1.667	9.00	3.167	19.80	4.67	5.40
0.250	3.60	1.750	9.00	3.250	19.80	4.75	5.40
0.333	3.60	1.833	9.00	3.333	19.80	4.83	5.40
0.417	3.60	1.917	9.00	3.417	19.80	4.92	5.40
0.500	3.60	2.000	9.00	3.500	19.80	5.00	5.40
0.583	5.40	2.083	10.80	3.583	9.00	5.08	3.60
0.667	5.40	2.167	10.80	3.667	9.00	5.17	3.60
0.750	5.40	2.250	10.80	3.750	9.00	5.25	3.60
0.833	5.40	2.333	10.80	3.833	9.00	5.33	3.60
0.917	5.40	2.417	10.80	3.917	9.00	5.42	3.60
1.000	5.40	2.500	10.80	4.000	9.00	5.50	3.60
1.083	5.40	2.583	53.90	4.083	7.20	5.58	3.60
1.167	5.40	2.667	53.90	4.167	7.20	5.67	3.60
1.250	5.40	2.750	53.90	4.250	7.20	5.75	3.60
1.333	5.40	2.833	140.20	4.333	7.20	5.83	3.60
1.417	5.40	2.917	140.20	4.417	7.20	5.92	3.60
1.500	5.40	3.000	140.20	4.500	7.20	6.00	3.60

				TOTALS
Max.Eff.Inten.(mm/hr)=		140.20	109.06	
over (min)		5.00	10.00	
Storage Coeff.	(min)=	1.52 (ii)	8.33 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	10.00	
Unit Hyd. peak	(cms)=	0.33	0.13	
PEAK FLOW	(cms)=	0.00	0.10	0.102 (iii)
TIME TO PEAK	(hrs)=	3.00	3.00	3.00
RUNOFF VOLUME	(mm)=	88.92	31.03	31.09

TOTAL RAINFALL	(mm)=	89.93	89.93	89.93
RUNOFF COEFFICIENT	=	0.99	0.35	0.35

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 47.0    Ia = Dep. 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 (  0001)|   Area     (ha)=  10.01
|ID= 1 DT= 5.00 min |   Total Imp(%)=  56.00   Dir. Conn.(%)=  43.00
```

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	5.60	4.40
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	2.00	2.00
Length	(m)=	258.26	10.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.60	1.583	9.00	3.083	19.80	4.58	5.40
0.167	3.60	1.667	9.00	3.167	19.80	4.67	5.40
0.250	3.60	1.750	9.00	3.250	19.80	4.75	5.40
0.333	3.60	1.833	9.00	3.333	19.80	4.83	5.40
0.417	3.60	1.917	9.00	3.417	19.80	4.92	5.40
0.500	3.60	2.000	9.00	3.500	19.80	5.00	5.40
0.583	5.40	2.083	10.80	3.583	9.00	5.08	3.60
0.667	5.40	2.167	10.80	3.667	9.00	5.17	3.60
0.750	5.40	2.250	10.80	3.750	9.00	5.25	3.60
0.833	5.40	2.333	10.80	3.833	9.00	5.33	3.60
0.917	5.40	2.417	10.80	3.917	9.00	5.42	3.60
1.000	5.40	2.500	10.80	4.000	9.00	5.50	3.60
1.083	5.40	2.583	53.90	4.083	7.20	5.58	3.60
1.167	5.40	2.667	53.90	4.167	7.20	5.67	3.60
1.250	5.40	2.750	53.90	4.250	7.20	5.75	3.60
1.333	5.40	2.833	140.20	4.333	7.20	5.83	3.60
1.417	5.40	2.917	140.20	4.417	7.20	5.92	3.60
1.500	5.40	3.000	140.20	4.500	7.20	6.00	3.60

				TOTALS
Max.Eff.Inten.(mm/hr)=		140.20	68.63	
over (min)		5.00	10.00	
Storage Coeff.	(min)=	3.20 (ii)	5.91 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	10.00	
Unit Hyd. peak	(cms)=	0.27	0.15	
PEAK FLOW	(cms)=	1.67	0.69	2.354 (iii)
TIME TO PEAK	(hrs)=	3.00	3.00	3.00
RUNOFF VOLUME	(mm)=	88.92	27.66	54.01
TOTAL RAINFALL	(mm)=	89.93	89.93	89.93
RUNOFF COEFFICIENT	=	0.99	0.31	0.60

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN* = 50.0    Ia = Dep. 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(  0004)|    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	0.1740	0.2900
0.0560	0.1441	0.2080	0.3290
0.1000	0.2002	0.2110	0.3723
0.1320	0.2393	0.2500	0.7460

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

```
   INFLOW : ID= 2 (  0001)     10.005      2.354      3.00       54.01
   OUTFLOW: ID= 1 (  0004)     10.005      0.211      3.67       53.94

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)=  8.96
                    TIME SHIFT OF PEAK FLOW          (min)= 40.00
                    MAXIMUM  STORAGE   USED        (ha.m.)=  0.3723

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

--------------------
| ADD HYD  (  0006)|
|  1 +  2 =  3     |        AREA     QPEAK     TPEAK      R.V.
--------------------        (ha)     (cms)     (hrs)      (mm)
       ID1= 1 (  0002):     0.83     0.102      3.00     31.09
     + ID2= 2 (  0004):    10.01     0.211      3.67     53.94
       ==========================================================
       ID = 3 (  0006):    10.84     0.297      3.08     52.19

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

--------------------------
| CALIB                  |
| STANDHYD (  0003)|   Area     (ha)=   0.73
|ID= 1 DT= 5.0 min |   Total Imp(%)=  45.00   Dir. Conn.(%)=  45.00
--------------------------------------------------------------------------------
                                IMPERVIOUS     PERVIOUS (i)
     Surface Area      (ha)=         0.33           0.40
     Dep. Storage      (mm)=         1.00           1.50
     Average Slope      (%)=         1.00           3.00
     Length             (m)=        69.90          15.00
     Mannings n            =        0.013          0.250

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


                                ---- TRANSFORMED HYETOGRAPH ----
              TIME    RAIN  |  TIME    RAIN  |'  TIME    RAIN  |  TIME    RAIN
              hrs    mm/hr  |  hrs    mm/hr  |'   hrs    mm/hr  |  hrs    mm/hr
            0.083     3.60  | 1.583     9.00 | 3.083    19.80  |  4.58     5.40
            0.167     3.60  | 1.667     9.00 | 3.167    19.80  |  4.67     5.40
            0.250     3.60  | 1.750     9.00 | 3.250    19.80  |  4.75     5.40
            0.333     3.60  | 1.833     9.00 | 3.333    19.80  |  4.83     5.40
            0.417     3.60  | 1.917     9.00 | 3.417    19.80  |  4.92     5.40
            0.500     3.60  | 2.000     9.00 | 3.500    19.80  |  5.00     5.40
            0.583     5.40  | 2.083    10.80 | 3.583     9.00  |  5.08     3.60
            0.667     5.40  | 2.167    10.80 | 3.667     9.00  |  5.17     3.60
            0.750     5.40  | 2.250    10.80 | 3.750     9.00  |  5.25     3.60
            0.833     5.40  | 2.333    10.80 | 3.833     9.00  |  5.33     3.60
            0.917     5.40  | 2.417    10.80 | 3.917     9.00  |  5.42     3.60
            1.000     5.40  | 2.500    10.80 | 4.000     9.00  |  5.50     3.60
            1.083     5.40  | 2.583    53.90 | 4.083     7.20  |  5.58     3.60
            1.167     5.40  | 2.667    53.90 | 4.167     7.20  |  5.67     3.60
            1.250     5.40  | 2.750    53.90 | 4.250     7.20  |  5.75     3.60
            1.333     5.40  | 2.833   140.20 | 4.333     7.20  |  5.83     3.60
            1.417     5.40  | 2.917   140.20 | 4.417     7.20  |  5.92     3.60
            1.500     5.40  | 3.000   140.20 | 4.500     7.20  |  6.00     3.60

     Max.Eff.Inten.(mm/hr)=      140.20          37.49
               over (min)           5.00          10.00
     Storage Coeff.  (min)=         1.80 (ii)      5.08 (ii)
     Unit Hyd. Tpeak (min)=         5.00          10.00
     Unit Hyd. peak  (cms)=         0.32           0.16
                                                          *TOTALS*
     PEAK FLOW         (cms)=       0.13           0.04          0.164 (iii)
     TIME TO PEAK      (hrs)=       3.00           3.00           3.00
     RUNOFF VOLUME      (mm)=      88.93          19.60          50.79
     TOTAL RAINFALL     (mm)=      89.93          89.93          89.93
     RUNOFF COEFFICIENT    =        0.99           0.22           0.56

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

       (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
           CN*  =  45.0     Ia = Dep. Storage  (Above)
      (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
           THAN THE STORAGE COEFFICIENT.
     (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

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



```
         VV      I    SSSSS  UUUUU   A   A  LLLLL

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


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 6.2.2015\VO2\voin.dat
  Output  filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\98762d26-2
  Summary filename: C:\Users\lmattern\AppData\Local\Civica\VH5\7de1f66e-0da9-46d9-8ae5-e8f892ef54ef\98762d26-2


DATE: 02-16-2024                          TIME: 03:21:39

USER:


COMMENTS: _____________________________________________________

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

  ************************************************
  ** SIMULATION : TImmins Storm.stm              **
  ************************************************

-------------------------
|    READ STORM         |    Filename: C:\Users\lmattern\AppD
|                       |              ata\Local\Temp\
|                       |              9184f6ae-5778-4d44-b28a-4ff007efe36b\88ed268f
| Ptotal=193.00 mm |    Comments: Timmins Storm
-------------------------
              TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
              hrs    mm/hr |   hrs    mm/hr |'   hrs    mm/hr |   hrs    mm/hr
            0.00     15.00 |  3.00     3.00 |  6.00    43.00 |  9.00    13.00
            1.00     20.00 |  4.00     5.00 |  7.00    20.00 | 10.00    13.00
            2.00     10.00 |  5.00    20.00 |  8.00    23.00 | 11.00     8.00

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

--------------------------
| CALIB                  |
| STANDHYD (  0002)|   Area     (ha)=   0.83
|ID= 1 DT= 5.0 min |   Total Imp(%)=  45.00   Dir. Conn.(%)=   0.10
--------------------------------------------------------------------------------
                                IMPERVIOUS     PERVIOUS (i)
     Surface Area      (ha)=         0.37           0.46
     Dep. Storage      (mm)=         1.00           5.00
     Average Slope      (%)=         2.00           2.00
     Length             (m)=        74.39          40.00
     Mannings n            =        0.013          0.250

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


                                ---- TRANSFORMED HYETOGRAPH ----
              TIME    RAIN  |  TIME    RAIN  |'  TIME    RAIN  |  TIME    RAIN
              hrs    mm/hr  |  hrs    mm/hr  |'   hrs    mm/hr  |  hrs    mm/hr
            0.083    15.00  | 3.083     3.00 | 6.083    43.00  |  9.08    13.00
            0.167    15.00  | 3.167     3.00 | 6.167    43.00  |  9.17    13.00
            0.250    15.00  | 3.250     3.00 | 6.250    43.00  |  9.25    13.00
            0.333    15.00  | 3.333     3.00 | 6.333    43.00  |  9.33    13.00
            0.417    15.00  | 3.417     3.00 | 6.417    43.00  |  9.42    13.00
            0.500    15.00  | 3.500     3.00 | 6.500    43.00  |  9.50    13.00
            0.583    15.00  | 3.583     3.00 | 6.583    43.00  |  9.58    13.00
            0.667    15.00  | 3.667     3.00 | 6.667    43.00  |  9.67    13.00
            0.750    15.00  | 3.750     3.00 | 6.750    43.00  |  9.75    13.00
            0.833    15.00  | 3.833     3.00 | 6.833    43.00  |  9.83    13.00
            0.917    15.00  | 3.917     3.00 | 6.917    43.00  |  9.92    13.00
            1.000    15.00  | 4.000     3.00 | 7.000    43.00  | 10.00    13.00
            1.083    20.00  | 4.083     5.00 | 7.083    20.00  | 10.08    13.00
            1.167    20.00  | 4.167     5.00 | 7.167    20.00  | 10.17    13.00
            1.250    20.00  | 4.250     5.00 | 7.250    20.00  | 10.25    13.00
            1.333    20.00  | 4.333     5.00 | 7.333    20.00  | 10.33    13.00
            1.417    20.00  | 4.417     5.00 | 7.417    20.00  | 10.42    13.00
            1.500    20.00  | 4.500     5.00 | 7.500    20.00  | 10.50    13.00
```

```
                1.583   20.00 |  4.583    5.00 |  7.583   20.00 | 10.58   13.00
                1.667   20.00 |  4.667    5.00 |  7.667   20.00 | 10.67   13.00
                1.750   20.00 |  4.750    5.00 |  7.750   20.00 | 10.75   13.00
                1.833   20.00 |  4.833    5.00 |  7.833   20.00 | 10.83   13.00
                1.917   20.00 |  4.917    5.00 |  7.917   20.00 | 10.92   13.00
                2.000   20.00 |  5.000    5.00 |  8.000   20.00 | 11.00   13.00
                2.083   10.00 |  5.083   20.00 |  8.083   23.00 | 11.08    8.00
                2.167   10.00 |  5.167   20.00 |  8.167   23.00 | 11.17    8.00
                2.250   10.00 |  5.250   20.00 |  8.250   23.00 | 11.25    8.00
                2.333   10.00 |  5.333   20.00 |  8.333   23.00 | 11.33    8.00
                2.417   10.00 |  5.417   20.00 |  8.417   23.00 | 11.42    8.00
                2.500   10.00 |  5.500   20.00 |  8.500   23.00 | 11.50    8.00
                2.583   10.00 |  5.583   20.00 |  8.583   23.00 | 11.58    8.00
                2.667   10.00 |  5.667   20.00 |  8.667   23.00 | 11.67    8.00
                2.750   10.00 |  5.750   20.00 |  8.750   23.00 | 11.75    8.00
                2.833   10.00 |  5.833   20.00 |  8.833   23.00 | 11.83    8.00
                2.917   10.00 |  5.917   20.00 |  8.917   23.00 | 11.92    8.00
                3.000   10.00 |  6.000   20.00 |  9.000   23.00 | 12.00    8.00

      Max.Eff.Inten.(mm/hr)=       43.00          50.93
                over (min)          5.00          15.00
      Storage Coeff.  (min)=        2.44 (ii)    11.68 (ii)
      Unit Hyd. Tpeak (min)=        5.00          15.00
      Unit Hyd. peak  (cms)=        0.30           0.09
                                                          *TOTALS*
      PEAK FLOW       (cms)=        0.00           0.06          0.062 (iii)
      TIME TO PEAK    (hrs)=        6.33           7.00          7.00
      RUNOFF VOLUME    (mm)=      192.00         104.02         104.10
      TOTAL RAINFALL   (mm)=      193.00         193.00         193.00
      RUNOFF COEFFICIENT   =        0.99           0.54           0.54

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

        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  47.0     Ia = Dep. 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 (  0001)|   Area     (ha)=  10.01
|ID= 1 DT= 5.0 min |   Total Imp(%)=  56.00   Dir. Conn.(%)=  43.00
-------------------------------
                          IMPERVIOUS     PERVIOUS (i)
      Surface Area      (ha)=       5.60          4.40
      Dep. Storage      (mm)=       1.00          1.50
      Average Slope      (%)=       2.00          2.00
      Length             (m)=     258.26         10.00
      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   15.00 | 3.083    3.00 | 6.083   43.00 |  9.08   13.00
     0.167   15.00 | 3.167    3.00 | 6.167   43.00 |  9.17   13.00
     0.250   15.00 | 3.250    3.00 | 6.250   43.00 |  9.25   13.00
     0.333   15.00 | 3.333    3.00 | 6.333   43.00 |  9.33   13.00
     0.417   15.00 | 3.417    3.00 | 6.417   43.00 |  9.42   13.00
     0.500   15.00 | 3.500    3.00 | 6.500   43.00 |  9.50   13.00
     0.583   15.00 | 3.583    3.00 | 6.583   43.00 |  9.58   13.00
     0.667   15.00 | 3.667    3.00 | 6.667   43.00 |  9.67   13.00
     0.750   15.00 | 3.750    3.00 | 6.750   43.00 |  9.75   13.00
     0.833   15.00 | 3.833    3.00 | 6.833   43.00 |  9.83   13.00
     0.917   15.00 | 3.917    3.00 | 6.917   43.00 |  9.92   13.00
     1.000   15.00 | 4.000    3.00 | 7.000   43.00 | 10.00   13.00
     1.083   20.00 | 4.083    5.00 | 7.083   20.00 | 10.08   13.00
     1.167   20.00 | 4.167    5.00 | 7.167   20.00 | 10.17   13.00
     1.250   20.00 | 4.250    5.00 | 7.250   20.00 | 10.25   13.00
     1.333   20.00 | 4.333    5.00 | 7.333   20.00 | 10.33   13.00
     1.417   20.00 | 4.417    5.00 | 7.417   20.00 | 10.42   13.00
     1.500   20.00 | 4.500    5.00 | 7.500   20.00 | 10.50   13.00
     1.583   20.00 | 4.583    5.00 | 7.583   20.00 | 10.58   13.00
     1.667   20.00 | 4.667    5.00 | 7.667   20.00 | 10.67   13.00
     1.750   20.00 | 4.750    5.00 | 7.750   20.00 | 10.75   13.00
     1.833   20.00 | 4.833    5.00 | 7.833   20.00 | 10.83   13.00
     1.917   20.00 | 4.917    5.00 | 7.917   20.00 | 10.92   13.00
     2.000   20.00 | 5.000    5.00 | 8.000   20.00 | 11.00   13.00
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                2.083   10.00 |  5.083   20.00 |  8.083   23.00 | 11.08    8.00
                2.167   10.00 |  5.167   20.00 |  8.167   23.00 | 11.17    8.00
                2.250   10.00 |  5.250   20.00 |  8.250   23.00 | 11.25    8.00
                2.333   10.00 |  5.333   20.00 |  8.333   23.00 | 11.33    8.00
                2.417   10.00 |  5.417   20.00 |  8.417   23.00 | 11.42    8.00
                2.500   10.00 |  5.500   20.00 |  8.500   23.00 | 11.50    8.00
                2.583   10.00 |  5.583   20.00 |  8.583   23.00 | 11.58    8.00
                2.667   10.00 |  5.667   20.00 |  8.667   23.00 | 11.67    8.00
                2.750   10.00 |  5.750   20.00 |  8.750   23.00 | 11.75    8.00
                2.833   10.00 |  5.833   20.00 |  8.833   23.00 | 11.83    8.00
                2.917   10.00 |  5.917   20.00 |  8.917   23.00 | 11.92    8.00
                3.000   10.00 |  6.000   20.00 |  9.000   23.00 | 12.00    8.00

      Max.Eff.Inten.(mm/hr)=       43.00          33.03
                over (min)          5.00          10.00
      Storage Coeff.  (min)=        5.14 (ii)     9.48 (ii)
      Unit Hyd. Tpeak (min)=        5.00          10.00
      Unit Hyd. peak  (cms)=        0.21           0.12
                                                          *TOTALS*
      PEAK FLOW       (cms)=        0.51           0.39          0.907 (iii)
      TIME TO PEAK    (hrs)=        6.92           7.00          7.00
      RUNOFF VOLUME    (mm)=      192.00          94.87         136.64
      TOTAL RAINFALL   (mm)=      193.00         193.00         193.00
      RUNOFF COEFFICIENT   =        0.99           0.49           0.71


        (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
            CN*  =  50.0     Ia = Dep. Storage  (Above)
       (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
            THAN THE STORAGE COEFFICIENT.
      (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR(  0004)|     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     |   0.1740     0.2900
                        0.0560     0.1441     |   0.2080     0.3290
                        0.1000     0.2002     |   0.2110     0.3723
                        0.1320     0.2393     |   0.2500     0.7460

                                    AREA      QPEAK      TPEAK       R.V.
                                     (ha)      (cms)      (hrs)       (mm)
      INFLOW : ID= 2 (  0001)      10.005      0.907       7.00     136.64
      OUTFLOW: ID= 1 (  0004)      10.005      0.248      11.08     136.57

                    PEAK   FLOW   REDUCTION [Qout/Qin](%)= 27.32
                    TIME SHIFT OF PEAK FLOW          (min)=245.00
                    MAXIMUM  STORAGE   USED        (ha.m.)=  0.7244

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| ADD HYD  (  0006)|
|   1 +  2 =  3    |          AREA     QPEAK     TPEAK      R.V.
-------------------          (ha)      (cms)     (hrs)      (mm)
        ID1= 1 (  0002):      0.83     0.062      7.00    104.10
      + ID2= 2 (  0004):     10.01     0.248     11.08    136.57
      ================================================================
        ID = 3 (  0006):     10.84     0.283      7.00    134.09

      NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| CALIB                       |
| STANDHYD (  0003)|   Area     (ha)=   0.73
|ID= 1 DT= 5.0 min |   Total Imp(%)=  45.00   Dir. Conn.(%)=  45.00
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                          IMPERVIOUS     PERVIOUS (i)
      Surface Area      (ha)=       0.33          0.40
      Dep. Storage      (mm)=       1.00          1.50
      Average Slope      (%)=       1.00          3.00
      Length             (m)=      69.90         15.00
      Mannings n            =      0.013         0.250

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


                          ---- TRANSFORMED HYETOGRAPH ----
      TIME     RAIN |  TIME     RAIN |'  TIME     RAIN     TIME     RAIN
       hrs   mm/hr |   hrs    mm/hr |'   hrs    mm/hr      hrs    mm/hr
     0.083   15.00 | 3.083    3.00 | 6.083   43.00 |  9.08   13.00
```

```
                0.167   15.00 | 3.167    3.00 | 6.167   43.00 |   9.17   13.00
                0.250   15.00 | 3.250    3.00 | 6.250   43.00 |   9.25   13.00
                0.333   15.00 | 3.333    3.00 | 6.333   43.00 |   9.33   13.00
                0.417   15.00 | 3.417    3.00 | 6.417   43.00 |   9.42   13.00
                0.500   15.00 | 3.500    3.00 | 6.500   43.00 |   9.50   13.00
                0.583   15.00 | 3.583    3.00 | 6.583   43.00 |   9.58   13.00
                0.667   15.00 | 3.667    3.00 | 6.667   43.00 |   9.67   13.00
                0.750   15.00 | 3.750    3.00 | 6.750   43.00 |   9.75   13.00
                0.833   15.00 | 3.833    3.00 | 6.833   43.00 |   9.83   13.00
                0.917   15.00 | 3.917    3.00 | 6.917   43.00 |   9.92   13.00
                1.000   15.00 | 4.000    3.00 | 7.000   43.00 |  10.00   13.00
                1.083   20.00 | 4.083    5.00 | 7.083   20.00 |  10.08   13.00
                1.167   20.00 | 4.167    5.00 | 7.167   20.00 |  10.17   13.00
                1.250   20.00 | 4.250    5.00 | 7.250   20.00 |  10.25   13.00
                1.333   20.00 | 4.333    5.00 | 7.333   20.00 |  10.33   13.00
                1.417   20.00 | 4.417    5.00 | 7.417   20.00 |  10.42   13.00
                1.500   20.00 | 4.500    5.00 | 7.500   20.00 |  10.50   13.00
                1.583   20.00 | 4.583    5.00 | 7.583   20.00 |  10.58   13.00
                1.667   20.00 | 4.667    5.00 | 7.667   20.00 |  10.67   13.00
                1.750   20.00 | 4.750    5.00 | 7.750   20.00 |  10.75   13.00
                1.833   20.00 | 4.833    5.00 | 7.833   20.00 |  10.83   13.00
                1.917   20.00 | 4.917    5.00 | 7.917   20.00 |  10.92   13.00
                2.000   20.00 | 5.000    5.00 | 8.000   20.00 |  11.00   13.00
                2.083   10.00 | 5.083   20.00 | 8.083   23.00 |  11.08    8.00
                2.167   10.00 | 5.167   20.00 | 8.167   23.00 |  11.17    8.00
                2.250   10.00 | 5.250   20.00 | 8.250   23.00 |  11.25    8.00
                2.333   10.00 | 5.333   20.00 | 8.333   23.00 |  11.33    8.00
                2.417   10.00 | 5.417   20.00 | 8.417   23.00 |  11.42    8.00
                2.500   10.00 | 5.500   20.00 | 8.500   23.00 |  11.50    8.00
                2.583   10.00 | 5.583   20.00 | 8.583   23.00 |  11.58    8.00
                2.667   10.00 | 5.667   20.00 | 8.667   23.00 |  11.67    8.00
                2.750   10.00 | 5.750   20.00 | 8.750   23.00 |  11.75    8.00
                2.833   10.00 | 5.833   20.00 | 8.833   23.00 |  11.83    8.00
                2.917   10.00 | 5.917   20.00 | 8.917   23.00 |  11.92    8.00
                3.000   10.00 | 6.000   20.00 | 9.000   23.00 |  12.00    8.00

     Max.Eff.Inten.(mm/hr)=       43.00        19.66
           over (min)             5.00        10.00
     Storage Coeff.  (min)=       2.89 (ii)    9.54 (ii)
     Unit Hyd. Tpeak (min)=       5.00        10.00
     Unit Hyd. peak  (cms)=       0.28         0.12
                                                          *TOTALS*
     PEAK FLOW       (cms)=       0.04         0.02          0.061 (iii)
     TIME TO PEAK    (hrs)=       6.67         7.00           7.00
     RUNOFF VOLUME    (mm)=     192.00        73.06         126.58
     TOTAL RAINFALL   (mm)=     193.00       193.00         193.00
     RUNOFF COEFFICIENT   =       0.99         0.38           0.66

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

      (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
          CN*  =  45.0     Ia = Dep. 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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Appendix D: Water Quality Calculations

Water Quality Requirements

Project Name: Trent Meadows **Designed By:** LM
Project No: 23104 **Date:** 2024-02-16

Site Data			
Protection Level:		Enhanced	
Facility Type:		Wet Pond	
Area	=	10	ha
% Impervious Calculated	=	56%	%
Impervious Area	=	5.58	ha
Required Extended Detention Volume (Ved)**			
Ved	=	40	m^3/ha
	=	400	m^3
Total Required Storage Volume (Vs)*			
Vs	=	184	m^3/ha
	=	1844	m^3
Required Permanent Pool Volume (Vpp = Vs - Ved)			
Vpp	=	144	m^3/ha
	=	1444	m^3
Permanent Pool Volume Provided	=	3100	m^3
Provided Volumes vs. Required Volumes			
Quantity Control Volume Required	=	7446.0	m^3
Quantity Control Volume Provided	=	9931.0	m^3
Total Pond Volume Required	=	184	m^3
Total Pond Volume Provided	=	13031	m^3

*Required volumes calculated utilizing linear regression including a slope (m) of 236.44 and an intercept (b) of 52.5 based on the below table.

**Extended Detention is required only for wet facilities and based on the MOE reqirement of 40m^3/ha

Notes:

Table 3.2: Water Quality Storage Requirements based on Receiving Waters (MOE SWMPD Manual)

Protection Level	SWMP Type	Storage Volume (m^3/ha) for Impervious Level				
		0%	35%	55%	70%	85%
Enhanced 80% long-term S.S. removal	Infiltration	16.25	25	30	35	40
	Wetlands	36.25	80	105	120	140
	Hybrid Wet Pond/Wetland	40	110	150	175	195
	Wet Pond	52.5	140	190	225	250
Normal 70% long-term S.S. removal	Infiltration	20	20	20	25	30
	Wetlands	42.5	60	70	80	90
	Hybrid Wet Pond/Wetland	48.75	75	90	105	120
	Wet Pond	55	90	110	130	150
Basic 60% long-term S.S. removal	Infiltration	20	20	20	20	20
	Wetlands	60	60	60	60	60
	Hybrid Wet Pond/Wetland	42.5	60	70	75	80
	Wet Pond	33.75	60	75	85	95
	Dry Pond (Continuous Flow)	0	90	150	200	240

Appendix E: Storm Sewer Design Sheet

Storm Sewer Design Sheet

Project Name: Trent Meadows
Project No: 23104

Design Storm: 100 Year
Rain Station: Peterborough
Initial ToC: 10
Max Capacity: 80 %

Designed By: LM
Date: 2024-02-16

Location			Hydrologic Parameters						Peak Flow			Pipe Properties					Hydraulics			
Location/Description	From Structure	To Structure	Area (ha)	Runoff Coefficient	A*C	Cumulative A*C	Time of Concentration (min)	Intensity (mm/hr)	Extraneous Flow (m^3/s)	Cumulative Extraneous Flow (m^3/s)	Total Peak Flow (m^3/s)	Pipe Diameter (mm)	Pipe Slope (%)	Pipe Length (m)	Pipe Material	Manning's Coefficient, n	Velocity in Sewer (m/s)	Pipe Capacity (m^3/s)	% Capacity	Actual Velocity (m/s)
EXT12	MH1	MH2	27.719	0.00	0.00	0.00	10.00	148.6	2.05	2.05	**2.053**	1200	0.50	70.4	Conc	0.013	2.44	2.757	74.5%	2.67
Phase 2 Allowable + PR3	MH2	MH3	37.000	0.00	0.00	0.00	10.48	146.1	0.72	2.77	**2.771**	1350	0.50	95.0	Conc	0.013	2.64	3.775	73.4%	2.88
	MH3	MH4	37.000	0.00	0.00	0.00	11.08	143.1	0.00	2.77	**2.771**	1350	0.50	80.0	Conc	0.013	2.64	3.775	73.4%	2.88
	MH4	MH5	37.000	0.00	0.00	0.00	11.59	140.7	0.00	2.77	**2.771**	1350	0.50	80.0	Conc	0.013	2.64	3.775	73.4%	2.88
	MH5	MH6	37.000	0.00	0.00	0.00	12.09	138.4	0.00	2.77	**2.771**	1350	0.50	80.0	Conc	0.013	2.64	3.775	73.4%	2.88
	MH6	MH7	37.000	0.00	0.00	0.00	12.60	136.1	0.00	2.77	**2.771**	1350	0.50	80.0	Conc	0.013	2.64	3.775	73.4%	2.88
	MH7	MH8	37.000	0.00	0.00	0.00	13.10	134.0	0.00	2.77	**2.771**	1350	0.50	80.0	Conc	0.013	2.64	3.775	73.4%	2.88
EXT4	MH8	MH9	41.810	0.00	0.00	0.00	13.61	131.9	0.34	3.11	**3.111**	1500	0.50	80.0	Conc	0.013	2.83	4.999	62.2%	2.98
	MH9	MH10	41.810	0.00	0.00	0.00	14.08	130.0	0.00	3.11	**3.111**	1500	0.50	80.0	Conc	0.013	2.83	4.999	62.2%	2.98
	MH10	MH11	41.810	0.00	0.00	0.00	14.55	128.1	0.00	3.11	**3.111**	1500	0.50	90.0	Conc	0.013	2.83	4.999	62.2%	2.98
	MH11	MH12	41.810	0.00	0.00	0.00	15.08	126.1	0.00	3.11	**3.111**	1500	0.50	90.0	Conc	0.013	2.83	4.999	62.2%	2.98
Phase 1 Alowable	MH12	MH13	55.510	0.00	0.00	0.00	15.61	124.2	0.35	3.46	**3.461**	1500	0.50	57.1	Conc	0.013	2.83	4.999	69.2%	3.05
	MH13	MH14	55.510	0.00	0.00	0.00	15.95	123.0	0.00	3.46	**3.461**	1500	0.50	97.5	Conc	0.013	2.83	4.999	69.2%	3.05
	MH14	MH15	55.510	0.00	0.00	0.00	16.52	121.0	0.00	3.46	**3.461**	1500	3.60	97.7	Conc	0.013	7.59	13.414	25.8%	6.35
	MH15	Outlet	55.510	0.00	0.00	0.00	16.74	120.3	0.00	3.46	**3.461**	1500	1.00	19.5	Conc	0.013	4.00	7.070	49.0%	3.97

Note:
1. Extraneous Flows calculated using 100 year results from Viusal Otthymo Software.
2. Timmins Storm peak flows were used for EXT12 as it exceed the 100 yearr peak flow
3. Maximum allowable peak flows from phase 1 and 2 were used.

Appendix F: Swale Capacity Calculations

CHANNEL DESIGN SHEET

Project Name: Trent Meadows
Project Number: 23104
Designed By: LM

Location	Contributing Area and Flow		Channel Properties						Hydraulics					
Channel Description	Description	Flow (m3/s)	Bed Slope	Side Slope (X:1)	Bottom Width	Depth	Lining Material	Mannings n	Channel Capacity	% Capacity	Cross Sectional Area	Wetted Perimter	Flow Depth	Velocity
Overland Flow	**EXT12**	**2.050**	0.005	3.000	0.5	1.0	Grass	0.07	2.27	90%	3.500	6.82	0.96	0.63
Mill Street Storm Sewer Outlet Channel		**3.460**	0.005	3.000	0.5	1.3	Grass	0.07	4.36	79%	5.720	8.72	1.01	0.96

Appendix G: Water Balance Calculations

Climatic Water Budget - Thornthwaite Method
Water Balance Calculations PR1

Project Name: Trent Meadows
Project No: 23104
Location: Norwood
Rainfall Data: PETBERBOROUGH A

Designed By: LM
Date: 2024-02-16

Month	Mean Temperature (◦C)	Heat index	" a "	PET - Potential Evapotranspiration (mm)	Daily Correction Value	Adjusted PET - Potential Evapotranspiration (mm)	Total Precipitation (mm)	Surplus (mm)	Deficit (mm)
January	-8.5	0.0	0.49	0.0	0.76	0.0	57.4	57.4	0.0
February	-7.0	0.0	0.49	0.0	0.87	0.0	51.5	51.5	0.0
March	-1.8	0.0	0.49	0.0	0.99	0.0	56.1	56.1	0.0
April	5.9	1.3	0.52	28.8	1.12	32.2	68.6	36.4	0.0
May	12.1	3.8	0.56	60.3	1.23	74.3	81.5	7.2	0.0
June	17.0	6.4	0.60	85.6	1.29	110.7	79.9	0.0	30.8
July	19.6	7.9	0.63	99.1	1.27	125.8	70.6	0.0	55.2
August	18.3	7.1	0.62	92.3	1.17	108.4	77.0	0.0	31.4
September	13.9	4.7	0.58	69.6	1.05	72.9	85.3	12.4	0.0
October	7.5	1.8	0.53	36.9	0.92	33.9	76.9	43.0	0.0
November	1.9	0.2	0.50	9.0	0.80	7.2	86.4	79.2	0.0
December	-4.4	0.0	0.49	0.0	0.74	0.0	64.2	64.2	0.0
Totals		33.3	1.03			565.4	855.4	407.4	117.4

TOTAL WATER DEFICIT = 117.4 mm
TOTAL WATER SURPLUS (SURPLUS - DEFICIT) = 290.0 mm
Precipitation Adjustment Factor : none

NOTES:

1. Water budget adjusted for latitude and daylight.
2. (◦C) - Represents calculated mean of daily temperatures for the month.
3. Precipitation and Temperature data from thePETERBOROUGH A (Station No.6166418) Environment Canada Station Data
4. Total Water Surplus (Thornthwaite, 1948) is calculated as total precipitation minus adjusted potential evapostranspiration.

Pre-Development
Water Balance Equations PR1

Project Name: Trent Meadows
Project No: 23104
Location: Norwood
Rainfall Data: Peterborough STP

Designed By: LM
Date: 2024-02-16

Catchment Designation	Site - Pre-Development			
	Crop Areas	Gravel Areas	Woodlot Areas	Totals
Area (m^2)	100054	0	0	100054
Pervious Area (m^2)	100054	0	0	100054
Impervious Area (m^2)	0	0	0	0
Infiltration Factors				
Topography Infiltration Factor	0.2	0.2	0.2	
Soil Infiltration Factor	0.2	0.2	0.2	
Land Cover Infiltration Factor	0.1	0.1	0.2	
MOE Infiltration Factor	0.5	0.5	0	
Actual Infiltration Factor	0.5	0.5	0	
Run-off Coefficient	0.22	0.6	0.25	
Runoff from Impervious Surfaces *	0	0.8	0.8	
Inputs (per Unit Area)				
Precipitation (mm/yr)	855	855	855	855
Run-On (mm/yr)	0	0	0	0
Other Inputs (mm/yr)	0	0	0	0
Total Inputs (mm/yr)	855	855	855	855
Outputs (per Unit Area)				
Precipitation Surplus (mm/yr)	290	290	684	290
Net Surplus (mm/yr)	290	290	684	290
Evapotranspiration (mm/yr) *	565	565	171	565
Infiltration (mm/yr)	145	145	0	145
LID Infiltration (mm/yr)	0	0	0	0
Total Infiltration (mm/yr)	145	145	0	145
Runoff Pervious Areas (mm/yr)	145	145	0	145
Runoff Impervious Areas (mm/yr)	0	0	684	0
Total Runoff (mm/yr)	145	145	684	145
Total Outputs (mm/yr)	855	855	855	855
Difference (Inputs- Outputs)	0	0	0	0
Inputs (Volumes)				
Precipitation (m^3/yr)	85586	0	0	85586
Run-On (m^3/yr)	0	0	0	0
Other Inputs (m^3/yr)	0	0	0	0
Total Inputs (m^3/yr)	85586	0	0	85586
Outputs (Volumes)				
Precipitation Surplus (m^3/yr)	29018	0	0	29018
Net Surplus (m^3/yr)	29018	0	0	29018
Evapotranspiration (m^3/yr) *	56569	0	0	56569
Infiltration (m^3/yr)	14509	0	0	14509
Soakaway Infiltration (m^3/yr)	0	0	0	0
Total Infiltration (m^3/yr)	14509	0	0	14509
Runoff Pervious Areas (m^3/yr)	14509	0	0	14509
Runoff Impervious Areas (m^3/yr)	0	0	0	0
Total Runoff (m^3/yr)	14509	0	0	14509
Total Outputs (m^3/yr)	85586	0	0	85586
Difference (Inputs- Outputs)	0	0	0	0

Notes:

Infiltration Factors

1.	**Topography**	Flat Land, average slope < 0.6 m/km	0.3
		Rolling Land, average slope 2.8 m to 3.8 m/km	0.2
		Hilly Land, average slope 28 m to 47 m/km	0.1
2.	**Soils**	Tight impervious clay	0.1
		Medium combinations of clay and loam	0.2
		Open Sandy loam	0.4
3.	**Cover**	Cultivated Land	0.1
		Woodland	0.2

4. Evapotranspiration from impervious surfaces assumed to be 20% of precipitation.

Post-Development
Water Balance Calculations PR 1

Project Name: Trent Meadows
Project No: 23104
Location: Norwood
Rainfall Data: Peterborough STP

Designed By: LM
Date: 2024-02-16

Catchment Designation	Site - Post-Development			
	Grassed Area	Crop Area	Impervious Area	Totals
Area (m^2)	44221	0	55833	100054
Pervious Area (m^2)	44221	0	0	44221
Impervious Area (m^2)	0	0	55833	55833
Infiltration Factors				
Topography Infiltration Factor	0.3	0.2	0.3	
Soil Infiltration Factor	0.2	0.2	0.2	
Land Cover Infiltration Factor	0.1	0.1	0.2	
MOE Infiltration Factor	0.6	0.5	0	
Actual Infiltration Factor	0.6	0.5	0	
Run-off Coefficient	0.1	0.35	0.9	
Runoff from Impervious Surfaces *	0	0	0.8	
Inputs (per Unit Area)				
Precipitation (mm/yr)	855	855	855	855
Run-On (mm/yr)	0	0	0	0
Other Inputs (mm/yr)	0	0	0	0
Total Inputs (mm/yr)	855	855	855	855
Outputs (per Unit Area)				
Precipitation Surplus (mm/yr)	290	0	684	510
Net Surplus (mm/yr)	290	0	684	510
Evapotranspiration (mm/yr) *	565	565	171	345
Infiltration (mm/yr)	174	0	0	77
LID Infiltration (mm/yr)	0	0	0	0
Total Infiltration (mm/yr)	174	0	0	77
Runoff Pervious Areas (mm/yr)	116	290	0	51
Runoff Impervious Areas (mm/yr)	0	0	684	382
Total Runoff (mm/yr)	116	290	684	433
Total Outputs (mm/yr)	855	855	855	855
Difference (Inputs- Outputs)	0	0	0	0
Inputs (Volumes)				
Precipitation (m^3/yr)	37827	0	47760	85586
Run-On (m^3/yr)	0	0	0	0
Other Inputs (m^3/yr)	0	0	0	0
Total Inputs (m^3/yr)	37827	0	47760	85586
Outputs (Volumes)				
Precipitation Surplus (m^3/yr)	12825	0	38208	51033
Net Surplus (m^3/yr)	12825	0	38208	51033
Evapotranspiration (m^3/yr) *	25002	0	9552	34554
Infiltration (m^3/yr)	7695	0	0	7695
Soakaway Infiltration (m^3/yr)	0	0	0	0
Total Infiltration (m^3/yr)	7695	0	0	7695
Runoff Pervious Areas (m^3/yr)	5130	0	0	5130
Runoff Impervious Areas (m^3/yr)	0	0	38208	38208
Total Runoff (m^3/yr)	5130	0	38208	43338
Total Outputs (m^3/yr)	37827	0	47760	85586
Difference (Inputs- Outputs)	0	0	0	0

Pre-Development Total Infil.:
14509 m3/yr

Notes:

Infiltration Factors

1.	**Topography**	Flat Land, average slope < 0.6 m/km	0.3
		Rolling Land, average slope 2.8 m to 3.8 m/km	0.2
		Hilly Land, average slope 28 m to 47 m/km	0.1
2.	**Soils**	Tight impervious clay	0.1
		Medium combinations of clay and loam	0.2
		Open Sandy loam	0.4
3.	**Cover**	Cultivated Land	0.1
		Woodland	0.2

4. Evapotranspiration from impervious surfaces assumed to be 20% of precipitation.

Post-Development with Mitigation
Water Balance Calculations PR 1

Project Name: Trent Meadows
Project No: 23104
Location: Norwood
Rainfall Data: Peterborough STP

Designed By: LM
Date: 2024-02-16

Catchment Designation	Site - Post-Development				
	Grassed Area	Crop Areas	Impervious Area	Impervious Area Directed to Infiltration Facility	Totals
Area (m^2)	44221	0	44788	11045	100054
Pervious Area (m^2)	44221	0	0	0	44221
Impervious Area (m^2)	0	0	44788	11045	55833
Infiltration Factors					
Topography Infiltration Factor	0.3	0.2	0	0.3	
Soil Infiltration Factor	0.2	0.2	0	0.2	
Land Cover Infiltration Factor	0.1	0.1	0	0.2	
MOE Infiltration Factor	0.6	0.5	0	0	
Actual Infiltration Factor	0.6	0.5	0	0	
Run-off Coefficient	0.1	0.35	0.9	0.9	
Runoff from Impervious Surfaces *	0	0	0.8	0.8	
Inputs (per Unit Area)					
Precipitation (mm/yr)	855	855	855	855	855
Run-On (mm/yr)	0	0	0	0	0
Other Inputs (mm/yr)	0	0	0	0	0
Total Inputs (mm/yr)	855	855	855	855	855
Outputs (per Unit Area)					
Precipitation Surplus (mm/yr)	290	0	684	684	510
Net Surplus (mm/yr)	290	0	684	684	510
Evapotranspiration (mm/yr) *	565	565	171	171	345
Infiltration (mm/yr)	174	0	0	0	77
LID Infiltration (mm/yr)	0	0	0	450	50
Total Infiltration (mm/yr)	174	0	0	450	127
Runoff Pervious Areas (mm/yr)	116	290	0	0	51
Runoff Impervious Areas (mm/yr)	0	0	684	234	332
Total Runoff (mm/yr)	116	290	684	234	383
Total Outputs (mm/yr)	855	855	855	855	855
Difference (Inputs- Outputs)	0	0	0	0	0
Inputs (Volumes)					
Precipitation (m^3/yr)	37827	0	38312	9448	85586
Run-On (m^3/yr)	0	0	0	0	0
Other Inputs (m^3/yr)	0	0	0	0	0
Total Inputs (m^3/yr)	37827	0	38312	9448	85586
Outputs (Volumes)					
Precipitation Surplus (m^3/yr)	12825	0	30649	7558	51033
Net Surplus (m^3/yr)	12825	0	30649	7558	51033
Evapotranspiration (m^3/yr) *	25002	0	7662	1890	34554
Infiltration (m^3/yr)	7695	0	0	0	7695
Soakaway Infiltration (m^3/yr)	0	0	0	4970	4970
Total Infiltration (m^3/yr)	7695	0	0	4970	12665
Runoff Pervious Areas (m^3/yr)	5130	0	0	0	5130
Runoff Impervious Areas (m^3/yr)	0	0	30649	2588	33237
Total Runoff (m^3/yr)	5130	0	30649	2588	38367
Total Outputs (m^3/yr)	37827	0	38312	9448	85586
Difference (Inputs- Outputs)	0	0	0	0	0

Proposed Infiltration via Mitig

Pre-Development Total Infiltration:
145 mm/yr

Note:
539.8 mm
Precipitation available between Apr-Oct (non-winter months). Therefore available for infiltration into non-frozen soil

Pre-Development Total Infiltration:
14509 m3/yr

Notes:

Infiltration Factors

1.	**Topography**	Flat Land, average slope < 0.6 m/km	0.3
		Rolling Land, average slope 2.8 m to 3.8 m/km	0.2
		Hilly Land, average slope 28 m to 47 m/km	0.1
2.	**Soils**	Tight impervious clay	0.1
		Medium combinations of clay and loam	0.2
		Open Sandy loam	0.4
3.	**Cover**	Cultivated Land	0.1
		Woodland	0.2

4. Evapotranspiration from impervious surfaces assumed to be 20% of precipitation.

Water Budget Summary

Project Name: Trent Meadows
Project No: 23104
Location: Norwood
Rainfall Data: Peterborough STP

Designed By: LM
Date: 2024-02-16

Characteristic	Site				
	Pre-Development	Post-Development	Post-Development *with Mitigation*	Change (Pre to Post)	Change (Pre to Post) *with Mititgation*
Inputs (Volumes)					
Precipitation (m^3/yr)	85586	85586	85586	0%	0%
Run-On (m^3/yr)	0	0	0	0%	0%
Other inputs (m^3/yr)	0	0	0	0%	0%
Total Inputs (m^3/yr)	85586	85586	85586	0	0
Outputs (Volumes)					
Precipitation Surplus (m^3/yr)	29018	51033	51033	176%	176%
Net Surplus (m^3/yr)	29018	51033	51033	176%	176%
Evapotranspiration (m^3/yr)	56569	34554	34554	61%	61%
Infiltration (m^3/yr)	14509	7695	7695	53%	53%
LID Infiltration (m^3/yr)	0	0	4970	-	4970 m3/yr
Total Infiltration (m^3/yr)	**14509**	**7695**	**12665**	**53%**	**87%**
Runoff Pervious Areas (m^3/yr)	14509	5130	5130	35%	35%
Runoff Impervious Areas (m^3/yr	0	38208	33237	-	-
Total Runoff (m^3/yr)	14509	43338	38367	299%	264%
Total Outputs (m^3/yr)	85586	85586	85586	0%	0%

Infiltration Facility Calculations PR1

Project Name: Trent Meadows
Project No: 23104
Location: Norwood
Rainfall Data: Peterborough STP

Designed LM
Date: 2024-02-16

Days with Precipitation (From Climate Data)

	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
>= 0.2 mm	12.9	12.7	11.5	10.2	11.7	12.5	14.5	86
>= 5 mm	4.9	5.4	4.6	3.9	4.1	5.3	4.8	33
>= 10 mm	2.4	3.1	2.9	2.3	2.7	2.9	2.4	18.7
>= 25 mm	0.19	0.31	0.65	0.52	0.58	0.65	0.36	3.26

Available Precipitation

Storm Event (mm)	Total Days Per Year	Incremental Precipitation (mm/yr)	Cummulative Precipitation (mm/yr)
0.2	86	17.2	17.2
5	33	165.0	182.2
10	19	187.0	369.2
25	3	81.5	450.7
Total	141	450.7	

Mitigation Infiltration Volume Provided: 351.0 m^3

Contributing Drainage Area: 11045 m^2

Therefore Design Storm: 31.8 mm

Mitigation Infiltration: 450.00 mm/yr

Mitigation Infiltration: 4970 m^3/yr

LID INFILTRATION CALCULATIONS

LID	Length (m)	Depth (m)	Width (m)	Voids	Volume (m^3)
PR1	585	1	1.5	0.4	351
Total Infiltration Volume					**351**

Appendix H: Meeting Minutes from ORCA and AECOM Meeting

Meeting Minutes		
	Project:	**Crowley Farms Development**
	Project No:	**17080**
	Meeting Date:	**January 10, 2019**
	Report Date:	**January 17, 2019**
	Recorder:	**Paul Hurley**

Location: Township of Asphodel Norwood Council Chambers

Attendees: Paul Hurley, Brad Parsons, Engage
David Crowley, Crowley Farms
Candice White, Ed Whitmore, Jeff Waldon, Kyle Beacock, Township of Asphodel Norwood
Neil Macfarlane, Alex Bradburn, ORCA
Peter Middaugh, AECOM

Purpose: Review of AECOM and ORCA Comments

Distribution: All Attendees

Item	Description	Action
1.1	With respect to comment 11, it was agreed that there was significant background material related to this comment from previous work completed on the file that CC Tatham was not aware of. It was agreed that revisions to the report are not required but the comment would be addressed in a response letter to be provided by Engage. With respect to comment 12, it was confirmed that the rationale was simply to be conservative at this preliminary stage in the process and this would be addressed in a comment response letter to be provided by Engage.	Engage Engage
1.2	Comment 15 – it was agreed that this could be addressed during the detailed design phase. Comment 20 – it was agreed that further details of the infiltration trench would be provided but that the design of the infiltration trenches did not require geotechnical information at the OPA/ZBA stage. It was agreed that the design would be based on soil mapping at this functional stage and that geotechnical information would be utilized for the design during the detailed design stage. Comment 22 – It was agreed that water balance calculations could be revised based on the new plans but that the calculations could be based on soil mapping at this functional stage. The calculations would be	Info Engage Engage

	revisited with geotechnical information during the detailed design.	
1.3	Comment 14 – It was discussed that changes to the Mill Street Road profile to provide a surface overland flow route would be very difficult to achieve without significant grading impacts to adjacent properties. In lieu of the suggested approach to mitigate flooding in Comment 14, it was suggested that the AECOM approach of oversizing the SWM facilities and outlet structures be investigated.	Engage
	Comment 19 – it was agreed that it was not a requirement to oversize the SWM ponds on the Crowley property to provide SWM controls for the existing undeveloped plan of subdivision on the northeast side of Mill Street. It was agreed that the storm sewer on Mill Street should be designed to accommodate the existing (pre-development) flows from these lands and that if these lands were developed in the future, they would be required to provide their own SWM controls.	Info
	Comment 32 – It was agreed that the AECOM approach to oversizing the SWM ponds in lieu of changes to Mill Street Profile would be investigated and the Functional SWM Report and drawings revised accordingly.	Engage
	Neil noted that MNRF did have regulations that may not permit Regulatory Ponds. Neil was going to investigate to confirm if any regulations would prohibit ORCA approval of oversizing of ponds.	ORCA
2.1	Comment 1.1 – AECOM confirmed that this comment referred to the inlet capacity to ensure all flows could enter the storm sewer system.	Info
	Comment 2.8 – The Township confirmed that the concern was not sidewalk but the impact that the proposed turning lane would have on the existing school crossing. Engage to investigate and propose solutions which could include the suggested sidewalk.	Engage
	Comment 3.1 – It was agreed that improvements to the water supply and storage system will be required to support this development and that they will be a condition of the OPA. It is premature to discuss cost-sharing at this OPA stage. Opportunities for cost sharing could be considered at a future date once the development is closer to final approval. Options for phasing were discussed including placing Hold on portions of the site, so that only those lots for which there is capacity could be developed.	Info
	Comment 3.2 – The Township reiterated that it had a strong preference to avoid replacing sewer on King Street. A new alignment for sanitary sewer through the Community Centre lands to Alma Street was reviewed. This comment suggested that this alignment be considered in the future as a condition of OPA however the proponent would like to investigate this alternative now, in conjunction with a new alignment for the watermain looping. Engage will investigate this alternative and include the analysis in a resubmission of the FSR.	Engage

	Comment 3.5 – It was agreed that a water storage facility is a viable option to address fire flow requirements and would benefit both the proposed development and surrounding lands. No action is required at this stage, but design of a storage system will be required as a condition of OPA. Comment 3.9 – A new alignment for watermain looping that utilizes community center lands to Alma Street was reviewed. It was agreed that this would be investigated and the FSR revised accordingly. Comment 4.1 – AECOM confirmed that the intent of this comment is to ensure that any known or possible developments that may contribute to sections of sewer in question are included in the capacity calculations. Engage to review and modify as required.	Info Engage Engage
2.2	Comments 1.1/1.7 – it was agreed by all parties that the approach of oversizing the SWM facilities would be investigated and pursued to reduce the risk of flooding, given there is no overland flow route to the Ouse River. Comment 1.8 – it was agreed that the old plan of subdivision on the northeast side of Mill Street did not need to be accommodated in the proposed Crowley SWM ponds and that they would need to provide their own SWM controls. It was agreed that the storm sewer on Mill Street would need to accommodate the existing/pre-development flows from these lands.	Engage Info
3.0	The Township enquired if the intent was to apply for the OPA/Rezoning in 2019. Engage confirmed that it was. In the near term, the goal will be to address any remaining comments on the technical studies, which will likely take several months. At that point, MHBC would get involved again to move the planning application forward.	Info

Brad Parsons

From: Neil MacFarlane <nmacfarlane@otonabeeconservation.com>
Sent: September 9, 2019 9:06 AM
To: Brad Parsons
Subject: RE: 17080 Crowley Farms ORCA SWM comments

Follow Up Flag: Follow up
Flag Status: Flagged

Brad,

We will remove the requirement to stack the pond volumes, therefore the wet pond will have the following:

- Permanent pool
- Extended detention (2yr thru 100 yr peak flow control)
- 100 yr volume (in lieu of an overland flow route on Mill Street)

thanks

Neil MacFarlane
Engineering Services Coordinator
Otonabee Region Conservation Authority (ORCA)
250 Milroy Drive
Peterborough, ON
(705) 745-5791 ext. 231
nmacfarlane@otonabeeconservation.com

Please consider the environment before printing this message.

From: Brad Parsons (brad@engageeng.ca) [mailto:brad@engageeng.ca]
Sent: Friday, September 6, 2019 10:13 AM

Appendix I: Geotechnical Investigation

Soil Engineers Ltd.
CONSULTING ENGINEERS
GEOTECHNICAL • ENVIRONMENTAL • HYDROGEOLOGICAL • BUILDING SCIENCE
90 WEST BEAVER CREEK ROAD, SUITE #100, RICHMOND HILL, ONTARIO L4B 1E7 · TEL (416) 754-8515 · FAX (905) 881-8335

BARRIE	MISSISSAUGA	OSHAWA	NEWMARKET	GRAVENHURST	PETERBOROUGH	HAMILTON
TEL: (705) 721-7863	TEL: (905) 542-7605	TEL: (905) 440-2040	TEL: (905) 853-0647	TEL: (705) 684-4242	TEL: (905) 440-2040	TEL: (905) 777-7956
FAX: (705) 721-7864	FAX: (905) 542-2769	FAX: (905) 725-1315	FAX: (905) 881-8335	FAX: (705) 684-8522	FAX: (905) 725-1315	FAX: (905) 542-2769

A REPORT TO
HBNG (NORWOOD) DEVELOPMENTS INC.

A GEOTECHNICAL INVESTIGATION FOR PROPOSED RESIDENTIAL DEVELOPMENT

MILL STREET AND ASPHODEL 10TH LINE
TOWNSHIP OF ASPHODEL-NORWOOD

REFERENCE NO. 2206-S253

SEPTEMBER 2022

DISTRIBUTION

1 Copy - HBNG (Norwood) Developments Inc.
1 Copy - Soil Engineers Ltd. (Richmond Hill)

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TABLES

ENCLOSURES

1.0 INTRODUCTION

In accordance with the written authorization dated June 30, 2022 from Mr. James Stevenson of HBNG (Norwood) Developments Inc., a geotechnical investigation was carried out on the land parcels at Mill Street and Asphodel 10th Line in the Township of Asphodel-Norwood.

The purpose of the geotechnical investigation is to evaluate the subsurface conditions and determine the engineering properties of the revealed soils for the design and construction of the proposed residential development. The geotechnical findings and resulting recommendations are presented in this Report.

2.0 SITE AND PROJECT DESCRIPTION

The Township of Asphodel-Norwood is situated in a physio-geographical region known as Peterborough Drumlin Field, comprising of rolling till plain above the bedrock at relatively shallow depth. The drumlins have gravel ridges and in places are covered with silt, clay and sand deposit by glacial retreat.

The subject site, which has a total area of approximately 30.8 hectares, is located to the west of Asphodel 10th Line, along both sides of Mill Street. It is legally described as "Part of Block J, Registered Plan No. 6 and Part of Lot 17, Concession 9, Geographic Village of Norwood, Township of Asphodel-Norwood, County of Peterborough". At the time of investigation, the site is a farm field. The existing site gradient is undulating, generally descends towards the west and south of the site, except the southeast corner being the highest point of the site.

Based on the conceptual site plan prepared by MHBC Planning dated March 11, 2022, it is understood that the site will be developed for residential subdivision with park blocks and three (3) stormwater management (SWM) ponds. A retirement residence is also proposed at the southeast corner of the site. The site will be provided with municipal services and paved roadways meeting the Town standards.

3.0 FIELD WORK

The field work, consisting of twenty-five (25) sampled boreholes extending to depths ranging from 1.8 to 6.4 m below grade, was performed between July 21 and 27, 2022.

Upon completion of drilling and sampling, monitoring wells were installed in sixteen (16) selected boreholes to facilitate groundwater monitoring and hydrogeological assessment. The locations of all boreholes and monitoring wells are shown on the Borehole and Monitoring Well Location Plan, Drawing No. 1.

The boreholes were advanced at intervals to the sampling depths by a track-mounted, continuous-flight power-auger machine equipped for soil sampling. Standard Penetration Tests, using the procedures described on the enclosed "List of Abbreviations and Terms", were performed at the sampling depths. The test results are recorded as the Standard Penetration Resistance (or 'N' values) of the subsoil. The relative density of the non-cohesive strata and the consistency of the cohesive strata are inferred from the 'N' values. Split-spoon samples were recovered for soil classification and laboratory testing.

The field work was supervised and the findings were recorded by a Geotechnical Technician. The ground elevation of each borehole location was determined using hand-held Global Navigation Satellite System survey equipment.

4.0 SUBSURFACE CONDITIONS

The boreholes were carried out in a farm field. The investigation has revealed that, the site is generally underlain by a stratum of silty sand till beneath the topsoil veneer. Localized sand, silty sand and sandy silt deposits were also contacted near the ground surface.

Detailed descriptions of the subsurface conditions are presented on the Borehole Logs, Figures 1 to 25, inclusive. The revealed stratigraphy is plotted on the Subsurface Profiles, Drawing Nos. 2A, 2B and 2C. The engineering properties of the disclosed soils are discussed herein.

4.1 **Topsoil** (All Boreholes)

A layer of topsoil, approximately 23 to 45 cm in thickness, was contacted at the ground surface in all boreholes. Thicker topsoil may be encountered beyond the borehole locations.

4.2 **Sand/Silty Sand/Sandy Silt** (Boreholes 1, 4, 5, 7, 8, 10, 12, 13, 15, 17, 22, 23 and 25)

Beneath the topsoil veneer, native sand, silty sand or sandy silt deposits was contacted in some of the boreholes, extending to depths between 0.8 m and 2.1 m. The deposits are generally fine grained, with variable amount of sand and silt.

The obtained 'N' values range from 1 to 32 blows, with a median of 5 blows per 30 cm of penetration, indicating the deposits are very loose to dense, being generally loose in relative density. Weaker layer was contacted near the ground surface, likely being disturbed by farming activities or weathering process.

The natural water content values range from 6% to 27%, with a median of 18%, indicating the deposits are moist to wet, generally in wet conditions.

The engineering properties of the sand/silt deposits are listed below:

- High frost susceptibility and high water erodibility.
- Pervious to semi-pervious, with an estimated coefficient of permeability of 10^{-3} to 10^{-4} cm/sec and a percolation time between 8 and 12 min/cm.
- The shear strength is primarily derived from internal friction and is augmented by cementation. The wet soils may be susceptible to impact disturbance, which may result in reduction in shear strength.
- In excavation, the sand/silt deposit will slough to its angle of repose and run with water seepage, if any.
- Moderate corrosivity to buried metal, with an estimated electrical resistivity of 4000 ohm·cm.

4.3 **Silty Sand Till** (All Boreholes)

The silty sand till deposit was contacted in all boreholes. It consists of a random mixture of particle sizes ranging from clay to gravel, with sand and silt being the dominant fraction. Grain size analyses were carried out on 2 representative samples and the results are plotted in Figure 26.

The recorded 'N' values range from 2 to over 100 blows, with a median of 50 blows per 30 cm of penetration, indicating that the till deposit is very loose to very dense, being generally very dense in relative density. Intermittent hard resistance to augering was encountered, indicating the presence of cobbles, boulders or rock fragments. Weaker layer was contacted near the ground surface, likely being disturbed by farming activities or weathering process.

The natural water content values range from 2% to 24%, with a median of 6%, indicating the sand and gravel is moist to wet, generally in moist condition.

The engineering properties of the silty sand till deposit are listed below:

- High frost susceptibility and low water erodibility.
- Relatively low permeability, with an estimated coefficient of permeability of 10^{-5} cm/sec and a percolation time of 20 min/cm.
- The shear strength is primarily derived from internal friction and is augmented by cementation.
- In excavation, the till deposit will be stable in relatively steep cuts; however, localized sheet failure may occur under prolonged exposure.
- Moderate corrosivity to buried metal, with an estimated electrical resistivity of 4000 ohm·cm.

4.4 Interpretation on Auger Refusal

Auger refusal was reached at the maximum investigated depths in most of the boreholes, representing probable bedrock. Based on the geology mapping, limestone bedrock of Shadow Lake Formation presents in the region. The quality and strength of the bedrock was not evaluated as it was not part of the scope of work of this report. Where necessary, additional boreholes with rock coring can be carried out to properly evaluate the quality, soundness and strength of bedrock.

5.0 GROUNDWATER CONDITION

All boreholes remained dry upon completion of borehole drilling. Groundwater levels were recorded for all monitoring wells on July 5, 2022, where majority of them remained dry, except 4 of the wells. The groundwater records are summarized in Table 1.

Table 1 – Groundwater Level in Monitoring Wells

Monitoring Well No.	Ground Elevation (m)	Well Depth (m)	July 5, 2022	
			Depth (m)	Elevation (m)
7	208.1	3.0	2.7	205.4
8	207.6	2.3	2.3	205.3
12	207.1	5.0	2.8	204.3
22	207.7	3.9	3.7	204.0

The groundwater levels were recorded between 2.3 m and 3.7 m below grade, or between El. 204.0 m and El. 205.4 m, in 4 of the monitoring wells. The recorded groundwater likely indicates the presence of localized perched water and is subject to seasonal fluctuations. Continuous groundwater is not anticipated within the depth of investigation.

6.0 DISCUSSION AND RECOMMENDATIONS

The boreholes were carried out in a farm field. The investigation has revealed that, the site is generally underlain by a stratum of silty sand till beneath the topsoil veneer. Localized sand, silty sand and sandy silt deposits were also contacted near the ground surface.

The groundwater levels were recorded between 2.3 m and 3.7 m below grade, or between El. 204.0 m and El. 205.4 m, in 4 of the monitoring wells. The recorded groundwater likely indicates the presence of localized perched water and is subject to seasonal fluctuations. Continuous groundwater is not anticipated within the depth of investigation.

It is understood that the site will be developed for residential subdivision with park blocks and 3 SWM ponds. A retirement residence is also proposed at the southeast corner of the site. The site will be provided with municipal services and paved roadways meeting the Town standards. The geotechnical findings warranting special consideration for the proposed development are presented below:

1. The revealed topsoil should be removed prior to the development. It can be stockpiled to be reused in landscape areas only. Any surplus should be removed off-site.
2. Where the site needs to be regraded with additional earth fill, the fill should be constructed as engineered fill to support building foundations, pavement and sewers.
3. While detailed design of the residential dwellings and the retirement residence is not available, it is assumed that these structures will have one basement level. These structures can be supported on sound native soils or engineered fill using conventional spread and strip footings. The footing subgrade should be inspected by either the geotechnical engineer or the senior geotechnical technician to ensure its condition is compatible with the design of the foundation.
4. The foundation walls must be damp-proofed and provided with perimeter subdrains at wall base, connecting into positive outlets.
5. A Class ‘B’ bedding, consisting of compacted 19-mm Crusher-Run Limestone (CRL) or equivalent, is recommended for the construction of the underground utilities above the groundwater level.

6. Excavation should be carried out in accordance with Ontario Regulation 213/91.

The recommendations appropriate for the project described in Section 2.0 are based on the geotechnical findings of this investigation. One must be aware that the subsurface conditions may vary between boreholes. Should this become apparent during construction, the geotechnical engineer must be consulted to determine whether the following recommendations require revision.

6.1 Site Preparation

Where the site needs to be re-graded with additional earth fill, the fill should be constructed as engineered fill to support building foundations, pavement and sewers. The engineering requirements for a certifiable fill for building foundations, municipal services and pavement construction are presented below:

1. All the existing topsoil must be removed, and the subgrade must be inspected and proof-rolled prior to any fill placement. The badly weathered soils near the ground surface should be sub-excavated, sorted free of organics and deleterious materials, if any, aerated before use for site grading.
2. Inorganic earth fill must be used for engineered fill construction. It should be uniformly compacted in 20 cm thick lifts to at least 98% of the maximum Standard Proctor dry density (SPDD) up to the proposed finished grade. The soil moisture must be properly controlled near the optimum moisture content. If the foundations are to be built soon after the fill placement, the densification process for the engineered fill must be increased to 100% SPDD.
3. If imported fill is to be used, it should be inorganic soils, free of deleterious material. Any potential imported earth fill must be reviewed for geotechnical and environmental assessment by the appropriate personnel as authorized by the developer or agency, before being hauled to the site.
4. The engineered fill must extend over the entire graded area; the engineered fill envelope and finished elevations must be clearly and accurately defined in the field, and they must be precisely documented by qualified surveyors.
5. If the engineered fill is to be left over the winter months, adequate earth cover or equivalent must be provided for protection against frost action.
6. The engineered fill must not be placed during the period from late November to early April when freezing ambient temperatures occur either persistently or intermittently. This is to ensure that the fill is free of frozen soils, ice and snow.

7. Where the fill is to be placed on sloping ground, the area must be benched or flattened to 1 vertical (V): 3 horizontal (H), the face of the bank must be flattened for safe operation of the compactor and the required compaction can be obtained.
8. The fill operation must be inspected on a full-time basis by the technician under the direction of the geotechnical engineer.
9. The footing and underground services subgrade must be inspected by the geotechnical consulting firm that inspected the engineered fill placement. This is to ensure that the foundations are placed within the engineered fill envelope, and the integrity of the fill has not been compromised by interim construction, environmental degradation and/or disturbance by the footing excavation.
10. Any excavation carried out in certified engineered fill must be reported to the geotechnical consultant who supervised the fill placement in order to document the locations of the excavation and/or to supervise reinstatement of the excavated areas to engineered fill status. If construction on the engineered fill does not commence within a period of 2 years from the date of certification, the condition of the engineered fill must be assessed for re-certification.
11. Despite stringent control in the placement of engineered fill, variations in soil type and density may occur in engineered fill. Therefore, strip footings and the upper section of foundation walls constructed on engineered fill will require continuous reinforcement. The required number and size of reinforcing bars must be assessed by considering the uniformity as well as the thickness of the engineered fill beneath the foundations.
12. In sewer construction, the engineered fill is considered to have the same structural proficiency as a natural inorganic soil.

6.2 **Foundation**

Conventional spread and strip footings can be used to support the residential dwellings and the retirement residence. They should be founded on sound native soil or engineered fill. The recommended soil bearing pressures at Serviceability Limit State (SLS) and Ultimate Limit State (ULS) for the design of the footings are provided below:

- Maximum Bearing Pressure at Serviceability Limit State (SLS) = 150 kPa
- Factored Bearing Pressure at Ultimate Limit State (ULS) = 250 kPa

Higher soil bearing pressures can be provided for the design of the retirement residence once the site grading plan and/or the underside of the footing are available for review.

The total and differential settlements for footings designed using the bearing pressure at SLS is estimated to be 25 mm and 20 mm, respectively.

One must be noted that the above recommended design bearing pressures are intended for preliminary design purpose. During construction, the foundation subgrade should be inspected by the geotechnical engineer, or senior geotechnical technician to ensure that the revealed conditions are compatible with the foundation design requirements.

Where water seepage is evident or the foundation subgrade is wet, the footings must be poured with concrete immediately after the subgrade inspection. Alternatively, a mud slab of 8 to 10 cm should be provided at the bearing surface after inspection to prevent costly rectification.

Foundations exposed to weathering, or in unheated areas, should have at least 1.4 m of earth cover for protection against frost action.

The foundations should meet the requirements specified in the latest Ontario Building Code, and the proposed structures should be designed to resist an earthquake force using Site Classification 'C' (very dense soil).

6.3 Basement and Slab-on-Grade Construction

In conventional design, the perimeter walls of basement structures should be provided with drainage board and subdrain systems at the wall base. The subdrains should be shielded by a fabric filter and discharge into the municipal sewer.

Basement slab should be constructed on a granular base, consisting of 19-mm CRL, 20 cm in thickness, compacted to 100% SPDD.

The subgrade for slab-on-grade construction should consist of sound natural soil or properly compacted inorganic earth fill. Any new fill in the slab subgrade should consist of organic free soil, compacted to at least 98% SPDD.

A Modulus of Subgrade Reaction of 25 MPa/m can be used for the design of the floor slab.

The exterior grade should slope away from the structures to prevent ponding of water adjacent to the house structures.

6.4 Underground Services

The subgrade for the underground services should consist of sound native soil or properly compacted inorganic earth fill. In areas where the subgrade consists of loose or soft soils, they should be subexcavated and replaced with the bedding material, properly compacted to 98% SPDD.

A Class 'B' granular bedding, consisting of compacted 19-mm CRL, or equivalent, is recommended for construction of underground services. Openings to subdrains and catch basins should be shielded with a fabric filter to prevent blockage by silting.

The pipe joints connected into the manholes and catch basins should be leak-proof or wrapped with an appropriate waterproof membrane. This is to prevent migration of fines due to leakage, leading to weakening of subgrade support and settlement of underground services.

In order to prevent pipe floatation when the underground services trench is deluged with water, a soil cover of at least two times the diameter of the pipe should be in place at all times after completion of the pipe installation.

The service pipes and metal fittings should be protected against corrosion. In determining the mode of protection, an estimated electrical resistivity of 4000 ohm·cm can be used. This, however, should be confirmed by testing the soil along the site service alignment at the time of construction or the proposed anode weight must meet the minimum requirements as specified by the Town Standard.

6.5 Backfilling in Trenches and Excavated Areas

The on-site inorganic soils are generally suitable for structural backfill. They should be sorted free of any organics or other deleterious material, if any prior to backfilling. Any oversized boulders (over 15 cm in size) should not be used for backfill.

The backfill in-service trenches or beside foundation walls should be compacted to at least 95% SPDD. In the zone within 1.0 m below the pavement or slab-on-grade, the backfill should be compacted to at least 98% SPDD, with the water content 2% to 3% drier than the optimum moisture content. The lift of each backfill layer should be limited to a thickness of 20 cm or it has to be determined by test strips.

In normal construction practice, the problem areas of settlement largely occur adjacent to foundation walls, columns, manholes, catch basins and services crossings. In areas which are inaccessible to a heavy compactor, granular backfill should be used with a small vibratory compactor.

6.6 Sidewalk, Interlocking Stone Pavement and Landscaping

Due to the frost susceptible characteristics of the subsoil, heaving of the pavement and sidewalk is anticipated during cold weather. Surface structures should be designed to tolerate seasonal movement subject to weather conditions.

Sidewalks, interlocking stone pavement, and the landscaping structures in areas which are sensitive to frost-induced ground movement, should be constructed on a free-draining, non-frost susceptible granular material such as Granular 'B'. This material must extend to at least 0.3 to 1.4 m below the sidewalk, slab or pavement surface, depending on the degree of tolerance of ground movement. The granular subgrade should be provided with positive drainage such as weeper subdrains connected to manholes or catch-basins. Alternatively, the subgrade should be properly insulated with 60-mm Styrofoam, or equivalent.

The exterior grading around the building structures must be designed such that it directs runoff away from the structures.

6.7 Pavement Design

The pavement design for local and collector residential roads is presented in Table 2.

Table 2 – Pavement Design

Course	Thickness (mm)	OPS Specifications
Asphalt Surface	50	HL1
Asphalt Binder Local Collector	 50 100	HDBC
Granular Base	150	Granular 'A' or equivalent
Granular Sub-base Local Collector	 300 300	Granular 'B' or equivalent

Prior to the placement of granular materials, the subgrade should be inspected and proof-rolled. Any soft spot or wet subgrade identified should be sub-excavated and replaced by inorganic soil or granular materials, compacted to at least 98% SPDD, with the water content at 2% to 3% drier than the optimum moisture content. The lift of each backfill layer should be limited to a thickness of 20 cm. The granular base and sub-base should be compacted to 100% SPDD.

Along the perimeter where surface runoff may drain onto the pavement, an intercept subdrain system should be installed to prevent infiltrating precipitation from seeping into the granular bases. The subdrains should consist of filter wrapped weepers connected into the catch basins and backfilled with free-draining granular material.

6.8 **Stormwater Management Ponds**

A total of three (3) SWM ponds are proposed at the subject site at Blocks 8, 23 and 24. Boreholes 8, 9 and 24 were completed in the vicinity of the ponds, where the subsoil generally consists of silty sand till deposit, with a localized sandy silt/silty sand layer in Borehole 8.

Groundwater is detected in Borehole 8 at a depth of 2.3 m below grade, or at El. 205.3 m. No groundwater was detected in Boreholes 9 and 24 within the depth of investigation.

Details of the ponds are not available for review at the time of report preparation and the pond designs should be further reviewed once they are available. The preliminary consideration of the pond designs is provided below:

- Given that the native soil are relatively pervious, a 1.0 m thick impervious clay liner or geosynthetic clay liner (GCL) will be required for the sides and bottom of the ponds. The liner should extend to the top of the ponds.
- Where earth berm is required for the construction of the ponds, topsoil must be removed and the subgrade must be proof-rolled before placement of earth fill. On-site inorganic soil can be used for berm constructions; it must be placed in 20 cm lifts and uniformly compacted to 98% SPDD.
- The side slope of the pond should be maintained at a gradient of 1V:3H or flatter for stability. All exposed slopes must be vegetated and/or sodded to prevent surface erosion.

- The inlet, outlet and control structures should be designed in accordance with the recommendations in Section 6.1 and 6.2. The footings must be placed below the scouring depth or the frost depth, whichever is deeper. The inlet and outlet structures must be lined with gabion mats or rip rap for protection against scouring.

6.9 Soil Parameters

The recommended soil parameters for the project design are given in Table 3.

Table 3 – Soil Parameters

Unit Weight and Bulk Factor	**Bulk Unit Weight (kN/m^3)**	**Estimated Bulk Factor**	
		Loose	**Compacted**
Silty Sand Till	22.5	1.30	1.03
Sand/Silty Sand/Sandy Silt	21.0	1.20	1.00
Lateral Earth Pressure Coefficients	**Active K_a**	**At Rest K_o**	**Passive K_p**
Compacted Earth Fill	0.40	0.55	2.50
Silty Sand Till	0.28	0.45	3.55
Sand/Silty Sand/Sandy Silt	0.33	0.50	3.00
Coefficients of Friction			
Between Concrete and Granular Base		0.50	
Between Concrete and Sound Native Soils		0.35	

6.10 Excavation

Excavation should be carried out in accordance with Ontario Regulation 213/91. The types of soils are classified in Table 4.

Table 4 – Classification of Soils for Excavation

Material	**Type**
Silty Sand Till	2
Earth Fill, drained Sands, Silty Sand, Sandy Silt	3
Saturated Soils, if any	4

Continuous groundwater is not anticipated in excavation within the depth of investigation. Any localized groundwater seepage from the percolation of surface water or perched water will expect to be limited in quantity and can be removed by conventional pumping from sumps.

7.0 LIMITATIONS OF REPORT

This report was prepared by Soil Engineers Ltd. for the account HBNG (Norwood) Developments Inc., for review by its designated consultants, financial institutions, and government agencies. Use of this report is subject to the conditions and limitations of the contractual agreement.

The material in the report reflects the judgment of Jonathan Fung, B.A.Sc., and Kin Fung Li, P.Eng., in light of the information available to it at the time of preparation. Any use which a Third Party makes of this report, or any reliance on decisions to be made based on it, is the responsibility of such Third Parties. Soil Engineers Ltd. accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

SOIL ENGINEERS LTD.

Jonathan Fung, B.A.Sc.

Kin Fung Li, P.Eng.
JF/KFL

LIST OF ABBREVIATIONS AND DESCRIPTION OF TERMS

The abbreviations and terms commonly employed on the borehole logs and figures, and in the text of the report, are as follows:

SAMPLE TYPES

AS Auger sample
CS Chunk sample
DO Drive open (split spoon)
DS Denison type sample
FS Foil sample
RC Rock core (with size and percentage recovery)
ST Slotted tube
TO Thin-walled, open
TP Thin-walled, piston
WS Wash sample

PENETRATION RESISTANCE

Dynamic Cone Penetration Resistance:

A continuous profile showing the number of blows for each foot of penetration of a 2-inch diameter, 90° point cone driven by a 140-pound hammer falling 30 inches.

Plotted as '—●—'

Standard Penetration Resistance or 'N' Value:

The number of blows of a 140-pound hammer falling 30 inches required to advance a 2-inch O.D. drive open sampler one foot into undisturbed soil.

Plotted as '○'

WH Sampler advanced by static weight
PH Sampler advanced by hydraulic pressure
PM Sampler advanced by manual pressure
NP No penetration

SOIL DESCRIPTION

Cohesionless Soils:

'N' (blows/ft)	Relative Density
0 to 4	very loose
4 to 10	loose
10 to 30	compact
30 to 50	dense
over 50	very dense

Cohesive Soils:

Undrained Shear Strength (ksf)	'N' (blows/ft)	Consistency
less than 0.25	0 to 2	very soft
0.25 to 0.50	2 to 4	soft
0.50 to 1.0	4 to 8	firm
1.0 to 2.0	8 to 16	stiff
2.0 to 4.0	16 to 32	very stiff
over 4.0	over 32	hard

Method of Determination of Undrained Shear Strength of Cohesive Soils:

x 0.0 Field vane test in borehole; the number denotes the sensitivity to remoulding

△ Laboratory vane test

☐ Compression test in laboratory

For a saturated cohesive soil, the undrained shear strength is taken as one half of the undrained compressive strength

METRIC CONVERSION FACTORS

1 ft = 0.3048 metres
1lb = 0.454 kg
1 inch = 25.4 mm
1ksf = 47.88 kPa

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH/MW-1

FIGURE NO.: 1

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 21, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
209.4	Ground Surface							
0.0	**33 cm TOPSOIL**	1	DO	3	0		14	
	Brown, very loose to compact weathered **SAND** some silt to silty	2	DO	11	1		16	
208.2								
1.3	Grey, very dense **SILTY SAND TILL** a trace of clay occ. cobbles and boulders	3	DO	55	2		4	
207.3								
2.2	**END OF BOREHOLE (Auger refusal due to probable bedrock)**				3			
	Installed 50-mm Ø PVC monitoring well to 2.1 m with slotted screen from 1.2 to 2.1 m, and sand backfill from 0.6 to 2.1 m. Bentonite seal from 0.0 to 0.6 m. Mounted with a steel monument protective casing.				4			
					5			
					6			
					7			
					8			
					9			
					10			

Dry upon Completion

Soil Engineers Ltd.

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH/MW-2

FIGURE NO.: 2

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 27, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
211.6	Ground Surface							
0.0	**45 cm TOPSOIL**	1	DO	4	0		9	
	Grey, loose to very dense weathered							
	SILTY SAND TILL	2	DO	15	1		4	
	a trace of clay occ. cobbles and boulders							
		3	DO	55	2		3	
		4	DO	40			3	
207.7					3			
3.9	**END OF BOREHOLE** **(Auger refusal due to probable bedrock)**				4			
	Installed 50-mm Ø PVC monitoring well to 3.0 m with slotted screen from 1.5 to 3.0 m, and sand backfill from 0.9 to 3.0 m. Bentonite seal from 0.0 to 0.9 m. Mounted with a steel monument protective casing.				5			
					6			
					7			
					8			
					9			
					10			Dry upon Completion

Soil Engineers Ltd.

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH/MW-3

FIGURE NO.: 3

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 21, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
210.8	Ground Surface							
0.0	**36 cm TOPSOIL**	1	DO	2	0		13	
	Grey, very loose to very dense weathered							
	SILTY SAND TILL	2	DO	45	1		3	
	a trace of clay occ. cobbles and boulders	3	DO	50/10	2		3	
		4	DO	50/30			5	
207.7					3			
3.1	**END OF BOREHOLE** **(Auger refusal due to probable bedrock)**				4			
	Installed 50-mm Ø PVC monitoring well to 3.0 m with slotted screen from 1.5 to 3.0 m, and sand backfill from 0.9 to 3.0 m. Bentonite seal from 0.0 to 0.9 m. Mounted with a steel monument protective casing.				5			Dry upon Completion
					6			
					7			
					8			
					9			
					10			

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH/MW-4

FIGURE NO.: 4

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 27, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
212.8	Ground Surface							
0.0	**25 cm TOPSOIL**				0			
	Brown, loose	1	DO	7			8	
	SAND weathered							
	some silt to silty	2	DO	6	1		17	
211.3								
1.5	Grey, compact to very dense	3	DO	10			3	
	SILTY SAND TILL				2			
	a trace of clay occ. cobbles and boulders	4	DO	36			4	
					3			
		5	DO	50/30			7	
208.8								
4.0	**END OF BOREHOLE** **(Auger refusal due to probable bedrock)**				4			
					5			
	Installed 50-mm Ø PVC monitoring well to 3.9 m with slotted screen from 2.4 to 3.9 m, and sand backfill from 1.8 to 3.9 m. Bentonite seal from 0.0 to 1.8 m. Mounted with a steel monument protective casing.				6			
					7			
					8			
					9			
					10			

Dry upon Completion

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH-5

FIGURE NO.: 5

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 21, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
209.0	Ground Surface							
0.0	**30 cm TOPSOIL**	1	DO	5	0		13	
	Brown							
	SAND — weathered	2	DO	5	1		6	
	some silt to silty							
207.6								
1.4	Grey, very dense	3	DO	50/8			6	
207.2	**SILTY SAND TILL**				2			
1.8	occ. cobbles and boulders							
	END OF BOREHOLE				3			
	(Auger refusal due to probable bedrock)				4			
					5			
					6			
					7			
					8			
					9			
					10			

Dry upon Completion

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH/MW-6

FIGURE NO.: 6

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 27, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
211.0	Ground Surface							
0.0	**23 cm TOPSOIL**				0			
	Grey, loose to very dense weathered	1	DO	6			8	
	SILTY SAND TILL							
	a trace of clay occ. cobbles and boulders	2	DO	32	1		4	
		3	DO	50/8			4	
					2			
		4	DO	50/5			2	
208.0					3			
3.0	**END OF BOREHOLE** **(Auger refusal due to probable bedrock)**							
					4			
					5			
					6			
					7			
					8			
					9			
					10			

Installed 50-mm Ø PVC monitoring well to 2.9 m with slotted screen from 1.4 to 2.9 m, and sand backfill from 0.8 to 2.9 m. Bentonite seal from 0.0 to 0.8 m. Mounted with a steel monument protective casing.

Dry upon Completion

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH/MW-7

FIGURE NO.: 7

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 21, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
208.1	Ground Surface							
0.0	**23 cm TOPSOIL**				0			
	Brown, loose to compact	1	DO	6				
	SILTY SAND/SANDY SILT weathered							
		2	DO	10	1			
		3	DO	18				
206.0					2			
2.1	Grey, dense							
	SILTY SAND TILL a trace of clay occ. cobbles and boulders	4	DO	37				
205.0					3			
3.1	**END OF BOREHOLE** **(Auger refusal due to probable bedrock)**							
					4			
					5			
					6			
					7			
					8			
					9			
					10			

Installed 50-mm Ø PVC monitoring well to 2.9 m with slotted screen from 1.4 to 2.9 m, and sand backfill from 0.8 to 2.9 m. Bentonite seal from 0.0 to 0.8 m. Mounted with a steel monument protective casing.

Dry upon Completion

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH/MW-8

FIGURE NO.: 8

PROJECT DESCRIPTION: Proposed Residential Development

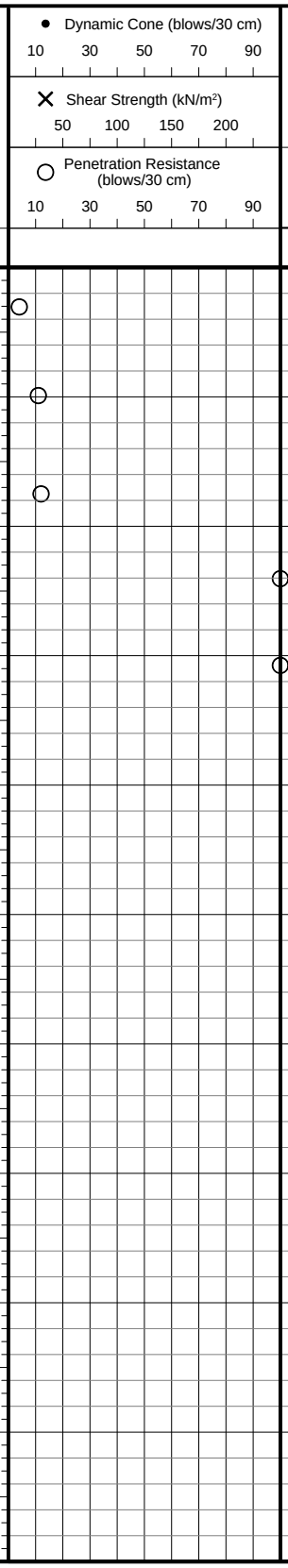
METHOD OF BORING: Flight Auger

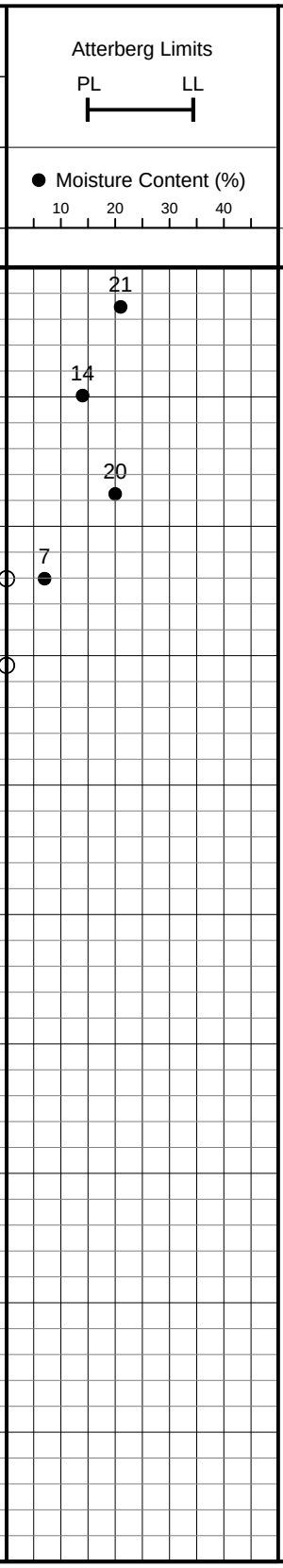
PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 21, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)
207.6 / 0.0	Ground Surface				
	30 cm TOPSOIL	1	DO	4	0
	Brown, loose to compact				
	SILTY SAND/SANDY SILT — weathered	2	DO	11	1
		3	DO	12	
205.5 / 2.1	Grey, very dense				2
		4	DO	50/23	
	SILTY SAND TILL a trace of clay occ. cobbles and boulders				
204.5 / 3.1	**END OF BOREHOLE** **(Auger refusal due to probable bedrock)**	5	DO	50/5	3
					4
					5
					6
					7
					8
					9
					10

Installed 50-mm Ø PVC monitoring well to 3.0 m with slotted screen from 1.5 to 3.0 m, and sand backfill from 0.9 to 3.0 m. Bentonite seal from 0.0 to 0.9 m. Mounted with a steel monument protective casing.





WATER LEVEL: Dry upon Completion

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH/MW-9

FIGURE NO.: 9

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 22, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
204.0	Ground Surface							
0.0	**25 cm TOPSOIL**	1	DO	2	0		13	
	Grey, very loose to very dense weathered							
	SILTY SAND TILL	2	DO	46	1		6	
	a trace of clay occ. cobbles and boulders							
		3	DO	55	2		7	
		4	DO	50/30			6	
		5	DO	50/15	3		7	
199.8					4			
4.2	**END OF BOREHOLE** **(Auger refusal due to probable bedrock)**				5			
	Installed 50-mm Ø PVC monitoring well to 4.1 m with slotted screen from 2.6 to 4.1 m, and sand backfill from 2.0 to 4.1 m. Bentonite seal from 0.0 to 2.0 m. Mounted with a steel monument protective casing.				6			
					7			
					8			
					9			
					10			

Dry upon Completion

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH/MW-10

FIGURE NO.: 10

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 22, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
202.8	Ground Surface							
0.0	**25 cm TOPSOIL**				0			
	Brown, loose to dense — weathered **SILTY SAND/SANDY SILT**	1	DO	5			18	
		2	DO	32	1		16	
201.3								
1.5	Grey, very dense **SILTY SAND TILL** a trace of clay occ. cobbles and boulders	3	DO	50	2		6	
		4	DO	50/30			5	
		5	DO	50/30	3		7	
198.4					4			
4.4	**END OF BOREHOLE (Auger refusal due to probable bedrock)**				5			
	Installed 50-mm Ø PVC monitoring well to 4.3 m with slotted screen from 2.6 to 4.3 m, and sand backfill from 2.0 to 4.3 m. Bentonite seal from 0.0 to 2.0 m. Mounted with a steel monument protective casing.				6			
					7			
					8			
					9			
					10			Dry upon Completion

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH/MW-11

FIGURE NO.: 11

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 25, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
207.8	Ground Surface							
0.0	**25 cm TOPSOIL**	1	DO	5	0		13	
	Grey, loose to very dense — weathered							
	SILTY SAND TILL	2	DO	27	1		8	
	a trace of clay occ. cobbles and boulders	3	DO	37	2		7	
		4	DO	50			7	
		5	DO	65	3		7	
		6	DO	50/30	4		6	
201.4		7	DO	50/30	5		8	
6.4	**END OF BOREHOLE**				6			
	Installed 50-mm Ø PVC monitoring well to 6.0 m with slotted screen from 3.0 to 6.0 m, and sand backfill from 2.4 to 6.0 m. Bentonite seal from 0.0 to 2.4 m. Mounted with a steel monument protective casing.				7			Dry upon Completion
					8			
					9			
					10			

Soil Engineers Ltd.

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH/MW-12

FIGURE NO.: 12

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 26, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
207.1	Ground Surface							
0.0	**30 cm TOPSOIL**	1	DO	5	0		21	
	Brown, loose							
	SILTY SAND/SANDY SILT	2	DO	8	1		19	
		3	DO	4			19	
205.0					2			
2.1	Grey, dense to very dense	4	DO	50/30			8	
	SILTY SAND TILL							
	a trace of clay occ. cobbles and boulders	5	DO	50	3		7	
					4			
		6	DO	38	5		8	
201.5								
5.6	**END OF BOREHOLE** **(Auger refusal due to probable bedrock)**				6			
	Installed 50-mm Ø PVC monitoring well to 5.0 m with slotted screen from 2.0 to 5.0 m, and sand backfill from 1.4 to 5.0 m. Bentonite seal from 0.0 to 1.4 m. Mounted with a steel monument protective casing.				7			
					8			
					9			
					10			Dry upon Completion

Soil Engineers Ltd.

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH-13

FIGURE NO.: 13

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 25, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
207.6	Ground Surface							
0.0	**25 cm TOPSOIL**				0			
	Brown, very loose to loose	1	DO	3			21	
	SILTY SAND/SANDY SILT weathered							
		2	DO	8	1		16	
206.2								
1.4	Grey, very dense							
		3	DO	50/30			23	
	SILTY SAND TILL				2			
	occ. cobbles and boulders							
205.0		4	DO	50/30			6	
2.6	**END OF BOREHOLE** **(Auger refusal due to probable bedrock)**				3 4 5 6 7 8 9 10			Dry upon Completion

Soil Engineers Ltd.

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH/MW-14

FIGURE NO.: 14

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 25, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
207.3	Ground Surface							
0.0	**45 cm TOPSOIL**	1	DO	5	0		18	
	weathered Grey, loose to very dense							
	SILTY SAND TILL	2	DO	50/30	1		5	
	a trace of clay occ. cobbles and boulders	3	DO	45	2		4	
		4	AS	50/5			2	
204.3					3			
3.0	**END OF BOREHOLE** **(Auger refusal due to probable bedrock)**				4			
	Installed 50-mm Ø PVC monitoring well to 2.9 m with slotted screen from 1.4 to 2.9 m, and sand backfill from 0.8 to 2.9 m. Bentonite seal from 0.0 to 0.8 m. Mounted with a steel monument protective casing.				5			Dry upon Completion
					6			
					7			
					8			
					9			
					10			

Soil Engineers Ltd.

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH/MW-15

FIGURE NO.: 15

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 26, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
209.7	Ground Surface							
0.0	**23 cm TOPSOIL**				0			
	Brown, very loose weathered **SAND** some silt to silty	1	DO	3				
209.0 / 0.7								
	Grey, compact to very dense	2	DO	21	1			
	SILTY SAND TILL							
	a trace of clay occ. cobbles and boulders	3	DO	45				
		4	AS	50/5	2			
206.6		5	DO	50/5	3			
3.1	**END OF BOREHOLE (Auger refusal due to probable bedrock)**							
	Installed 50-mm Ø PVC monitoring well to 3.0 m with slotted screen from 1.5 to 3.0 m, and sand backfill from 0.9 to 3.0 m. Bentonite seal from 0.0 to 0.9 m. Mounted with a steel monument protective casing.				4 5 6 7 8 9 10			Dry upon Completion

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH-16

FIGURE NO.: 16

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 25, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
210.0	Ground Surface							
0.0	**23 cm TOPSOIL**				0			
	weathered brown grey	1	DO	16				
	Compact to very dense							
	SILTY SAND TILL	2	DO	50/30	1			
	a trace of clay occ. cobbles and boulders							
		3	DO	50/15				
					2			
		4	AS	50/5				
					3			
		5	DO	50/30				
					4			
205.6								
4.4	**END OF BOREHOLE** **(Auger refusal due to probable bedrock)**				5			
					6			
					7			
					8			
					9			
					10			

Dry upon Completion

Soil Engineers Ltd.

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH-17

FIGURE NO.: 17

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line
Township of Asphodel-Norwood

DRILLING DATE: July 25, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
208.0	Ground Surface							
0.0	**25 cm TOPSOIL**				0			
	Brown, very loose	1	DO	2				
	SILTY SAND/SANDY SILT							
		2	DO	1	1		21	
206.7								
1.3	Grey, compact							
	SILTY SAND TILL	3	DO	21			25	
	a trace of clay				2			
205.8	occ. cobbles and boulders							
2.2	**END OF BOREHOLE**							
	(Auger refusal due to probable bedrock)				3			
					4			
					5			
					6			
					7			
					8			
					9			
					10			

Dry upon Completion

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH-18

FIGURE NO.: 18

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 22, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
209.5	Ground Surface							
0.0	**25 cm TOPSOIL**	1	DO	10	0		11	
	Grey, compact to very dense — weathered							
	SILTY SAND TILL a trace of clay occ. cobbles and boulders	2	DO	30	1		4	
207.7		3	DO	50/30			3	
1.8	**END OF BOREHOLE (Auger refusal due to probable bedrock)**				2			
					3			
					4			
					5			
					6			
					7			
					8			
					9			
					10			

Dry upon Completion

Soil Engineers Ltd.

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH-19

FIGURE NO.: 19

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 25, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
208.7	Ground Surface							
0.0	**23 cm TOPSOIL**	1	DO	7	0		9	
	Grey, loose to very dense weathered							
	SILTY SAND TILL	2	DO	50/30	1		3	
	a trace of clay occ. cobbles and boulders	3	DO	50/30	2		6	
		4	DO	50/30	3		7	
		5	DO	42	4		6	
204.4								
4.3	**END OF BOREHOLE** **(Auger refusal due to probable bedrock)**				5			Dry upon Completion
					6			
					7			
					8			
					9			
					10			

Soil Engineers Ltd.

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH-20

FIGURE NO.: 20

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 25, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
206.9	Ground Surface							
0.0	**25 cm TOPSOIL**	1	DO	7	0		15	
	Grey, loose to very dense — weathered							
	SILTY SAND TILL a trace of clay occ. cobbles and boulders	2	DO	43	1		8	
		3	DO	54	2		4	
204.3		4	AS	50/5			4	
2.6	**END OF BOREHOLE** **(Auger refusal due to probable bedrock)**				3 4 5 6 7 8 9 10			Dry upon Completion

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH/MW-21

FIGURE NO.: 21

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 22, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
208.9	Ground Surface							
0.0	**25 cm TOPSOIL**				0			
	weathered	1	DO	12			18	
	Grey, compact to very dense							
	SILTY SAND TILL	2	DO	50/30	1		6	
	a trace of clay occ. cobbles and boulders							
		3	DO	48	2		5	
		4	DO	50/15			4	
		5	DO	37	3		3	
205.3								
3.6	**END OF BOREHOLE** **(Auger refusal due to probable bedrock)**				4			
	Installed 50-mm Ø PVC monitoring well to 3.5 m with slotted screen from 2.0 to 3.5 m, and sand backfill from 1.4 to 3.5 m. Bentonite seal from 0.0 to 1.4 m. Mounted with a steel monument protective casing.				5			Dry upon Completion
					6			
					7			
					8			
					9			
					10			

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH/MW-22

FIGURE NO.: 22

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line, Township of Asphodel-Norwood

DRILLING DATE: July 26, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
207.7	Ground Surface							
0.0	**28 cm TOPSOIL**	1	DO	5	0		21	
	Brown, loose — weathered							
	SILTY SAND/SANDY SILT	2	DO	5	1		27	
		3	DO	4	2		16	
205.6								
2.1	Grey, compact	4	DO	24			12	
	SILTY SAND TILL				3			
	a trace of clay occ. cobbles and boulders				4			
203.7								
4.0	**END OF BOREHOLE** **(Auger refusal due to probable bedrock)**				5			
					6			
	Installed 50-mm Ø PVC monitoring well to 3.9 m with slotted screen from 2.4 to 3.9 m, and sand backfill from 1.8 to 3.9 m. Bentonite seal from 0.0 to 1.8 m. Mounted with a steel monument protective casing.				7			
					8			
					9			
					10			Dry upon Completion

Soil Engineers Ltd.

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH-23

FIGURE NO.: 23

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line
Township of Asphodel-Norwood

DRILLING DATE: July 26, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m²) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
213.3	Ground Surface							
0.0	**23 cm TOPSOIL**	1	DO	2	0		12	
	Brown, very loose to compact weathered							
	SAND	2	DO	10	1		11	
211.9	some silt to silty							
1.4	Grey, dense to very dense	3	DO	40	2		7	
	SILTY SAND TILL							
	a trace of clay occ. cobbles and boulders	4	DO	43			8	
		5	DO	42	3		8	
209.5								
3.8	**END OF BOREHOLE** **(Auger refusal due to probable bedrock)**				4 5 6 7 8 9 10			Dry upon Completion

Soil Engineers Ltd.

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH-24

FIGURE NO.: 24

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line
Township of Asphodel-Norwood

DRILLING DATE: July 22, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
214.5	Ground Surface							
0.0	**38cm TOPSOIL**	1	DO	3	0		14	
	weathered Grey, very loose to very dense							
	SILTY SAND TILL	2	DO	50/30	1		6	
	a trace of clay occ. cobbles and boulders	3	DO	50/30	2		3	
		4	AS	50/5			3	
211.5 3.0	**END OF BOREHOLE** **(Auger refusal due to probable bedrock)**				3			Dry upon Completion
					4			
					5			
					6			
					7			
					8			
					9			
					10			

Soil Engineers Ltd.

JOB NO.: 2206-S253

LOG OF BOREHOLE: BH/MW-25

FIGURE NO.: 25

PROJECT DESCRIPTION: Proposed Residential Development

METHOD OF BORING: Flight Auger

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line Township of Asphodel-Norwood

DRILLING DATE: July 26, 2022

El. (m) / Depth (m)	SOIL DESCRIPTION	SAMPLES Number	Type	N-Value	Depth Scale (m)	Dynamic Cone (blows/30 cm) 10 30 50 70 90 / Shear Strength (kN/m^2) 50 100 150 200 / Penetration Resistance (blows/30 cm) 10 30 50 70 90	Atterberg Limits PL LL / Moisture Content (%) 10 20 30 40	WATER LEVEL
215.6	Ground Surface							
0.0	**23 cm TOPSOIL**				0			
	Brown, loose to compact weathered	1	DO	6			9	
	SAND some silt to silty							
214.6 / 1.0		2	DO	28	1		24	
	Grey, compact to very dense							
	SILTY SAND TILL	3	DO	45			6	
	a trace of clay occ. silt seams and layers, cobbles and boulders				2			
		4	DO	28			7	
					3			
		5	DO	48			6	
					4			
		6	DO	50/30			7	
					5			
209.5 / 6.1	**END OF BOREHOLE**				6			
	Installed 50-mm Ø PVC monitoring well to 6.0 m with slotted screen from 3.0 to 6.0 m, and sand backfill from 2.4 to 6.0 m. Bentonite seal from 0.0 to 2.4 m. Mounted with a steel monument protective casing.				7			
					8			
					9			
					10			Dry upon Completion

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GRAIN SIZE DISTRIBUTION

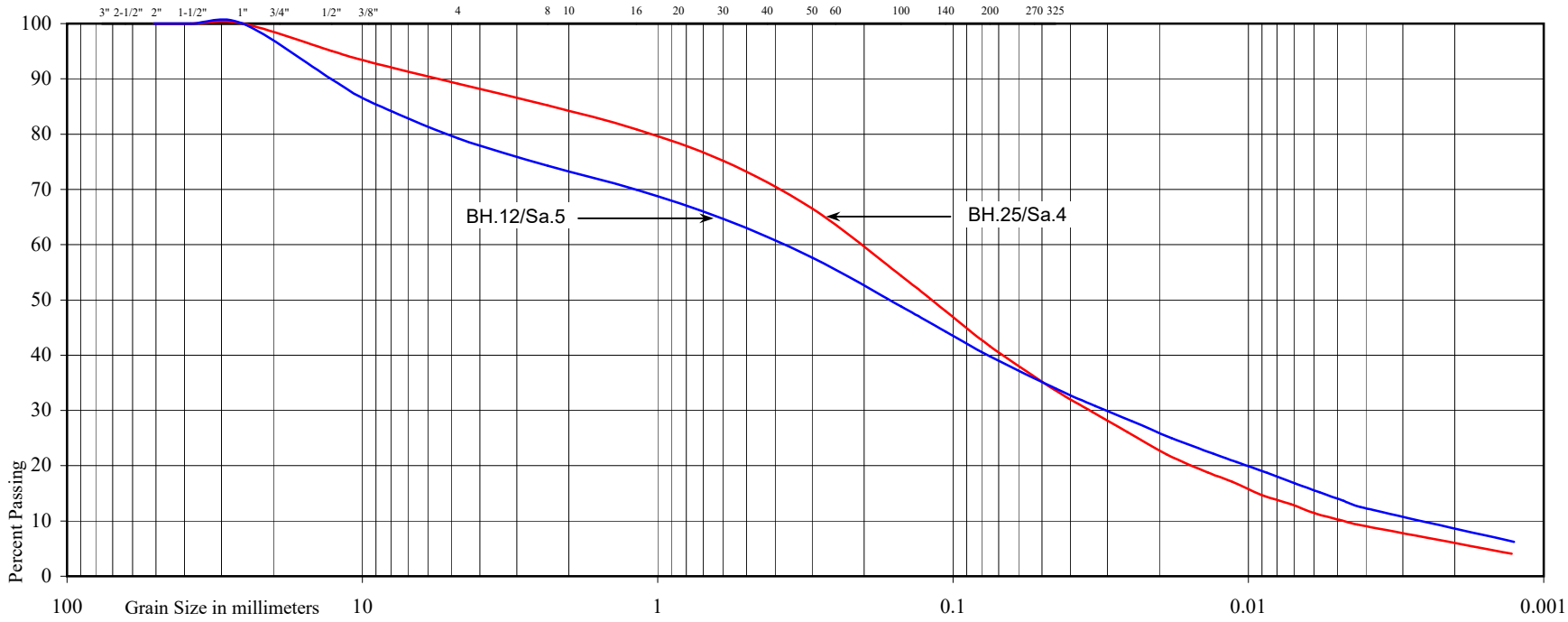
Reference No: 2206-S253

U.S. BUREAU OF SOILS CLASSIFICATION

GRAVEL			SAND				SILT	CLAY
COARSE		FINE	COARSE	MEDIUM	FINE	V. FINE		

UNIFIED SOIL CLASSIFICATION

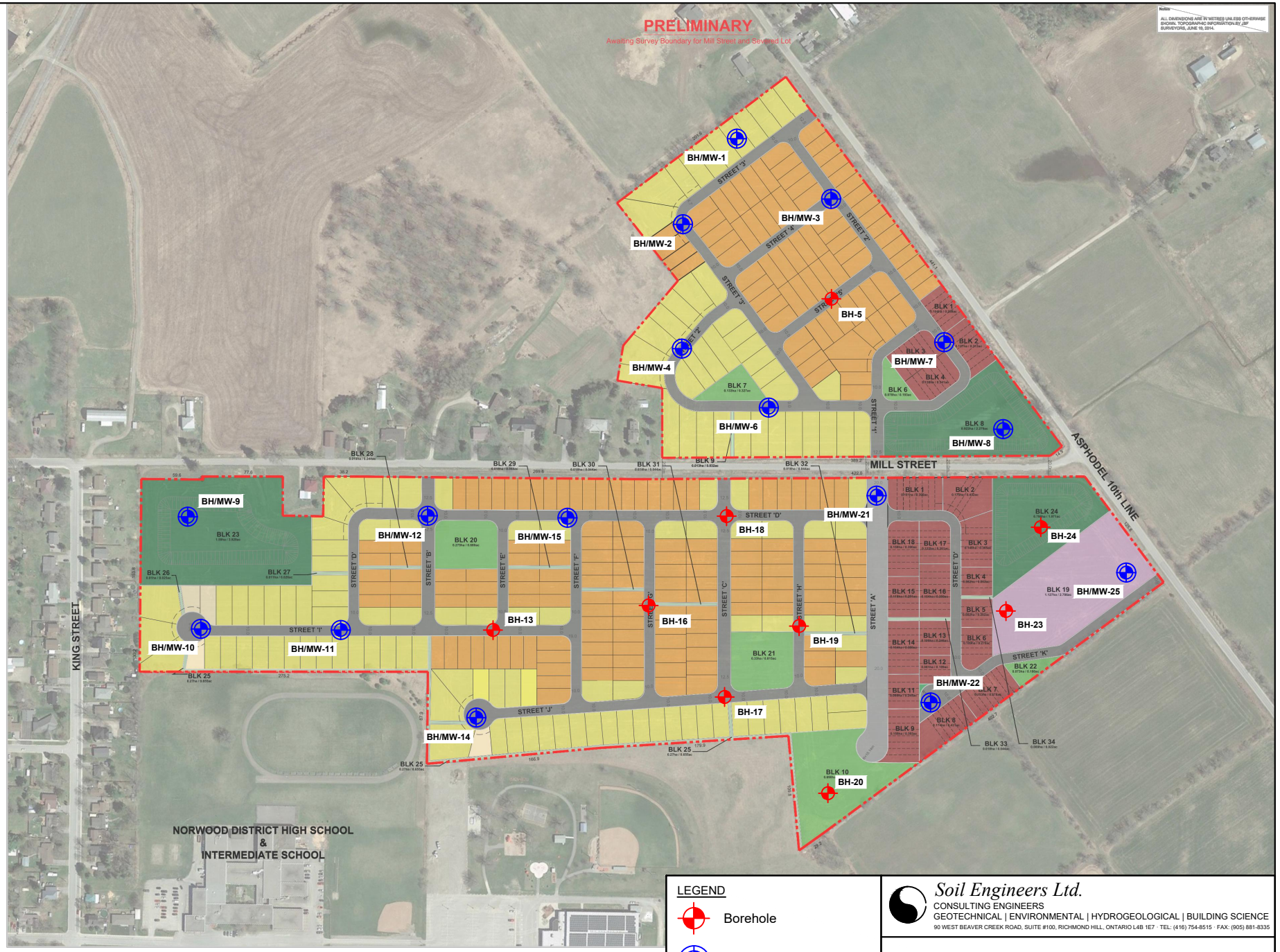
GRAVEL		SAND			SILT & CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



Project:	Proposed Residential Development		BH./Sa.	12/5	25/4
Location:	SW and NW Corners of Mill Street and Asphodel 10th Line		Liquid Limit (%) =	-	-
	Township of Asphodel-Norwood		Plastic Limit (%) =	-	-
Borehole No:	12	25	Plasticity Index (%) =	-	-
Sample No:	5	4	Moisture Content (%) =	7	7
Depth (m):	3.3	2.5	Estimated Permeability		
Elevation (m):	203.8	213.1	(cm./sec.) =	10^{-5}	10^{-5}

Classification of Sample [& Group Symbol]:	SILTY SAND TILL some gravel, a trace of clay

Figure: 26


PRELIMINARY
Awaiting Survey Boundary for Mill Street and Severed Lot
BH/MW-1
BH/MW-2
BH/MW-3
BH-5
BH/MW-4
BH/MW-6
BH/MW-7
BH/MW-8
BH/MW-9
BH/MW-10
BH/MW-11
BH/MW-12
BH-13
BH/MW-14
BH/MW-15
BH-16
BH-17
BH-18
BH-19
BH/MW-21
BH/MW-22
BH-23
BH-24
BH/MW-25
BH-20
MILL STREET
ASPHODEL 10th LINE
KING STREET
STREET 'A'
STREET 'B'
STREET 'C'
STREET 'D'
STREET 'E'
STREET 'F'
STREET 'G'
STREET 'H'
STREET 'I'
STREET 'J'
STREET 'K'
NORWOOD DISTRICT HIGH SCHOOL
&
INTERMEDIATE SCHOOL
LEGEND
Borehole
Borehole/Monitoring Well
Soil Engineers Ltd.
CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | HYDROGEOLOGICAL | BUILDING SCIENCE
90 WEST BEAVER CREEK ROAD, SUITE #100, RICHMOND HILL, ONTARIO L4B 1E7 · TEL: (416) 754-8515 · FAX: (905) 881-8335
Borehole and Monitoring Well Location Plan
SITE: SE and NE Corners of Mill Street and Asphodel 10th Line
Township of Asphodel-Norwood
DESIGNED BY: J.F.
CHECKED BY: K.L.
DWG NO.: 1
SCALE: 1:5000
REF. NO.: 2206-S253
DATE: September 2022
REV -

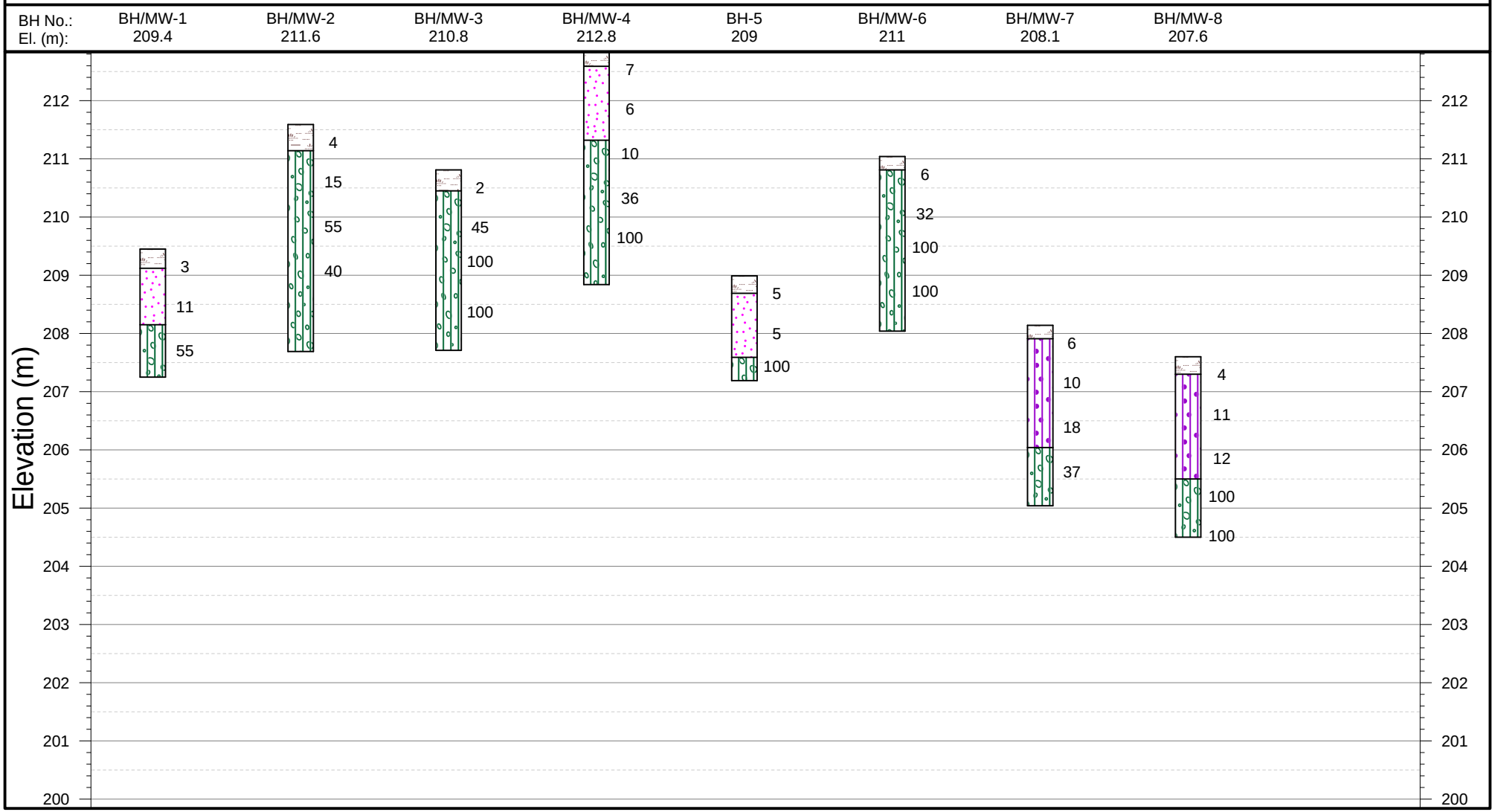
Soil Engineers Ltd.
CONSULTING ENGINEERS
GEOTECHNICAL | ENVIRONMENTAL | HYDROGEOLOGICAL | BUILDING SCIENCE

SUBSURFACE PROFILE
DRAWING NO. 2A
SCALE: AS SHOWN

JOB NO.: 2206-S253
REPORT DATE: September 2022
PROJECT DESCRIPTION: Proposed Residential Development

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line
Township of Asphodel-Norwood

LEGEND
SAND | SILTY SAND | SILTY SAND TILL | TOPSOIL



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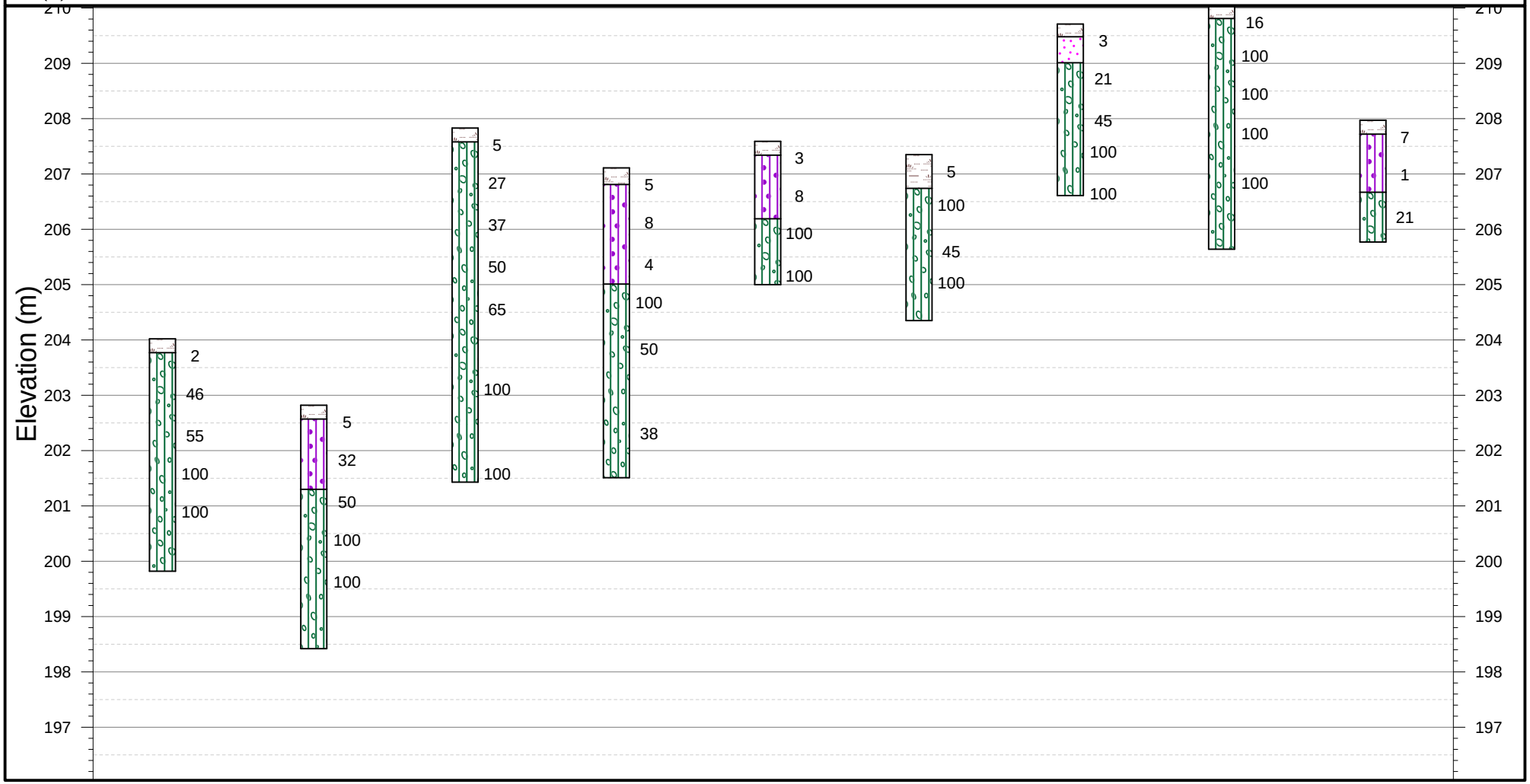
SUBSURFACE PROFILE
DRAWING NO. 2B
SCALE: AS SHOWN

JOB NO.: 2206-S253
REPORT DATE: September 2022
PROJECT DESCRIPTION: Proposed Residential Development

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line
Township of Asphodel-Norwood

LEGEND
SAND | SILTY SAND | SILTY SAND TILL | TOPSOIL



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SUBSURFACE PROFILE
DRAWING NO. 2C
SCALE: AS SHOWN

JOB NO.: 2206-S253
REPORT DATE: September 2022
PROJECT DESCRIPTION: Proposed Residential Development

PROJECT LOCATION: SW and NW Corners of Mill Street and Asphodel 10th Line
Township of Asphodel-Norwood

LEGEND
SAND | SILTY SAND | SILTY SAND TILL | TOPSOIL