

**FUNCTIONAL SERVICING &
STORMWATER MANAGEMENT REPORT**

**15717 AIRPORT ROAD
RESIDENTIAL SUBDIVISION**

TOWN OF CALEDON

Project: 2016-4453

**Revised: September 2018
May 2017**



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CONSULTING ENGINEERS

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- Appendix A: Background Information
- Appendix B: Water Supply Calculations
- Appendix C: Sanitary Servicing Calculations
- Appendix D: Stormwater Management Calculations
- Appendix E: Engineering Drawings

1.0 INTRODUCTION

1.1 Study Objectives and Location

The objective of this report is to provide a servicing plan for the 43.44 ha subject property which will provide guidance for detailed engineering designs for the proposed development. The property can be legally defined as Lot 19 Concession 1, north of Olde Base Line Road on the east side of Airport Road in the Town of Caledon, Region of Peel, refer to Figure 1-1.

The following sections provide strategic information regarding the stormwater management, sanitary, and water servicing for the subject development while ensuring compatibility with services already in place and prior planning resolutions.

1.2 Existing Conditions

1.2.1 Topography and Drainage

Topographic relief on the site is in excess of 17m, ranging from 295.5masl at the southern boundary, to 312.25masl at the north-eastern portion of the site. In general, the site drains in a north to south direction. A drainage divide exists along the north half the property that results in 4.73 ha draining north towards the existing residential development, and 39.26 ha south towards the valley lands.

1.2.2 Soil Conditions

A preliminary geotechnical investigation has been completed by exp. Services Inc. on September 22, 2016. This investigation revealed that the predominant underlying soils consist of sandy silty till and silty sand. Based on the monitoring program carried out for the study, water levels at depths in range of 2.1 m to 6.5 meters were observed in 4 boreholes (BH 2, 8, 9, 10). The report further states that no groundwater was encountered in the remaining boreholes.



TRIPLE CROWN RESIDENTIAL SUBDIVISION
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LEGEND



SUBJECT SITE



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FIGURE 1-1
 LOCATION PLAN

1.3 Proposed Development Plan and Population

The subdivision is proposed to consist of 554 single family residential lots, 67 townhouse units, roads, open space, walkways, and parkettes. A private high density development with a unit count in range of 17-30 units is proposed near the proposed entrance to the subdivision across from Cranston Drive. Similarly, a 1.60 ha private residential condominium block is proposed along the east boundary of the subdivision, which is expected to have a unit count of 20. Furthermore, we are proposing an approximate area of 2.48 ha to be utilized for the SWM pond within the site. The following page presents the draft plan of subdivision. The development plan is illustrated in Figure 1-2.

The Region of Peel guidelines recommend a population density based on area of development rather than proposed unit counts for the purposes of sanitary sewer and water supply design. Given the size of the lots and number of units however, a “per unit” criterion may be more appropriate at a detailed design stage. The proposed site design population is summarized in Table 1-1. The design population is for planning purposes only.

Table 1-1: Estimated Design Population

Land Use	Criteria	Units	Prorated Area of Development Type (ha)	Design Population
Single-Family/ Townhomes Residential (< 10m Frontages)	70 capita/hectare	248	17.34	1214
Single-Family Residential (> 10m Frontages)	50 capita/hectare	373	24.15	1208
High Density Block	70 capita/hectare	30	0.35	25
Condominium Block (>10m Frontages)	50 capita/hectare	20	1.60	80
TOTAL	--	671	43.44	2527

1.4 Background

The following material has been reviewed during the preparation of this Preliminary Engineering and Functional Servicing Report:

- “Public Works Design, Specifications & Procedures Manual – Linear Infrastructure”, dated November 2009, Revised July 2009 and June 2010, by Region of Peel;
- “Development Standards, Policies and Guidelines, Town of Caledon, Version 4”, dated January 2009, prepared by Town of Caledon Public Works and Engineering Department;
- “Caledon East – Preliminary Site Servicing Investigation Memorandum”, dated February 5, 2015 by Counterpoint Engineering;

- *Ministry of Environment Stormwater Management Planning and Design Manual*, by the MOE dated March 2003;
- *“Low Impact Development Stormwater Management Planning and Design Guide, Version 1.0”* by the CVC and TRCA, dated 2010;
- *“Natural Environment Constraints Analysis – 15717 Airport Road, Caledon, Ontario”* dated September 23, 2016 by GHD;
- *“Soil Infiltration Testing, Airport Road and Cranston Drive”* dated September 28, 2016 by exp Services Inc.;
- *“Subsurface Environmental Investigation, Airport Road and Cranston Drive”* dated September 27, 2016 by exp Services Inc.;

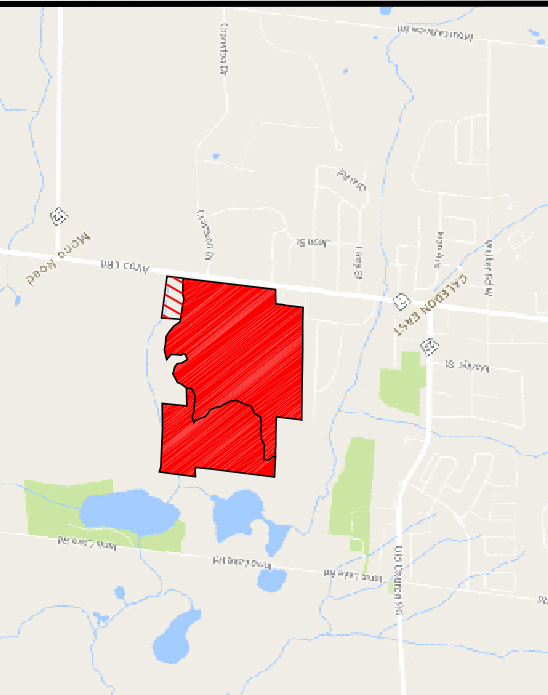
VALEWOOD DRIVE
(REGISTERED PLAN 43M-569)

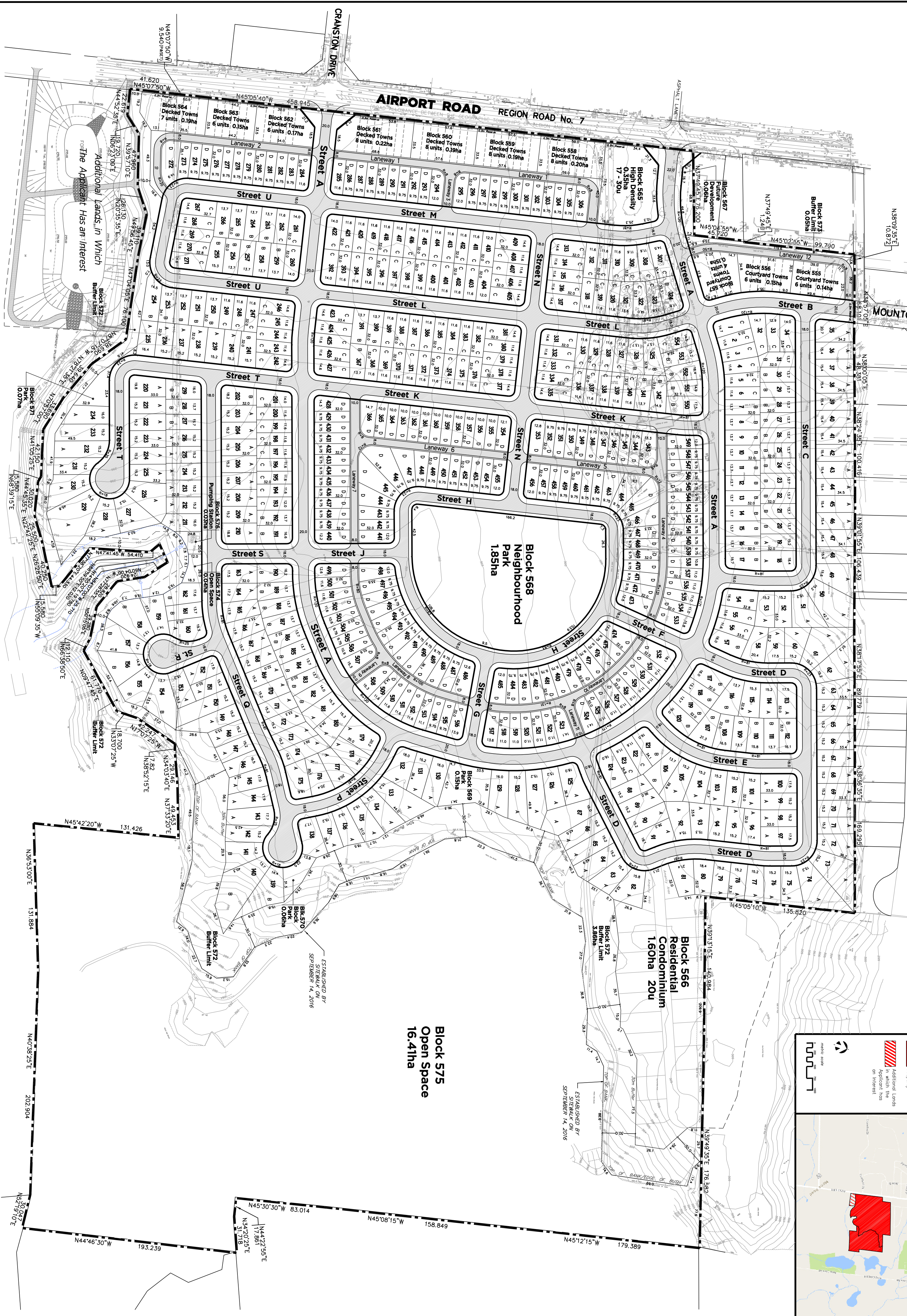
VALEWOOD DRIVE
(REGISTERED PLAN 43M-569)

(INDICATED BY THE RED SHADING IN PLAN 1624/4579)

KEY PLAN

- Subject Property
- Additional Lands which Applicant has an Interest





AREA TABLE

Detached Single Family Lots 1-554	25.42nat
Townhouses (Decked & Courtyard) Blocks 555-564	1.75
High Density Block 565	0.35
Residential Condominium Block 566	1.60
Future Development Block 567	0.06
Neighbourhood Park Block 568	1.85
Parks Blocks 569-571	0.28
Buffer Limit Blocks 572-573	3.91
Open Space Blocks 574-575	16.45
Pumping Station Block 576	0.03
Public Roads & Laneways	12.10
Total	63.80nat

ROAD LENGTH

23.0m (75') R.O.W.	45m
20.0m (66') R.O.W.	1.450
18.0m (59') R.O.W.	3.700
16.0m (52') R.O.W.	560
8.0m (26') Laneway	1,620
Condominium Driveway	260
Total	7.635m

LEGEND

- Boundary of Subdivision
- Pavement (Diagonomatic Only)

SURVEYOR'S CERTIFICATE

I hereby certify that the boundaries of the lands to be subdivided as shown on this plan, and their relationship to the adjacent lands are accurately and correctly shown.

OWNERS AUTHORIZATION

I, **TRIPLE CROWN LINE DEVELOPMENTS INC.**, hereby authorize **DESIGN PLAN SERVICES INC.** to prepare and submit a draft plan of subdivision for approval.

SEE ORIGINAL SUBMISSION _____ Signature _____ Day _____ Month _____ Year

Gary B. Vanderveen O.L.S. Signature _____ Day _____ Month _____ Year
Holding Jones Vanderveen Inc.

UNIT COUNT

15.2m (50') Single	A	153u
13.7m (45') Single	B	92
11.6m (38') Single	C	128
9.75m (32') Single (Laneway Unit)	D	181
6.7m (22') Decked Townhouse (Airport Road)	E	51
6.7m (22') Courtyard Townhouse (Street B)	F	16
High Density Block (Range is 49-55u/ha)	G	17-30
Condominium Block (Single Detached)	H	20
Total		658-671u

ADDITIONAL INFORMATION REQUIRED UNDER THE PLANNING ACT

D Residential single family, townhouses, condominium, high density, future development, parks, pumping station and open space.

H Piped water to be provided.

I Silt loam soil.

K Sanitary and storm sewers to be provided.

NOTES

All measurements are in metres.
All elevations refer to Geodetic Datum.
All corner roundings are 5.0mR, unless otherwise stated.

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landscape architecture | urban design | design guidance | infrastructure | geotechnical | soil design | future design

1:2000 Scale
Date July 10/18
Drawing Number 1692-70
Rev. Design HP Ws

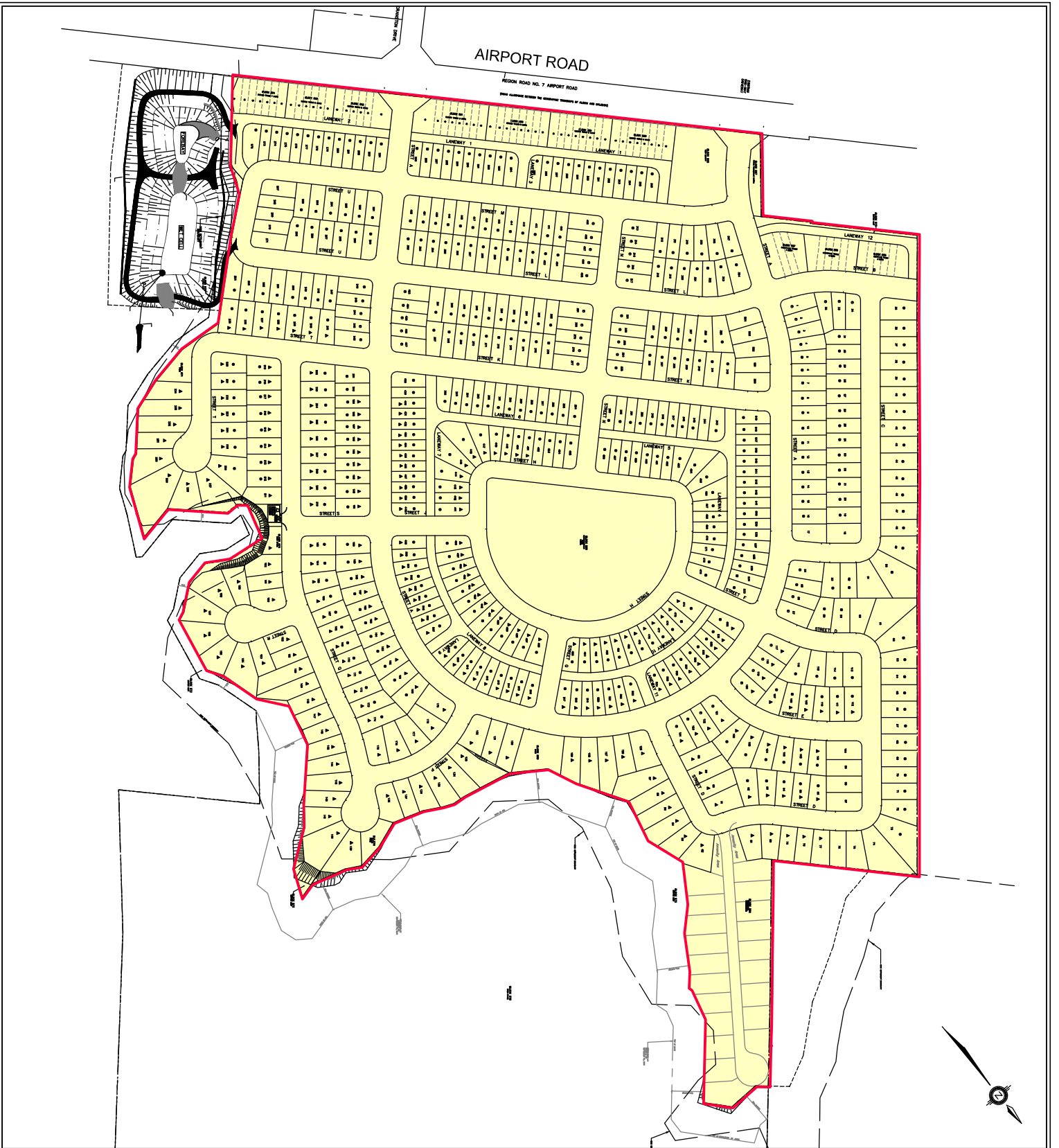
2.0 GRADING

2.1 Existing Site Grading

The current site grading conditions are further discussed in Section 5.1, the subject site generally drains from North to South, with the exception of a small area (~4.73 ha) to the North draining northward. The pre-development contours have been provided on Figure 5-1, these contours show the existing elevation relief on the western side of the site as roughly 17 m (311 – 294 m, an average slope of 3.1%) from the highest point to the lowest outlet and on the eastern side of the side as roughly 26.5 m (312.5 – 286 m, an average slope of 4.7%).

2.2 Proposed Site Grading

A preliminary grading plan designed in accordance with the Town of Caledon Design Criteria has been prepared for the subject site, and is shown in detail on the engineering drawings GR-1-5 (refer to engineering submission for the full detailed drawings). The proposed grading plans demonstrate that all boundary grades will be maintained with minimal cutting and filling throughout the subject development, thereby fulfilling goals of landform conservation. The lots will be graded to ensure there is a sufficient envelope to accommodate the homes, amenities, as well as the proposed LID techniques and Stormwater Management facilities further discussed in Section 5.0.



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FIGURE 1-2
PROPOSED DEVELOPMENT PLAN

3.0 WATER SUPPLY SERVICING

3.1 Existing Watermain Infrastructure

The proposed development area is located outside of the Region of Peel's Lake-based water supply system. The area east of Airport Road, North of Olde Base Line Road falls under the Caledon East Groundwater System; this is known as Pressure Zone 8B. The top water level for this system's reservoir is 360 m, as given by the Region of Peel.

The site is not currently serviced with the regional watermain infrastructure. There is however, an existing 300mmØ municipal watermain located along the west side of Airport Road, refer to Figure 3-1 for a schematic representation of the existing water supply infrastructure.

3.2 Water Supply Design Criteria

Typical Water Demand Criteria:

- Average Consumption Rate for residential area is 280 L/cap/day
- Maximum Day Factor for residential area is 2.0
- Peak Hour Factor for residential area is 3.0

Pressure:

- Minimum pressure for Maximum Day and Fire Flow demand is 140 kPa (20 psi)
- Minimum pressure for Peak Hour demand is 275 kPa (40 psi)
- Maximum pressure for Maximum Day and Fire Flow demand is 690 kPa (100 psi)

Fire Protection Demand:

- Fire Protection demand is 9,000 L/min

3.3 Proposed Water Supply Servicing

Upon preliminary review by the Region of Peel Water, compiled by Counterpoint Engineering and provided in Appendix A of this FSR, “the subject site has been accounted for in the water capacity allocation as per the CE (Caledon East) Secondary Plan.” We propose a 300 mmØ watermain along Airport Road to connect to the existing watermain. A 150 mmØ watermain is proposed along airport road connecting to the proposed 300 mmØ to service lots fronting Airport Road. Lots within the subdivision will draw water via connections to these proposed watermains along Airport Road. Additionally, a connection to the existing watermain is proposed at the proposed entrance by the high density block and Airport Road. The Region of Peel has provided the H.W.L., as 360m, which will be used to model and size internal watermains at the detailed design stage. Please refer to Figure 3-1 and the General Plan (GP-1) attached in Appendix E for more details.

3.3.1 Water Supply Demands

The estimated demands for the proposed development are summarized in Table 3-1 below. The water supply servicing scheme is compatible with the Region of Peel design criteria.

Table 3-1: Estimated Residential Water Supply Demands

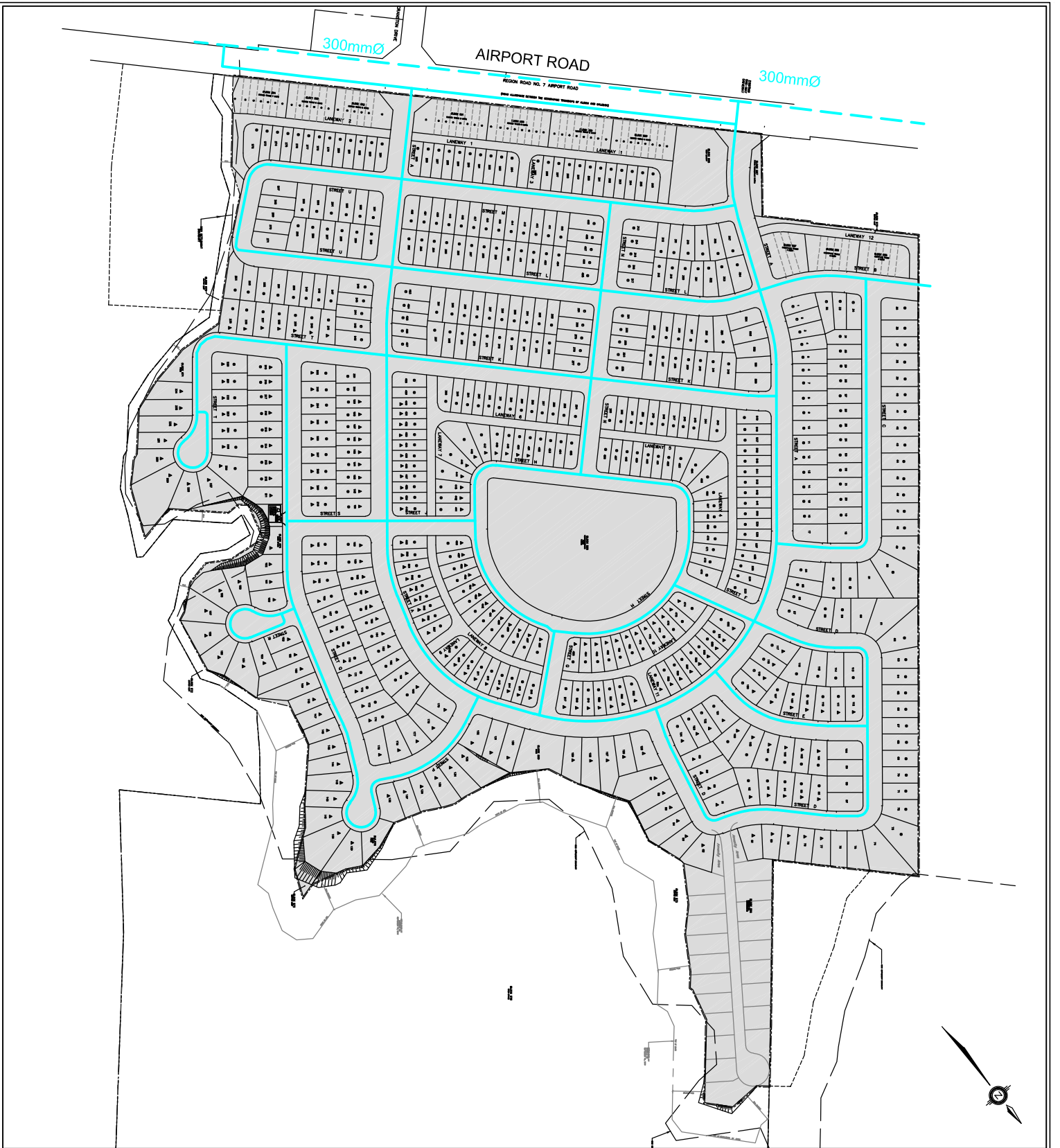
Expected Population ⁽¹⁾	Unit Average Day Demand (L/cap/s) ⁽²⁾	Average Day Demand (L/s)	Maximum Day Demand (L/s) ⁽³⁾	Peak Hour Demand (L/s) ⁽⁴⁾	Max Demand + Demand (L/s) ⁽⁵⁾
2527	0.00324	8.19	16.38	24.57	166.38

Note:

- (1) Expected population from Table 1-1
- (2) Average day consumption rate as 280 L/cap/day as per Region of Peel Design Criteria
- (3) Maximum day factor as 2 as per Region of Peel Design Criteria
- (4) Peak hour factor as 3 as per Region of Peel Design Criteria
- (5) Fire Protection of 9,000 L/min as per Region of Peel Design Criteria

3.3.2 WaterCAD Modeling

The high water level of 360 m was used for preliminary hydraulic modeling revealing that adequate pressure and flow is available to service the proposed development, the results of this model are provided in Appendix B. Hydrant testing and full hydraulic modeling may be performed during detailed design; however, no servicing constraints for the proposed development are expected at this time.



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LEGEND

- PROPOSED WATERMAIN
- EXISTING WATERMAIN


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FIGURE 3-1
 PROPOSED WATER SUPPLY SERVICING

4.0 SANITARY SERVICING

4.1 Existing Sanitary Sewers

The site is not currently serviced by regional sanitary infrastructure. There is however, an existing sanitary sewer located along the east side of Airport Road, ranging from 450mmØ to 525mmØ. In addition to these there is a 250mmØ sanitary sewer at the southern limit of Mountcrest Road within the existing development to the North. Please refer to Figure 4-1 for a schematic representation of the existing sanitary servicing infrastructure.

4.2 Proposed Sanitary Sewer Servicing

Upon preliminary review by the Region of Peel Water, supplied by Counterpoint Engineering and provided in Appendix A of this FSR, “the subject site has been accounted for in the wastewater capacity allocation as per the CE (Caledon East) Secondary Plan.” We propose a 250 mmØ sewer along Airport Road parallel to the existing sewer to service lots fronting Airport Road. Lots within the subdivision will be serviced by sewers running along proposed roadways that are proposed to connect to the existing 525 mmØ at the southwest corner of the site. The area near the southeast is comparatively lower than the surrounding area and therefore will utilize a pump station to pump sewage to the gravity system. This is further discussed in section 4.2.2.1. Please refer to Figure 4-1 and servicing plan for more details.

4.2.1 Wastewater Loading Demands

The estimated demands for the proposed development are summarized in Table 4-1 below. The sanitary servicing scheme is compatible with the Region of Peel design criteria. Downstream analysis is not required because the sanitary service connections are proposed to outlet flow from the development directly to the trunk sewer. No servicing constraints for the proposed development are expected at this time. Preliminary servicing drawings are provided in Appendix E.

Table 4-1: Estimated Residential Sanitary Servicing Demands

Expected Population ⁽¹⁾	Harmon's Peaking Factor (M) ⁽²⁾	Development Area (ha)	Infiltration Flow (L/s) ⁽³⁾	MH Inflow Allowance (L/s) ⁽⁴⁾	Total Peak Flow (L/s)
2527	3.50	43.44	8.69	22.68	62.40

Note:

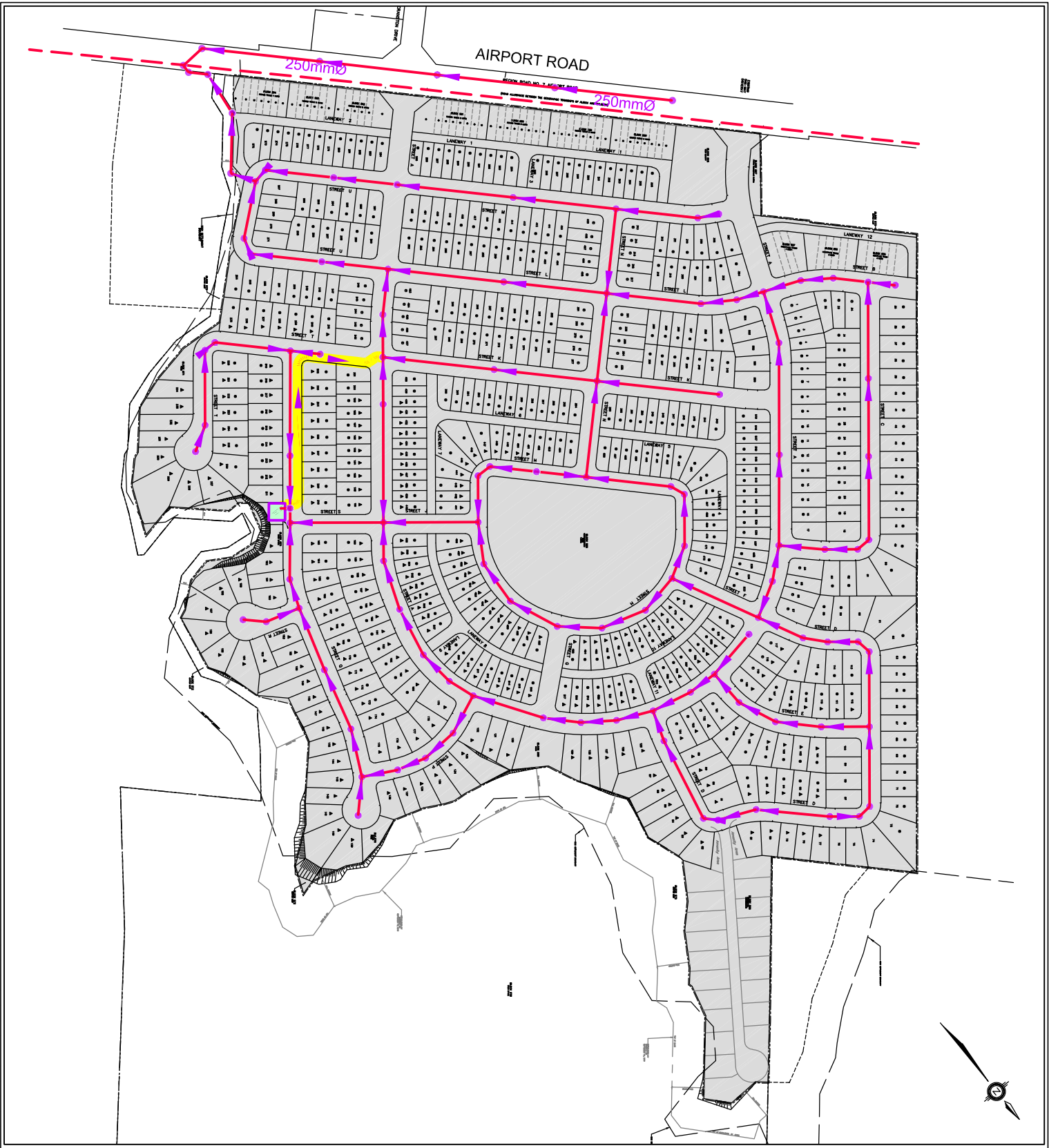
- (1) Expected population from Table 1-1
- (2) $M = 1 + (14/(4+\rho^{0.5}))$ as per Region of Peel Design Criteria
- (3) Infiltration Allowance = 0.2 L/s/ha as per Region of Peel Design Criteria
- (4) MH Inflow Allowance = 0.28 L/s/mh as per Region of Peel Design Criteria

4.2.2 Sanitary Infrastructure Layout

For a schematic illustration of the general sanitary infrastructure configuration refer to Figure 4-1, and for further detail refer to GP-1 attached in Appendix E.

4.2.2.1 Forcemain System

Due to grade differential across the site, the southern portion of the subject site is too low to drain via gravity sewers to the existing sewer system, therefore, a sanitary pump station is proposed at the south to pump flows from this lower portion to the gravity sewer system within the site. Furthermore, an emergency outlet pipe is proposed at the south to outlet to the watercourse. It is to note that this low area of the subdivision will have a gravity sewer system that will collect local flows to the pump station. The proposed system is highlighted in Figure 4-1.



TRIPLE CROWN RESIDENTIAL SUBDIVISION
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LEGEND

- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER
- PROPOSED FORCEMAIN
- PROPOSED PUMP STATION

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FIGURE 4-1
 PROPOSED SANITARY SERVICING

5.0 STORMWATER MANAGEMENT

5.1 Existing Conditions

The subject site is located within the Humber River Subwatershed. Existing drainage infrastructure in the vicinity of the site is quite limited. The site generally drains in a north to southeast direction towards an existing watercourse. Grade changes become significant near the southern limit of the site. The existing watercourse discharges to Innis Lake located just downstream on the west side of Innis Lake Road. There is external drainage which crosses Airport Road through a 600 mmØ steel pipe and is conveyed to Innis Lake through an existing swale south of the subject site. Drainage through this pipe will be routed to the watercourse by a ditch. Under existing conditions, approximately 4.73ha of land drains northerly into the existing residential subdivision located to the north of the site. Please refer to Figure 5-1 for an illustration of the existing appurtenances mentioned above and the predevelopment drainage patterns.

5.2 Design Criteria

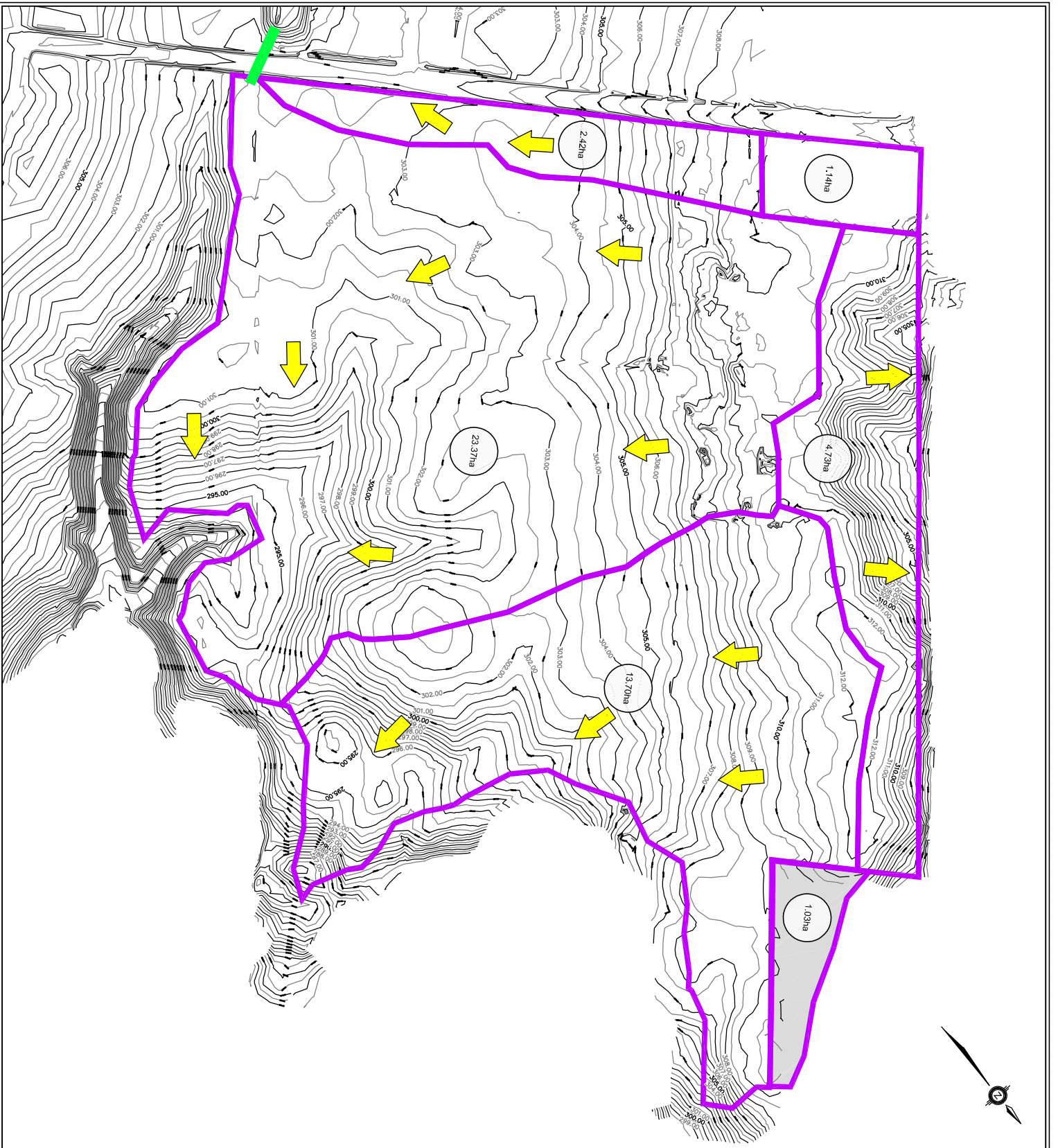
The Town of Caledon and Toronto and Region Conservation Authority Design Standards require the following stormwater management (SWM) criteria for developments;

- Quality control (80% long term TSS removal);
- Erosion control (25mm extended detention for 24 hours);
- Quantity control to be provided in accordance with Humber River Unit Flow Equations for Sub-Basin 6. The area utilized to establish the release rates is based on the developed area within the existing drainage boundary to the water course.

Return Frequency	Unit Flow Equation B (Sub Basin 6)
2-Year	$Q=3.288-0.159*\ln(A)$
5-Year	$Q=5.755-0.283*\ln(A)$
10-Year	$Q=7.707-0.382*\ln(A)$
25-Year	$Q=10.488-0.522*\ln(A)$
50-Year	$Q=12.692-0.623*\ln(A)$
100-Year	$Q=15.911-0.751*\ln(A)$





- Block 565 and Block 566 shall be controlled to 40 L/s and 100 L/s during the 100- year design storm
- Storm sewers are to be designed, based on the Rational Method, to accommodate the 10-year design storm if foundation drains are to be connected, and 5-year design storm if they are not to be connected;
- Annual post development infiltration volumes match predevelopment volumes;
- 6-Hour and 12-hour AES storm distribution to be used to determine SWM pond volumes.

Insert



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LEGEND

-  EXISTING DRAINAGE BOUNDARY
-  EXISTING 600mm CSP CULVERT
-  DIRECTION OF FLOW
-  EXISTING EXTERNAL DRAINAGE AREA

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FIGURE 5-1
 PRE-DEVELOPMENT DRAINAGE PLAN

5.3 Proposed Stormwater Management Plan

The proposed drainage scheme will replicate the existing drainage patterns to the extent possible and meet the Town of Caledon and TRCA Standards. A stormwater management ‘Wet Pond’ is proposed to provide water quantity and quality control for the majority of the site. Based on the grading plan, an area of 38.40 ha (36.45 ha + 0.35 ha + 1.60 ha) is proposed to drain to the SWM facility. It is to note that Block 565 and 566 of the draft plan are private site plans that are to provide lot level controls to satisfy TRCA and Town of Caledon SWM criteria. As noted in the design criteria, these sites should be controlled to 40 L/s and 100 L/s respectively during the 100 year storm, provide quality control and satisfy lot level water balance. Erosion control for these site plans are proposed to be met by the retention of a 5 mm rain event. Quality control shall be achieved through the use of a treatment train approach with Oil and Grit Separator systems (OGS) and filtration.

Due to grading constraints, a portion of the site at the southeast limit, adjacent to the valley, cannot drain by gravity to the proposed SWM Pond. This area is proposed to be serviced through the use of underground superpipe storage, orifice control and drain to the watercourse separately. This area, herein referred to as the “LID Area” encompasses approximately 5.40 ha of the site. Due to grading constraints, this area is further subdivided into two systems. System 1 will utilize a 3.0 m x 1.5 m box culvert, and system 2 a 2.4 m x 1.2 m box culvert. The drainage areas to these systems are calculated to be 4.38 ha and 1.02 ha for system 1 and system 2 respectively. Quality control is proposed to be met by a treatment train approach to achieve 80% TSS removal. Figure 5-2 illustrates this SWM scheme.

Infiltration targets for the subdivision has been established as matching pre-development infiltration volumes during post development. As the site has favourable soil conditions suitable for infiltration, it is proposed to utilize storm tech (STC- 740 or equivalent) through the subject site for onsite retention and infiltration. These chambers are proposed along the backyards and along some front lawns, with direct roof connections. All these facilities will have an overflow connection to the proposed storm sewers within the site. This concept further provides a benefit during major storm events as a portion of runoff can be captured and infiltrated on site.

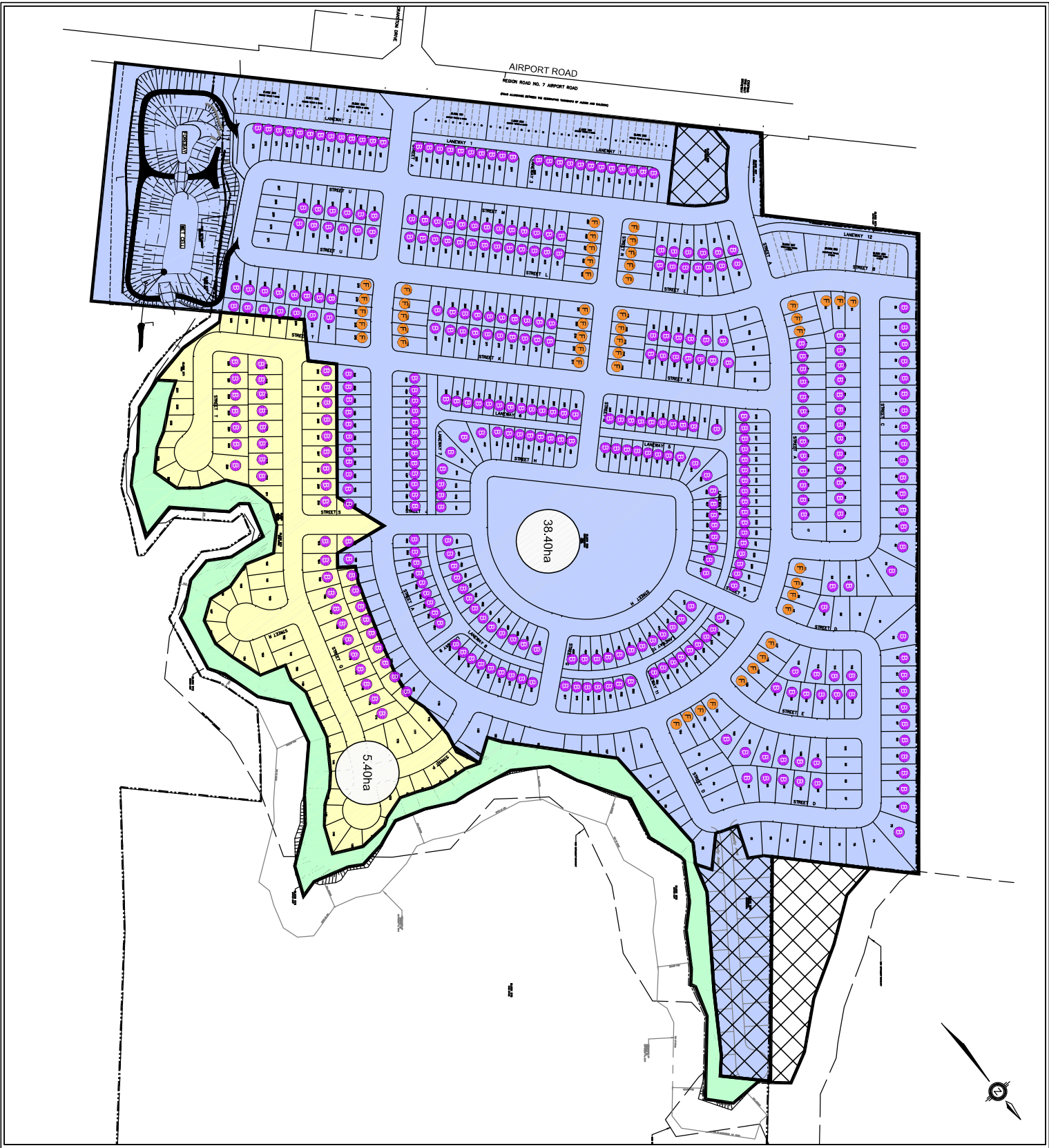
5.4 Water Quantity Control

5.4.1 Allowable Release Rates

The allowable release rates from the subject site are based on the Humber River Unit Flow Equations, provided by TRCA, for Sub Basin 6. Please refer to Table 5-1 below for a summary of the allowable release rates. The allowable release rate is based on the proposed development area within the existing drainage area to the watershed. This area is calculated to be 41.97 ha, as per Figure 5-1.








Table 5-1: Allowable Release Rates

Return Frequency	Unit Flow Equation B (Sub Basin 6)	Allowable Release Rate (m ³ /s)
2-Year	$Q=3.288-0.159*\ln(A)$	0.113
5-Year	$Q=5.755-0.283*\ln(A)$	0.197
10-Year	$Q=7.707-0.382*\ln(A)$	0.263
25-Year	$Q=10.488-0.522*\ln(A)$	0.358
50-Year	$Q=12.692-0.623*\ln(A)$	0.435
100-Year	$Q=15.911-0.751*\ln(A)$	0.550



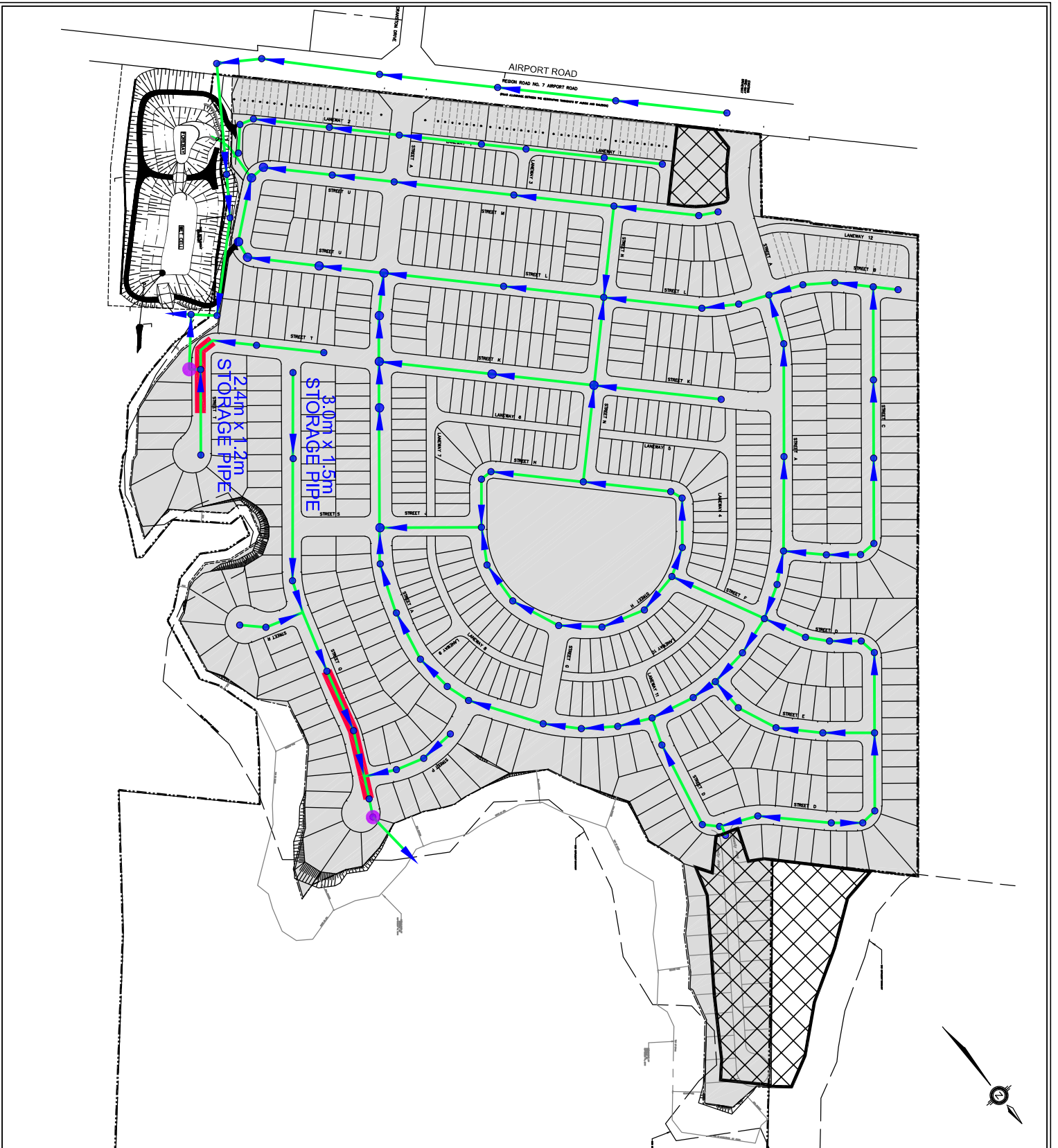
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LEGEND

-  LID 1/2 CONTROLLED AREAS
-  SWM POND DRAINAGE AREA
-  UNCONTROLLED AREA
-  PROPOSED ON-SITE CONTROL
-  AREA IN HECTARES
-  FRONT INFILTRATION
-  BACKYARD INFILTRATION


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FIGURE 5-2
 PROPOSED STORM DRAINAGE



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- PROPOSED STORM SEWER
- INFILTRATION GALLERY
-  PROPOSED ON-SITE CONTROL
-  OIL GRIT SEPARATOR

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FIGURE 5-3
 PROPOSED STORM SERVICING

5.4.2 SWM Pond Design

The proposed SWM facility will provide a combination of water quality, erosion, and quantity control. Details regarding sizing calculations and modelling are provided in Appendix A for reference.

The required water quality storage was determined using the 2003 MOE SWMP manual corresponding to *Enhanced* (80% TSS removal efficiency) level. Table 5-2 presents the required storage volumes corresponding to the proposed drainage area.

Table 5-2: Water Quality Requirements

Type of Facility	Wet Pond
Level of Protection	Enhanced
Drainage Area	36.45*
Weighted Imperviousness	61%
Permanent Pool Requirements	164 m ³ /ha
Permanent Pool Storage Required	5,978 m ³

*Drainage Area does not Include Block 565,566

The required erosion control volume and release rates are based on the portion of drainage area directly discharging to the SWM facility. The portion of roof runoff diverted to the storm-tech chambers have been sized to retain a runoff volume exceeding the total runoff generated by a 25 mm rain event. Within the drainage area of the SWM Pond, approximately 3.94 ha of roof area is proposed to drain to these chambers. The calculated runoff volume during a 25 mm rain event from this roof area is 940 m³. Based on the lot fabric and grading, we anticipate a total volume of 4260 m³ across 382 lots from the lot area tributary to the pond. Due to the available volume within the proposed trench system, the SWM pond will be sized to provide erosion control to the remaining area tributary to the pond not including Blocks 565 and 566. Erosion control for these site plans are proposed to be met by the retention of a 5 mm rain event. This area is calculated to be 30.32 ha. Table 5-3. provides a summary of the erosion control requirements.

Table 5-3: Erosion Control Requirements

Facility	Wet Pond
Drainage Area	*32.52 ha
Erosion Control Volume	4,062 m ³
Erosion Control Release Rate	0.071 m ³ /s
Erosion Control Detention Period	Approximately 24 hr

*Area = 38.40-1.60-0.35-3.94

The Visual OTTHYMO Ver.5.0 hydrologic model was utilized to determine the required active storage volume of the proposed SWM facility. The model utilized both the 6hr and 12 hr AES storm distributions. It is to note that the release rates for the SWM Pond was based on pro-rating the allowable release rates established for the subdivision. As evident below, the 12 Hour AES distribution presents more restrictive criteria and was used to size the pond. The required storage volumes and release rates for the SWM facility are presented in Table 5-4.

Table 5-4: Required Active Storage Volumes and Release Rates

Design Storm Event	12 Hour AES Storage Volume (m ³)	*6 Hour AES Storage Volume (m ³)	Release Rate (m ³ /s)
2-Year	6,770	5,986	0.088
5-Year	9,180	8,538	0.160
10-Year	10,070	10,181	0.220
25-Year	12,650	12,231	0.300
50-Year	14,000	13,732	0.380
100-Year	15,300	15,133	0.480

*Please refer to the model provided in the attached CD

Preliminary design plans for the proposed SWM facility were prepared to illustrate that the required storage volumes can be met and are provided in Appendix E for reference. A comparison between the provided storage and required storage are presented in Table 5-5 for reference.

Table 5-5: Summary of Required and Provided Storage Volumes

Description	Required Storage Volume (m ³)	Provided Storage Volume (m ³)
Permanent Pool EL. 293.00m – EL. 294.50 m	5,978	6,500
100 Year EL. 294.50 m – EL. 296.50 m	15,300	15,500

5.5 LID Controlled Area

As per Figure 5-2, there is an area at the southwest limit of the site that cannot drain to the SWM Pond due to grading constraints. It is proposed to provide water quantity and quality control for this LID area through the use of superpipe storage and orifice control. The following table provides a summary of the proposed release rates and storage requirements for System 1 and System 2. Preliminary orifice sizes have been carried out to confirm the viability of this solution, and are summarized below. Quantity control is proposed to be provided by an underground box culvert, to store runoff in excess of the allowable release rate. Similar to the SWM Pond, the 12 Hour AES storm distributions for 2 to 100 year storm events were used to calculate storage requirements. Erosion control is carried out similar to the SWM Pond, runoff not draining to the infiltration galleries is proposed to be detained and released through a 24 hour period.

5.5.1 SYSTEM 1 Design

The SWM scheme draining to system 1 utilizes a similar concept to that of the SWM Pond. Based on the proposed grading plan, 29 lots within this 4.38 ha drainage area will be installed with storm-tech units in the backyards to provide 348 m³ of storage. Approximately 0.37 ha of roof area is proposed to be routed through these trenches to achieve erosion control for the roof area, and additional storage mitigation for major storm events. The remaining uncontrolled runoff area (4.016 ha (4.38-.37)) will be captured by the proposed box culvert. Based on our preliminary outlet invert of 291.60 masl, in order to satisfy erosion control and quantity control criteria, a dual orifice structure is proposed. Two 75 mm orifice plates are proposed in series at an invert of 291.60 masl followed by a 130 mm diameter orifice plate at an invert of 293.00 masl to achieve necessary target release rates. Based on our preliminary calculations, the 100 year storage requirement was calculated to be 1,709 m³, which is achieved within the 3.0 m x 1.5 m box culvert. The 100 year HWL was set to the upstream obvert of 295.44 m of the culvert to minimize HGL concerns. The available underground storage within this system is calculated to be 1,747 m³ at a HWL of 294.60 masl. Our proposed stage storage curve, along with modelling results are summarized in the table below.

Table 5-6: System 1- Stage Storage Results

Component	Water Elevation (masl)	Target Release Rate (m ³ /s)	Provided Storage Volume (m ³)	Expected*	
				Storage (m ³)	Outflow (m ³ /s)
E.C	292.75	0.009	552	452	0.007
2 – Year	292.98	0.022	814	795	0.010
5 – Year	293.20	0.026	1,053	1031	0.025
10 – Year	293.35	0.034	1,196	1,188	0.034
25 – Year	293.70	0.046	1,470	1,402	0.043
50 – Year	293.95	0.053	1,571	1,561	0.052
100 –Year	294.60	0.067	1,747	1,709	0.064

5.5.2 SYSTEM 2

The design of system 2 is similar to system 1. Infiltration galleries are proposed in 11 lots where 0.14 ha of roof area will be routed through them. A volume 132 m³ will provided within these galleries for erosion control for the roofs, as well as additional storage for major storms. Similar to system 1, storage will be achieved through the use of 2.4 m x 1.2 m box culverts. Peak flow attenuation during major storm events will be achieved by a Vortex Valve orifice FA1012 with an opening of 76 mm placed at a preliminary invert of 296.40 masl. The HWL is proposed to be controlled to 297.75 masl such that 485 m³ is provided exceeding the required 100 year storage of 462 m³. It is proposed to place a weir at an elevation of 297.75 masl such that excess water can drain out. This concept further mitigates HGL impacts to the basement connections. The table below summarizes the stage storage discharge curve and modelling results of the proposed system.

Table 5-7: System 2- Stage Storage Results

Component	Water Elevation (masl)	Target Release Rate (m ³ /s)	Provided Storage Volume (m ³)	Expected*	
				Storage (m ³)	Outflow (m ³ /s)
E.C	297.10	0.0028	145	98	0.002
2 – Year	297.20	0.0030	193	167	0.003
5 – Year	297.35	0.0033	269	239	0.003
10 – Year	297.45	0.0035	322	291	0.003
25 – Year	297.55	0.0037	375	358	0.003
50 – Year	297.65	0.0038	443	409	0.003
100 –Year	298.75	0.0040	485	462	0.004

5.6 Total Release Rate

Due to a significant difference in time to peak for the SWM Pond and the LID area, the VO modeling combined both systems and determined the total resulting peak flow. The results show that the allowable release rates, as shown above in Table 5-1, are achieved. The following table presents a summary of the release rates for the subject site.

Table 5-8: SWM Summary of Required Storage Volume and Release Rates

Design Storm Event	SWM Pond Target Release Rate (m ³ /s)	LID System 1 Expected Release Rate (m ³ /s)	LID System 2 Expected Release Rate (m ³ /s)	Total Release Rate (m ³ /s)	Allowable Release Rate (m ³ /s)
2-Year	0.088	0.010	0.003	0.101	0.113
5-Year	0.160	0.025	0.003	0.188	0.197
10-Year	0.220	0.034	0.003	0.257	0.263
25-Year	0.300	0.043	0.003	0.346	0.358
50-Year	0.380	0.052	0.003	0.435	0.435
100-Year	0.480	0.064	0.004	0.548	0.550

5.7 Quality Control

For the SWM Pond catchment area, quality control will be provided by the SWM Pond permanent pool. The permanent pool has been sized in accordance with the MOE SWM Manual criteria to provide ‘Enhance’ water quality control (80% TSS removal).

For the LID areas, it is proposed to utilize a treatment train approach. “Enhanced” level treatment can be achieved through the use of Catchbasin shields and infiltration trenches designed as per MOECC Guidelines. The 4.016 ha drainage area to System 1 shall receive pre-treatment via Catchbasin Shields such that 50% of TSS are removed when runoff is captured by the minor system. The remaining 60% TSS removal shall be achieved by an infiltration gallery designed under the most downstream leg of the culvert. This ~120 m stretch of pipe shall have perforated bottom with a gravel bed underneath to provide a required storage of 80.32 m³ (20 m³/ha [MOECC] x 4.016). With a gravel bed depth of 0.70 meters, and 3.0 meters in width, an approximate storage of 101 m³ can be provided (3.0 x 0.7 x 120 x 0.4). This trench shall be wrapped with non-woven filter fabric and contain 150 mm sand layer at the bottom to achieve necessary filtration. The expected drawdown time using an average percolation rate of 15.2 mm/hr assuming a safety factor of 2.5 is 18.42 hours (0.70 x 0.40 / (38mm/hr/2.5)). The proposed location of this trench is illustrated in Figure 5-3. As a precautionary measure, an Oil and Grit Separator (OGS) is proposed after the outlet to further treat any excess drainage that may not infiltrate.

Similarly, System 2 is proposed to have an infiltration trench underneath 48 meters of sewer as illustrated in

Figure 5 -3 and Catchbasin Shields along roadside catchbasins. The proposed trench shall be sized 2.4 meter in width, 0.7 meters in depth for a storage volume of 32 m³ (2.4 x 0.7 x 48 x 0.4). The required storage is calculated to be 17.50 m³ (0.875 x 20 m³/ha [MOECC]). The gravel trench is proposed to be wrapped in non-woven geotextile with a layer of sand underneath to achieve filtration. The drawdown time will be similar to System 1 of 18.42 hours. An Oil and Grit Separator is proposed downstream of the control structure to achieve further treatment similar to System 1.

The total achieved reduction by this treatment train approach is calculated to be 80% (50% + 60% - (50 % x 60 %)), discounting any treatment received by the OGS systems.

5.8 Water Balance

A water balance was prepared for the development area to determine the characteristics of water movement, including runoff and groundwater recharge under existing conditions. The objective of this water balance is to ensure the level of post-development infiltration within the subdivision meets the pre-development levels. The water balance analysis utilizes precipitation, evapotranspiration, infiltration, soil types, and land uses.

Precipitation and Evapotranspiration were obtained from the TRSPA Water Balance Tool, and the infiltration factor components (topography, soil type and cover) were obtained from the MOE's SWM Planning and Design Manual (March, 2003) Table 3.1 based on Sandy Loam soils – Type B.

The post-development indirectly connected water balance varies from the pre-development, as well as the post-development pervious and directly connected impervious calculation due to the quantification for downspout disconnections. Specifically, the pre-development approach is calculated as follows:

$$P - ET - \text{Surplus} = \text{Infiltration} + \text{Runoff} \quad (\text{Where: Infiltration} = \text{Surplus} \times \text{Infiltration Factor})$$

The indirectly connected water balance calculation assumes the following:

- 10% of precipitation evaporates from roof (or roof runoff = 90% P) – commonly documented in surface hydrology modeling.
- Roof runoff directed to pervious lawns is subject to a 25% runoff reduction (Table 4.3.2 LID Manual CVC and TRCA, 2010)
- Of the 25% runoff reduction, it is assumed that 17.5% infiltrates and 82.5% evapotranspires (same composition as pervious areas).

Therefore, the post-development indirectly connected water balance is as follows:

- Roof Runoff = Precipitation – Roof Evaporation
- Lawn Retention = 25% of Roof Runoff
- Lawn Evapotranspiration (of Roof Runoff) = Lawn Retention x IF Factor

- Lawn Infiltration (of Roof Runoff) = Lawn Retention – Evapotranspiration

The results of the preliminary water balance show an annual infiltration deficit in the post-development condition of 42,559 m³. This can be mitigated through the use of storm tech galleries, additional topsoil and disconnected roof leaders. Our preliminary analysis suggests that the pre-development infiltration levels can be achieved by the above mentioned LID's for total post development annual infiltration volume of 67,569 m³/ year. It is to note that we excluded the infiltration achieved through the trenches below the box culverts for a conservative analysis.

The stormtech galleries have been sized to provide a total retention volume of 4740 m³. The total bed area within the site is calculated to be 8376 m² based on the sizing tool provided by ADS Canada. With 4.45 ha of roof drainage area, these galleries have capacity to retain 107 mm (4740 m³/44452 m²) of runoff. As previously stated, we believe the storm tech SC-740 type chambers to be the best suited option for onsite retention given its geometry. These chambers are typically, 0.76 m in height, and will contain a 0.15 meter stone base. However, our analysis reveals that the maximum event based retention to achieve annual post-development infiltration is 21 mm. The estimated head within these chambers during such a rain event is 0.12 m ((21 mm*10*4.45 ha) / 8376 m²). With a calculated average percolation rate of 38 mm/hr for the entire site based on the results of the in-situ testing carried out by Exp. Inc, the average drawdown time is calculated to be 7.90 hours given a safety factor of 2.5 (120 mm/(38 mm/hr /2.5)). Refer to the following table for a summary of the preliminary water balance calculations:

Table 5-9: Pre and Post Development Annual Infiltration Volume

Pre-Development (m ³ /year)	Post-Development (m ³ /year)	Annual Deficit (m ³ /year)	Post-Development Infiltration with LID's (m ³ /year)
61,308	18,749	42,559	67,569

6.0 SUMMARY

This Functional Servicing Report provides an overview of the proposed servicing plan for the residential subdivision proposed for 15717 Airport Road in the Town of Caledon. This report demonstrates that grading can be achieved, and that stormwater, sanitary and water supply servicing will be available for the proposed development. In summary, the Functional Servicing Report established the following:

Grading

The proposed grading plans demonstrate that all boundary grades will be maintained with minimal cutting and filling throughout the subject development, thereby fulfilling goals of landform conservation. The lots will be graded to ensure there is a sufficient envelope to accommodate the homes, amenities, as well as the proposed LID techniques and Stormwater Management facilities.

Water Supply

The site is not currently serviced with the regional watermain infrastructure. There is however, an existing 300mmØ municipal watermain located along the west side of Airport Road. Water supply for the lots fronting Airport Road shall be achieved via connections to the proposed watermains along Airport Road. Water Supply for lots within the subdivision is proposed via connection to the proposed watermains along Airport Road and a connection to the existing 300mmØ municipal watermain near the northwest entrance to the subdivision.

Sanitary

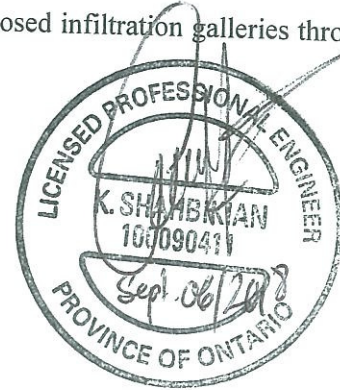
Lots fronting Airport Road is proposed to be serviced via a proposed 250 mmØ sewer which is proposed to connect to the existing 525 mmØ on Airport Road. Lots within the subdivision shall be serviced via sewers running internally along the roads. This system will connect to the 525 mmØ diameter existing sewer at the south west corner of the site. The southern portion of the subject site is too low to drain wastewater flows via gravity sewers, therefore, a pump station is proposed within this area to pump up flows to the internal gravity system within the subdivision. An emergency overflow pipe is proposed for the pump station which will outlet to the channel to the south.

Stormwater Servicing

A stormwater management 'Wet Pond' is proposed to provide water quantity and quality control for the majority of the site. Due to grading constraints, a portion of the site at the southeast side of the site, adjacent to the valley, cannot drain by gravity to the proposed SWM Pond. This area is proposed to be serviced through the use of underground superpipe storage and orifice control. Quality control for this area will be

achieved by a treatment train approach. Catchbasin shields are proposed on road side catchbasins within roadways within this area, combined with infiltration and filtration via infiltration trenches underneath the super pipes. OGS systems shall be installed downstream of the control structures as a precautionary treatment component. To achieve on site waterbalance requirements, we have proposed infiltration galleries through the subdivision within 422 lots.

Respectfully Submitted,
SCHAEFFER & ASSOCIATES LTD.



Sadh Katukurunde.
Sadh Katukurunde B.ASc.,
Water Resources Analyst

Koryun Shahbikian, P. Eng.
Associate

APPENDIX A

Background Information

Patrick Turner

From: Motala, Imran <Imran.Motala@peelregion.ca>
Sent: December-17-14 3:06 PM
To: Hovig Tozcu; Masley, Aleksander
Cc: Patrick Turner; Schiller, Mark
Subject: RE: Low Dens. Residential Property in Caledon East

Hovig;

The subject property has been accounted for in the water and wastewater capacity allocation as per the CE Secondary Plan. We will formally review and comment on the file once we receive the formal application through the normal development approval process.

Regards;

Imran Motala M.Eng.,P.Eng.,PMP
Program Manager, Water and Wastewater Program Planning

Region of Peel
10 Peel Centre Drive, Suite A, 4th Floor
Brampton, ON L6T 4B9

905-791-7800 Ext. 4066
Imran.Motala@peelregion.ca
www.peelregion.ca

From: Hovig Tozcu [mailto:htozcu@counterpointeng.com]
Sent: December 15, 2014 3:41 PM
To: Masley, Aleksander; Motala, Imran
Cc: Patrick Turner
Subject: Low Dens. Residential Property in Caledon East

Aleksander,

Thanks for your time at the counter this afternoon. As discussed, the property we are investigating is on Airport Road in Caledon East. The attached mark-up of the Town's land use planning map indicates the majority of the property (clouded in blue) is intended for low density residential.

We are trying to determine what kind of allocation there is for this property with regards to water and wastewater. We know there is some infrastructure along Airport Rd servicing the development across the street, but we don't know if there is any limitation on the current capacity of these systems. Moreover, we understand there are some MFSP's being undertaken that propose upgrades to the infrastructure, but we are not clear on if these upgrades are required for any new development to occur in Caledon East, such as would be the case for our subject site.

Any information you can provide with regards to these issues would be appreciated. We are at a very preliminary investigation stage and don't have a development concept yet for the lands, however, we expect that any proposed development would be in conformance with the low density residential designation given to the lands by the Town.

Also note, that we have put a formal request in with your records department for available drawings along Airport Rd.

Any help you can provide to help us understand the issues related to any new development in Caledon East would be appreciated.

Thanks,

Hovig Tozcu, P.Eng.

Counterpoint Engineering

Direct: 905-326-3070

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HTozcu@CounterpointEng.com

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NOTE: This e-mail message is intended only for the named recipient(s) above and may contain information that is privileged and/or confidential . If you have received this message in error, or are not the named recipient(s), please immediately notify the sender and delete this e-mail message.

Accompanying file(s) are supplied as a matter of courtesy, these files do not include a professional engineer's stamp on the drawings, and only drawings with such stamp are to be considered as true and final as issued by our office. Counterpoint Engineering assumes no liability for any reliance placed on these drawings.

Michael Ventresca

From: Mitra, Soyuz <soyuz.mitra@peelregion.ca>
Sent: Wednesday, May 17, 2017 12:56 PM
To: Michael Ventresca
Cc: Polga, Miriam; Lasso, Luis
Subject: East side of Airport Road, North of Olde Base Line Road

Hi Michael,

Luis forwarded your request to me as our team deals with modeling related enquiries.

The area East side of Airport Road and North of Olde Base Line Road falls under our Caledon East groundwater system. The Zone is 8B.

Top Water Level for the reservoir is 360m. The elevation at Olde Base Line Road and Airport intersection is about 298.6m as per our DEM and that gives me a theoretical max pressure of 87psi at this location. Pressures will vary daily and seasonally and will also vary on your development based on the elevation of the land.

Hope this helps. If you have any further questions, please contact me directly.

Thanks

Soyuz Mitra P.Eng
Project Manager, EA and Studies, Program Planning & Compliance

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DG Group Inc.

**Preliminary Geotechnical Investigation
Proposed Residential Development
Airport Road and Cranston Drive
Caledon East, Ontario**

Project Number
BRM-00235186-C0

Prepared By:

exp Services Inc.
220 Commerce Valley Drive West, Suite 500
Markham, Ontario L3T 0A8
Canada
Date Submitted
September 22, 2016

1. Introduction

This report presents the results of a Preliminary Geotechnical investigation carried out for a proposed Residential Development on the east side of Airport Road and straddling the intersection with Cranston Drive in Caledon East, Ontario. The site occupies an area of approximately 40 hectares (~100 acres). The work was authorized by Mr. Jordan Archer of DG Group Inc.

The project involves the design and construction of single family residential dwellings together with the necessary municipal infrastructure such as roads, sewers, water and other services.

The purpose of the Preliminary Geotechnical investigation was to determine the subsurface soil and groundwater conditions at the site and, based on this information, to provide an engineering report with preliminary geotechnical recommendations pertaining to the design and construction of the proposed residential development. Once development plans have been finalized additional investigations including boreholes would be required to provide additional information pertinent to the design.

A Phase 2 Environmental Site Assessment (ESA) was conducted in conjunction with this Preliminary Geotechnical Investigation. Findings are reported under separate cover.

The comments and recommendations given in this report are based on the assumption that the above-described design concept will proceed into construction. If changes are made either in the design phase or during construction, this office must be retained to review these modifications. The result of this review may be a modification of our recommendations or it may require additional field or laboratory work to check whether the changes are acceptable from a geotechnical viewpoint.

2. Site Description

The Site occupies an area east of Airport Road, north of the farmland located at address 15535 Airport Road, and south of the commercial plaza located at 15771 Airport Road, in Caledon East, Ontario, as shown on Figure 1. The Site is irregular in shape and occupies an area of approximately 40.0 hectares (~100 acres).

The majority of the Site property consists of an open field, largely covered in soya bean plants. The north, east, and southeast boundaries of the property consist of a tree-line, which extends into a forested area in the southeast corner of the property. In general, the Site property and surrounding area appeared to rise from south to north, though the topography was found to undulate significantly across the Site. The southeast corner of the property was found to drop in elevation by approximately 20 m as several small streams in the area descend toward Innis Lake. The property comprises mainly farmland and is currently developed with two (2) residential dwellings and nine (9) major outbuildings.

3. Fieldwork

The field work comprised drilling of ten (10) sampled boreholes designated Boreholes 1 to 10. The fieldwork was carried out between September 8 and 12, 2016. All ten (10) sampled boreholes were drilled to approximately 8 m depth below existing grade at the approximate locations shown on the attached Borehole Location Plan (Drawing No. 1).

The boreholes were advanced using continuous flight solid stem auger equipment owned and operated by a specialist drilling contractor. In each borehole, samples were recovered using conventional split spoon equipment in conjunction with the standard penetration test method.

Water levels were observed in the open boreholes during the course of the fieldwork. In addition, 50 mm diameter monitoring wells were installed in five (5) boreholes (Boreholes 1, 6 and 8 to 10) for subsequent groundwater level measurement and sampling for the Phase 2 ESA.

The fieldwork was supervised throughout by an **exp** Services Inc. (**exp**) geoenvironmental technologist who directed the drilling and sampling operations, prepared borehole logs, made groundwater observations during and upon completion of drilling, and processed the recovered samples. In the laboratory, the samples were classified as to their olfactory, visual and textural characteristics. Natural moisture content and density tests were carried out for selected recovered samples, with results presented on the Log of Borehole sheets.

The locations of the boreholes were established in the field by **exp** personnel. The top of borehole elevations for Boreholes 2 to 8 were taken from undated drawing Reference Job No. 16-2484-BASE prepared by Holding Jones Vanderveen Inc. (OLS). Top of borehole elevations for Boreholes 1, 9 and 10 were surveyed by **exp** referencing Temporary Benchmarks shown on the afore referenced drawing as follows:

Borehole 1:	Flagged pin in ground off northeast corner of southern brick dwelling – Elevation 309.92 m (Geodetic).
Borehole 9:	Flagged pin in ground off southeast corner of southern brick dwelling – Elevation 309.76 m (Geodetic).
Borehole 10:	Ground level at Borehole 7 – Elevation 295.01 m (Geodetic).

4. Laboratory Testing

The laboratory testing program comprised the following:

- Moisture content and unit weight determination on selected recovered soil samples, with results presented on the Log of Borehole sheets.
- One (1) native soil sample for pH and Sulphate.

5. Subsurface Conditions

5.1 Soil

The detailed profiles encountered in each borehole and the results of laboratory moisture content and unit weight are indicated on the attached borehole logs. It should be noted that the soil boundaries indicated on the borehole logs are inferred from non-continuous sampling and observations during drilling. These boundaries are intended to reflect transition zones, for the purpose of geological design and should not be interpreted as exact planes of geological change. The "Notes on Sample Description" preceding the borehole logs are an integral part of and should be read in conjunction with this report.

The stratigraphy encountered at the site, as revealed in the boreholes, generally comprised surficial ploughed soil, topsoil or sand and gravel followed by fill and native deposits of sandy silt till and silty sand.

A brief description of the soil profiles in the respective land parcels, in order of depth, follows.

Topsoil / Ploughed Soil

A surficial layer of topsoil 125 to 159 mm thick was encountered in Boreholes 6 and 9.

Disturbed (ploughed) sandy silt to clayey silt with trace gravel was noted from surface in cultivated fields at the locations of Boreholes 1 to 5, 7 and 10.

It should be noted that topsoil and disturbed (ploughed) soil measurements were carried out at the borehole locations only and could differ at other locations on the site. Consequently, topsoil and disturbed (ploughed) soil quantities should not be established from the information provided at the borehole locations. If required, a more detailed test pit program should be carried out to more accurately quantify the amount of topsoil and disturbed (ploughed) soil to be removed for construction purposes.

Surficial Finishes

Surface finish on the graded pathway where Borehole 8 was drilled consists of approximately 230 mm of sand and gravel.

Fill

Fill underlies the disturbed (ploughed) soil in Boreholes 3 to 5, the sand and gravel in Borehole 8 and the topsoil in Borehole 9. The fill extends to depths of approximately 1.0 to 2.8 m (~Elevation 298.9 to 309.4 m). The fill comprises brown to grey silty sand or sandy silt to clayey silt with trace gravel. Locally, asphalt fragments, wood chips were observed in the fill. A buried topsoil layer was noted within the fill at approximately 2.3 m depth (~Elevation 299.1 m) in Borehole 4. Moisture contents in the fill ranged from approximately 11 to 21 %.

Sandy Silt Till

A discontinuous sandy silt till deposit was intersected below the surficial disturbed (ploughed) soil in Boreholes 1, 2 and 7, the fill in Boreholes 3 and 4 and the topsoil in Borehole 6. The sandy silt till extends to approximately 2.1 m to 5.6 m depth (~Elevation 292.9 to 301.9 m). The sandy silt till contains fine sand seams, trace clay, trace gravel and localized gravel layers and occasional boulder fragments. The sandy silt till is brown in colour with oxidized pockets. The degree of compactness was assessed as compact to very dense. Moisture contents in the sandy silt till were recorded at approximately 6 to 14 %.

Silty Sand

Silty sand underlies the sandy silt till in Boreholes 1 to 4, 6 and 7, and the fill in Boreholes 5, 8 and 9. The silty sand was fully penetrated in Boreholes 2 and 8 at depths of approximately 5.6 to 7.1 m (~Elevation 302.0 to 304.2 m). Boreholes 1, 2 to 6 and 9 were terminated in the silty sand at approximately 8.1 m depth (~Elevation 286.9 to 302.3 m). The silty sand is fine grained, contains trace gravel and characterized by scattered cemented zones. The silty sand is brown in colour and exists in a compact to very dense state. Moisture contents in the silty sand were recorded between approximately 2 and 19 %.

Sandy Silt Till (Lower)

A lower sandy silt till deposit follows the silty sand in Boreholes 2 and 8 and the surficial disturbed (ploughed) soil in Borehole 10. These boreholes were terminated in the lower sandy silt till at approximately 7.7 m to 8.1 m depth (~Elevation 274.9 to 303.2 m). The lower sandy silt till contains trace fine sand seams, trace clay, trace gravel and occasional boulder fragments. The lower sandy silt till is brown in colour changing to grey below approximately 2.9 m depth (~Elevation 280.1 m) in Borehole 10. The degree of compactness was assessed as compact to very dense. Moisture contents in the lower sandy silt till were recorded at approximately 9 to 24 %.

5.2 Groundwater

Groundwater conditions were observed in the open boreholes during the course of the fieldwork and in the monitoring wells installed in six (6) selected boreholes for subsequent groundwater measurements.

Upon completion of drilling, free water was detected at depths of approximately 2.1 to 6.5 m in Boreholes 2, 8, 9 and 10. All other boreholes were dry upon completion of drilling. A summary of groundwater observations in the monitoring wells is presented in the following table.

Table 1: Groundwater Level Readings

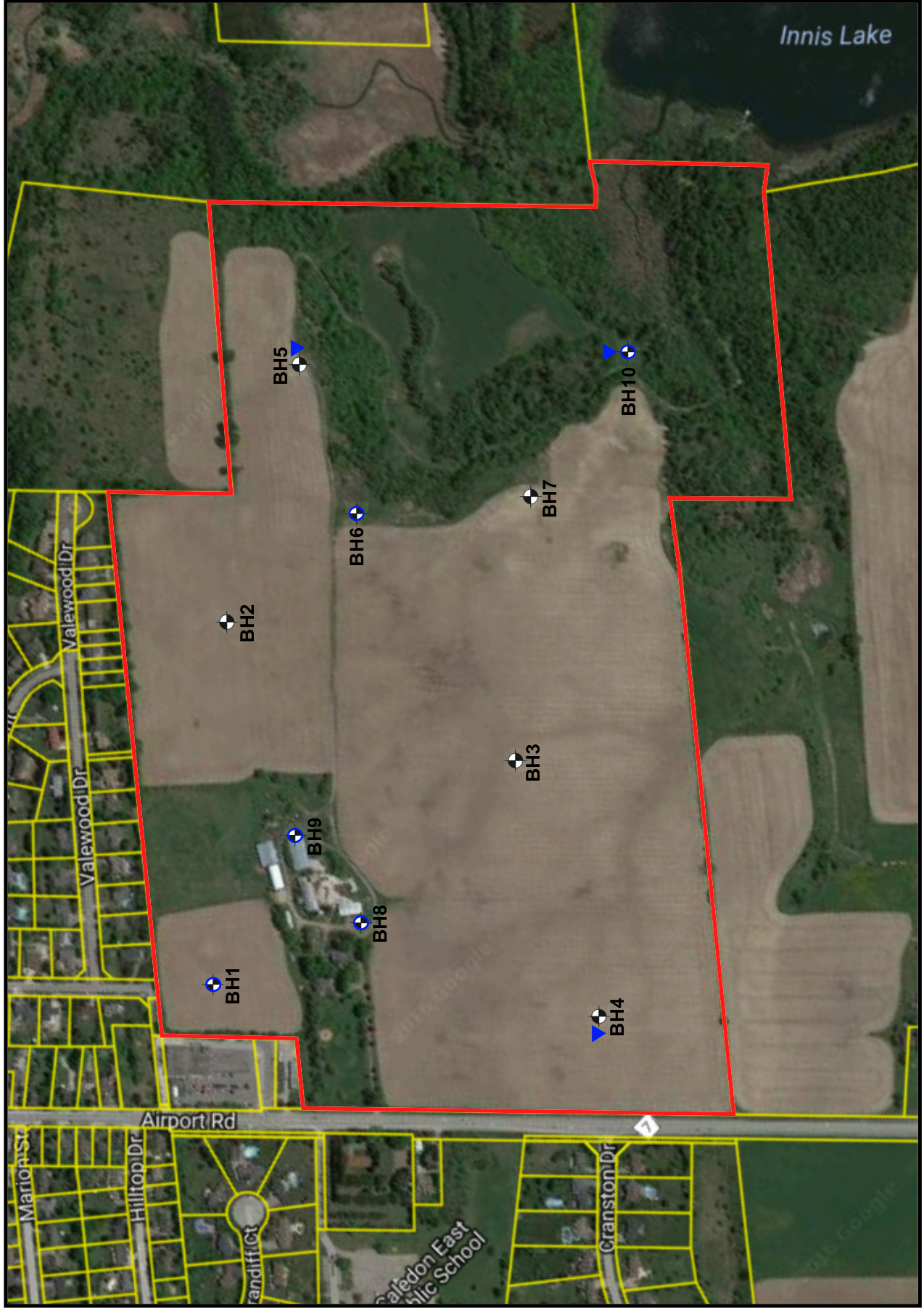
Borehole No.	Elapsed Time	Water Level (m)	Elevation (m)
1	After 8 Days	6.7	303.7
6	After 11 Days	Dry	--
8	After 12 Days	4.0	303.6
9	After 12 Days	5.5	304.9
10*	After 8 days	1.9	281.1

*** Located at significantly lower elevation than other monitoring wells and separated from them by a stream traversing the east portion of the site.**

Based on the information observed in the boreholes, the groundwater originates from the silty sand and the more pervious seams within the glacial sandy silt till.

The groundwater elevations reflect the conditions at the time of the investigation. Groundwater elevations are subject to seasonal fluctuations.

The monitoring wells were installed in general accordance with the Ontario Water Resources Act-R.R.O. 1990, Regulation 903 – Amended to O. Reg. 128/03 by CSD, by a licensed well contractor. When the use of the monitoring wells is no longer required, they must be decommissioned in accordance with the



Legend

- Borehole
- Monitoring Well
- Percolation Test

exp.
 exp Services Inc.
 1595 Clark Boulevard
 Brampton, Ontario
 L6T 4V1
 Telephone: (905) 793-9800
 Fax: (905) 793-0641

SCALE: As shown	CHECKED: DD
DATE: September 2016	
DRAWN: KM	DD

Borehole Location Plan	
Preliminary Geotechnical Investigation	
Airport Road and Cranston Drive	
Caledon East, Ontario	
PROJECT NO.: BRM-0023,5186-C0	DRAWING NO.: 1



BRM-00235186-C0

September 28, 2016

Mr. Jordan Archer
DG Group Inc.
30 Floral Parkway, Suite 300
Concord, Ontario
L4K 4R1

Via Electronic Mail:
jarcher@dgggroup.ca

Re: BRM-00235186-C0

**Soil Infiltration Testing
Airport Road and Cranston Drive
Caledon East, Ontario**

Dear Mr. Archer:

This letter report presents the results of infiltration testing conducted at the above captioned site. The purpose of the infiltration testing was to determine the hydraulic conductivity and infiltration rate of the on-site soils to support the design of proposed stormwater management systems. The infiltration testing was carried out in conjunction with a Preliminary Geotechnical investigation of the site. This letter should be read in conjunction with the Preliminary Geotechnical investigation report (reference BRM-00235186-C0) dated September 22, 2016.

Three (3) boreholes, designated Boreholes 4A, 5A and 10A, were drilled in conjunction with the Preliminary Geotechnical investigation boreholes on September 9 and 12, 2016. As requested, Borehole 4A was advanced to ~5 m depth and Boreholes 5A and 10A were drilled to ~2.4 m depth. In each borehole, a 50 mm diameter monitoring well was installed to the base of the borehole with 1.5 m screened sections at the bottom of each borehole. The approximate borehole locations are shown on the attached Drawing No. 1 extracted from the Preliminary Geotechnical investigation report.

Infiltration testing was carried out in the monitoring wells on September 14, 2016, two (2) to five (5) days after completion of borehole drilling. All three (3) wells were found to be dry prior to infiltration testing. The wells were filled with water to approximately 2.59 m, 2.11 m and 2.00 m above the bottom of the wells in Boreholes 4A, 5A and 10A, respectively. Water level readings were taken at timed intervals until the water levels had fallen to 87%, 46% and 65% of the initial hydraulic heads in the wells in Boreholes 4A, 5A and 10A, respectively. The



hydraulic conductivity, k , was then determined using the Hvorslev method. The corresponding infiltration rates were determined from Figure C1: Approximate relationship between infiltration rate and hydraulic conductivity in Appendix C of the "Low Impact Development Stormwater Management Planning and Design Guide" developed by the Credit Valley Conservation Authority and the Toronto and Region Conservation Authority.

The infiltration test results are summarized in the following table.

Infiltration Test Results

Borehole No.	Tested Soil Type	Test Elevation (m)	Hydraulic Conductivity, k (cm/s)	Infiltration Rate (mm/hr)
4A	Sandy Silt Till	296.8 to 298.3	3.6×10^{-5}	35
5A	Fill – clayey silt, trace sand, trace gravel	304.8 to 306.3	6.6×10^{-5}	41
10A	Sandy Silt Till	280.6 to 282.1	1.4×10^{-4}	50

We trust that the information provided in this report is sufficient for your purposes. Should you have any questions, please do not hesitate to contact this office.

Yours truly,

exp Services Inc.

David Dennison, P.Eng.
Senior Engineer
Geotechnical Division

Peter T.L. Chan, P.Eng.
Senior Manager, Central Ontario
Geotechnical Services

Distribution:

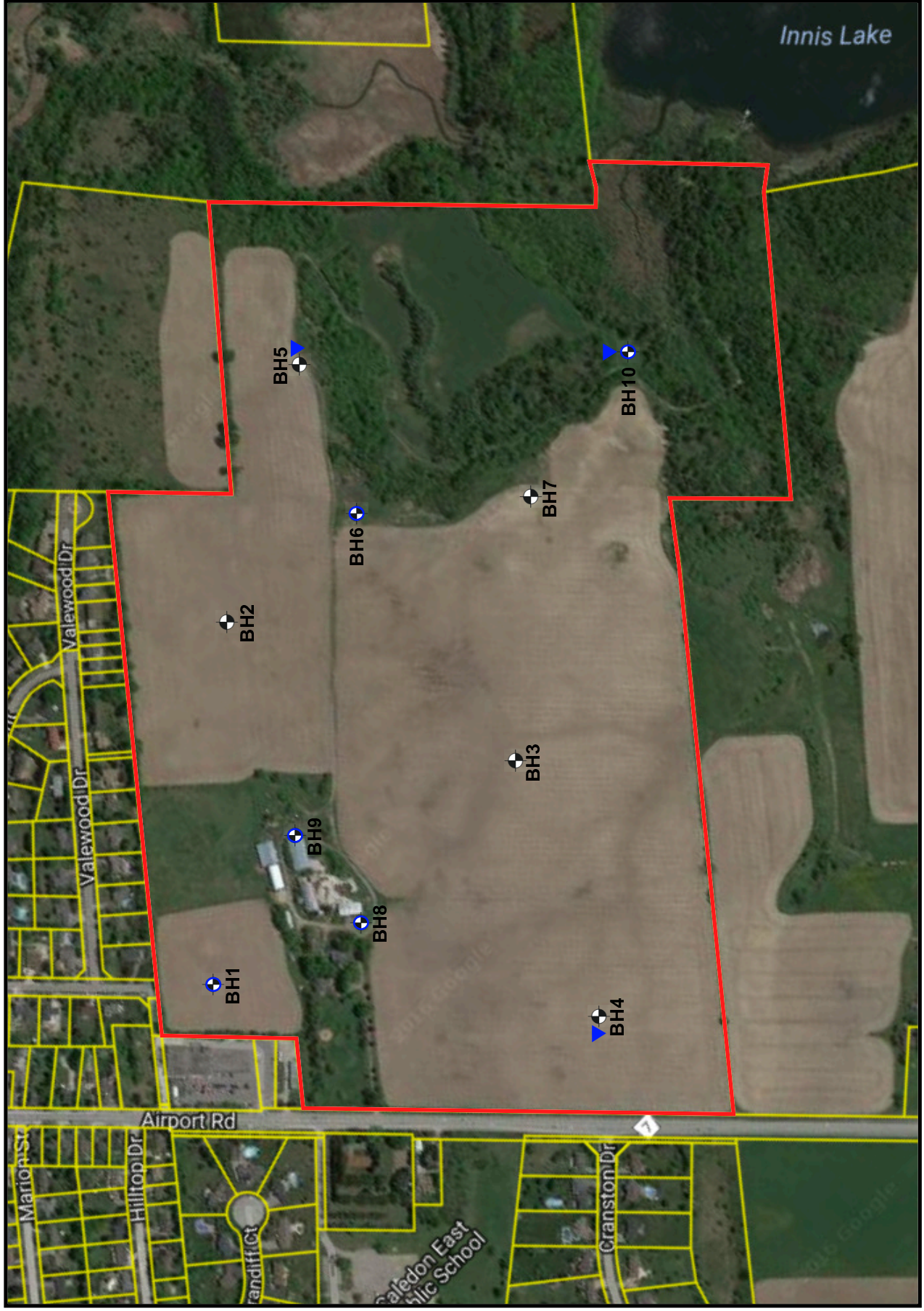


BRM-00235186-C0

Appendix

Borehole Location Plan

Borehole Logs



Legend

- Borehole
- Monitoring Well
- Percolation Test

exp.

exp Services Inc.
 1595 Clark Boulevard
 Brampton, Ontario
 L6T 4V1
 Telephone: (905) 793-9800
 Fax: (905) 793-0641

SCALE: As shown	CHECKED: DD
DATE: September 2016	
DRAWN: KM	PROJECT NO.: BRM-0023,5186-C0

Borehole Location Plan
 Preliminary Geotechnical Investigation
 Airport Road and Cranston Drive
 Caledon East, Ontario

DRAWING NO.: 1

Log of Borehole 4A

Project No. BRM-00235186-B0/C0

Drawing No. 4A

Project: Phase II ESA and Preliminary Geotechnical Investigation

Sheet No. 1 of 1

Location: 15717 Airport Road, Caledon East, Ontario

Date Drilled: 12/09/2016

Auger Sample

SPT (N) Value

Dynamic Cone Test

Shelby Tube

Field Vane Test

Combustible Vapour Reading

Natural Moisture

Plastic and Liquid Limit

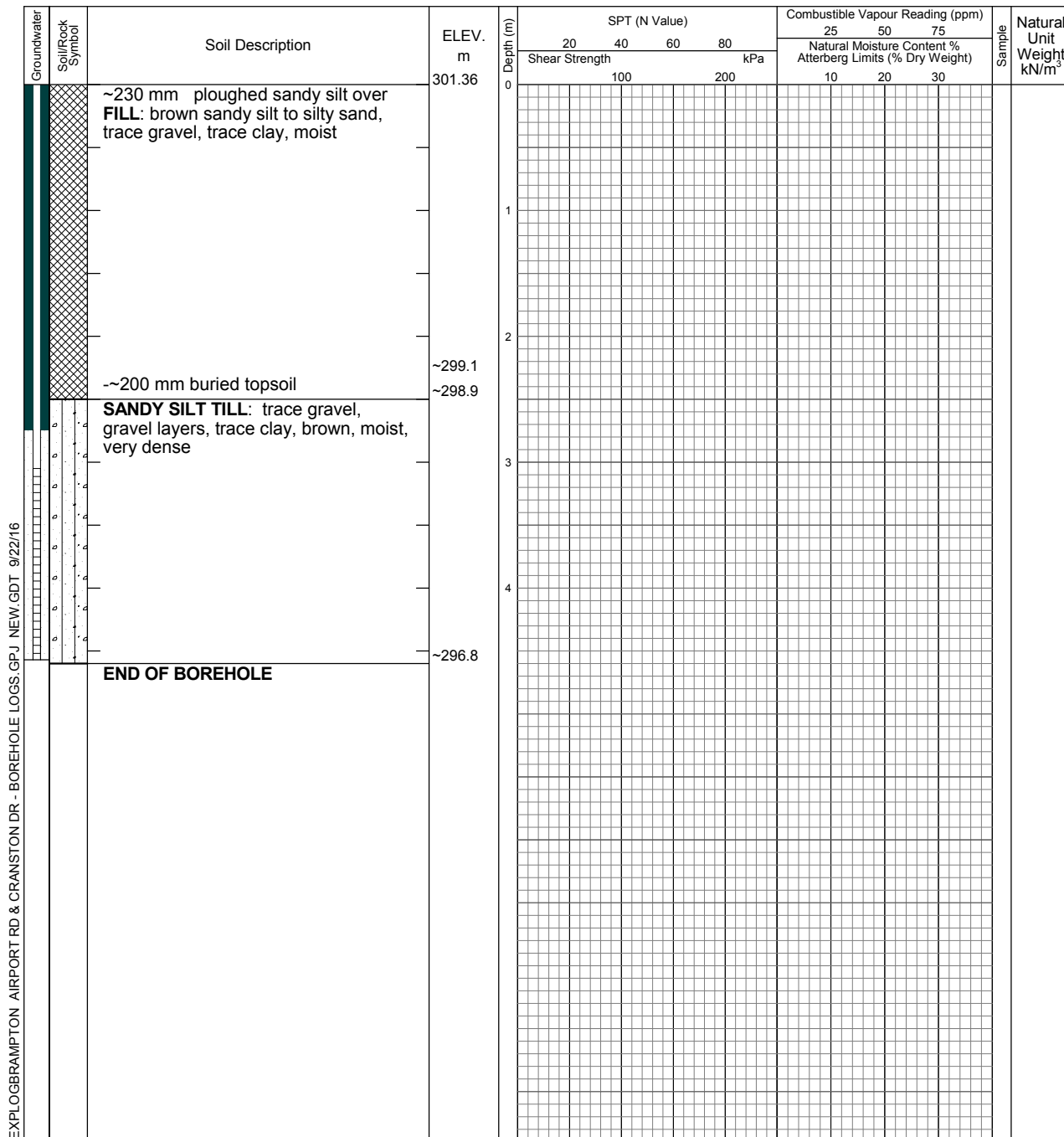
Undrained Triaxial at

% Strain at Failure

Penetrometer

Drill Type: Bombardier CME 55 - Solid Stem

Datum: Geodetic



EXPLOGBRAMPTON AIRPORT RD & CRANSTON DR - BOREHOLE LOGS.GPJ NEW.GDT 9/22/16

Elapsed Time	Water Level (m)	Hole Open to (m)



Log of Borehole 5A

Project No. BRM-00235186-B0/C0

Drawing No. 5A

Project: Phase II ESA and Preliminary Geotechnical Investigation

Sheet No. 1 of 1

Location: 15717 Airport Road, Caledon East, Ontario

Date Drilled: 09/09/2016

Drill Type: Bombardier CME 55 - Solid Stem

Datum: Geodetic

Auger Sample

SPT (N) Value

Dynamic Cone Test

Shelby Tube

Field Vane Test

Combustible Vapour Reading

Natural Moisture

Plastic and Liquid Limit

Undrained Triaxial at

% Strain at Failure

Penetrometer

Groundwater Soil/Rock Symbol	Soil Description	ELEV. m	SPT (N Value)				Combustible Vapour Reading (ppm)			Natural Unit Weight kN/m ³
			20	40	60	80	25	50	75	
	~900 mm ploughed sandy silt to clayey silt, trace gravel over FILL: clayey silt, trace sand, trace gravel, asphalt fragments, wood chips, brown, moist, no odour	307.15	Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)			sample
			100		200					
	END OF BOREHOLE	~304.7								

EXPLOGBRAMPTON AIRPORT RD & CRANSTON DR - BOREHOLE LOGS.GPJ NEW.GDT 9/22/16

Elapsed Time	Water Level (m)	Hole Open to (m)



Log of Borehole 10A

Project No. BRM-00235186-B0/C0

Drawing No. 10A

Project: Phase II ESA and Preliminary Geotechnical Investigation

Sheet No. 1 of 1

Location: 15717 Airport Road, Caledon East, Ontario

Date Drilled: 12/09/2016

Drill Type: Bombardier CME 55 - Solid Stem

Datum: Geodetic

Auger Sample

SPT (N) Value

Dynamic Cone Test

Shelby Tube

Field Vane Test

Combustible Vapour Reading

Natural Moisture

Plastic and Liquid Limit

Undrained Triaxial at

% Strain at Failure

Penetrometer

Groundwater Soil/Rock Symbol	Soil Description	ELEV. m	SPT (N Value)				Combustible Vapour Reading (ppm)			Natural Unit Weight kN/m ³
			20	40	60	80	25	50	75	
			Shear Strength kPa				Natural Moisture Content % Atterberg Limits (% Dry Weight)			
	~600 mm ploughed sandy silt, trace rootlets, trace gravel, brown, moist, over SANDY SILT TILL : trace gravel, trace clay, occasional boulder fragments, brown, moist, compact to dense	283.00	100		200					
	END OF BOREHOLE	~280.6								

EXPLOGBRAMPTON AIRPORT RD & CRANSTON DR - BOREHOLE LOGS.GPJ NEW.GDT 9/22/16

Elapsed Time	Water Level (m)	Hole Open to (m)



APPENDIX B

Water Supply Calculations

Water Supply Calculation

Project No. 2016-4453

Proposed Residential Subdivision Development, 15717 Airport Road, Town of Caledon

Fire Flow: 9000 L/min
 Water Supply Demand: 280 L/capita/day

Land Use	Type	Area (ha)	Pop. Density (persons/ha) [†]	Population	Average Day Demand (L/s) [‡]
Residential	Detached (> 10m frontages)	24.15	50	1208	3.91
Residential	Detached (< 10m frontages)	17.34	70	1214	3.93
High Density Block		0.35	70	25	0.08
Condominium Block	Detached(>10m Frontages)	1.6	50	80	0.26
Total		43.44		2527	8.19

Land Use	Average Day Demand (L/s) [‡]	Peak Hour Demand Peaking Factor [†]	Peak Hour Demand (L/s)	Max Day Demand Peaking Factor [†]	Max Day Demand (L/s)	Max Demand + Fire Flow (L/s)
Residential	8.19	3.0	24.57	2.0	16.38	166.38

[†] As per Region of Peel Design Guidelines

[‡] Based on Region of Peel Design Guidelines of 280 L/cap/day

Water Supply Demand - Caledon - DG Group Development 15717 Airport Road
Town of Caledon, Region of Peel
Project: 2016-4453

Node	Elevation m	Low Density	Medium Density	No. of People Residential	Commercial Area ha	Institutional Area ha	Park Area ha	No. of People Non-Residential	Daily Avg. Demand (L/s)	Maximum Day (L/s)	Peak Hour (L/s)	Minimum Hour (L/s)
		Units	Units									
Cal-1	307.63	0	6	111	0	0	0	0	0.36	0.72	1.08	0.25
Cal-2	306.30	8	0	17	0	0	0	0	0.06	0.11	0.17	0.04
Cal-3	306.72	11	0	23	0	0	0	0	0.07	0.15	0.22	0.05
Cal-4	306.56	2	0	4	0	0	0	0	0.01	0.03	0.04	0.01
Cal-5	307.44	16	0	34	0	0	0	0	0.11	0.22	0.33	0.08
Cal-6	306.65	31	0	66	0	0	0	0	0.21	0.43	0.64	0.15
Cal-7	305.92	16	0	34	0	0	0	0	0.11	0.22	0.33	0.08
Cal-8	304.70	30	0	64	0	0	0	0	0.21	0.41	0.62	0.15
Cal-9	303.58	17	0	36	0	0	0	0	0.12	0.23	0.35	0.08
Cal-10	305.68	11	11	227	0	0	0	0	0.74	1.47	2.21	0.51
Cal-11	303.19	15	11	236	0	0	0	0	0.76	1.53	2.29	0.54
Cal-12	303.25	20	0	43	0	0	0	0	0.14	0.28	0.42	0.10
Cal-13	301.76	5	0	11	0	0	0	0	0.04	0.07	0.11	0.02
Cal-14	303.85	19	0	41	0	0	0	0	0.13	0.27	0.40	0.09
Cal-15	297.75	9	0	19	0	0	0	0	0.06	0.12	0.18	0.04
Cal-16	299.37	25	0	53	0	0	0	0	0.17	0.34	0.52	0.12
Cal-17	297.88	9	0	19	0	0	0	0	0.06	0.12	0.18	0.04
Cal-18	300.25	14	0	30	0	0	0	0	0.10	0.19	0.29	0.07
Cal-19	301.31	15	0	32	0	0	0	0	0.10	0.21	0.31	0.07
Cal-20	302.41	22	0	47	0	0	0	0	0.15	0.30	0.46	0.11
Cal-21	304.96	21	0	45	0	0	0	0	0.15	0.29	0.44	0.10
Cal-22	306.39	16	0	34	0	0	0	0	0.11	0.22	0.33	0.08
Cal-23	307.48	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Cal-24	309.07	11	0	23	0	0	0	0	0.07	0.15	0.22	0.05
Cal-25	303.36	15	0	32	0	0	0	0	0.10	0.21	0.31	0.07
Cal-26	305.54	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00
Cal-27	306.63	26	0	55	0	0	0	0	0.18	0.36	0.53	0.12
Cal-28	296.76	27	0	58	0	0	0	0	0.19	0.38	0.56	0.13
Cal-29	302.24	22	0	47	0	0	0	0	0.15	0.30	0.46	0.11
Cal-30	296.48	55	0	117	0	0	0	0	0.38	0.76	1.14	0.27
Cal-31	302.57	6	0	13	0	0	0	0	0.04	0.08	0.13	0.03
Cal-32	303.46	21	0	45	0	0	0	0	0.15	0.29	0.44	0.10
Cal-33	304.31	13	0	28	0	0	0	0	0.09	0.18	0.27	0.06
Cal-34	296.47	10	0	21	0	0	0	0	0.07	0.14	0.20	0.05
Cal-35	303.50	24	24	495	0	0	0	0	1.60	3.21	4.81	1.12
Cal-36	302.00	21	15	323	0	0	0	0	1.05	2.09	3.14	0.73
Cal-37	310.00	11	0	23	0	0	0	0	0.07	0.15	0.22	0.05
Cal-38	310.00	10	0	21	0	0	0	0	0.07	0.14	0.20	0.05
Cal-39	301.14	0	0	0	0	0	0	0	0.00	0.00	0.00	0.00

15717 Airport Road Residential Subdivision – Town of Caledon – WaterCAD Modeling

Caledon Residential Subdivision WaterCAD Schematic



Scenario: Average Day
Current Time Step: 0.000 Hr
FlexTable: Junction Table

Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (kPa)
Cal-1	307.63	0.09	360.00	512.5
Cal-2	306.30	0.08	360.00	525.5
Cal-3	306.72	0.12	360.00	521.4
Cal-4	306.56	0.02	360.00	523.0
Cal-5	307.44	0.17	360.00	514.4
Cal-6	306.65	0.32	360.00	522.1
Cal-7	305.92	0.17	360.00	529.2
Cal-8	304.70	0.31	360.00	541.2
Cal-9	303.58	0.18	360.00	552.1
Cal-10	305.68	0.29	360.00	531.6
Cal-11	303.19	0.33	360.00	556.0
Cal-12	303.25	0.21	360.00	555.4
Cal-13	301.76	0.05	360.00	569.9
Cal-14	303.85	0.20	360.00	549.5
Cal-15	297.75	0.09	359.99	609.2
Cal-16	299.37	0.26	359.99	593.3
Cal-17	297.88	0.09	359.99	607.9
Cal-18	300.25	0.15	360.00	584.7
Cal-19	301.31	0.16	360.00	574.3
Cal-20	302.41	0.23	360.00	563.6
Cal-21	304.96	0.22	360.00	538.6
Cal-22	306.39	0.17	360.00	524.6
Cal-23	307.48	0.00	360.00	514.0
Cal-24	309.07	0.12	360.00	498.4
Cal-25	303.36	0.16	360.00	554.3
Cal-26	305.54	0.00	360.00	533.0
Cal-27	306.63	0.27	360.00	522.3
Cal-28	296.76	0.28	359.98	618.7
Cal-29	302.24	0.23	360.00	565.2
Cal-30	296.48	0.58	359.99	621.6
Cal-31	302.57	0.06	360.00	562.0
Cal-32	303.46	0.22	360.00	553.3
Cal-33	304.31	0.14	360.00	545.0
Cal-34	296.47	0.10	359.99	621.7
Cal-35	303.50	0.62	360.00	552.9
Cal-36	302.00	0.45	360.00	567.6
Cal-37	310.00	(N/A)	(N/A)	(N/A)
Cal-38	310.00	(N/A)	(N/A)	(N/A)
Cal-39	301.14	0.00	360.00	576.0

Scenario: Average Day
Current Time Step: 0.000 Hr
FlexTable: Pipe Table

Label	Length (Scaled) (m)	Start Node	Stop Node	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)
P-143	21.05	Cal-13	Cal-39	50.0	Copper	100.0	0.00	0.00	0.00
P-141	48.41	Cal-17	Cal-28	50.0	Copper	100.0	0.12	0.06	0.01
P-139	40.54	Cal-30	Cal-34	50.0	Copper	100.0	0.04	0.02	0.00
P-137	39.45	Cal-38	Cal-37	50.0	Copper	100.0	(N/A)	(N/A)	(N/A)
P-133	82.28	Cal-8	Cal-33	200.0	PVC	110.0	-0.61	0.02	0.00
P-129	87.61	Cal-31	Cal-32	200.0	PVC	110.0	-0.02	0.00	0.00
P-127	103.05	Cal-25	Cal-31	300.0	PVC	120.0	0.61	0.01	0.00
P-125	24.96	Cal-15	Cal-30	150.0	PVC	100.0	0.68	0.04	0.00
P-140	26.56	Cal-34	Cal-30	50.0	Copper	100.0	-0.06	0.03	0.00
P-128	71.07	Cal-31	Cal-29	300.0	PVC	120.0	0.56	0.01	0.00
P-138	36.75	Cal-37	Cal-38	50.0	Copper	135.0	(N/A)	(N/A)	(N/A)
P-122	215.30	Cal-27	Cal-38	150.0	PVC	100.0	(N/A)	(N/A)	(N/A)
P-120	215.95	Cal-24	Cal-27	200.0	PVC	110.0	0.16	0.01	0.00
P-117	67.35	Cal-25	Cal-26	300.0	PVC	120.0	-0.88	0.01	0.00
P-121	128.17	Cal-27	Cal-25	200.0	PVC	110.0	-0.11	0.00	0.00
P-119	159.91	Cal-26	Cal-24	200.0	PVC	110.0	0.08	0.00	0.00
P-115	183.42	Cal-23	Cal-24	200.0	PVC	110.0	0.20	0.01	0.00
P-113	91.07	Cal-22	Cal-23	200.0	PVC	110.0	-0.33	0.01	0.00
P-118	72.03	Cal-26	Cal-23	300.0	PVC	120.0	-0.96	0.01	0.00
P-112	169.78	Cal-21	Cal-22	200.0	PVC	110.0	0.05	0.00	0.00
P-130	122.86	Cal-32	Cal-22	200.0	PVC	110.0	-0.21	0.01	0.00
P-110	143.32	Cal-20	Cal-21	200.0	PVC	110.0	-0.20	0.01	0.00
P-131	129.95	Cal-32	Cal-20	200.0	PVC	110.0	-0.02	0.00	0.00
P-109	91.14	Cal-19	Cal-20	200.0	PVC	110.0	0.05	0.00	0.00
P-126	188.87	Cal-29	Cal-19	300.0	PVC	120.0	-0.36	0.01	0.00
P-107	82.43	Cal-18	Cal-19	200.0	PVC	110.0	-0.54	0.02	0.00
P-105	163.25	Cal-14	Cal-18	200.0	PVC	110.0	0.31	0.01	0.00
P-104	38.34	Cal-16	Cal-17	150.0	PVC	100.0	0.37	0.02	0.00
P-142	27.65	Cal-28	Cal-17	50.0	Copper	100.0	-0.16	0.08	0.01
P-106	80.25	Cal-18	Cal-16	200.0	PVC	110.0	0.71	0.02	0.00
P-103	164.23	Cal-16	Cal-15	200.0	PVC	110.0	0.08	0.00	0.00
P-124	130.39	Cal-29	Cal-15	200.0	PVC	110.0	0.69	0.02	0.00
P-99	84.52	Cal-9	Cal-14	200.0	PVC	110.0	0.56	0.02	0.00
P-100	176.30	Cal-14	Cal-13	150.0	PVC	100.0	0.05	0.00	0.00
P-144	35.14	Cal-39	Cal-13	50.0	Copper	100.0	0.00	0.00	0.00
P-136	205.23	Cal-33	Cal-12	200.0	PVC	110.0	0.24	0.01	0.00
P-97	336.43	Cal-11	Cal-12	200.0	PVC	110.0	0.21	0.01	0.00
P-95	82.20	Cal-9	Cal-12	300.0	PVC	120.0	-1.68	0.02	0.00
P-94	203.32	Cal-10	Cal-11	200.0	PVC	110.0	0.25	0.01	0.00
P-96	82.07	Cal-12	Cal-11	300.0	PVC	120.0	-1.44	0.02	0.00
P-91	117.07	Cal-1	Cal-10	200.0	PVC	110.0	0.99	0.03	0.00
P-134	81.74	Cal-33	Cal-10	200.0	PVC	110.0	-0.46	0.01	0.00
P-89	200.15	Cal-8	Cal-9	200.0	PVC	110.0	0.17	0.01	0.00
P-108	154.08	Cal-19	Cal-9	300.0	PVC	120.0	-1.11	0.02	0.00
P-111	89.86	Cal-21	Cal-8	200.0	PVC	110.0	-0.47	0.02	0.00
P-88	125.69	Cal-7	Cal-8	200.0	PVC	110.0	0.35	0.01	0.00
P-87	47.39	Cal-6	Cal-7	200.0	PVC	110.0	0.52	0.02	0.00
P-85	136.78	Cal-5	Cal-6	300.0	PVC	120.0	-1.30	0.02	0.00
P-114	67.03	Cal-23	Cal-5	300.0	PVC	120.0	-1.49	0.02	0.00
P-83	325.31	Cal-3	Cal-5	200.0	PVC	110.0	0.36	0.01	0.00
P-82	36.07	Cal-3	Cal-4	200.0	PVC	110.0	0.02	0.00	0.00
P-81	97.74	Cal-2	Cal-3	200.0	PVC	110.0	0.50	0.02	0.00
P-135	152.42	Cal-33	Cal-2	200.0	PVC	110.0	-0.54	0.02	0.00
P-86	101.69	Cal-6	Cal-2	300.0	PVC	120.0	-2.14	0.03	0.00
P-80	82.80	Cal-1	Cal-2	300.0	PVC	120.0	3.25	0.05	0.00
P-79	85.89	R-1	Cal-1	300.0	PVC	120.0	4.34	0.06	0.00
P-77	197.59	Cal-35	Cal-36	300.0	PVC	120.0	0.45	0.01	0.00
P-76	316.48	R-1	Cal-35	300.0	PVC	120.0	2.80	0.04	0.00
P-93	96.90	Cal-11	Cal-35	300.0	PVC	120.0	-1.73	0.02	0.00

Scenario: Peak Hour
Current Time Step: 0.000 Hr
FlexTable: Junction Table

Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (kPa)
Cal-1	307.63	0.28	359.99	512.4
Cal-2	306.30	0.25	359.98	525.3
Cal-3	306.72	0.35	359.97	521.2
Cal-4	306.56	0.06	359.97	522.8
Cal-5	307.44	0.51	359.97	514.1
Cal-6	306.65	0.97	359.97	521.9
Cal-7	305.92	0.51	359.97	529.0
Cal-8	304.70	0.94	359.97	540.9
Cal-9	303.58	0.53	359.97	551.9
Cal-10	305.68	0.87	359.97	531.4
Cal-11	303.19	0.99	359.97	555.7
Cal-12	303.25	0.63	359.97	555.1
Cal-13	301.76	0.16	359.97	569.6
Cal-14	303.85	0.60	359.97	549.2
Cal-15	297.75	0.28	359.96	608.8
Cal-16	299.37	0.79	359.96	593.0
Cal-17	297.88	0.28	359.96	607.5
Cal-18	300.25	0.44	359.96	584.4
Cal-19	301.31	0.48	359.97	574.1
Cal-20	302.41	0.69	359.97	563.3
Cal-21	304.96	0.66	359.97	538.3
Cal-22	306.39	0.51	359.97	524.4
Cal-23	307.48	0.00	359.97	513.7
Cal-24	309.07	0.35	359.97	498.1
Cal-25	303.36	0.48	359.97	554.0
Cal-26	305.54	0.00	359.97	532.7
Cal-27	306.63	0.82	359.97	522.0
Cal-28	296.76	0.85	359.86	617.6
Cal-29	302.24	0.69	359.97	565.0
Cal-30	296.48	1.73	359.95	621.2
Cal-31	302.57	0.18	359.97	561.7
Cal-32	303.46	0.66	359.97	553.0
Cal-33	304.31	0.41	359.97	544.8
Cal-34	296.47	0.31	359.94	621.2
Cal-35	303.50	1.87	359.98	552.7
Cal-36	302.00	1.36	359.98	567.4
Cal-37	310.00	(N/A)	(N/A)	(N/A)
Cal-38	310.00	(N/A)	(N/A)	(N/A)
Cal-39	301.14	0.00	359.97	575.7

Scenario: Peak Hour
Current Time Step: 0.000 Hr
FlexTable: Pipe Table

Label	Length (Scaled) (m)	Start Node	Stop Node	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)
P-143	21.05	Cal-13	Cal-39	50.0	Copper	100.0	0.00	0.00	0.00
P-141	48.41	Cal-17	Cal-28	50.0	Copper	100.0	0.36	0.18	0.09
P-139	40.54	Cal-30	Cal-34	50.0	Copper	100.0	0.14	0.07	0.01
P-137	39.45	Cal-38	Cal-37	50.0	Copper	100.0	(N/A)	(N/A)	(N/A)
P-133	82.28	Cal-8	Cal-33	200.0	PVC	110.0	-1.84	0.06	0.00
P-129	87.61	Cal-31	Cal-32	200.0	PVC	110.0	-0.05	0.00	0.00
P-127	103.05	Cal-25	Cal-31	300.0	PVC	120.0	1.83	0.03	0.00
P-125	24.96	Cal-15	Cal-30	150.0	PVC	100.0	2.04	0.12	0.01
P-140	26.56	Cal-34	Cal-30	50.0	Copper	100.0	-0.17	0.09	0.01
P-128	71.07	Cal-31	Cal-29	300.0	PVC	120.0	1.70	0.02	0.00
P-138	36.75	Cal-37	Cal-38	50.0	Copper	135.0	(N/A)	(N/A)	(N/A)
P-122	215.30	Cal-27	Cal-38	150.0	PVC	100.0	(N/A)	(N/A)	(N/A)
P-120	215.95	Cal-24	Cal-27	200.0	PVC	110.0	0.48	0.02	0.00
P-117	67.35	Cal-25	Cal-26	300.0	PVC	120.0	-2.65	0.04	0.00
P-121	128.17	Cal-27	Cal-25	200.0	PVC	110.0	-0.34	0.01	0.00
P-119	159.91	Cal-26	Cal-24	200.0	PVC	110.0	0.23	0.01	0.00
P-115	183.42	Cal-23	Cal-24	200.0	PVC	110.0	0.60	0.02	0.00
P-113	91.07	Cal-22	Cal-23	200.0	PVC	110.0	-1.00	0.03	0.00
P-118	72.03	Cal-26	Cal-23	300.0	PVC	120.0	-2.88	0.04	0.00
P-112	169.78	Cal-21	Cal-22	200.0	PVC	110.0	0.15	0.00	0.00
P-130	122.86	Cal-32	Cal-22	200.0	PVC	110.0	-0.64	0.02	0.00
P-110	143.32	Cal-20	Cal-21	200.0	PVC	110.0	-0.62	0.02	0.00
P-131	129.95	Cal-32	Cal-20	200.0	PVC	110.0	-0.07	0.00	0.00
P-109	91.14	Cal-19	Cal-20	200.0	PVC	110.0	0.14	0.00	0.00
P-126	188.87	Cal-29	Cal-19	300.0	PVC	120.0	-1.09	0.02	0.00
P-107	82.43	Cal-18	Cal-19	200.0	PVC	110.0	-1.63	0.05	0.00
P-105	163.25	Cal-14	Cal-18	200.0	PVC	110.0	0.95	0.03	0.00
P-104	38.34	Cal-16	Cal-17	150.0	PVC	100.0	1.13	0.06	0.00
P-142	27.65	Cal-28	Cal-17	50.0	Copper	100.0	-0.49	0.25	0.09
P-106	80.25	Cal-18	Cal-16	200.0	PVC	110.0	2.14	0.07	0.00
P-103	164.23	Cal-16	Cal-15	200.0	PVC	110.0	0.22	0.01	0.00
P-124	130.39	Cal-29	Cal-15	200.0	PVC	110.0	2.10	0.07	0.01
P-99	84.52	Cal-9	Cal-14	200.0	PVC	110.0	1.71	0.05	0.00
P-100	176.30	Cal-14	Cal-13	150.0	PVC	100.0	0.16	0.01	0.00
P-144	35.14	Cal-39	Cal-13	50.0	Copper	100.0	0.00	0.00	0.00
P-136	205.23	Cal-33	Cal-12	200.0	PVC	110.0	0.73	0.02	0.00
P-97	336.43	Cal-11	Cal-12	200.0	PVC	110.0	0.64	0.02	0.00
P-95	82.20	Cal-9	Cal-12	300.0	PVC	120.0	-5.07	0.07	0.00
P-94	203.32	Cal-10	Cal-11	200.0	PVC	110.0	0.74	0.02	0.00
P-96	82.07	Cal-12	Cal-11	300.0	PVC	120.0	-4.33	0.06	0.00
P-91	117.07	Cal-1	Cal-10	200.0	PVC	110.0	2.99	0.10	0.01
P-134	81.74	Cal-33	Cal-10	200.0	PVC	110.0	-1.37	0.04	0.00
P-89	200.15	Cal-8	Cal-9	200.0	PVC	110.0	0.51	0.02	0.00
P-108	154.08	Cal-19	Cal-9	300.0	PVC	120.0	-3.35	0.05	0.00
P-111	89.86	Cal-21	Cal-8	200.0	PVC	110.0	-1.42	0.05	0.00
P-88	125.69	Cal-7	Cal-8	200.0	PVC	110.0	1.04	0.03	0.00
P-87	47.39	Cal-6	Cal-7	200.0	PVC	110.0	1.55	0.05	0.00
P-85	136.78	Cal-5	Cal-6	300.0	PVC	120.0	-3.91	0.06	0.00
P-114	67.03	Cal-23	Cal-5	300.0	PVC	120.0	-4.48	0.06	0.00
P-83	325.31	Cal-3	Cal-5	200.0	PVC	110.0	1.08	0.03	0.00
P-82	36.07	Cal-3	Cal-4	200.0	PVC	110.0	0.06	0.00	0.00
P-81	97.74	Cal-2	Cal-3	200.0	PVC	110.0	1.49	0.05	0.00
P-135	152.42	Cal-33	Cal-2	200.0	PVC	110.0	-1.61	0.05	0.00
P-86	101.69	Cal-6	Cal-2	300.0	PVC	120.0	-6.44	0.09	0.00
P-80	82.80	Cal-1	Cal-2	300.0	PVC	120.0	9.78	0.14	0.01
P-79	85.89	R-1	Cal-1	300.0	PVC	120.0	13.05	0.18	0.01
P-77	197.59	Cal-35	Cal-36	300.0	PVC	120.0	1.36	0.02	0.00
P-76	316.48	R-1	Cal-35	300.0	PVC	120.0	8.44	0.12	0.02
P-93	96.90	Cal-11	Cal-35	300.0	PVC	120.0	-5.21	0.07	0.00

Scenario: Min Hour
Current Time Step: 0.000 Hr
FlexTable: Junction Table

Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (kPa)
Cal-1	307.63	0.07	360.00	512.5
Cal-2	306.30	0.06	360.00	525.5
Cal-3	306.72	0.08	360.00	521.4
Cal-4	306.56	0.01	360.00	523.0
Cal-5	307.44	0.12	360.00	514.4
Cal-6	306.65	0.23	360.00	522.1
Cal-7	305.92	0.12	360.00	529.3
Cal-8	304.70	0.22	360.00	541.2
Cal-9	303.58	0.12	360.00	552.2
Cal-10	305.68	0.20	360.00	531.6
Cal-11	303.19	0.23	360.00	556.0
Cal-12	303.25	0.15	360.00	555.4
Cal-13	301.76	0.04	360.00	570.0
Cal-14	303.85	0.14	360.00	549.5
Cal-15	297.75	0.07	360.00	609.2
Cal-16	299.37	0.18	360.00	593.4
Cal-17	297.88	0.07	360.00	607.9
Cal-18	300.25	0.10	360.00	584.7
Cal-19	301.31	0.11	360.00	574.4
Cal-20	302.41	0.16	360.00	563.6
Cal-21	304.96	0.15	360.00	538.6
Cal-22	306.39	0.12	360.00	524.7
Cal-23	307.48	0.00	360.00	514.0
Cal-24	309.07	0.08	360.00	498.4
Cal-25	303.36	0.11	360.00	554.3
Cal-26	305.54	0.00	360.00	533.0
Cal-27	306.63	0.19	360.00	522.3
Cal-28	296.76	0.20	359.99	618.8
Cal-29	302.24	0.16	360.00	565.3
Cal-30	296.48	0.40	360.00	621.6
Cal-31	302.57	0.04	360.00	562.0
Cal-32	303.46	0.15	360.00	553.3
Cal-33	304.31	0.10	360.00	545.0
Cal-34	296.47	0.07	360.00	621.7
Cal-35	303.50	0.44	360.00	552.9
Cal-36	302.00	0.32	360.00	567.6
Cal-37	310.00	(N/A)	(N/A)	(N/A)
Cal-38	310.00	(N/A)	(N/A)	(N/A)
Cal-39	301.14	0.00	360.00	576.0

Scenario: Min Hour
Current Time Step: 0.000 Hr
FlexTable: Pipe Table

Label	Length (Scaled) (m)	Start Node	Stop Node	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)
P-143	21.05	Cal-13	Cal-39	50.0	Copper	100.0	0.00	0.00	0.00
P-141	48.41	Cal-17	Cal-28	50.0	Copper	100.0	0.08	0.04	0.01
P-139	40.54	Cal-30	Cal-34	50.0	Copper	100.0	0.03	0.02	0.00
P-137	39.45	Cal-38	Cal-37	50.0	Copper	100.0	(N/A)	(N/A)	(N/A)
P-133	82.28	Cal-8	Cal-33	200.0	PVC	110.0	-0.43	0.01	0.00
P-129	87.61	Cal-31	Cal-32	200.0	PVC	110.0	-0.01	0.00	0.00
P-127	103.05	Cal-25	Cal-31	300.0	PVC	120.0	0.43	0.01	0.00
P-125	24.96	Cal-15	Cal-30	150.0	PVC	100.0	0.47	0.03	0.00
P-140	26.56	Cal-34	Cal-30	50.0	Copper	100.0	-0.04	0.02	0.00
P-128	71.07	Cal-31	Cal-29	300.0	PVC	120.0	0.40	0.01	0.00
P-138	36.75	Cal-37	Cal-38	50.0	Copper	135.0	(N/A)	(N/A)	(N/A)
P-122	215.30	Cal-27	Cal-38	150.0	PVC	100.0	(N/A)	(N/A)	(N/A)
P-120	215.95	Cal-24	Cal-27	200.0	PVC	110.0	0.11	0.00	0.00
P-117	67.35	Cal-25	Cal-26	300.0	PVC	120.0	-0.61	0.01	0.00
P-121	128.17	Cal-27	Cal-25	200.0	PVC	110.0	-0.08	0.00	0.00
P-119	159.91	Cal-26	Cal-24	200.0	PVC	110.0	0.05	0.00	0.00
P-115	183.42	Cal-23	Cal-24	200.0	PVC	110.0	0.14	0.00	0.00
P-113	91.07	Cal-22	Cal-23	200.0	PVC	110.0	-0.23	0.01	0.00
P-118	72.03	Cal-26	Cal-23	300.0	PVC	120.0	-0.67	0.01	0.00
P-112	169.78	Cal-21	Cal-22	200.0	PVC	110.0	0.04	0.00	0.00
P-130	122.86	Cal-32	Cal-22	200.0	PVC	110.0	-0.15	0.00	0.00
P-110	143.32	Cal-20	Cal-21	200.0	PVC	110.0	-0.14	0.00	0.00
P-131	129.95	Cal-32	Cal-20	200.0	PVC	110.0	-0.01	0.00	0.00
P-109	91.14	Cal-19	Cal-20	200.0	PVC	110.0	0.03	0.00	0.00
P-126	188.87	Cal-29	Cal-19	300.0	PVC	120.0	-0.25	0.00	0.00
P-107	82.43	Cal-18	Cal-19	200.0	PVC	110.0	-0.38	0.01	0.00
P-105	163.25	Cal-14	Cal-18	200.0	PVC	110.0	0.22	0.01	0.00
P-104	38.34	Cal-16	Cal-17	150.0	PVC	100.0	0.27	0.02	0.00
P-142	27.65	Cal-28	Cal-17	50.0	Copper	100.0	-0.12	0.06	0.01
P-106	80.25	Cal-18	Cal-16	200.0	PVC	110.0	0.50	0.02	0.00
P-103	164.23	Cal-16	Cal-15	200.0	PVC	110.0	0.05	0.00	0.00
P-124	130.39	Cal-29	Cal-15	200.0	PVC	110.0	0.49	0.02	0.00
P-99	84.52	Cal-9	Cal-14	200.0	PVC	110.0	0.40	0.01	0.00
P-100	176.30	Cal-14	Cal-13	150.0	PVC	100.0	0.04	0.00	0.00
P-144	35.14	Cal-39	Cal-13	50.0	Copper	100.0	0.00	0.00	0.00
P-136	205.23	Cal-33	Cal-12	200.0	PVC	110.0	0.17	0.01	0.00
P-97	336.43	Cal-11	Cal-12	200.0	PVC	110.0	0.15	0.00	0.00
P-95	82.20	Cal-9	Cal-12	300.0	PVC	120.0	-1.17	0.02	0.00
P-94	203.32	Cal-10	Cal-11	200.0	PVC	110.0	0.17	0.01	0.00
P-96	82.07	Cal-12	Cal-11	300.0	PVC	120.0	-1.00	0.01	0.00
P-91	117.07	Cal-1	Cal-10	200.0	PVC	110.0	0.70	0.02	0.00
P-134	81.74	Cal-33	Cal-10	200.0	PVC	110.0	-0.32	0.01	0.00
P-89	200.15	Cal-8	Cal-9	200.0	PVC	110.0	0.12	0.00	0.00
P-108	154.08	Cal-19	Cal-9	300.0	PVC	120.0	-0.77	0.01	0.00
P-111	89.86	Cal-21	Cal-8	200.0	PVC	110.0	-0.33	0.01	0.00
P-88	125.69	Cal-7	Cal-8	200.0	PVC	110.0	0.24	0.01	0.00
P-87	47.39	Cal-6	Cal-7	200.0	PVC	110.0	0.36	0.01	0.00
P-85	136.78	Cal-5	Cal-6	300.0	PVC	120.0	-0.91	0.01	0.00
P-114	67.03	Cal-23	Cal-5	300.0	PVC	120.0	-1.04	0.01	0.00
P-83	325.31	Cal-3	Cal-5	200.0	PVC	110.0	0.25	0.01	0.00
P-82	36.07	Cal-3	Cal-4	200.0	PVC	110.0	0.01	0.00	0.00
P-81	97.74	Cal-2	Cal-3	200.0	PVC	110.0	0.34	0.01	0.00
P-135	152.42	Cal-33	Cal-2	200.0	PVC	110.0	-0.38	0.01	0.00
P-86	101.69	Cal-6	Cal-2	300.0	PVC	120.0	-1.50	0.02	0.00
P-80	82.80	Cal-1	Cal-2	300.0	PVC	120.0	2.28	0.03	0.00
P-79	85.89	R-1	Cal-1	300.0	PVC	120.0	3.04	0.04	0.00
P-77	197.59	Cal-35	Cal-36	300.0	PVC	120.0	0.32	0.00	0.00
P-76	316.48	R-1	Cal-35	300.0	PVC	120.0	1.97	0.03	0.00
P-93	96.90	Cal-11	Cal-35	300.0	PVC	120.0	-1.21	0.02	0.00

Scenario: Max Day
Current Time Step: 0.000 Hr
FlexTable: Junction Table

Label	Elevation (m)	Demand (L/s)	Hydraulic Grade (m)	Pressure (kPa)
Cal-1	307.63	0.19	359.99	512.5
Cal-2	306.30	0.17	359.99	525.4
Cal-3	306.72	0.23	359.99	521.3
Cal-4	306.56	0.04	359.99	522.9
Cal-5	307.44	0.34	359.99	514.3
Cal-6	306.65	0.65	359.99	522.0
Cal-7	305.92	0.34	359.99	529.1
Cal-8	304.70	0.63	359.99	541.1
Cal-9	303.58	0.36	359.99	552.0
Cal-10	305.68	0.58	359.99	531.5
Cal-11	303.19	0.66	359.99	555.9
Cal-12	303.25	0.42	359.99	555.3
Cal-13	301.76	0.10	359.98	569.8
Cal-14	303.85	0.40	359.98	549.4
Cal-15	297.75	0.19	359.98	609.0
Cal-16	299.37	0.53	359.98	593.2
Cal-17	297.88	0.19	359.98	607.8
Cal-18	300.25	0.29	359.98	584.6
Cal-19	301.31	0.32	359.98	574.2
Cal-20	302.41	0.46	359.98	563.5
Cal-21	304.96	0.44	359.98	538.5
Cal-22	306.39	0.34	359.98	524.5
Cal-23	307.48	0.00	359.98	513.9
Cal-24	309.07	0.23	359.98	498.3
Cal-25	303.36	0.32	359.98	554.2
Cal-26	305.54	0.00	359.98	532.8
Cal-27	306.63	0.54	359.98	522.2
Cal-28	296.76	0.56	359.94	618.3
Cal-29	302.24	0.46	359.98	565.1
Cal-30	296.48	1.15	359.98	621.4
Cal-31	302.57	0.12	359.98	561.9
Cal-32	303.46	0.44	359.98	553.2
Cal-33	304.31	0.27	359.99	544.9
Cal-34	296.47	0.21	359.97	621.5
Cal-35	303.50	1.24	359.99	552.8
Cal-36	302.00	0.91	359.99	567.5
Cal-37	310.00	(N/A)	(N/A)	(N/A)
Cal-38	310.00	(N/A)	(N/A)	(N/A)
Cal-39	301.14	0.00	359.98	575.9

Scenario: Max Day
Current Time Step: 0.000 Hr
FlexTable: Pipe Table

Label	Length (Scaled) (m)	Start Node	Stop Node	Diameter (mm)	Material	Hazen-Williams C	Flow (L/s)	Velocity (m/s)	Headloss (m)
P-143	21.05	Cal-13	Cal-39	50.0	Copper	100.0	0.00	0.00	0.00
P-141	48.41	Cal-17	Cal-28	50.0	Copper	100.0	0.24	0.12	0.04
P-139	40.54	Cal-30	Cal-34	50.0	Copper	100.0	0.09	0.05	0.01
P-137	39.45	Cal-38	Cal-37	50.0	Copper	100.0	(N/A)	(N/A)	(N/A)
P-133	82.28	Cal-8	Cal-33	200.0	PVC	110.0	-1.22	0.04	0.00
P-129	87.61	Cal-31	Cal-32	200.0	PVC	110.0	-0.03	0.00	0.00
P-127	103.05	Cal-25	Cal-31	300.0	PVC	120.0	1.22	0.02	0.00
P-125	24.96	Cal-15	Cal-30	150.0	PVC	100.0	1.36	0.08	0.00
P-140	26.56	Cal-34	Cal-30	50.0	Copper	100.0	-0.12	0.06	0.01
P-128	71.07	Cal-31	Cal-29	300.0	PVC	120.0	1.14	0.02	0.00
P-138	36.75	Cal-37	Cal-38	50.0	Copper	135.0	(N/A)	(N/A)	(N/A)
P-122	215.30	Cal-27	Cal-38	150.0	PVC	100.0	(N/A)	(N/A)	(N/A)
P-120	215.95	Cal-24	Cal-27	200.0	PVC	110.0	0.32	0.01	0.00
P-117	67.35	Cal-25	Cal-26	300.0	PVC	120.0	-1.77	0.02	0.00
P-121	128.17	Cal-27	Cal-25	200.0	PVC	110.0	-0.22	0.01	0.00
P-119	159.91	Cal-26	Cal-24	200.0	PVC	110.0	0.15	0.00	0.00
P-115	183.42	Cal-23	Cal-24	200.0	PVC	110.0	0.40	0.01	0.00
P-113	91.07	Cal-22	Cal-23	200.0	PVC	110.0	-0.67	0.02	0.00
P-118	72.03	Cal-26	Cal-23	300.0	PVC	120.0	-1.92	0.03	0.00
P-112	169.78	Cal-21	Cal-22	200.0	PVC	110.0	0.10	0.00	0.00
P-130	122.86	Cal-32	Cal-22	200.0	PVC	110.0	-0.43	0.01	0.00
P-110	143.32	Cal-20	Cal-21	200.0	PVC	110.0	-0.41	0.01	0.00
P-131	129.95	Cal-32	Cal-20	200.0	PVC	110.0	-0.04	0.00	0.00
P-109	91.14	Cal-19	Cal-20	200.0	PVC	110.0	0.09	0.00	0.00
P-126	188.87	Cal-29	Cal-19	300.0	PVC	120.0	-0.73	0.01	0.00
P-107	82.43	Cal-18	Cal-19	200.0	PVC	110.0	-1.09	0.03	0.00
P-105	163.25	Cal-14	Cal-18	200.0	PVC	110.0	0.63	0.02	0.00
P-104	38.34	Cal-16	Cal-17	150.0	PVC	100.0	0.75	0.04	0.00
P-142	27.65	Cal-28	Cal-17	50.0	Copper	100.0	-0.32	0.16	0.04
P-106	80.25	Cal-18	Cal-16	200.0	PVC	110.0	1.43	0.05	0.00
P-103	164.23	Cal-16	Cal-15	200.0	PVC	110.0	0.15	0.00	0.00
P-124	130.39	Cal-29	Cal-15	200.0	PVC	110.0	1.40	0.04	0.00
P-99	84.52	Cal-9	Cal-14	200.0	PVC	110.0	1.13	0.04	0.00
P-100	176.30	Cal-14	Cal-13	150.0	PVC	100.0	0.10	0.01	0.00
P-144	35.14	Cal-39	Cal-13	50.0	Copper	100.0	0.00	0.00	0.00
P-136	205.23	Cal-33	Cal-12	200.0	PVC	110.0	0.49	0.02	0.00
P-97	336.43	Cal-11	Cal-12	200.0	PVC	110.0	0.42	0.01	0.00
P-95	82.20	Cal-9	Cal-12	300.0	PVC	120.0	-3.38	0.05	0.00
P-94	203.32	Cal-10	Cal-11	200.0	PVC	110.0	0.49	0.02	0.00
P-96	82.07	Cal-12	Cal-11	300.0	PVC	120.0	-2.88	0.04	0.00
P-91	117.07	Cal-1	Cal-10	200.0	PVC	110.0	1.99	0.06	0.01
P-134	81.74	Cal-33	Cal-10	200.0	PVC	110.0	-0.91	0.03	0.00
P-89	200.15	Cal-8	Cal-9	200.0	PVC	110.0	0.34	0.01	0.00
P-108	154.08	Cal-19	Cal-9	300.0	PVC	120.0	-2.23	0.03	0.00
P-111	89.86	Cal-21	Cal-8	200.0	PVC	110.0	-0.95	0.03	0.00
P-88	125.69	Cal-7	Cal-8	200.0	PVC	110.0	0.69	0.02	0.00
P-87	47.39	Cal-6	Cal-7	200.0	PVC	110.0	1.03	0.03	0.00
P-85	136.78	Cal-5	Cal-6	300.0	PVC	120.0	-2.60	0.04	0.00
P-114	67.03	Cal-23	Cal-5	300.0	PVC	120.0	-2.98	0.04	0.00
P-83	325.31	Cal-3	Cal-5	200.0	PVC	110.0	0.72	0.02	0.00
P-82	36.07	Cal-3	Cal-4	200.0	PVC	110.0	0.04	0.00	0.00
P-81	97.74	Cal-2	Cal-3	200.0	PVC	110.0	0.99	0.03	0.00
P-135	152.42	Cal-33	Cal-2	200.0	PVC	110.0	-1.07	0.03	0.00
P-86	101.69	Cal-6	Cal-2	300.0	PVC	120.0	-4.29	0.06	0.00
P-80	82.80	Cal-1	Cal-2	300.0	PVC	120.0	6.52	0.09	0.00
P-79	85.89	R-1	Cal-1	300.0	PVC	120.0	8.70	0.12	0.01
P-77	197.59	Cal-35	Cal-36	300.0	PVC	120.0	0.91	0.01	0.00
P-76	316.48	R-1	Cal-35	300.0	PVC	120.0	5.62	0.08	0.01
P-93	96.90	Cal-11	Cal-35	300.0	PVC	120.0	-3.47	0.05	0.00

Scenario: Max Day
Current Time Step: 0.000 Hr
Fire Flow Node FlexTable: Fire Flow Report

Label	Fire Flow Iterations	Satisfies Fire Flow Constraints?	Fire Flow (Needed) (L/s)	Fire Flow (Available) (L/s)	Pressure (Calculated Residual) (kPa)
Cal-39	2	True	0.50	1.00	574.8
Cal-38	(N/A)	(N/A)	150.00	(N/A)	(N/A)
Cal-37	(N/A)	(N/A)	150.00	(N/A)	(N/A)
Cal-36	2	True	150.00	151.00	519.3
Cal-35	2	True	150.00	151.00	535.9
Cal-34	2	True	0.50	1.00	619.9
Cal-33	2	True	150.00	151.00	519.7
Cal-32	2	True	150.00	151.00	510.3
Cal-31	2	True	150.00	151.00	535.8
Cal-30	2	True	0.50	1.00	621.4
Cal-29	2	True	150.00	151.00	538.4
Cal-28	2	True	0.50	1.00	615.8
Cal-27	2	True	150.00	151.00	432.4
Cal-26	2	True	150.00	151.00	506.8
Cal-25	2	True	150.00	151.00	527.4
Cal-24	2	True	150.00	151.00	438.4
Cal-23	2	True	150.00	151.00	490.2
Cal-22	2	True	150.00	151.00	480.6
Cal-21	2	True	150.00	151.00	494.6
Cal-20	2	True	150.00	151.00	520.1
Cal-19	2	True	150.00	151.00	550.5
Cal-18	2	True	150.00	151.00	533.4
Cal-17	2	True	0.50	1.00	607.7
Cal-16	2	True	150.00	151.00	506.8
Cal-15	2	True	150.00	151.00	518.0
Cal-14	2	True	150.00	151.00	483.8
Cal-13	2	True	0.50	1.00	569.7
Cal-12	2	True	150.00	151.00	537.1
Cal-11	2	True	150.00	151.00	538.7
Cal-10	2	True	150.00	151.00	499.6
Cal-9	2	True	150.00	151.00	531.8
Cal-8	2	True	150.00	151.00	512.5
Cal-7	2	True	150.00	151.00	485.8
Cal-6	2	True	150.00	151.00	503.4
Cal-5	2	True	150.00	151.00	492.1
Cal-4	2	True	150.00	151.00	401.6
Cal-3	2	True	150.00	151.00	447.9
Cal-2	2	True	150.00	151.00	511.4
Cal-1	2	True	150.00	151.00	503.6

APPENDIX C

Sanitary Servicing Calculations

Sanitary Flow Calculation

Project No. 2016-4453

Proposed Residential Development Sanitary Generation, Town of Caledon

Site Area: 43.44 ha
 Infiltration Rate (Gross Land): 0.20 L/ha/sec As per Peel Region design criteria dated July 2009
 Infiltration Rate (MH inflow): 0.28 L/sec/MH As per Peel Region design criteria dated July 2009
 Generation Rate: 302.8 L/capita/day As per Peel Region, Drawing 2-5-2 dated June 2005
 Sanitary Manholes: 81 MH

Summary of Average Sanitary Generation Calculation

Tenure Type	Units	Unit Density (cap/ha)	Population	Sanitary Demand (L/cap/day)	Average Demand (L/s)
<i>Residential - Single Detached (<10m frontage)</i>	248	70	1214	302.8	4.254
<i>Residential - Single Detached (>10m frontage)</i>	373	50	1208	302.8	4.234
<i>High Density Block</i>	30	70	25	302.8	0.088
<i>Condominium Block (> 10m frontage)</i>	20	50	80	302.8	0.280
Total	671	--	2527		8.855

Summary of Sanitary Design Flow Calculation

Average Residential Demand (L/s)	Total Residential Population	Harmon's Peaking Factor (M) ⁺	Area (ha)	Infiltration (L/ha/s)	MH Inflow (L/ha/s)	Total Peak Flow (L/s)	Minimum Design Flow (L/s)
8.855	2527	3.50	43.44	8.688	22.680	62.403	13.00

⁺ Based on equivalent population method

$$M = 1 + 14 / (4 + (P/1000)^{0.5})$$

APPENDIX D

Stormwater Management Calculations

DRAINAGE AREA TO SWM POND

	Area (ha)	TIMP	XIMP	A x TIMP	A x XIMP
Total Residential	26.37	0.57	0.35	15.03	9.23
*Residential Condominium	0.00	0.79	0.63	0.00	0.00
*High Density	0.00	0.79	0.63	0.00	0.00
Decked Townhouses	1.75	0.95	0.95	1.66	1.66
Park	1.92	0.07	0.07	0.13	0.13
SWM POND	2.48	0.50	0.50	1.24	1.24
Total/Composite	32.52	0.56	0.38	18.07	12.27

*On Site Controls

AREA TO TRENCH FROM SWM POND DRAINAGE

Land Description	Area (ha)	TIMP	XIMP	A x TIMP	A x XIMP
Roof	3.940	0.990	0.990	3.901	3.901
Total	3.940	0.990	0.990	3.901	3.901

LID SYSTEM 1

	Area (ha)	TIMP	A xTIMP	XIMP	A x XIMP
Residential	3.089	0.570	1.761	0.340	1.050
ROW	1.207	0.730	0.881	0.730	0.881
Pump Station	0.030	0.790	0.024	0.790	0.024
Open Space	0.060	0.070	0.004	0.070	0.004
Total/Composite	4.39	0.61	2.67	0.45	1.96

LID SYSTEM 1 AREA TO TRENCH

	Area (ha)	TIMP	A xTIMP	XIMP	A x XIMP
Roof	0.37	0.99	0.37	0.99	0.37
ROW	0.00	0.73	0.00	0.00	0.00
Pump Station	0.00	0.79	0.00	0.00	0.00
Open Space	0.00	0.07	0.00	0.00	0.00
Total/Composite	0.37	0.99	0.37	0.99	0.37

LID SYSTEM 1 AREA TO SUPER PIPE STORAGE

	Area (ha)	TIMP	A xTIMP	XIMP	A x XIMP
Residential	2.719	0.513	1.394898	0.250	0.680
ROW	1.207	0.730	0.881037	0.730	0.881
Pump Station	0.030	0.790	0.0237	0.790	0.024
Open Space	0.060	0.070	0.0042	0.070	0.004
Total/Composite	4.02	0.57	2.30	0.40	1.59

LID SYSTEM 1

	Area (ha)	TIMP	A xTIMP	XIMP	A x XIMP
Residential	3.089	0.570	1.761	0.340	1.050
ROW	1.207	0.730	0.881	0.730	0.881
Pump Station	0.030	0.790	0.024	0.790	0.024
Open Space	0.060	0.070	0.004	0.070	0.004
Total/Composite	4.39	0.61	2.67	0.45	1.96

LID SYSTEM 1 AREA TO TRENCH

	Area (ha)	TIMP	A xTIMP	XIMP	A x XIMP
Roof	0.37	0.99	0.37	0.99	0.37
ROW	0.00	0.73	0.00	0.00	0.00
Pump Station	0.00	0.79	0.00	0.00	0.00
Open Space	0.00	0.07	0.00	0.00	0.00
Total/Composite	0.37	0.99	0.37	0.99	0.37

LID SYSTEM 1 AREA TO SUPER PIPE STORAGE

	Area (ha)	TIMP	A xTIMP	XIMP	A x XIMP
Residential	2.719	0.513	1.394898	0.250	0.680
ROW	1.207	0.730	0.881037	0.730	0.881
Pump Station	0.030	0.790	0.0237	0.790	0.024
Open Space	0.060	0.070	0.0042	0.070	0.004
Total/Composite	4.02	0.57	2.30	0.40	1.59

LID SYSTEM 2

	Area (ha)	TIMP	A xTIMP	XIMP	A x XIMP
Residential	0.5774	0.57	0.32912	0.34	0.196316
ROW	0.4181	0.73	0.30521	0.73	0.305213
Pump Station	0	0.79	0	0	0
Open Space	0.02	0.07	0.0014	0.0014	0.000028
Total/Composite	1.016	0.63	0.64	0.49	0.50

LID SYSTEM 2 AREA TO TRENCH

	Area (ha)	TIMP	A xTIMP	XIMP	A x XIMP
Roof	0.14	0.99	0.1386	0.99	0.1386
ROW	0	0.73	0	0	0
Pump Station	0	0.79	0	0	0
Open Space	0	0.07	0	0	0
Total/Composite	0.14	0.99	0.14	0.99	0.14

LID SYSTEM 2 AREA TO SUPER PIPE STORAGE

	Area (ha)	TIMP	A xTIMP	XIMP	A x XIMP
Residential	0.4374	0.44	0.19049	0.13	0.056862
ROW	0.4181	0.73	0.30521	0.73	0.305213
Pump Station	0	0.79	0	0	0
Open Space	0.02	0.07	0.0014	0.07	0.0014
Total/Composite	0.88	0.57	0.50	0.42	0.36

15717 Airport Road - Town of Caledon

TARGET RELEASE RATES

UNIT FLOW RELATIONSHIP OF HUMBER RIVER

Catchment - SWM Pond 1

Sub Basin 6 (Humber River) Unit Flow Rate Equation B

Storm Event		Area (ha)	Target Rate (L/s/ha)	Target Rates (L/s)
2 Year	$Q=3.288-0.159 \times \ln(A)$	42.0	2.69	113.1
5 Year	$Q=5.755-0.283 \times \ln(A)$	42.0	4.70	197.2
10 Year	$Q=7.707-0.382 \times \ln(A)$	42.0	6.28	263.5
25 Year	$Q=10.488-0.522 \times \ln(A)$	42.0	8.54	358.3
50 Year	$Q=12.692-0.623 \times \ln(A)$	42.0	10.36	435.0
100 Year	$Q=15.911-0.751 \times \ln(A)$	42.0	13.10	550.0

Area (ha) = 12.54+25.13+1.59+1.14

Calculation - Flux - SYSTEM 1 and SYSTEM 2

Test Point	Percolation rates (mm/hr)	
1	35	
5	41	
10	50	not used
Average	38	mm/hr
safety Factor	2.5	
Design Rate	15.2	mm/hr

Drawdown Time	48	hr
Design percolation rate	15.2	mm/hr
Depth of water	0.73	m

Lot Fabric information - SYSTEM 2	
Number of Lots	11
Average width of lot (m)	12
Volume (cum)	12
Length of SC-740	10.87
Provided Volume (cum)	132.00
Approximate bed size (sqm)	21

Flux Calculation	
Total Area (sqm)	231
Flux (CMS)	0.0010

Lot Fabric information - SYSTEM 1	
Number of Lots	29
Average width of lot (m)	12
Volume (cum)	12
Length of SC-740	10.87
Provided Volume (cum)	348.00
Approximate bed size (sqm)	21

Flux Calculation	
Total Area (sqm)	609
Flux (CMS)	0.0026

Calculation - Flux - SWM Pond

Test Point	Percolation rates (mm/hr)	
1	35	
5	41	
10	50	not used
Average	38	mm/hr
safety Factor	2.5	
Design Rate	15.2	mm/hr

Drawdown Time	48	hr
Design percolation rate	15.2	mm/hr
Depth of water	0.73	m

Lot Fabric information - Backyards	
Number of Lots	328
Average width of lot (m)	12
Volume (cum)	12
Length of SC-740	10.87
Provided Volume (cum)	3936.00
Approximate bed size (sqm)	21

Lot Fabric information - Front	
Number of Lots	54
Average width of lot (m)	7
Volume (cum)	6
Length of SC-740	5.55
Provided Volume (cum)	324.00
Approximate bed size (sqm)	12

Flux Calculation	
Total Area (sqm)	7536
Flux (CMS)	0.0318
Total Provided Volume	4260.0000

**15717 Airport Road
SWM Pond**

PROJECT NO. 4453

EROSION CONTROL CALCULATIONS

Run	NHYD	DT [hr]	AREA [ha]	PKFW [m ³ /s]	TP [hr]	RV [mm]	DWF [m ³ /s]
25MM4HR	1	0.083	30.319	1.320	1.583	13.783	0.000

Results of 4 hr 25 mm Design Storm

Input:

Area = 30.32 ha

R.V = 14.124 mm

Draw Down Time = 24 hrs

Calculations:

Storage = 4,282 m³

Average Outflow = 0.050 m³/s

Peak Outflow = 0.074 m³/s

Note: Estimated at 1.5 times Average Outflow

15717 Airport Road SYSTEM 1

PROJECT NO. 4453

EROSION CONTROL CALCULATIONS

Run	NHYD	DT [hr]	AREA [ha]	PKFW [m ³ /s]	TP [hr]	RV [mm]	DWF [m ³ /s]
25MM4HR	33	0.083	4.016	0.212	1.500	12.963	0.000

Results of 4 hr 25 mm Design Storm

Input:

Area = 4.02 ha
R.V = 12.963 mm
Draw Down Time = 24 hrs

Calculations:

Storage = 521 m³
Average Outflow = 0.006 m³/s
Peak Outflow = 0.009 m³/s

Note: Estimated at 1.5 times Average Outflow

**15717 Airport Road
SYSTEM 2**

PROJECT NO. 4453

EROSION CONTROL CALCULATIONS

Run	NHYD	DT [hr]	AREA [ha]	PKFW [m ³ /s]	TP [hr]	RV [mm]	DWF [m ³ /s]
25MM4HR	40	0.083	0.876	0.052	1.500	13.227	0.000

Results of 4 hr 25 mm Design Storm

Input:

Area = 0.88 ha
R.V = 13.227 mm
Draw Down Time = **24** hrs

Calculations:

Storage = **116** m³
Average Outflow = 0.001 m³/s
Peak Outflow = **0.003** m³/s

Note: Estimated at 1.5 times Average Outflow

**15717 Airport Road
SWM Pond**

PROJECT NO. 4453

EROSION CONTROL CALCULATIONS

Run	NHYD	DT [hr]	AREA [ha]	PKFW [m ³ /s]	TP [hr]	RV [mm]	DWF [m ³ /s]
25MM4HR	1	0.083	32.520	1.182	1.583	12.492	0.000

Results of 4 hr 25 mm Design Storm

Input:

Area = 32.52 ha

R.V = 12.627 mm

Draw Down Time = 24 hrs

Calculations:

Storage = 4,106 m³

Average Outflow = 0.048 m³/s

Peak Outflow = 0.071 m³/s

Note: Estimated at 1.5 times Average Outflow

15717 Airport Road
ROOFS TO TRENCHES IN SWM POND DRAINAGE

PROJECT NO. 4453

EROSION CONTROL CALCULATIONS

Run	NHYD	DT [hr]	AREA [ha]	PKFW [m ³ /s]	TP [hr]	RV [mm]	DWF [m ³ /s]
25MM4HR	6	0.083	3.935	0.497	1.500	23.797	0.000

Results of 4 hr 25 mm Design Storm

Input:

Area = 3.94 ha
R.V = 23.8534 mm
Draw Down Time = 24 hrs

Calculations:

Storage = 940 m³
Average Outflow = 0.011 m³/s
Peak Outflow = 0.016 m³/s

Note: Estimated at 1.5 times Average Outflow

**15717 Airport Road
SYSTEM 1 AREA TO TRENCHES**

PROJECT NO. 4453

EROSION CONTROL CALCULATIONS

Run	NHYD	DT [hr]	AREA [ha]	PKFW [m ³ /s]	TP [hr]	RV [mm]	DWF [m ³ /s]
25MM4HR	41	0.083	0.370	0.051	1.500	23.834	0.000

Results of 4 hr 25 mm Design Storm

Input:

Area = 0.37 ha

R.V = 23.834 mm

Draw Down Time = 24 hrs

Calculations:

Storage = 88 m³

Average Outflow = 0.001 m³/s

Peak Outflow = 0.002 m³/s

Note: Estimated at 1.5 times Average Outflow

**15717 Airport Road
SYSTEM 2 TO TRENCHES**

PROJECT NO. 4453

EROSION CONTROL CALCULATIONS

Run	NHYD	DT [hr]	AREA [ha]	PKFW [m ³ /s]	TP [hr]	RV [mm]	DWF [m ³ /s]
25MM4HR	23	0.083	0.140	0.019	1.500	23.788	0.000

Results of 4 hr 25 mm Design Storm

Input:

Area = 0.14 ha

R.V = 23.788 mm

Draw Down Time = **24** hrs

Calculations:

Storage = **33** m³

Average Outflow = 0.000 m³/s

Peak Outflow = **0.003** m³/s

Note: Estimated at 1.5 times Average Outflow

Job: 4453

Notes: LID Control Structure System 1

Controls: 1- 2 x 75 mm Orifice Plate in Series
2- 140 mm orifice

	Outlet 1	Outlet 2
Invert Elevation	291.60	293.00
Number of Orifice	2	1
Diameter (mm) or Length (m)	75	140
Median Width (m)	na	na
Max Area (m ²)	0.004	0.015
Coefficient	0.62	0.62
Starting Flow Elevation.(m)	291.60	293.00
Top Elevation (m)	305.00	305.00

Stage-Storage-Discharge:

	Stage		Outlet 1		Outlet 2		Pipe Storage (m ³)	Above Ground Storage (m ³)	Total Storage (m ³)	Total Flow (m ³ /s)	VO5 Used Storage (m ³)	VO5 Total Flow (m ³ /s)
	Water Elevation (m)	Water Elevation Above Perm. Pool (m)	Head (m)	Q (m ³ /s)	Head (m)	Q (m ³ /s)						
	291.60	0.00	0.00	na	na	na		0	na			
EC	292.75	1.15	0.56	0.009	na	na		552	0.0090			
	292.80	1.20	0.58	0.009	na	na		0	0.009			
	292.85	1.25	0.61	0.009	na	na		0	0.009			
2yr	292.98	1.38	0.67	0.00994	na	na		814	0.0099	795	0.010	
	293.03	1.43	0.70	0.010	na	na		0	0.010			
	293.07	1.47	0.72	0.010	0.00	na		0	0.010			
	293.08	1.48	0.72	0.010	0.01	na		0	0.0103			
	293.13	1.53	0.75	0.010	0.06	na		0	0.010			
	293.15	1.55	0.76	0.011	0.08	0.01		0	0.023			
	293.16	1.56	0.76	0.011	0.09	0.013		0	0.023			
	293.18	1.58	0.77	0.011	0.11	0.014		0	0.025			
5 yr	293.20	1.60	0.78	0.011	0.13	0.015		1,053	0.026	1,031	0.025	
	293.22	1.62	0.79	0.011	0.15	0.016		0	0.027			
	293.24	1.64	0.80	0.011	0.17	0.017		0	0.028			
	293.25	1.65	0.81	0.011	0.18	0.018		0	0.029			
	293.28	1.68	0.82	0.011	0.21	0.019		0	0.030			
	293.30	1.70	0.83	0.011	0.23	0.02		0	0.0313			
	293.32	1.72	0.84	0.011	0.25	0.02		0	0.032			
10 yr	293.35	1.75	0.86	0.011	0.28	0.022		1,196	0.034	1,188	0.034	
	293.52	1.92	0.94	0.012	0.45	0.028		0	0.040			
	293.54	1.94	0.95	0.012	0.47	0.029		0	0.041			
	293.59	1.99	0.98	0.012	0.520	0.030		0	0.0425			
	293.61	2.01	0.99	0.012	0.54	0.031		0	0.043			
25 yr	293.70	2.10	1.03	0.012	0.63	0.03		1,470	0.046	1,402	0.043	
	293.75	2.15	1.06	0.012	0.68	0.035		0	0.047			
50 yr	293.95	2.35	1.16	0.01305	0.88	0.040		1,571	0.053	1,561	0.052	
	294.20	2.60	1.28	0.014	1.13	0.045		0	0.059			
	294.40	2.80	1.38	0.014	1.33	0.049		0	0.063			
100 yr	294.60	3.00	1.48	0.015	1.53	0.052		1,747	0.067	1,709	0.064	

Job: 4453

Notes: LID Control Structure System 2

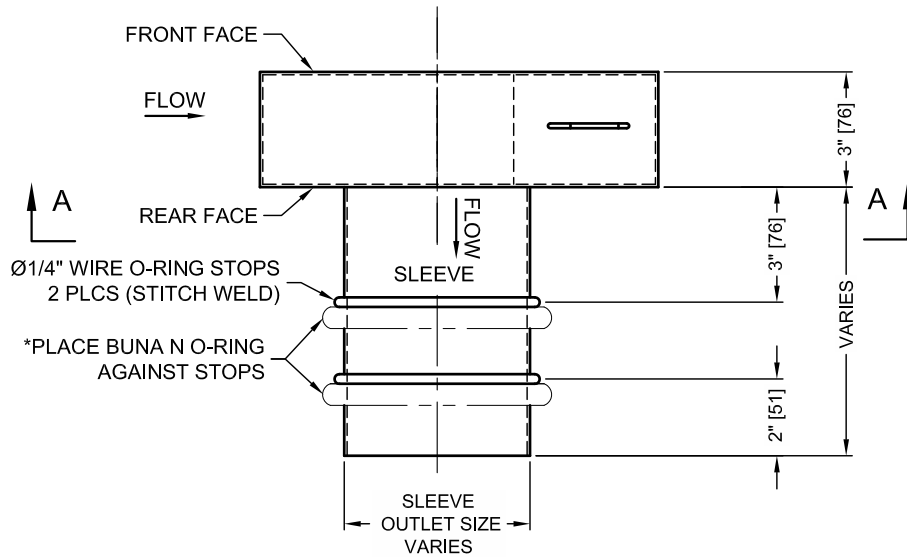
Controls: 1- Vortex Valve FA1012 (76 mm)

	Outlet 1	Outlet 2
Invert Elevation	296.40	291.90
Number of Orifice	1	1
Diameter (mm) or Length (m)	40	0
Median Width (m)	na	na
Max Area (m ²)	0.001	0.000
Coefficient.	0.62	0.62
Starting Flow Elevation.(m)	296.40	291.90
Top Elevation (m)	305.00	305.00

Stage-Storage-Discharge:

	Stage		Outlet 1		Total Storage (m ³)	Total Flow (m ³ /s)	VO5 Used Storage (m ³)	VO5 Total Flow (m ³ /s)
	Water Elevation (m)	Water Elevation Above Perm. Pool (m)	Head (m)	Q (m ³ /s)				
EC	297.10	0.70	0.68	0.003	145	0.0028	N/A	N/A
2yr	297.20	0.80	0.78	0.00305	193	0.0030	167	0.003
5yr	297.35	0.95	0.93	0.00333	269	0.0033	239	0.003
	297.40	1.00	0.98	0.003	0	0.0034		
	297.42	1.02	1.00	0.003	0	0.0035		
10yr	297.45	1.05	1.03	0.004	322	0.0035	291	0.003
	297.50	1.10	1.08	0.004	0	0.0036		
25yr	297.55	1.15	1.13	0.00367	375	0.0037	358	0.004
	297.60	1.20	1.18	0.004	0	0.0037		
50yr	297.65	1.25	1.23	0.004	443	0.0038	409	0.004
	297.70	1.30	1.28	0.004	0	0.0039		
100 yr	297.75	1.35	1.33	0.004	485	0.0040	462	0.004
	297.80	1.40	1.38	0.004	0	0.0041		
	297.86	1.46	1.44	0.004	0	0.0041		
	298.30	1.90	1.88	0.005	0	0.0047		
	298.38	1.98	1.96	0.005	0	0.0048		

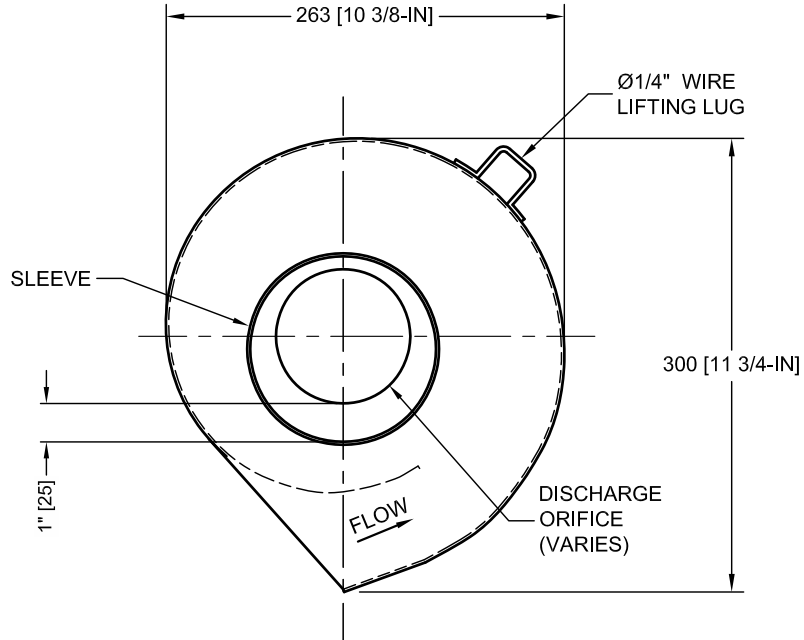
I:\STORMWATER\DRAWING\TEMPLATES\HYDROBRAKE FABRICATION\STANDARD DETAILS\SUS VERSION- NEEDS UPDATING - USE FC16 AS TEMPLATE\TYPFA1012-FAB-S2.DWG 11/8/2013 9:26 AM



TOP VIEW

NOTES

1. SLEEVE DIAMETER & LENGTH DEPEND ON PIPE SIZE AND MATERIAL
2. OUTLET SIZE VARIES BASED ON DESIRED OUTFLOW RATES
3. ALL WELDS CONTINUOUS, UNLESS OTHERWISE NOTED
4. MATERIALS:
 - 12 Ga. STAINLESS STEEL
 - (1) Ø5/8" AND (1) Ø9/16" BUNA N 50 DUROMETER O-RINGS



REAR VIEW

This CADD file is for the purpose of specifying stormwater flow control equipment to be furnished by Contech Engineered Solutions, LLC and may only be transferred to other documents exactly as provided by Contech Engineered Solutions, LLC. Title block information, **excluding** the Contech Engineered Solutions, LLC logo and the Fluidic-Amp or Fluidic-Cone designation and patent number, may be deleted if necessary. Revisions to any part of this CADD file without prior coordination with Contech Engineered Solutions, LLC shall be considered unauthorized use of proprietary information.

CONTECH
ENGINEERED SOLUTIONS LLC

www.contechES.com
200 Enterprise Drive, Scarborough, ME 04074

877-907-8676 207-885-9830 207-885-9825 FAX

TYPICAL FABRICATION DRAWING FOR FLUIDIC-AMP VORTEX VALVE
MODEL FA1012 w/ SLEEVE ATTACHMENT

DATE: 11/8/13

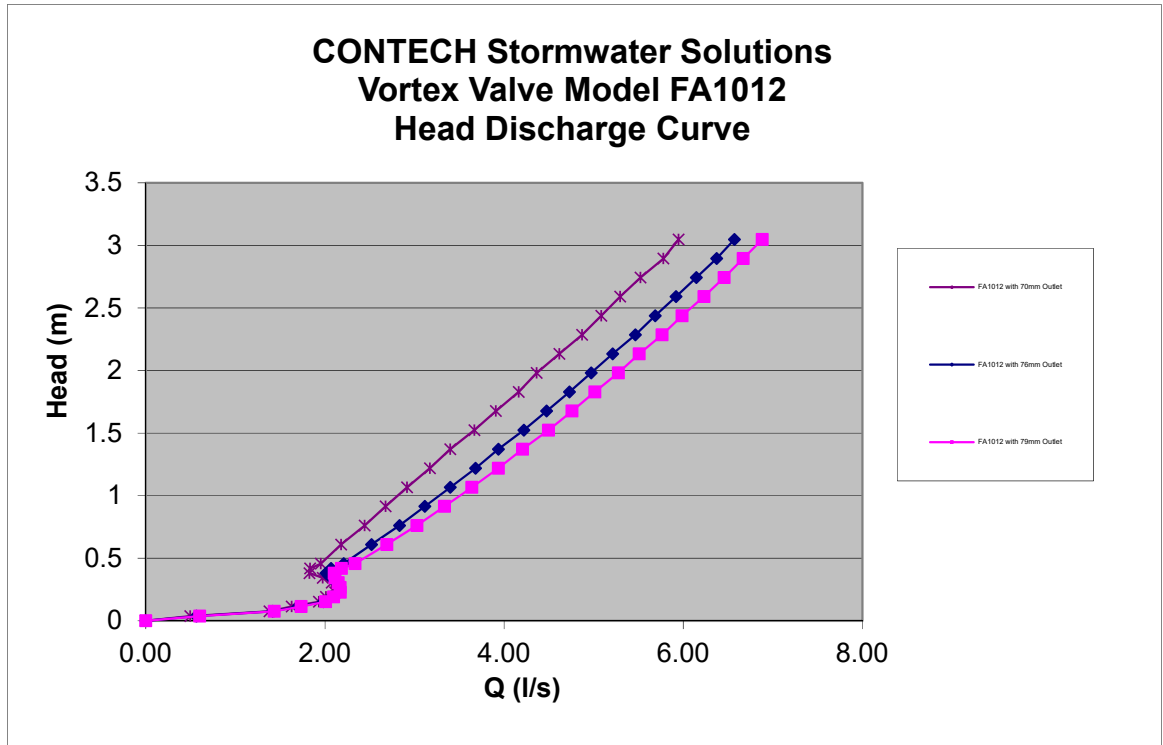
SCALE: 1:5

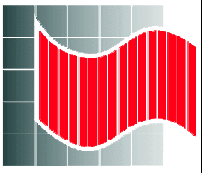
FILE NAME: TYPFA1012-FAB-S2

DRAWN: DWB

CHECKED:

	FA1012 with 70 mm Outlet	FA1012 with 76 mm Outlet	FA1012 with 79 mm Outlet
Head (m)	Flow (l/s)	Flow (l/s)	Flow (l/s)
0	0.00	0.00	0.00
0.038	0.50	0.57	0.60
0.076	1.38	1.42	1.43
0.114	1.63	1.70	1.73
0.152	1.93	1.98	2.01
0.191	2.01	2.07	2.10
0.229	2.11	2.15	2.17
0.267	2.12	2.15	2.17
0.305	2.07	2.12	2.15
0.343	1.98	2.07	2.11
0.381	1.83	2.01	2.10
0.419	1.83	2.07	2.18
0.457	1.95	2.21	2.34
0.610	2.18	2.52	2.69
0.762	2.44	2.83	3.03
0.914	2.68	3.12	3.33
1.067	2.92	3.40	3.64
1.219	3.17	3.68	3.94
1.372	3.40	3.94	4.21
1.524	3.67	4.22	4.50
1.676	3.91	4.47	4.76
1.829	4.16	4.73	5.01
1.981	4.36	4.97	5.28
2.134	4.62	5.21	5.51
2.286	4.87	5.47	5.76
2.438	5.08	5.69	5.99
2.591	5.30	5.92	6.23
2.743	5.52	6.15	6.46
2.896	5.78	6.37	6.67
3.048	5.95	6.57	6.88



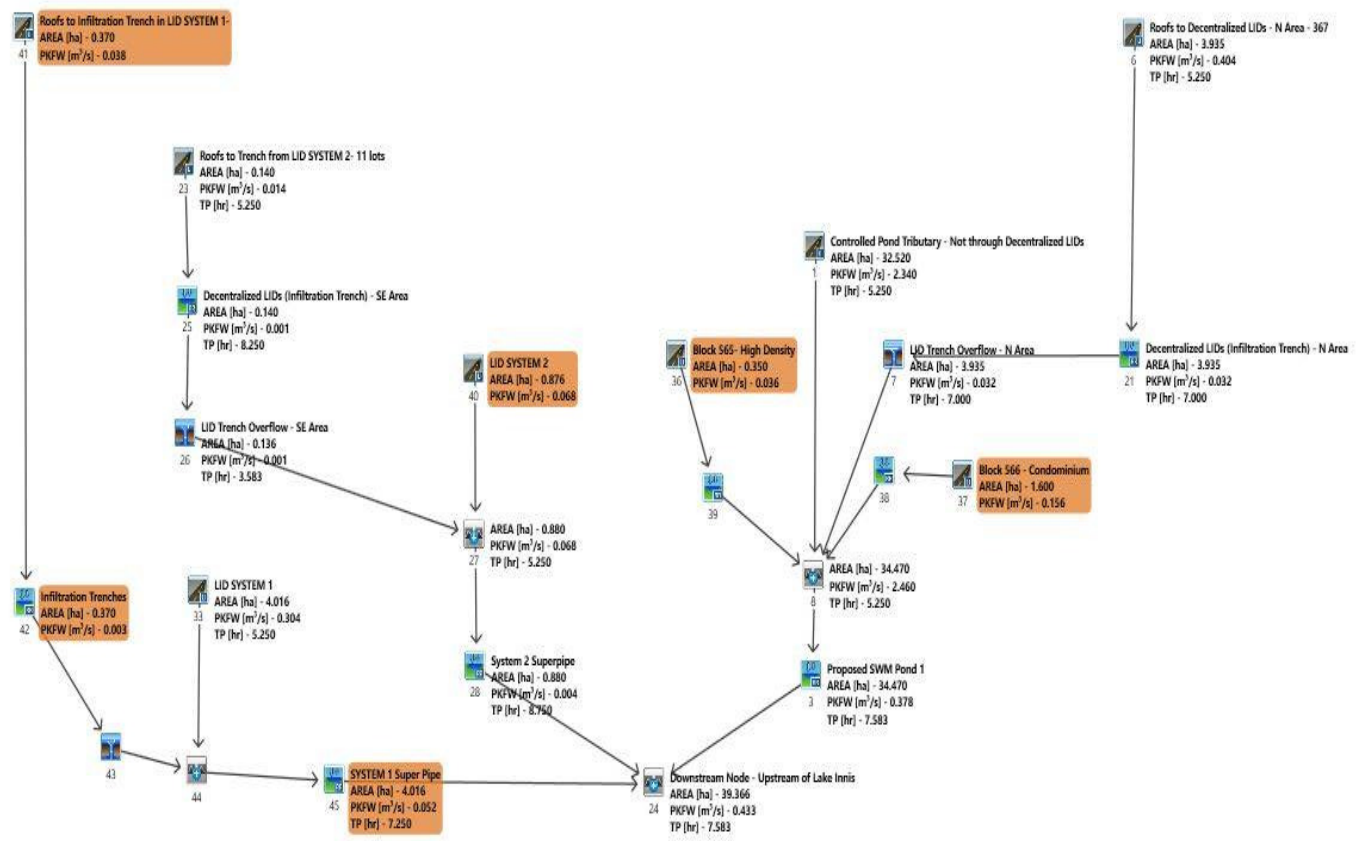


SCHAEFFERS
CONSULTING ENGINEERS

Job #: 2016-4453

Date: September 2018

2-year 12 Hour AES Storm
SWM Pond / LID SYSTEM 1/ LID SYSTEM 2



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V V I SSSSS U U A L
V V I SS U U A A L
V V I SS U U A A A A L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

OOO TTTT TTTT 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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** SIMULATION : 2y12 TRCA AES **

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| READ STORM | Filename: C:\Users\skatukurunde\AppData
|             | ata\Local\Temp\
|             | 3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\b0cf5a91
| Ptotal= 42.00 mm | Comments: 2y12 TRCA AES
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TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	7.14	6.75	2.94	10.00	0.42
0.50	0.42	3.75	7.14	7.00	2.94	10.25	0.42
0.75	0.42	4.00	7.14	7.25	2.94	10.50	0.42
1.00	0.42	4.25	7.14	7.50	1.68	10.75	0.42
1.25	0.42	4.50	19.32	7.75	1.68	11.00	0.42
1.50	0.42	4.75	19.32	8.00	1.68	11.25	0.42
1.75	0.42	5.00	19.32	8.25	1.68	11.50	0.42
2.00	0.42	5.25	19.32	8.50	0.84	11.75	0.42
2.25	0.42	5.50	5.46	8.75	0.84	12.00	0.42
2.50	2.52	5.75	5.46	9.00	0.84	12.25	0.42
2.75	2.52	6.00	5.46	9.25	0.84		
3.00	2.52	6.25	5.46	9.50	0.42		
3.25	2.52	6.50	2.94	9.75	0.42		

0.083	0.00	3.167	2.52	6.250	5.46	9.33	0.42
0.167	0.00	3.250	2.52	6.333	2.94	9.42	0.42
0.250	0.00	3.333	7.14	6.417	2.94	9.50	0.42
0.333	0.42	3.417	7.14	6.500	2.94	9.58	0.42
0.417	0.42	3.500	7.14	6.583	2.94	9.67	0.42
0.500	0.42	3.583	7.14	6.667	2.94	9.75	0.42
0.583	0.42	3.667	7.14	6.750	2.94	9.83	0.42
0.667	0.42	3.750	7.14	6.833	2.94	9.92	0.42
0.750	0.42	3.833	7.14	6.917	2.94	10.00	0.42
0.833	0.42	3.917	7.14	7.000	2.94	10.08	0.42
0.917	0.42	4.000	7.14	7.083	2.94	10.17	0.42
1.000	0.42	4.083	7.14	7.167	2.94	10.25	0.42
1.083	0.42	4.167	7.14	7.250	2.94	10.33	0.42
1.167	0.42	4.250	7.14	7.333	1.68	10.42	0.42
1.250	0.42	4.333	19.32	7.417	1.68	10.50	0.42
1.333	0.42	4.417	19.32	7.500	1.68	10.58	0.42
1.417	0.42	4.500	19.32	7.583	1.68	10.67	0.42
1.500	0.42	4.583	19.32	7.667	1.68	10.75	0.42
1.583	0.42	4.667	19.32	7.750	1.68	10.83	0.42
1.667	0.42	4.750	19.32	7.833	1.68	10.92	0.42
1.750	0.42	4.833	19.32	7.917	1.68	11.00	0.42
1.833	0.42	4.917	19.32	8.000	1.68	11.08	0.42
1.917	0.42	5.000	19.32	8.083	1.68	11.17	0.42
2.000	0.42	5.083	19.32	8.167	1.68	11.25	0.42
2.083	0.42	5.167	19.32	8.250	1.68	11.33	0.42
2.167	0.42	5.250	19.32	8.333	0.84	11.42	0.42
2.250	0.42	5.333	5.46	8.417	0.84	11.50	0.42
2.333	2.52	5.417	5.46	8.500	0.84	11.58	0.42
2.417	2.52	5.500	5.46	8.583	0.84	11.67	0.42
2.500	2.52	5.583	5.46	8.667	0.84	11.75	0.42
2.583	2.52	5.667	5.46	8.750	0.84	11.83	0.42
2.667	2.52	5.750	5.46	8.833	0.84	11.92	0.42
2.750	2.52	5.833	5.46	8.917	0.84	12.00	0.42
2.833	2.52	5.917	5.46	9.000	0.84	12.08	0.42
2.917	2.52	6.000	5.46	9.083	0.84	12.17	0.42
3.000	2.52	6.083	5.46	9.167	0.84	12.25	0.42
3.083	2.52	6.167	5.46	9.250	0.84		

Max.Eff.Inten.(mm/hr)= 19.32 11.83
over (min) 10.00 30.00
Storage Coeff. (min)= 12.41 (ii) 28.98 (ii)
Unit Hyd. Tpeak (min)= 10.00 30.00
Unit Hyd. peak (cms)= 0.10 0.04

TOTALS
PEAK FLOW (cms)= 0.66 0.34 0.968 (iii)
TIME TO PEAK (hrs)= 5.25 5.50 5.25
RUNOFF VOLUME (mm)= 41.00 14.18 24.37
TOTAL RAINFALL (mm)= 42.00 42.00 42.00
RUNOFF COEFFICIENT = 0.98 0.34 0.58

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| CALIB |
| STANDHYD ( 0001) | Area (ha)= 32.52
| ID= 1 DT= 5.0 min | Total Imp(%)= 56.00 Dir. Conn.(%)= 38.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	18.21	14.31
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	465.62	40.00
Mannings n =	0.013	0.250

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

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--- TRANSFORMED HYETOGRAPH ---
TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN
hrs mm/hr | hrs mm/hr | hrs mm/hr | hrs mm/hr

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| READ STORM | Filename: C:\Users\skatukurunde\AppData
|             | ata\Local\Temp\
|             | 3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\b0cf5a91
| Ptotal= 42.00 mm | Comments: 2y12 TRCA AES
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15717 Airport Road
Residential Subdivision

September 2018

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	7.14	6.75	2.94	10.00	0.42
0.50	0.42	3.75	7.14	7.00	2.94	10.25	0.42
0.75	0.42	4.00	7.14	7.25	2.94	10.50	0.42
1.00	0.42	4.25	7.14	7.50	1.68	10.75	0.42
1.25	0.42	4.50	19.32	7.75	1.68	11.00	0.42
1.50	0.42	4.75	19.32	8.00	1.68	11.25	0.42
1.75	0.42	5.00	19.32	8.25	1.68	11.50	0.42
2.00	0.42	5.25	19.32	8.50	0.84	11.75	0.42
2.25	0.42	5.50	5.46	8.75	0.84	12.00	0.42
2.50	2.52	5.75	5.46	9.00	0.84	12.25	0.42
2.75	2.52	6.00	5.46	9.25	0.84		
3.00	2.52	6.25	5.46	9.50	0.42		
3.25	2.52	6.50	2.94	9.75	0.42		

2.333	2.52	5.417	5.46	8.500	0.84	11.58	0.42
2.417	2.52	5.500	5.46	8.583	0.84	11.67	0.42
2.500	2.52	5.583	5.46	8.667	0.84	11.75	0.42
2.583	2.52	5.667	5.46	8.750	0.84	11.83	0.42
2.667	2.52	5.750	5.46	8.833	0.84	11.92	0.42
2.750	2.52	5.833	5.46	8.917	0.84	12.00	0.42
2.833	2.52	5.917	5.46	9.000	0.84	12.08	0.42
2.917	2.52	6.000	5.46	9.083	0.84	12.17	0.42
3.000	2.52	6.083	5.46	9.167	0.84	12.25	0.42
3.083	2.52	6.167	5.46	9.250	0.84		

Max.Eff.Inten.(mm/hr)= 19.32 6.86
 over (min) 5.00 10.00
 Storage Coeff. (min)= 6.59 (ii) 8.75 (ii)
 Unit Hyd. Tpeak (min)= 5.00 10.00
 Unit Hyd. peak (cms)= 0.18 0.12

TOTALS

PEAK FLOW (cms)= 0.21 0.00 0.210 (iii)
 TIME TO PEAK (hrs)= 5.25 5.25 5.25
 RUNOFF VOLUME (mm)= 41.00 10.98 40.70
 TOTAL RAINFALL (mm)= 42.00 42.00 42.00
 RUNOFF COEFFICIENT = 0.98 0.26 0.97

CALIB
 STANDHYD (0006) | Area (ha)= 3.94
 ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.90	0.04
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	161.97	40.00
Mannings n =	0.013	0.250

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 70.0 Ia = Dep. Storage (Above)
 (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
 (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

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

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	2.52	6.250	5.46	9.33	0.42
0.167	0.00	3.250	2.52	6.333	2.94	9.42	0.42
0.250	0.00	3.333	7.14	6.417	2.94	9.50	0.42
0.333	0.42	3.417	7.14	6.500	2.94	9.58	0.42
0.417	0.42	3.500	7.14	6.583	2.94	9.67	0.42
0.500	0.42	3.583	7.14	6.667	2.94	9.75	0.42
0.583	0.42	3.667	7.14	6.750	2.94	9.83	0.42
0.667	0.42	3.750	7.14	6.833	2.94	9.92	0.42
0.750	0.42	3.833	7.14	6.917	2.94	10.00	0.42
0.833	0.42	3.917	7.14	7.000	2.94	10.08	0.42
0.917	0.42	4.000	7.14	7.083	2.94	10.17	0.42
1.000	0.42	4.083	7.14	7.167	2.94	10.25	0.42
1.083	0.42	4.167	7.14	7.250	2.94	10.33	0.42
1.167	0.42	4.250	7.14	7.333	1.68	10.42	0.42
1.250	0.42	4.333	19.32	7.417	1.68	10.50	0.42
1.333	0.42	4.417	19.32	7.500	1.68	10.58	0.42
1.417	0.42	4.500	19.32	7.583	1.68	10.67	0.42
1.500	0.42	4.583	19.32	7.667	1.68	10.75	0.42
1.583	0.42	4.667	19.32	7.750	1.68	10.83	0.42
1.667	0.42	4.750	19.32	7.833	1.68	10.92	0.42
1.750	0.42	4.833	19.32	7.917	1.68	11.00	0.42
1.833	0.42	4.917	19.32	8.000	1.68	11.08	0.42
1.917	0.42	5.000	19.32	8.083	1.68	11.17	0.42
2.000	0.42	5.083	19.32	8.167	1.68	11.25	0.42
2.083	0.42	5.167	19.32	8.250	1.68	11.33	0.42
2.167	0.42	5.250	19.32	8.333	0.84	11.42	0.42
2.250	0.42	5.333	5.46	8.417	0.84	11.50	0.42

RESERVOIR(0021) |
 IN= 2---> OUT= 1 |
 DT= 5.0 min |

OUTFLOW	STORAGE	OUTFLOW	STORAGE
(cms)	(ha.m.)	(cms)	(ha.m.)
0.0000	0.0000	0.0318	0.4260
0.0318	0.0010	4.0000	0.4261

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0006)	3.935	0.210	5.25	40.70
OUTFLOW: ID= 1 (0021)	3.935	0.032	5.42	40.70

PEAK FLOW REDUCTION [Qout/Qin](%)= 15.16
 TIME SHIFT OF PEAK FLOW (min)= 10.00
 MAXIMUM STORAGE USED (ha.m.)= 0.0729

DUHYD (0007) |
 Inlet Cap.= 0.032 |
 #of Inlets= 1 |
 Total(cms)= 0.0 |

AREA	QPEAK	TPEAK	R.V.
(ha)	(cms)	(hrs)	(mm)
TOTAL HYD. (ID= 1):	3.94	0.03	5.42 40.70
MAJOR SYS. (ID= 2):	0.00	0.00	0.00 0.00
MINOR SYS. (ID= 3):	3.94	0.03	5.42 40.70

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| READ STORM | Filename: C:\Users\skatukurunde\AppData
|           |       ata\Local\Temp\
|           |       3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\b0cf5a91
| Ptotal= 42.00 mm | Comments: 2y12 TRCA AES
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TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	7.14	6.75	2.94	10.00	0.42
0.50	0.42	3.75	7.14	7.00	2.94	10.25	0.42
0.75	0.42	4.00	7.14	7.25	2.94	10.50	0.42
1.00	0.42	4.25	7.14	7.50	1.68	10.75	0.42
1.25	0.42	4.50	19.32	7.75	1.68	11.00	0.42
1.50	0.42	4.75	19.32	8.00	1.68	11.25	0.42
1.75	0.42	5.00	19.32	8.25	1.68	11.50	0.42
2.00	0.42	5.25	19.32	8.50	0.84	11.75	0.42
2.25	0.42	5.50	5.46	8.75	0.84	12.00	0.42
2.50	2.52	5.75	5.46	9.00	0.84	12.25	0.42
2.75	2.52	6.00	5.46	9.25	0.84		
3.00	2.52	6.25	5.46	9.50	0.42		
3.25	2.52	6.50	2.94	9.75	0.42		

1.917	0.42	5.000	19.32	8.083	1.68	11.17	0.42
2.000	0.42	5.083	19.32	8.167	1.68	11.25	0.42
2.083	0.42	5.167	19.32	8.250	1.68	11.33	0.42
2.167	0.42	5.250	19.32	8.333	0.84	11.42	0.42
2.250	0.42	5.333	5.46	8.417	0.84	11.50	0.42
2.333	2.52	5.417	5.46	8.500	0.84	11.58	0.42
2.417	2.52	5.500	5.46	8.583	0.84	11.67	0.42
2.500	2.52	5.583	5.46	8.667	0.84	11.75	0.42
2.583	2.52	5.667	5.46	8.750	0.84	11.83	0.42
2.667	2.52	5.750	5.46	8.833	0.84	11.92	0.42
2.750	2.52	5.833	5.46	8.917	0.84	12.00	0.42
2.833	2.52	5.917	5.46	9.000	0.84	12.08	0.42
2.917	2.52	6.000	5.46	9.083	0.84	12.17	0.42
3.000	2.52	6.083	5.46	9.167	0.84	12.25	0.42
3.083	2.52	6.167	5.46	9.250	0.84		

```

Max.Eff.Inten.(mm/hr)= 19.32 11.73
over (min) = 5.00 10.00
Storage Coeff. (min)= 3.19 (ii) 5.35 (ii)
Unit Hyd. Tpeak (min)= 5.00 10.00
Unit Hyd. peak (cms)= 0.27 0.16

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*TOTALS*
PEAK FLOW (cms)= 0.02 0.00 0.019 (iii)
TIME TO PEAK (hrs)= 5.08 5.25 5.25
RUNOFF VOLUME (mm)= 41.00 19.22 40.77
TOTAL RAINFALL (mm)= 42.00 42.00 42.00
RUNOFF COEFFICIENT = 0.98 0.46 0.97

```

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| CALIB |
| STANDHYD ( 0036) | Area (ha)= 0.35
| ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00
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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.35	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	48.30	40.00
Mannings n =	0.013	0.250

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

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---- TRANSFORMED HYETOGRAPH ----

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TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	2.52	6.250	5.46	9.33	0.42
0.167	0.00	3.250	2.52	6.333	2.94	9.42	0.42
0.250	0.00	3.333	7.14	6.417	2.94	9.50	0.42
0.333	0.42	3.417	7.14	6.500	2.94	9.58	0.42
0.417	0.42	3.500	7.14	6.583	2.94	9.67	0.42
0.500	0.42	3.583	7.14	6.667	2.94	9.75	0.42
0.583	0.42	3.667	7.14	6.750	2.94	9.83	0.42
0.667	0.42	3.750	7.14	6.833	2.94	9.92	0.42
0.750	0.42	3.833	7.14	6.917	2.94	10.00	0.42
0.833	0.42	3.917	7.14	7.000	2.94	10.08	0.42
0.917	0.42	4.000	7.14	7.083	2.94	10.17	0.42
1.000	0.42	4.083	7.14	7.167	2.94	10.25	0.42
1.083	0.42	4.167	7.14	7.250	2.94	10.33	0.42
1.167	0.42	4.250	7.14	7.333	1.68	10.42	0.42
1.250	0.42	4.333	19.32	7.417	1.68	10.50	0.42
1.333	0.42	4.417	19.32	7.500	1.68	10.58	0.42
1.417	0.42	4.500	19.32	7.583	1.68	10.67	0.42
1.500	0.42	4.583	19.32	7.667	1.68	10.75	0.42
1.583	0.42	4.667	19.32	7.750	1.68	10.83	0.42
1.667	0.42	4.750	19.32	7.833	1.68	10.92	0.42
1.750	0.42	4.833	19.32	7.917	1.68	11.00	0.42
1.833	0.42	4.917	19.32	8.000	1.68	11.08	0.42

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| RESERVOIR( 0039) |
| IN= 2----> OUT= 1 |
| DT= 5.0 min |
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	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)	
	0.0000	0.0000	0.0400	0.0050	
		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0036)		0.350	0.019	5.25	40.77
OUTFLOW: ID= 1 (0039)		0.350	0.018	5.25	40.70
PEAK FLOW REDUCTION [Qout/Qin] (%)=		95.55			
TIME SHIFT OF PEAK FLOW (min)=		0.00			
MAXIMUM STORAGE USED (ha.m.)=		0.0022			

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| READ STORM | Filename: C:\Users\skatukurunde\AppData
|           |       ata\Local\Temp\
|           |       3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\b0cf5a91
| Ptotal= 42.00 mm | Comments: 2y12 TRCA AES
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TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	7.14	6.75	2.94	10.00	0.42

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0.50	0.42	3.75	7.14	7.00	2.94	10.25	0.42
0.75	0.42	4.00	7.14	7.25	2.94	10.50	0.42
1.00	0.42	4.25	7.14	7.50	1.68	10.75	0.42
1.25	0.42	4.50	19.32	7.75	1.68	11.00	0.42
1.50	0.42	4.75	19.32	8.00	1.68	11.25	0.42
1.75	0.42	5.00	19.32	8.25	1.68	11.50	0.42
2.00	0.42	5.25	19.32	8.50	0.84	11.75	0.42
2.25	0.42	5.50	5.46	8.75	0.84	12.00	0.42
2.50	2.52	5.75	5.46	9.00	0.84	12.25	0.42
2.75	2.52	6.00	5.46	9.25	0.84		
3.00	2.52	6.25	5.46	9.50	0.42		
3.25	2.52	6.50	2.94	9.75	0.42		

2.667	2.52	5.750	5.46	8.833	0.84	11.92	0.42
2.750	2.52	5.833	5.46	8.917	0.84	12.00	0.42
2.833	2.52	5.917	5.46	9.000	0.84	12.08	0.42
2.917	2.52	6.000	5.46	9.083	0.84	12.17	0.42
3.000	2.52	6.083	5.46	9.167	0.84	12.25	0.42
3.083	2.52	6.167	5.46	9.250	0.84		

Max.Eff.Inten.(mm/hr)=	19.32	34.53
over (min)	5.00	20.00
Storage Coeff. (min)=	5.03 (ii)	15.83 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.21	0.07

TOTALS

PEAK FLOW (cms)=	0.04	0.03	0.073 (iii)
TIME TO PEAK (hrs)=	5.25	5.25	5.25
RUNOFF VOLUME (mm)=	41.00	27.67	33.66
TOTAL RAINFALL (mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT =	0.98	0.66	0.80

CALIB	
STANDHYD (0037)	Area (ha)= 1.60
ID= 1 DT= 5.0 min	Total Imp(%)= 75.00 Dir. Conn.(%)= 45.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.20	0.40
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	103.28	40.00
Mannings n =	0.013	0.250

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	2.52	6.250	5.46	9.33	0.42
0.167	0.00	3.250	2.52	6.333	2.94	9.42	0.42
0.250	0.00	3.333	7.14	6.417	2.94	9.50	0.42
0.333	0.42	3.417	7.14	6.500	2.94	9.58	0.42
0.417	0.42	3.500	7.14	6.583	2.94	9.67	0.42
0.500	0.42	3.583	7.14	6.667	2.94	9.75	0.42
0.583	0.42	3.667	7.14	6.750	2.94	9.83	0.42
0.667	0.42	3.750	7.14	6.833	2.94	9.92	0.42
0.750	0.42	3.833	7.14	6.917	2.94	10.00	0.42
0.833	0.42	3.917	7.14	7.000	2.94	10.08	0.42
0.917	0.42	4.000	7.14	7.083	2.94	10.17	0.42
1.000	0.42	4.083	7.14	7.167	2.94	10.25	0.42
1.083	0.42	4.167	7.14	7.250	2.94	10.33	0.42
1.167	0.42	4.250	7.14	7.333	1.68	10.42	0.42
1.250	0.42	4.333	19.32	7.417	1.68	10.50	0.42
1.333	0.42	4.417	19.32	7.500	1.68	10.58	0.42
1.417	0.42	4.500	19.32	7.583	1.68	10.67	0.42
1.500	0.42	4.583	19.32	7.667	1.68	10.75	0.42
1.583	0.42	4.667	19.32	7.750	1.68	10.83	0.42
1.667	0.42	4.750	19.32	7.833	1.68	10.92	0.42
1.750	0.42	4.833	19.32	7.917	1.68	11.00	0.42
1.833	0.42	4.917	19.32	8.000	1.68	11.08	0.42
1.917	0.42	5.000	19.32	8.083	1.68	11.17	0.42
2.000	0.42	5.083	19.32	8.167	1.68	11.25	0.42
2.083	0.42	5.167	19.32	8.250	1.68	11.33	0.42
2.167	0.42	5.250	19.32	8.333	0.84	11.42	0.42
2.250	0.42	5.333	5.46	8.417	0.84	11.50	0.42
2.333	2.52	5.417	5.46	8.500	0.84	11.58	0.42
2.417	2.52	5.500	5.46	8.583	0.84	11.67	0.42
2.500	2.52	5.583	5.46	8.667	0.84	11.75	0.42
2.583	2.52	5.667	5.46	8.750	0.84	11.83	0.42

RESERVOIR(0038)				
IN= 2---> OUT= 1				
DT= 5.0 min				
	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1000	0.0460
		AREA (ha)	QPEAK (cms)	TPEAK (hrs)
		1.600	0.073	5.25
INFLOW : ID= 2 (0037)				33.66
OUTFLOW: ID= 1 (0038)		1.600	0.041	5.50
				33.60
	PEAK FLOW REDUCTION [Qout/Qin] (%)=	56.00		
	TIME SHIFT OF PEAK FLOW (min)=	15.00		
	MAXIMUM STORAGE USED (ha.m.)=	0.0189		

ADD HYD (0008)				
1 + 2 = 3				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	32.52	0.968	5.25	24.37
+ ID2= 2 (0038):	1.60	0.041	5.50	33.60
ID = 3 (0008):	34.12	1.007	5.25	24.80

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0008)				
3 + 2 = 1				
	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0008):	34.12	1.007	5.25	24.80
+ ID2= 2 (0039):	0.35	0.018	5.25	40.70

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ID = 1 (0008): 34.47 1.025 5.25 24.96

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (0008) |
1 + 2 = 3
AREA QPEAK TPEAK R.V.
(ha) (cms) (hrs) (mm)
*** W A R N I N G : HYDROGRAPH 0007 <ID= 2> IS DRY.
*** W A R N I N G : HYDROGRAPH 0003 = HYDROGRAPH 0001
ID1= 1 (0008): 34.47 1.025 5.25 24.96
+ ID2= 2 (0007): 0.00 0.000 0.00 0.00

ID = 3 (0008): 34.47 1.025 5.25 24.96

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| RESERVOIR(0003) |
| IN= 2---> OUT= 1 |
DT= 5.0 min
OUTFLOW STORAGE
(cms) (ha.m.)
0.0000 0.0000 | 0.3000 1.2650
0.0710 0.4106 | 0.3780 1.4000
0.0880 0.6770 | 0.4800 1.5300
0.1600 0.9180 | 1.5000 5.0000
0.2200 1.0700 | 0.0000 0.0000

| AREA QPEAK TPEAK R.V. |
| (ha) (cms) (hrs) (mm) |
INFLOW : ID= 2 (0008) 34.470 1.025 5.25 24.96
OUTFLOW: ID= 1 (0003) 34.470 0.088 8.83 24.92

PEAK FLOW REDUCTION [Qout/Qin] (%) = 8.59
TIME SHIFT OF PEAK FLOW (min) = 215.00
MAXIMUM STORAGE USED (ha.m.) = 0.6771

| READ STORM | Filename: C:\Users\skatukurunde\AppData
| | ata\Local\Temp\
| | 3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\b0cf5a91
| Ptotal= 42.00 mm | Comments: 2y12 TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	7.14	6.75	2.94	10.00	0.42
0.50	0.42	3.75	7.14	7.00	2.94	10.25	0.42
0.75	0.42	4.00	7.14	7.25	2.94	10.50	0.42
1.00	0.42	4.25	7.14	7.50	1.68	10.75	0.42
1.25	0.42	4.50	19.32	7.75	1.68	11.00	0.42
1.50	0.42	4.75	19.32	8.00	1.68	11.25	0.42
1.75	0.42	5.00	19.32	8.25	1.68	11.50	0.42
2.00	0.42	5.25	19.32	8.50	0.84	11.75	0.42
2.25	0.42	5.50	5.46	8.75	0.84	12.00	0.42
2.50	2.52	5.75	5.46	9.00	0.84	12.25	0.42
2.75	2.52	6.00	5.46	9.25	0.84		
3.00	2.52	6.25	5.46	9.50	0.42		
3.25	2.52	6.50	2.94	9.75	0.42		

| CALIB |
| STANDHYD (0023) | Area (ha) = 0.14
| ID= 1 DT= 5.0 min | Total Imp (%) = 99.00 Dir. Conn. (%) = 99.00

| IMPERVIOUS PERVIOUS (i) |
Surface Area (ha) = 0.14 0.00
Dep. Storage (mm) = 1.00 1.50
Average Slope (%) = 1.00 2.00
Length (m) = 30.55 40.00
Mannings n = 0.013 0.250

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

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

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	2.52	6.250	5.46	9.33	0.42
0.167	0.00	3.250	2.52	6.333	2.94	9.42	0.42
0.250	0.00	3.333	7.14	6.417	2.94	9.50	0.42
0.333	0.42	3.417	7.14	6.500	2.94	9.58	0.42
0.417	0.42	3.500	7.14	6.583	2.94	9.67	0.42
0.500	0.42	3.583	7.14	6.667	2.94	9.75	0.42
0.583	0.42	3.667	7.14	6.750	2.94	9.83	0.42
0.667	0.42	3.750	7.14	6.833	2.94	9.92	0.42
0.750	0.42	3.833	7.14	6.917	2.94	10.00	0.42
0.833	0.42	3.917	7.14	7.000	2.94	10.08	0.42
0.917	0.42	4.000	7.14	7.083	2.94	10.17	0.42
1.000	0.42	4.083	7.14	7.167	2.94	10.25	0.42
1.083	0.42	4.167	7.14	7.250	2.94	10.33	0.42
1.167	0.42	4.250	7.14	7.333	1.68	10.42	0.42
1.250	0.42	4.333	19.32	7.417	1.68	10.50	0.42
1.333	0.42	4.417	19.32	7.500	1.68	10.58	0.42
1.417	0.42	4.500	19.32	7.583	1.68	10.67	0.42
1.500	0.42	4.583	19.32	7.667	1.68	10.75	0.42
1.583	0.42	4.667	19.32	7.750	1.68	10.83	0.42
1.667	0.42	4.750	19.32	7.833	1.68	10.92	0.42
1.750	0.42	4.833	19.32	7.917	1.68	11.00	0.42
1.833	0.42	4.917	19.32	8.000	1.68	11.08	0.42
1.917	0.42	5.000	19.32	8.083	1.68	11.17	0.42
2.000	0.42	5.083	19.32	8.167	1.68	11.25	0.42
2.083	0.42	5.167	19.32	8.250	1.68	11.33	0.42
2.167	0.42	5.250	19.32	8.333	0.84	11.42	0.42
2.250	0.42	5.333	5.46	8.417	0.84	11.50	0.42
2.333	2.52	5.417	5.46	8.500	0.84	11.58	0.42
2.417	2.52	5.500	5.46	8.583	0.84	11.67	0.42
2.500	2.52	5.583	5.46	8.667	0.84	11.75	0.42
2.583	2.52	5.667	5.46	8.750	0.84	11.83	0.42
2.667	2.52	5.750	5.46	8.833	0.84	11.92	0.42
2.750	2.52	5.833	5.46	8.917	0.84	12.00	0.42
2.833	2.52	5.917	5.46	9.000	0.84	12.08	0.42
2.917	2.52	6.000	5.46	9.083	0.84	12.17	0.42
3.000	2.52	6.083	5.46	9.167	0.84	12.25	0.42
3.083	2.52	6.167	5.46	9.250	0.84		

Max.Eff.Inten. (mm/hr) = 19.32 6.86
over (min) = 5.00 5.00
Storage Coeff. (min) = 2.42 (ii) 4.59 (ii)
Unit Hyd. Tpeak (min) = 5.00 5.00
Unit Hyd. peak (cms) = 0.30 0.23

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			TOTALS								
PEAK FLOW (cms)=	0.01	0.00	0.007 (iii)	2.00	0.42	5.25	19.32	8.50	0.84	11.75	0.42
TIME TO PEAK (hrs)=	4.83	5.25	5.25	2.25	0.42	5.50	5.46	8.75	0.84	12.00	0.42
RUNOFF VOLUME (mm)=	41.00	10.98	40.69	2.50	2.52	5.75	5.46	9.00	0.84	12.25	0.42
TOTAL RAINFALL (mm)=	42.00	42.00	42.00	2.75	2.52	6.00	5.46	9.25	0.84		
RUNOFF COEFFICIENT =	0.98	0.26	0.97	3.00	2.52	6.25	5.46	9.50	0.42		
				3.25	2.52	6.50	2.94	9.75	0.42		

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. 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 (0025)	IN= 2---> OUT= 1	DT= 5.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
			0.0000	0.0000	0.0011	0.0132
			0.0010	0.0010	2.0000	0.0132

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0023)	0.140	0.007	5.25	40.69
OUTFLOW: ID= 1 (0025)	0.140	0.001	7.25	38.95

PEAK FLOW REDUCTION [Qout/Qin] (%) = 13.70
TIME SHIFT OF PEAK FLOW (min) = 120.00
MAXIMUM STORAGE USED (ha.m.) = 0.0038

DUHYD (0026)	Inlet Cap.= 0.001	#of Inlets= 1	Total (cms)= 0.0	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL HYD. (ID= 1):				0.14	0.00	7.25	38.95
MAJOR SYS. (ID= 2):				0.00	0.00	7.25	38.95
MINOR SYS. (ID= 3):				0.14	0.00	4.33	38.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM
Filename: C:\Users\skatukurunde\AppData\Local\Temp\3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\b0cf5a91
Ptotal= 42.00 mm
Comments: 2y12 TRCA AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	3.50	7.14	6.75	2.94	10.00	0.42
0.50	0.42	3.75	7.14	7.00	2.94	10.25	0.42
0.75	0.42	4.00	7.14	7.25	2.94	10.50	0.42
1.00	0.42	4.25	7.14	7.50	1.68	10.75	0.42
1.25	0.42	4.50	19.32	7.75	1.68	11.00	0.42
1.50	0.42	4.75	19.32	8.00	1.68	11.25	0.42
1.75	0.42	5.00	19.32	8.25	1.68	11.50	0.42

CALIB	STANDHYD (0040)	Area (ha)=	Total Imp(%)=	Dir. Conn.(%)=
		0.88	57.00	42.00

	IMPERVIOUS (ha)=	PERVIOUS (i) (mm)=
Surface Area	0.50	0.38
Dep. Storage	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	76.40	40.00
Mannings n	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	3.167	2.52	6.250	5.46	9.33	0.42
0.167	0.00	3.250	2.52	6.333	2.94	9.42	0.42
0.250	0.00	3.333	7.14	6.417	2.94	9.50	0.42
0.333	0.42	3.417	7.14	6.500	2.94	9.58	0.42
0.417	0.42	3.500	7.14	6.583	2.94	9.67	0.42
0.500	0.42	3.583	7.14	6.667	2.94	9.75	0.42
0.583	0.42	3.667	7.14	6.750	2.94	9.83	0.42
0.667	0.42	3.750	7.14	6.833	2.94	9.92	0.42
0.750	0.42	3.833	7.14	6.917	2.94	10.00	0.42
0.833	0.42	3.917	7.14	7.000	2.94	10.08	0.42
0.917	0.42	4.000	7.14	7.083	2.94	10.17	0.42
1.000	0.42	4.083	7.14	7.167	2.94	10.25	0.42
1.083	0.42	4.167	7.14	7.250	2.94	10.33	0.42
1.167	0.42	4.250	7.14	7.333	1.68	10.42	0.42
1.250	0.42	4.333	19.32	7.417	1.68	10.50	0.42
1.333	0.42	4.417	19.32	7.500	1.68	10.58	0.42
1.417	0.42	4.500	19.32	7.583	1.68	10.67	0.42
1.500	0.42	4.583	19.32	7.667	1.68	10.75	0.42
1.583	0.42	4.667	19.32	7.750	1.68	10.83	0.42
1.667	0.42	4.750	19.32	7.833	1.68	10.92	0.42
1.750	0.42	4.833	19.32	7.917	1.68	11.00	0.42
1.833	0.42	4.917	19.32	8.000	1.68	11.08	0.42
1.917	0.42	5.000	19.32	8.083	1.68	11.17	0.42
2.000	0.42	5.083	19.32	8.167	1.68	11.25	0.42
2.083	0.42	5.167	19.32	8.250	1.68	11.33	0.42
2.167	0.42	5.250	19.32	8.333	0.84	11.42	0.42
2.250	0.42	5.333	5.46	8.417	0.84	11.50	0.42
2.333	2.52	5.417	5.46	8.500	0.84	11.58	0.42
2.417	2.52	5.500	5.46	8.583	0.84	11.67	0.42
2.500	2.52	5.583	5.46	8.667	0.84	11.75	0.42
2.583	2.52	5.667	5.46	8.750	0.84	11.83	0.42
2.667	2.52	5.750	5.46	8.833	0.84	11.92	0.42
2.750	2.52	5.833	5.46	8.917	0.84	12.00	0.42
2.833	2.52	5.917	5.46	9.000	0.84	12.08	0.42
2.917	2.52	6.000	5.46	9.083	0.84	12.17	0.42
3.000	2.52	6.083	5.46	9.167	0.84	12.25	0.42
3.083	2.52	6.167	5.46	9.250	0.84		

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Max.Eff.Inten.(mm/hr)=	19.32	10.99	0.25	0.00	3.50	7.14	6.75	2.94	10.00	0.42
over (min)	5.00	25.00	0.50	0.42	3.75	7.14	7.00	2.94	10.25	0.42
Storage Coeff. (min)=	4.20 (ii)	21.26 (ii)	0.75	0.42	4.00	7.14	7.25	2.94	10.50	0.42
Unit Hyd. Tpeak (min)=	5.00	25.00	1.00	0.42	4.25	7.14	7.50	1.68	10.75	0.42
Unit Hyd. peak (cms)=	0.24	0.05	1.25	0.42	4.50	19.32	7.75	1.68	11.00	0.42
			1.50	0.42	4.75	19.32	8.00	1.68	11.25	0.42
			1.75	0.42	5.00	19.32	8.25	1.68	11.50	0.42
PEAK FLOW (cms)=	0.02	0.01	2.00	0.42	5.25	19.32	8.50	0.84	11.75	0.42
TIME TO PEAK (hrs)=	5.08	5.42	2.25	0.42	5.50	5.46	8.75	0.84	12.00	0.42
RUNOFF VOLUME (mm)=	41.00	13.75	2.50	2.52	5.75	5.46	9.00	0.84	12.25	0.42
TOTAL RAINFALL (mm)=	42.00	42.00	2.75	2.52	6.00	5.46	9.25	0.84		
RUNOFF COEFFICIENT =	0.98	0.33	3.00	2.52	6.25	5.46	9.50	0.42		
			3.25	2.52	6.50	2.94	9.75	0.42		

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. 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 (0033) | Area (ha)= 4.02
| ID= 1 DT= 5.0 min | Total Imp(%)= 57.00 Dir. Conn.(%)= 40.00

| ADD HYD (0027) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0026):	0.00	0.000	7.25	38.95
+ ID2= 2 (0040):	0.88	0.029	5.25	25.18
=====				
ID = 3 (0027):	0.88	0.029	5.25	25.20

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.29	1.73
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	163.63	40.00
Mannings n =	0.013	0.250

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

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| RESERVOIR(0028) |
| IN= 2----> OUT= 1 |
| DT= 5.0 min |

	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0035	0.0322
	0.0029	0.0145	0.0037	0.0375
	0.0030	0.0193	0.0038	0.0443
	0.0033	0.0269	0.0040	0.0485

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0027)	0.877	0.029	5.25	25.20
OUTFLOW: ID= 1 (0028)	0.877	0.003	8.25	23.74

PEAK FLOW REDUCTION [Qout/Qin](%)= 10.31
TIME SHIFT OF PEAK FLOW (min)=180.00
MAXIMUM STORAGE USED (ha.m.)= 0.0167

| READ STORM | Filename: C:\Users\skaturunde\AppData
| | ata\Local\Temp\
| | 3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\b0cf5a91
| Ptotal= 42.00 mm | Comments: 2y12 TRCA AES

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

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

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	2.52	6.250	5.46	9.33	0.42
0.167	0.00	3.250	2.52	6.333	2.94	9.42	0.42
0.250	0.00	3.333	7.14	6.417	2.94	9.50	0.42
0.333	0.42	3.417	7.14	6.500	2.94	9.58	0.42
0.417	0.42	3.500	7.14	6.583	2.94	9.67	0.42
0.500	0.42	3.583	7.14	6.667	2.94	9.75	0.42
0.583	0.42	3.667	7.14	6.750	2.94	9.83	0.42
0.667	0.42	3.750	7.14	6.833	2.94	9.92	0.42
0.750	0.42	3.833	7.14	6.917	2.94	10.00	0.42
0.833	0.42	3.917	7.14	7.000	2.94	10.08	0.42
0.917	0.42	4.000	7.14	7.083	2.94	10.17	0.42
1.000	0.42	4.083	7.14	7.167	2.94	10.25	0.42
1.083	0.42	4.167	7.14	7.250	2.94	10.33	0.42
1.167	0.42	4.250	7.14	7.333	1.68	10.42	0.42
1.250	0.42	4.333	19.32	7.417	1.68	10.50	0.42
1.333	0.42	4.417	19.32	7.500	1.68	10.58	0.42
1.417	0.42	4.500	19.32	7.583	1.68	10.67	0.42
1.500	0.42	4.583	19.32	7.667	1.68	10.75	0.42
1.583	0.42	4.667	19.32	7.750	1.68	10.83	0.42
1.667	0.42	4.750	19.32	7.833	1.68	10.92	0.42
1.750	0.42	4.833	19.32	7.917	1.68	11.00	0.42
1.833	0.42	4.917	19.32	8.000	1.68	11.08	0.42
1.917	0.42	5.000	19.32	8.083	1.68	11.17	0.42
2.000	0.42	5.083	19.32	8.167	1.68	11.25	0.42
2.083	0.42	5.167	19.32	8.250	1.68	11.33	0.42
2.167	0.42	5.250	19.32	8.333	0.84	11.42	0.42
2.250	0.42	5.333	5.46	8.417	0.84	11.50	0.42
2.333	2.52	5.417	5.46	8.500	0.84	11.58	0.42
2.417	2.52	5.500	5.46	8.583	0.84	11.67	0.42
2.500	2.52	5.583	5.46	8.667	0.84	11.75	0.42

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2.583	2.52	5.667	5.46	8.750	0.84	11.83	0.42
2.667	2.52	5.750	5.46	8.833	0.84	11.92	0.42
2.750	2.52	5.833	5.46	8.917	0.84	12.00	0.42
2.833	2.52	5.917	5.46	9.000	0.84	12.08	0.42
2.917	2.52	6.000	5.46	9.083	0.84	12.17	0.42
3.000	2.52	6.083	5.46	9.167	0.84	12.25	0.42
3.083	2.52	6.167	5.46	9.250	0.84		

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

Max.Eff.Inten.(mm/hr)=	19.32	11.64	
over (min)	5.00	25.00	
Storage Coeff. (min)=	6.63 (ii)	23.31 (ii)	
Unit Hyd. Tpeak (min)=	5.00	25.00	
Unit Hyd. peak (cms)=	0.18	0.05	
TOTALS			
PEAK FLOW (cms)=	0.09	0.04	0.128 (iii)
TIME TO PEAK (hrs)=	5.25	5.42	
RUNOFF VOLUME (mm)=	41.00	14.08	24.85
TOTAL RAINFALL (mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT =	0.98	0.34	0.59

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	2.52	6.250	5.46	9.33	0.42
0.167	0.00	3.250	2.52	6.333	2.94	9.42	0.42
0.250	0.00	3.333	7.14	6.417	2.94	9.50	0.42
0.333	0.42	3.417	7.14	6.500	2.94	9.58	0.42
0.417	0.42	3.500	7.14	6.583	2.94	9.67	0.42
0.500	0.42	3.583	7.14	6.667	2.94	9.75	0.42
0.583	0.42	3.667	7.14	6.750	2.94	9.83	0.42
0.667	0.42	3.750	7.14	6.833	2.94	9.92	0.42
0.750	0.42	3.833	7.14	6.917	2.94	10.00	0.42
0.833	0.42	3.917	7.14	7.000	2.94	10.08	0.42
0.917	0.42	4.000	7.14	7.083	2.94	10.17	0.42
1.000	0.42	4.083	7.14	7.167	2.94	10.25	0.42
1.083	0.42	4.167	7.14	7.250	2.94	10.33	0.42
1.167	0.42	4.250	7.14	7.333	1.68	10.42	0.42
1.250	0.42	4.333	19.32	7.417	1.68	10.50	0.42
1.333	0.42	4.417	19.32	7.500	1.68	10.58	0.42
1.417	0.42	4.500	19.32	7.583	1.68	10.67	0.42
1.500	0.42	4.583	19.32	7.667	1.68	10.75	0.42
1.583	0.42	4.667	19.32	7.750	1.68	10.83	0.42
1.667	0.42	4.750	19.32	7.833	1.68	10.92	0.42
1.750	0.42	4.833	19.32	7.917	1.68	11.00	0.42
1.833	0.42	4.917	19.32	8.000	1.68	11.08	0.42
1.917	0.42	5.000	19.32	8.083	1.68	11.17	0.42
2.000	0.42	5.083	19.32	8.167	1.68	11.25	0.42
2.083	0.42	5.167	19.32	8.250	1.68	11.33	0.42
2.167	0.42	5.250	19.32	8.333	0.84	11.42	0.42
2.250	0.42	5.333	5.46	8.417	0.84	11.50	0.42
2.333	2.52	5.417	5.46	8.500	0.84	11.58	0.42
2.417	2.52	5.500	5.46	8.583	0.84	11.67	0.42
2.500	2.52	5.583	5.46	8.667	0.84	11.75	0.42
2.583	2.52	5.667	5.46	8.750	0.84	11.83	0.42
2.667	2.52	5.750	5.46	8.833	0.84	11.92	0.42
2.750	2.52	5.833	5.46	8.917	0.84	12.00	0.42
2.833	2.52	5.917	5.46	9.000	0.84	12.08	0.42
2.917	2.52	6.000	5.46	9.083	0.84	12.17	0.42
3.000	2.52	6.083	5.46	9.167	0.84	12.25	0.42
3.083	2.52	6.167	5.46	9.250	0.84		

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

 | READ STORM | Filename: C:\Users\skatukurunde\AppData
 | | | ata\Local\Temp\
 | | | 3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\b0cf5a91
 | Ptotal= 42.00 mm | Comments: 2y12 TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	7.14	6.75	2.94	10.00	0.42
0.50	0.42	3.75	7.14	7.00	2.94	10.25	0.42
0.75	0.42	4.00	7.14	7.25	2.94	10.50	0.42
1.00	0.42	4.25	7.14	7.50	1.68	10.75	0.42
1.25	0.42	4.50	19.32	7.75	1.68	11.00	0.42
1.50	0.42	4.75	19.32	8.00	1.68	11.25	0.42
1.75	0.42	5.00	19.32	8.25	1.68	11.50	0.42
2.00	0.42	5.25	19.32	8.50	0.84	11.75	0.42
2.25	0.42	5.50	5.46	8.75	0.84	12.00	0.42
2.50	2.52	5.75	5.46	9.00	0.84	12.25	0.42
2.75	2.52	6.00	5.46	9.25	0.84		
3.00	2.52	6.25	5.46	9.50	0.42		
3.25	2.52	6.50	2.94	9.75	0.42		

Max.Eff.Inten.(mm/hr)=	19.32	11.73
over (min)	5.00	10.00
Storage Coeff. (min)=	3.24 (ii)	5.41 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.27	0.16

TOTALS			
PEAK FLOW (cms)=	0.02	0.00	0.020 (iii)
TIME TO PEAK (hrs)=	5.08	5.25	5.25
RUNOFF VOLUME (mm)=	41.00	19.22	40.77
TOTAL RAINFALL (mm)=	42.00	42.00	42.00
RUNOFF COEFFICIENT =	0.98	0.46	0.97

 | CALIB |
 | STANDHYD (0041) | Area (ha)= 0.37
 | ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.37	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	49.67	40.00
Mannings n =	0.013	0.250

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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| RESERVOIR(0042) |
| IN= 2----> OUT= 1 |
| DT= 5.0 min |

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0026	0.0348
0.0026	0.0010	4.0000	0.0350

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0041)	0.370	0.020	5.25	40.77
OUTFLOW: ID= 1 (0042)	0.370	0.003	7.25	40.52

PEAK FLOW REDUCTION [Qout/Qin] (%) = 13.16
TIME SHIFT OF PEAK FLOW (min) = 120.00
MAXIMUM STORAGE USED (ha.m.) = 0.0097

| DUHYD (0043) |
| Inlet Cap.= 0.003 |
| #of Inlets= 10 |
| Total(cms)= 0.0 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL HYD.(ID= 1):	0.37	0.00	7.25	40.52
MAJOR SYS.(ID= 2):	0.00	0.00	0.00	0.00
MINOR SYS.(ID= 3):	0.37	0.00	7.25	40.52

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (0044) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
*** W A R N I N G : HYDROGRAPH 0043 <ID= 2> IS DRY.				
*** W A R N I N G : HYDROGRAPH 0003 = HYDROGRAPH 0001				
ID1= 1 (0033):	4.02	0.128	5.25	24.85
+ ID2= 2 (0043):	0.00	0.000	0.00	0.00
ID = 3 (0044):	4.02	0.128	5.25	24.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| RESERVOIR(0045) |
| IN= 2----> OUT= 1 |
| DT= 5.0 min |

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0340	0.1196
0.0088	0.0547	0.0460	0.1470
0.0100	0.0814	0.0530	0.1571
0.0260	0.1053	0.0670	0.1747

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0044)	4.016	0.128	5.25	24.85
OUTFLOW: ID= 1 (0045)	4.016	0.010	8.50	24.45

PEAK FLOW REDUCTION [Qout/Qin] (%) = 7.76
TIME SHIFT OF PEAK FLOW (min) = 195.00
MAXIMUM STORAGE USED (ha.m.) = 0.0795

| ADD HYD (0024) |
| 1 + 2 = 3 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0028):	0.88	0.003	8.25	23.74
+ ID2= 2 (0003):	34.47	0.088	8.83	24.92
ID = 3 (0024):	35.35	0.091	8.83	24.89

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (0024) |
| 3 + 2 = 1 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0024):	35.35	0.091	8.83	24.89
+ ID2= 2 (0045):	4.02	0.010	8.50	24.45
ID = 1 (0024):	39.36	0.101	8.75	24.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

** SIMULATION : 5y12 TRCA AES **

| READ STORM |

Filename: C:\Users\skaturunde\AppData
ata\Local\Temp\
3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\914fc38a
| Ptotal= 54.38 mm |
Comments: 5y12 TRCA AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	3.50	9.25	6.75	3.81	10.00	0.54
0.50	0.54	3.75	9.25	7.00	3.81	10.25	0.54
0.75	0.54	4.00	9.25	7.25	3.81	10.50	0.54
1.00	0.54	4.25	9.25	7.50	2.18	10.75	0.54
1.25	0.54	4.50	25.02	7.75	2.18	11.00	0.54
1.50	0.54	4.75	25.02	8.00	2.18	11.25	0.54
1.75	0.54	5.00	25.02	8.25	2.18	11.50	0.54
2.00	0.54	5.25	25.02	8.50	1.09	11.75	0.54
2.25	0.54	5.50	7.07	8.75	1.09	12.00	0.54
2.50	3.26	5.75	7.07	9.00	1.09	12.25	0.54
2.75	3.26	6.00	7.07	9.25	1.09		
3.00	3.26	6.25	7.07	9.50	0.54		
3.25	3.26	6.50	3.81	9.75	0.54		

| CALIB |
| STANDHYD (0001) |

Area (ha) = 32.52
Total Imp(%) = 56.00 Dir. Conn.(%) = 38.00

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	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	18.21	14.31
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	465.62	40.00
Mannings n =	0.013	0.250

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

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

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	3.26	6.250	7.07	9.33	0.54
0.167	0.00	3.250	3.26	6.333	3.81	9.42	0.54
0.250	0.00	3.333	9.25	6.417	3.81	9.50	0.54
0.333	0.54	3.417	9.25	6.500	3.81	9.58	0.54
0.417	0.54	3.500	9.25	6.583	3.81	9.67	0.54
0.500	0.54	3.583	9.25	6.667	3.81	9.75	0.54
0.583	0.54	3.667	9.25	6.750	3.81	9.83	0.54
0.667	0.54	3.750	9.25	6.833	3.81	9.92	0.54
0.750	0.54	3.833	9.25	6.917	3.81	10.00	0.54
0.833	0.54	3.917	9.25	7.000	3.81	10.08	0.54
0.917	0.54	4.000	9.25	7.083	3.81	10.17	0.54
1.000	0.54	4.083	9.25	7.167	3.81	10.25	0.54
1.083	0.54	4.167	9.25	7.250	3.81	10.33	0.54
1.167	0.54	4.250	9.25	7.333	2.18	10.42	0.54
1.250	0.54	4.333	25.02	7.417	2.18	10.50	0.54
1.333	0.54	4.417	25.02	7.500	2.18	10.58	0.54
1.417	0.54	4.500	25.02	7.583	2.18	10.67	0.54
1.500	0.54	4.583	25.02	7.667	2.18	10.75	0.54
1.583	0.54	4.667	25.02	7.750	2.18	10.83	0.54
1.667	0.54	4.750	25.02	7.833	2.18	10.92	0.54
1.750	0.54	4.833	25.02	7.917	2.18	11.00	0.54
1.833	0.54	4.917	25.02	8.000	2.18	11.08	0.54
1.917	0.54	5.000	25.02	8.083	2.18	11.17	0.54
2.000	0.54	5.083	25.02	8.167	2.18	11.25	0.54
2.083	0.54	5.167	25.02	8.250	2.18	11.33	0.54
2.167	0.54	5.250	25.02	8.333	1.09	11.42	0.54
2.250	0.54	5.333	7.07	8.417	1.09	11.50	0.54
2.333	3.26	5.417	7.07	8.500	1.09	11.58	0.54
2.417	3.26	5.500	7.07	8.583	1.09	11.67	0.54
2.500	3.26	5.583	7.07	8.667	1.09	11.75	0.54
2.583	3.26	5.667	7.07	8.750	1.09	11.83	0.54
2.667	3.26	5.750	7.07	8.833	1.09	11.92	0.54
2.750	3.26	5.833	7.07	8.917	1.09	12.00	0.54
2.833	3.26	5.917	7.07	9.000	1.09	12.08	0.54
2.917	3.26	6.000	7.07	9.083	1.09	12.17	0.54
3.000	3.26	6.083	7.07	9.167	1.09	12.25	0.54
3.083	3.26	6.167	7.07	9.250	1.09		

Max.Eff.Inten.(mm/hr)=	25.02	18.37
over (min)	10.00	30.00
Storage Coeff. (min)=	11.19 (ii)	25.09 (ii)
Unit Hyd. Tpeak (min)=	10.00	30.00
Unit Hyd. peak (cms)=	0.10	0.04

TOTALS

PEAK FLOW (cms)=	0.86	0.54	1.364 (iii)
TIME TO PEAK (hrs)=	5.25	5.42	5.25
RUNOFF VOLUME (mm)=	53.38	21.77	33.78
TOTAL RAINFALL (mm)=	54.38	54.38	54.38
RUNOFF COEFFICIENT =	0.98	0.40	0.62

READ STORM	Filename: C:\Users\skaturunde\AppData
	ata\Local\Temp\
	3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\914fc38a
Ptotal= 54.38 mm	Comments: 5y12 TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	9.25	6.75	3.81	10.00	0.54
0.50	0.54	3.75	9.25	7.00	3.81	10.25	0.54
0.75	0.54	4.00	9.25	7.25	3.81	10.50	0.54
1.00	0.54	4.25	9.25	7.50	2.18	10.75	0.54
1.25	0.54	4.50	25.02	7.75	2.18	11.00	0.54
1.50	0.54	4.75	25.02	8.00	2.18	11.25	0.54
1.75	0.54	5.00	25.02	8.25	2.18	11.50	0.54
2.00	0.54	5.25	25.02	8.50	1.09	11.75	0.54
2.25	0.54	5.50	7.07	8.75	1.09	12.00	0.54
2.50	3.26	5.75	7.07	9.00	1.09	12.25	0.54
2.75	3.26	6.00	7.07	9.25	1.09		
3.00	3.26	6.25	7.07	9.50	0.54		
3.25	3.26	6.50	3.81	9.75	0.54		

CALIB	
STANDHYD (0006)	Area (ha)= 3.94
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.90	0.04
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	161.97	40.00
Mannings n =	0.013	0.250

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

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

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	3.26	6.250	7.07	9.33	0.54
0.167	0.00	3.250	3.26	6.333	3.81	9.42	0.54
0.250	0.00	3.333	9.25	6.417	3.81	9.50	0.54
0.333	0.54	3.417	9.25	6.500	3.81	9.58	0.54
0.417	0.54	3.500	9.25	6.583	3.81	9.67	0.54
0.500	0.54	3.583	9.25	6.667	3.81	9.75	0.54
0.583	0.54	3.667	9.25	6.750	3.81	9.83	0.54
0.667	0.54	3.750	9.25	6.833	3.81	9.92	0.54
0.750	0.54	3.833	9.25	6.917	3.81	10.00	0.54
0.833	0.54	3.917	9.25	7.000	3.81	10.08	0.54
0.917	0.54	4.000	9.25	7.083	3.81	10.17	0.54
1.000	0.54	4.083	9.25	7.167	3.81	10.25	0.54
1.083	0.54	4.167	9.25	7.250	3.81	10.33	0.54
1.167	0.54	4.250	9.25	7.333	2.18	10.42	0.54

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1.250	0.54	4.333	25.02	7.417	2.18	10.50	0.54
1.333	0.54	4.417	25.02	7.500	2.18	10.58	0.54
1.417	0.54	4.500	25.02	7.583	2.18	10.67	0.54
1.500	0.54	4.583	25.02	7.667	2.18	10.75	0.54
1.583	0.54	4.667	25.02	7.750	2.18	10.83	0.54
1.667	0.54	4.750	25.02	7.833	2.18	10.92	0.54
1.750	0.54	4.833	25.02	7.917	2.18	11.00	0.54
1.833	0.54	4.917	25.02	8.000	2.18	11.08	0.54
1.917	0.54	5.000	25.02	8.083	2.18	11.17	0.54
2.000	0.54	5.083	25.02	8.167	2.18	11.25	0.54
2.083	0.54	5.167	25.02	8.250	2.18	11.33	0.54
2.167	0.54	5.250	25.02	8.333	1.09	11.42	0.54
2.250	0.54	5.333	7.07	8.417	1.09	11.50	0.54
2.333	3.26	5.417	7.07	8.500	1.09	11.58	0.54
2.417	3.26	5.500	7.07	8.583	1.09	11.67	0.54
2.500	3.26	5.583	7.07	8.667	1.09	11.75	0.54
2.583	3.26	5.667	7.07	8.750	1.09	11.83	0.54
2.667	3.26	5.750	7.07	8.833	1.09	11.92	0.54
2.750	3.26	5.833	7.07	8.917	1.09	12.00	0.54
2.833	3.26	5.917	7.07	9.000	1.09	12.08	0.54
2.917	3.26	6.000	7.07	9.083	1.09	12.17	0.54
3.000	3.26	6.083	7.07	9.167	1.09	12.25	0.54
3.083	3.26	6.167	7.07	9.250	1.09		

Max.Eff.Inten.(mm/hr)=	25.02	10.70
over (min)	5.00	10.00
Storage Coeff. (min)=	5.94 (ii)	7.89 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.19	0.13
PEAK FLOW (cms)=	0.27	0.00
TIME TO PEAK (hrs)=	5.25	5.25
RUNOFF VOLUME (mm)=	53.38	17.29
TOTAL RAINFALL (mm)=	54.38	54.38
RUNOFF COEFFICIENT =	0.98	0.32

TOTALS

0.272 (iii)
5.25
53.02
54.38
0.97

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. 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(0021)			
IN= 2---> OUT= 1			
DT= 5.0 min			
	OUTFLOW	STORAGE	OUTFLOW
	(cms)	(ha.m.)	(cms)
	0.0000	0.0000	0.0318
	0.0318	0.0010	4.0000
			0.4260
			0.4261

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0006)	3.935	0.272	5.25	53.02
OUTFLOW: ID= 1 (0021)	3.935	0.032	5.92	53.02

PEAK FLOW REDUCTION [Qout/Qin](%)= 11.70
TIME SHIFT OF PEAK FLOW (min)= 40.00
MAXIMUM STORAGE USED (ha.m.)= 0.1055

| DUHYD (0007)|

Inlet Cap.= 0.032				
#of Inlets= 1				
Total(cms)= 0.0				

TOTAL HYD. (ID= 1):	3.94	0.03	5.92	53.02
=====				
MAJOR SYS. (ID= 2):	0.00	0.00	0.00	0.00
MINOR SYS. (ID= 3):	3.94	0.03	5.92	53.02

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM	Filename: C:\Users\skatukurunde\AppData
	ata\Local\Temp\
	3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\914fc38a
Ptotal= 54.38 mm	Comments: 5y12 TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	9.25	6.75	3.81	10.00	0.54
0.50	0.54	3.75	9.25	7.00	3.81	10.25	0.54
0.75	0.54	4.00	9.25	7.25	3.81	10.50	0.54
1.00	0.54	4.25	9.25	7.50	2.18	10.75	0.54
1.25	0.54	4.50	25.02	7.75	2.18	11.00	0.54
1.50	0.54	4.75	25.02	8.00	2.18	11.25	0.54
1.75	0.54	5.00	25.02	8.25	2.18	11.50	0.54
2.00	0.54	5.25	25.02	8.50	1.09	11.75	0.54
2.25	0.54	5.50	7.07	8.75	1.09	12.00	0.54
2.50	3.26	5.75	7.07	9.00	1.09	12.25	0.54
2.75	3.26	6.00	7.07	9.25	1.09		
3.00	3.26	6.25	7.07	9.50	0.54		
3.25	3.26	6.50	3.81	9.75	0.54		

CALIB	
STANDHYD (0036)	Area (ha)= 0.35
ID= 1 DT= 5.0 min	Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)= 0.35	0.00
Dep. Storage	(mm)= 1.00	1.50
Average Slope	(%)= 1.00	2.00
Length	(m)= 48.30	40.00
Mannings n	= 0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	3.26	6.250	7.07	9.33	0.54
0.167	0.00	3.250	3.26	6.333	3.81	9.42	0.54
0.250	0.00	3.333	9.25	6.417	3.81	9.50	0.54
0.333	0.54	3.417	9.25	6.500	3.81	9.58	0.54
0.417	0.54	3.500	9.25	6.583	3.81	9.67	0.54
0.500	0.54	3.583	9.25	6.667	3.81	9.75	0.54
0.583	0.54	3.667	9.25	6.750	3.81	9.83	0.54
0.667	0.54	3.750	9.25	6.833	3.81	9.92	0.54
0.750	0.54	3.833	9.25	6.917	3.81	10.00	0.54

0.833	0.54	3.917	9.25	7.000	3.81	10.08	0.54
0.917	0.54	4.000	9.25	7.083	3.81	10.17	0.54
1.000	0.54	4.083	9.25	7.167	3.81	10.25	0.54
1.083	0.54	4.167	9.25	7.250	3.81	10.33	0.54
1.167	0.54	4.250	9.25	7.333	2.18	10.42	0.54
1.250	0.54	4.333	25.02	7.417	2.18	10.50	0.54
1.333	0.54	4.417	25.02	7.500	2.18	10.58	0.54
1.417	0.54	4.500	25.02	7.583	2.18	10.67	0.54
1.500	0.54	4.583	25.02	7.667	2.18	10.75	0.54
1.583	0.54	4.667	25.02	7.750	2.18	10.83	0.54
1.667	0.54	4.750	25.02	7.833	2.18	10.92	0.54
1.750	0.54	4.833	25.02	7.917	2.18	11.00	0.54
1.833	0.54	4.917	25.02	8.000	2.18	11.08	0.54
1.917	0.54	5.000	25.02	8.083	2.18	11.17	0.54
2.000	0.54	5.083	25.02	8.167	2.18	11.25	0.54
2.083	0.54	5.167	25.02	8.250	2.18	11.33	0.54
2.167	0.54	5.250	25.02	8.333	1.09	11.42	0.54
2.250	0.54	5.333	7.07	8.417	1.09	11.50	0.54
2.333	3.26	5.417	7.07	8.500	1.09	11.58	0.54
2.417	3.26	5.500	7.07	8.583	1.09	11.67	0.54
2.500	3.26	5.583	7.07	8.667	1.09	11.75	0.54
2.583	3.26	5.667	7.07	8.750	1.09	11.83	0.54
2.667	3.26	5.750	7.07	8.833	1.09	11.92	0.54
2.750	3.26	5.833	7.07	8.917	1.09	12.00	0.54
2.833	3.26	5.917	7.07	9.000	1.09	12.08	0.54
2.917	3.26	6.000	7.07	9.083	1.09	12.17	0.54
3.000	3.26	6.083	7.07	9.167	1.09	12.25	0.54
3.083	3.26	6.167	7.07	9.250	1.09		

MAXIMUM STORAGE USED (ha.m.)= 0.0029

 | READ STORM | Filename: C:\Users\skatukurunde\AppData
 | | ata\Local\Temp\
 | | 3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\914fc38a
 | Ptotal= 54.38 mm | Comments: 5y12 TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	9.25	6.75	3.81	10.00	0.54
0.50	0.54	3.75	9.25	7.00	3.81	10.25	0.54
0.75	0.54	4.00	9.25	7.25	3.81	10.50	0.54
1.00	0.54	4.25	9.25	7.50	2.18	10.75	0.54
1.25	0.54	4.50	25.02	7.75	2.18	11.00	0.54
1.50	0.54	4.75	25.02	8.00	2.18	11.25	0.54
1.75	0.54	5.00	25.02	8.25	2.18	11.50	0.54
2.00	0.54	5.25	25.02	8.50	1.09	11.75	0.54
2.25	0.54	5.50	7.07	8.75	1.09	12.00	0.54
2.50	3.26	5.75	7.07	9.00	1.09	12.25	0.54
2.75	3.26	6.00	7.07	9.25	1.09		
3.00	3.26	6.25	7.07	9.50	0.54		
3.25	3.26	6.50	3.81	9.75	0.54		

Max.Eff.Inten.(mm/hr)=	25.02	17.13	
over (min)	5.00	5.00	
Storage Coeff. (min)=	2.87 (ii)	4.83 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.28	0.22	
TOTALS			
PEAK FLOW (cms)=	0.02	0.00	0.024 (iii)
TIME TO PEAK (hrs)=	5.08	5.25	
RUNOFF VOLUME (mm)=	53.38	28.62	53.12
TOTAL RAINFALL (mm)=	54.38	54.38	54.38
RUNOFF COEFFICIENT =	0.98	0.53	0.98

 | CALIB |
 | STANDHYD (0037) | Area (ha)= 1.60
 | ID= 1 DT= 5.0 min | Total Imp(%)= 75.00 Dir. Conn.(%)= 45.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.20	0.40
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	103.28	40.00
Mannings n =	0.013	0.250

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

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0039)				
IN= 2---> OUT= 1				
DT= 5.0 min				

	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	0.0400	0.0050
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0036)	0.350	0.024	5.25	53.12
OUTFLOW: ID= 1 (0039)	0.350	0.023	5.25	53.05
PEAK FLOW REDUCTION [Qout/Qin](%)=	95.62			
TIME SHIFT OF PEAK FLOW (min)=	0.00			

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

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	3.26	6.250	7.07	9.33	0.54
0.167	0.00	3.250	3.26	6.333	3.81	9.42	0.54
0.250	0.00	3.333	9.25	6.417	3.81	9.50	0.54
0.333	0.54	3.417	9.25	6.500	3.81	9.58	0.54
0.417	0.54	3.500	9.25	6.583	3.81	9.67	0.54
0.500	0.54	3.583	9.25	6.667	3.81	9.75	0.54
0.583	0.54	3.667	9.25	6.750	3.81	9.83	0.54
0.667	0.54	3.750	9.25	6.833	3.81	9.92	0.54
0.750	0.54	3.833	9.25	6.917	3.81	10.00	0.54
0.833	0.54	3.917	9.25	7.000	3.81	10.08	0.54
0.917	0.54	4.000	9.25	7.083	3.81	10.17	0.54
1.000	0.54	4.083	9.25	7.167	3.81	10.25	0.54
1.083	0.54	4.167	9.25	7.250	3.81	10.33	0.54
1.167	0.54	4.250	9.25	7.333	2.18	10.42	0.54
1.250	0.54	4.333	25.02	7.417	2.18	10.50	0.54
1.333	0.54	4.417	25.02	7.500	2.18	10.58	0.54
1.417	0.54	4.500	25.02	7.583	2.18	10.67	0.54
1.500	0.54	4.583	25.02	7.667	2.18	10.75	0.54

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1.583	0.54	4.667	25.02	7.750	2.18	10.83	0.54
1.667	0.54	4.750	25.02	7.833	2.18	10.92	0.54
1.750	0.54	4.833	25.02	7.917	2.18	11.00	0.54
1.833	0.54	4.917	25.02	8.000	2.18	11.08	0.54
1.917	0.54	5.000	25.02	8.083	2.18	11.17	0.54
2.000	0.54	5.083	25.02	8.167	2.18	11.25	0.54
2.083	0.54	5.167	25.02	8.250	2.18	11.33	0.54
2.167	0.54	5.250	25.02	8.333	1.09	11.42	0.54
2.250	0.54	5.333	7.07	8.417	1.09	11.50	0.54
2.333	3.26	5.417	7.07	8.500	1.09	11.58	0.54
2.417	3.26	5.500	7.07	8.583	1.09	11.67	0.54
2.500	3.26	5.583	7.07	8.667	1.09	11.75	0.54
2.583	3.26	5.667	7.07	8.750	1.09	11.83	0.54
2.667	3.26	5.750	7.07	8.833	1.09	11.92	0.54
2.750	3.26	5.833	7.07	8.917	1.09	12.00	0.54
2.833	3.26	5.917	7.07	9.000	1.09	12.08	0.54
2.917	3.26	6.000	7.07	9.083	1.09	12.17	0.54
3.000	3.26	6.083	7.07	9.167	1.09	12.25	0.54
3.083	3.26	6.167	7.07	9.250	1.09		

Max.Eff.Inten.(mm/hr)= 25.02 47.80
 over (min) 5.00 15.00
 Storage Coeff. (min)= 4.53 (ii) 14.02 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.23 0.08

TOTALS
 PEAK FLOW (cms)= 0.05 0.05 0.100 (iii)
 TIME TO PEAK (hrs)= 5.25 5.25 5.25
 RUNOFF VOLUME (mm)= 53.38 38.93 45.43
 TOTAL RAINFALL (mm)= 54.38 54.38 54.38
 RUNOFF COEFFICIENT = 0.98 0.72 0.84

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 85.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0038)			
IN= 2---> OUT= 1			
DT= 5.0 min			
	OUTFLOW	STORAGE	OUTFLOW
	(cms)	(ha.m.)	(cms)
	0.0000	0.0000	0.1000
			0.0460

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0037)	1.600	0.100	5.25	45.43
OUTFLOW: ID= 1 (0038)	1.600	0.057	5.42	45.36

PEAK FLOW REDUCTION [Qout/Qin] (%) = 56.72
 TIME SHIFT OF PEAK FLOW (min) = 10.00
 MAXIMUM STORAGE USED (ha.m.) = 0.0262

ADD HYD (0008)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0001):	32.52	1.364	5.25	33.78

+ ID2= 2 (0038):	1.60	0.057	5.42	45.36
=====				
ID = 3 (0008):	34.12	1.418	5.25	34.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0008)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0008):	34.12	1.418	5.25	34.32
+ ID2= 2 (0039):	0.35	0.023	5.25	53.05
=====				
ID = 1 (0008):	34.47	1.442	5.25	34.51

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0008)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
*** W A R N I N G : HYDROGRAPH 0007 <ID= 2> IS DRY.				
*** W A R N I N G : HYDROGRAPH 0003 = HYDROGRAPH 0001				
ID1= 1 (0008):	34.47	1.442	5.25	34.51
+ ID2= 2 (0007):	0.00	0.000	0.00	0.00
=====				
ID = 3 (0008):	34.47	1.442	5.25	34.51

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0003)			
IN= 2---> OUT= 1			
DT= 5.0 min			
	OUTFLOW	STORAGE	OUTFLOW
	(cms)	(ha.m.)	(cms)
	0.0000	0.0000	0.3000
	0.0710	0.4106	0.3780
	0.0880	0.6770	0.4800
	0.1600	0.9180	1.5000
	0.2200	1.0700	0.0000

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0008)	34.470	1.442	5.25	34.51
OUTFLOW: ID= 1 (0003)	34.470	0.159	8.42	34.47

PEAK FLOW REDUCTION [Qout/Qin] (%) = 11.06
 TIME SHIFT OF PEAK FLOW (min) = 190.00
 MAXIMUM STORAGE USED (ha.m.) = 0.9162

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 | | ata\Local\Temp\
 | | 3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\914fc38a
 | Ptotal= 54.38 mm | Comments: 5y12 TRCA AES

TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	9.25	6.75	3.81	10.00	0.54
0.50	0.54	3.75	9.25	7.00	3.81	10.25	0.54
0.75	0.54	4.00	9.25	7.25	3.81	10.50	0.54
1.00	0.54	4.25	9.25	7.50	2.18	10.75	0.54
1.25	0.54	4.50	25.02	7.75	2.18	11.00	0.54
1.50	0.54	4.75	25.02	8.00	2.18	11.25	0.54
1.75	0.54	5.00	25.02	8.25	2.18	11.50	0.54
2.00	0.54	5.25	25.02	8.50	1.09	11.75	0.54
2.25	0.54	5.50	7.07	8.75	1.09	12.00	0.54
2.50	3.26	5.75	7.07	9.00	1.09	12.25	0.54
2.75	3.26	6.00	7.07	9.25	1.09		
3.00	3.26	6.25	7.07	9.50	0.54		
3.25	3.26	6.50	3.81	9.75	0.54		

2.500	3.26	5.583	7.07	8.667	1.09	11.75	0.54
2.583	3.26	5.667	7.07	8.750	1.09	11.83	0.54
2.667	3.26	5.750	7.07	8.833	1.09	11.92	0.54
2.750	3.26	5.833	7.07	8.917	1.09	12.00	0.54
2.833	3.26	5.917	7.07	9.000	1.09	12.08	0.54
2.917	3.26	6.000	7.07	9.083	1.09	12.17	0.54
3.000	3.26	6.083	7.07	9.167	1.09	12.25	0.54
3.083	3.26	6.167	7.07	9.250	1.09		

Max.Eff.Inten.(mm/hr)= 25.02 10.70
 over (min) 5.00 5.00
 Storage Coeff. (min)= 2.18 (ii) 4.14 (ii)
 Unit Hyd. Tpeak (min)= 5.00 5.00
 Unit Hyd. peak (cms)= 0.31 0.24

TOTALS
 PEAK FLOW (cms)= 0.01 0.00 0.010 (iii)
 TIME TO PEAK (hrs)= 4.83 5.25 5.25
 RUNOFF VOLUME (mm)= 53.38 17.29 53.01
 TOTAL RAINFALL (mm)= 54.38 54.38 54.38
 RUNOFF COEFFICIENT = 0.98 0.32 0.97

 | CALIB |
 | STANDHYD (0023) | Area (ha)= 0.14
 | ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.14	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	30.55	40.00
Mannings n =	0.013	0.250

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

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

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	3.26	6.250	7.07	9.33	0.54
0.167	0.00	3.250	3.26	6.333	3.81	9.42	0.54
0.250	0.00	3.333	9.25	6.417	3.81	9.50	0.54
0.333	0.54	3.417	9.25	6.500	3.81	9.58	0.54
0.417	0.54	3.500	9.25	6.583	3.81	9.67	0.54
0.500	0.54	3.583	9.25	6.667	3.81	9.75	0.54
0.583	0.54	3.667	9.25	6.750	3.81	9.83	0.54
0.667	0.54	3.750	9.25	6.833	3.81	9.92	0.54
0.750	0.54	3.833	9.25	6.917	3.81	10.00	0.54
0.833	0.54	3.917	9.25	7.000	3.81	10.08	0.54
0.917	0.54	4.000	9.25	7.083	3.81	10.17	0.54
1.000	0.54	4.083	9.25	7.167	3.81	10.25	0.54
1.083	0.54	4.167	9.25	7.250	3.81	10.33	0.54
1.167	0.54	4.250	9.25	7.333	2.18	10.42	0.54
1.250	0.54	4.333	25.02	7.417	2.18	10.50	0.54
1.333	0.54	4.417	25.02	7.500	2.18	10.58	0.54
1.417	0.54	4.500	25.02	7.583	2.18	10.67	0.54
1.500	0.54	4.583	25.02	7.667	2.18	10.75	0.54
1.583	0.54	4.667	25.02	7.750	2.18	10.83	0.54
1.667	0.54	4.750	25.02	7.833	2.18	10.92	0.54
1.750	0.54	4.833	25.02	7.917	2.18	11.00	0.54
1.833	0.54	4.917	25.02	8.000	2.18	11.08	0.54
1.917	0.54	5.000	25.02	8.083	2.18	11.17	0.54
2.000	0.54	5.083	25.02	8.167	2.18	11.25	0.54
2.083	0.54	5.167	25.02	8.250	2.18	11.33	0.54
2.167	0.54	5.250	25.02	8.333	1.09	11.42	0.54
2.250	0.54	5.333	7.07	8.417	1.09	11.50	0.54
2.333	3.26	5.417	7.07	8.500	1.09	11.58	0.54
2.417	3.26	5.500	7.07	8.583	1.09	11.67	0.54

 | RESERVOIR(0025) |
 | IN= 2----> OUT= 1 |
DT= 5.0 min

	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0011	0.0132
	0.0010	0.0010	2.0000	0.0132

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0023)	0.140	0.010	5.25	53.01
OUTFLOW: ID= 1 (0025)	0.140	0.001	7.33	51.24

	PEAK FLOW REDUCTION [Qout/Qin] (%)	TIME SHIFT OF PEAK FLOW (min)	MAXIMUM STORAGE USED (ha.m.)
	10.70	125.00	0.0053

 | DUHYD (0026) |
 | Inlet Cap.= 0.001 |
 | #of Inlets= 1 |
Total(cms)= 0.0

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL HYD. (ID= 1):	0.14	0.00	7.33	51.24
MAJOR SYS. (ID= 2):	0.00	0.00	7.33	51.24
MINOR SYS. (ID= 3):	0.14	0.00	3.92	51.24

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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READ STORM | Filename: C:\Users\skatukurunde\AppData
| | ata\Local\Temp\
| | 3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\914fc38a
| Ptotal= 54.38 mm | Comments: 5y12 TRCA AES

2.000	0.54	5.083	25.02	8.167	2.18	11.25	0.54
2.083	0.54	5.167	25.02	8.250	2.18	11.33	0.54
2.167	0.54	5.250	25.02	8.333	1.09	11.42	0.54
2.250	0.54	5.333	7.07	8.417	1.09	11.50	0.54
2.333	3.26	5.417	7.07	8.500	1.09	11.58	0.54
2.417	3.26	5.500	7.07	8.583	1.09	11.67	0.54
2.500	3.26	5.583	7.07	8.667	1.09	11.75	0.54
2.583	3.26	5.667	7.07	8.750	1.09	11.83	0.54
2.667	3.26	5.750	7.07	8.833	1.09	11.92	0.54
2.750	3.26	5.833	7.07	8.917	1.09	12.00	0.54
2.833	3.26	5.917	7.07	9.000	1.09	12.08	0.54
2.917	3.26	6.000	7.07	9.083	1.09	12.17	0.54
3.000	3.26	6.083	7.07	9.167	1.09	12.25	0.54
3.083	3.26	6.167	7.07	9.250	1.09		

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	9.25	6.75	3.81	10.00	0.54
0.50	0.54	3.75	9.25	7.00	3.81	10.25	0.54
0.75	0.54	4.00	9.25	7.25	3.81	10.50	0.54
1.00	0.54	4.25	9.25	7.50	2.18	10.75	0.54
1.25	0.54	4.50	25.02	7.75	2.18	11.00	0.54
1.50	0.54	4.75	25.02	8.00	2.18	11.25	0.54
1.75	0.54	5.00	25.02	8.25	2.18	11.50	0.54
2.00	0.54	5.25	25.02	8.50	1.09	11.75	0.54
2.25	0.54	5.50	7.07	8.75	1.09	12.00	0.54
2.50	3.26	5.75	7.07	9.00	1.09	12.25	0.54
2.75	3.26	6.00	7.07	9.25	1.09		
3.00	3.26	6.25	7.07	9.50	0.54		
3.25	3.26	6.50	3.81	9.75	0.54		

Max.Eff.Inten.(mm/hr)= 25.02 17.14
over (min) 5.00 20.00
Storage Coeff. (min)= 3.78 (ii) 18.08 (ii)
Unit Hyd. Tpeak (min)= 5.00 20.00
Unit Hyd. peak (cms)= 0.25 0.06

TOTALS
PEAK FLOW (cms)= 0.03 0.01 0.040 (iii)
TIME TO PEAK (hrs)= 5.08 5.33 5.25
RUNOFF VOLUME (mm)= 53.38 21.18 34.69
TOTAL RAINFALL (mm)= 54.38 54.38 54.38
RUNOFF COEFFICIENT = 0.98 0.39 0.64

CALIB |
STANDHYD (0040) | Area (ha)= 0.88
ID= 1 DT= 5.0 min | Total Imp(%)= 57.00 Dir. Conn.(%)= 42.00

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

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.50	0.38
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	76.40	40.00
Mannings n =	0.013	0.250

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

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

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	3.26	6.250	7.07	9.33	0.54
0.167	0.00	3.250	3.26	6.333	3.81	9.42	0.54
0.250	0.00	3.333	9.25	6.417	3.81	9.50	0.54
0.333	0.54	3.417	9.25	6.500	3.81	9.58	0.54
0.417	0.54	3.500	9.25	6.583	3.81	9.67	0.54
0.500	0.54	3.583	9.25	6.667	3.81	9.75	0.54
0.583	0.54	3.667	9.25	6.750	3.81	9.83	0.54
0.667	0.54	3.750	9.25	6.833	3.81	9.92	0.54
0.750	0.54	3.833	9.25	6.917	3.81	10.00	0.54
0.833	0.54	3.917	9.25	7.000	3.81	10.08	0.54
0.917	0.54	4.000	9.25	7.083	3.81	10.17	0.54
1.000	0.54	4.083	9.25	7.167	3.81	10.25	0.54
1.083	0.54	4.167	9.25	7.250	3.81	10.33	0.54
1.167	0.54	4.250	9.25	7.333	2.18	10.42	0.54
1.250	0.54	4.333	25.02	7.417	2.18	10.50	0.54
1.333	0.54	4.417	25.02	7.500	2.18	10.58	0.54
1.417	0.54	4.500	25.02	7.583	2.18	10.67	0.54
1.500	0.54	4.583	25.02	7.667	2.18	10.75	0.54
1.583	0.54	4.667	25.02	7.750	2.18	10.83	0.54
1.667	0.54	4.750	25.02	7.833	2.18	10.92	0.54
1.750	0.54	4.833	25.02	7.917	2.18	11.00	0.54
1.833	0.54	4.917	25.02	8.000	2.18	11.08	0.54
1.917	0.54	5.000	25.02	8.083	2.18	11.17	0.54

ADD HYD (0027)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0026):	0.00	0.000	7.33	51.24
+ ID2= 2 (0040):	0.88	0.040	5.25	34.69

ID = 3 (0027):	0.88	0.040	5.25	34.74

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0028)	OUTFLOW	STORAGE	OUTFLOW	STORAGE
IN= 2----> OUT= 1	(cms)	(ha.m.)	(cms)	(ha.m.)
DT= 5.0 min				
	0.0000	0.0000	0.0035	0.0322
	0.0029	0.0145	0.0037	0.0375
	0.0030	0.0193	0.0038	0.0443
	0.0033	0.0269	0.0040	0.0485
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0027)	0.878	0.040	5.25	34.74
OUTFLOW: ID= 1 (0028)	0.878	0.003	8.33	33.27

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PEAK FLOW REDUCTION [Qout/Qin] (%) = 7.98
 TIME SHIFT OF PEAK FLOW (min) = 185.00
 MAXIMUM STORAGE USED (ha.m.) = 0.0239

1.417	0.54	4.500	25.02	7.583	2.18	10.67	0.54
1.500	0.54	4.583	25.02	7.667	2.18	10.75	0.54
1.583	0.54	4.667	25.02	7.750	2.18	10.83	0.54
1.667	0.54	4.750	25.02	7.833	2.18	10.92	0.54
1.750	0.54	4.833	25.02	7.917	2.18	11.00	0.54
1.833	0.54	4.917	25.02	8.000	2.18	11.08	0.54
1.917	0.54	5.000	25.02	8.083	2.18	11.17	0.54
2.000	0.54	5.083	25.02	8.167	2.18	11.25	0.54
2.083	0.54	5.167	25.02	8.250	2.18	11.33	0.54
2.167	0.54	5.250	25.02	8.333	1.09	11.42	0.54
2.250	0.54	5.333	7.07	8.417	1.09	11.50	0.54
2.333	3.26	5.417	7.07	8.500	1.09	11.58	0.54
2.417	3.26	5.500	7.07	8.583	1.09	11.67	0.54
2.500	3.26	5.583	7.07	8.667	1.09	11.75	0.54
2.583	3.26	5.667	7.07	8.750	1.09	11.83	0.54
2.667	3.26	5.750	7.07	8.833	1.09	11.92	0.54
2.750	3.26	5.833	7.07	8.917	1.09	12.00	0.54
2.833	3.26	5.917	7.07	9.000	1.09	12.08	0.54
2.917	3.26	6.000	7.07	9.083	1.09	12.17	0.54
3.000	3.26	6.083	7.07	9.167	1.09	12.25	0.54
3.083	3.26	6.167	7.07	9.250	1.09		

 READ STORM | Filename: C:\Users\skatukurunde\AppData
 | | ata\Local\Temp\
 | | 3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\914fc38a
 | Ptotal= 54.38 mm | Comments: 5y12 TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	9.25	6.75	3.81	10.00	0.54
0.50	0.54	3.75	9.25	7.00	3.81	10.25	0.54
0.75	0.54	4.00	9.25	7.25	3.81	10.50	0.54
1.00	0.54	4.25	9.25	7.50	2.18	10.75	0.54
1.25	0.54	4.50	25.02	7.75	2.18	11.00	0.54
1.50	0.54	4.75	25.02	8.00	2.18	11.25	0.54
1.75	0.54	5.00	25.02	8.25	2.18	11.50	0.54
2.00	0.54	5.25	25.02	8.50	1.09	11.75	0.54
2.25	0.54	5.50	7.07	8.75	1.09	12.00	0.54
2.50	3.26	5.75	7.07	9.00	1.09	12.25	0.54
2.75	3.26	6.00	7.07	9.25	1.09		
3.00	3.26	6.25	7.07	9.50	0.54		
3.25	3.26	6.50	3.81	9.75	0.54		

Max.Eff.Inten.(mm/hr)= 25.02 18.09
 over (min) 5.00 20.00
 Storage Coeff. (min)= 5.98 (ii) 19.96 (ii)
 Unit Hyd. Tpeak (min)= 5.00 20.00
 Unit Hyd. peak (cms)= 0.19 0.06

TOTALS

PEAK FLOW (cms)= 0.11 0.07 0.182 (iii)
 TIME TO PEAK (hrs)= 5.25 5.33 5.25
 RUNOFF VOLUME (mm)= 53.38 21.64 34.33
 TOTAL RAINFALL (mm)= 54.38 54.38 54.38
 RUNOFF COEFFICIENT = 0.98 0.40 0.63

 CALIB |
 | STANDHYD (0033) | Area (ha)= 4.02
 | ID= 1 DT= 5.0 min | Total Imp(%)= 57.00 Dir. Conn.(%)= 40.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.29	1.73
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	163.63	40.00
Mannings n =	0.013	0.250

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 70.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

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

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	3.26	6.250	7.07	9.33	0.54
0.167	0.00	3.250	3.26	6.333	3.81	9.42	0.54
0.250	0.00	3.333	9.25	6.417	3.81	9.50	0.54
0.333	0.54	3.417	9.25	6.500	3.81	9.58	0.54
0.417	0.54	3.500	9.25	6.583	3.81	9.67	0.54
0.500	0.54	3.583	9.25	6.667	3.81	9.75	0.54
0.583	0.54	3.667	9.25	6.750	3.81	9.83	0.54
0.667	0.54	3.750	9.25	6.833	3.81	9.92	0.54
0.750	0.54	3.833	9.25	6.917	3.81	10.00	0.54
0.833	0.54	3.917	9.25	7.000	3.81	10.08	0.54
0.917	0.54	4.000	9.25	7.083	3.81	10.17	0.54
1.000	0.54	4.083	9.25	7.167	3.81	10.25	0.54
1.083	0.54	4.167	9.25	7.250	3.81	10.33	0.54
1.167	0.54	4.250	9.25	7.333	2.18	10.42	0.54
1.250	0.54	4.333	25.02	7.417	2.18	10.50	0.54
1.333	0.54	4.417	25.02	7.500	2.18	10.58	0.54

 READ STORM | Filename: C:\Users\skatukurunde\AppData
 | | ata\Local\Temp\
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 | Ptotal= 54.38 mm | Comments: 5y12 TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	9.25	6.75	3.81	10.00	0.54
0.50	0.54	3.75	9.25	7.00	3.81	10.25	0.54
0.75	0.54	4.00	9.25	7.25	3.81	10.50	0.54
1.00	0.54	4.25	9.25	7.50	2.18	10.75	0.54
1.25	0.54	4.50	25.02	7.75	2.18	11.00	0.54
1.50	0.54	4.75	25.02	8.00	2.18	11.25	0.54
1.75	0.54	5.00	25.02	8.25	2.18	11.50	0.54
2.00	0.54	5.25	25.02	8.50	1.09	11.75	0.54
2.25	0.54	5.50	7.07	8.75	1.09	12.00	0.54
2.50	3.26	5.75	7.07	9.00	1.09	12.25	0.54
2.75	3.26	6.00	7.07	9.25	1.09		
3.00	3.26	6.25	7.07	9.50	0.54		
3.25	3.26	6.50	3.81	9.75	0.54		

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| CALIB |
| STANDHYD (0041) | Area (ha)= 0.37
| ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.37	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	49.67	40.00
Mannings n	=	0.013	0.250

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

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

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	3.26	6.250	7.07	9.33	0.54
0.167	0.00	3.250	3.26	6.333	3.81	9.42	0.54
0.250	0.00	3.333	9.25	6.417	3.81	9.50	0.54
0.333	0.54	3.417	9.25	6.500	3.81	9.58	0.54
0.417	0.54	3.500	9.25	6.583	3.81	9.67	0.54
0.500	0.54	3.583	9.25	6.667	3.81	9.75	0.54
0.583	0.54	3.667	9.25	6.750	3.81	9.83	0.54
0.667	0.54	3.750	9.25	6.833	3.81	9.92	0.54
0.750	0.54	3.833	9.25	6.917	3.81	10.00	0.54
0.833	0.54	3.917	9.25	7.000	3.81	10.08	0.54
0.917	0.54	4.000	9.25	7.083	3.81	10.17	0.54
1.000	0.54	4.083	9.25	7.167	3.81	10.25	0.54
1.083	0.54	4.167	9.25	7.250	3.81	10.33	0.54
1.167	0.54	4.250	9.25	7.333	2.18	10.42	0.54
1.250	0.54	4.333	25.02	7.417	2.18	10.50	0.54
1.333	0.54	4.417	25.02	7.500	2.18	10.58	0.54
1.417	0.54	4.500	25.02	7.583	2.18	10.67	0.54
1.500	0.54	4.583	25.02	7.667	2.18	10.75	0.54
1.583	0.54	4.667	25.02	7.750	2.18	10.83	0.54
1.667	0.54	4.750	25.02	7.833	2.18	10.92	0.54
1.750	0.54	4.833	25.02	7.917	2.18	11.00	0.54
1.833	0.54	4.917	25.02	8.000	2.18	11.08	0.54
1.917	0.54	5.000	25.02	8.083	2.18	11.17	0.54
2.000	0.54	5.083	25.02	8.167	2.18	11.25	0.54
2.083	0.54	5.167	25.02	8.250	2.18	11.33	0.54
2.167	0.54	5.250	25.02	8.333	1.09	11.42	0.54
2.250	0.54	5.333	7.07	8.417	1.09	11.50	0.54
2.333	3.26	5.417	7.07	8.500	1.09	11.58	0.54
2.417	3.26	5.500	7.07	8.583	1.09	11.67	0.54
2.500	3.26	5.583	7.07	8.667	1.09	11.75	0.54
2.583	3.26	5.667	7.07	8.750	1.09	11.83	0.54
2.667	3.26	5.750	7.07	8.833	1.09	11.92	0.54
2.750	3.26	5.833	7.07	8.917	1.09	12.00	0.54
2.833	3.26	5.917	7.07	9.000	1.09	12.08	0.54
2.917	3.26	6.000	7.07	9.083	1.09	12.17	0.54
3.000	3.26	6.083	7.07	9.167	1.09	12.25	0.54
3.083	3.26	6.167	7.07	9.250	1.09		

Max.Eff.Inten.(mm/hr)=	25.02	17.13
over (min)	5.00	5.00
Storage Coeff. (min)=	2.92 (ii)	4.88 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.28	0.22

PEAK FLOW (cms)=	0.03	0.00	0.026 (iii)
TIME TO PEAK (hrs)=	5.08	5.25	5.25
RUNOFF VOLUME (mm)=	53.38	28.62	53.13
TOTAL RAINFALL (mm)=	54.38	54.38	54.38
RUNOFF COEFFICIENT =	0.98	0.53	0.98

TOTALS

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| RESERVOIR(0042) |
| IN= 2---> OUT= 1 |
DT= 5.0 min

	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0026	0.0348
	0.0026	0.0010	4.0000	0.0350

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0041)	0.370	0.026	5.25	53.13
OUTFLOW: ID= 1 (0042)	0.370	0.003	7.33	52.88

PEAK FLOW REDUCTION [Qout/Qin](%)= 10.16
TIME SHIFT OF PEAK FLOW (min)=125.00
MAXIMUM STORAGE USED (ha.m.)= 0.0137

| DUHYD (0043) |
| Inlet Cap.= 0.003 |
| #of Inlets= 10 |
Total(cms)= 0.0

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL HYD. (ID= 1):	0.37	0.00	7.33	52.88
MAJOR SYS. (ID= 2):	0.00	0.00	0.00	0.00
MINOR SYS. (ID= 3):	0.37	0.00	7.33	52.88

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (0044) |
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
*** W A R N I N G : HYDROGRAPH 0043 <ID= 2> IS DRY.				
*** W A R N I N G : HYDROGRAPH 0003 = HYDROGRAPH 0001				
ID1= 1 (0033):	4.02	0.182	5.25	34.33
+ ID2= 2 (0043):	0.00	0.000	0.00	0.00
ID = 3 (0044):	4.02	0.182	5.25	34.33

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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RESERVOIR(0045)				
IN= 2---> OUT= 1				
DT= 5.0 min				
	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	0.0340	0.1196
	0.0088	0.0547	0.0460	0.1470
	0.0100	0.0814	0.0530	0.1571
	0.0260	0.1053	0.0670	0.1747

1.75	0.63	5.00	28.84	8.25	2.51	11.50	0.63
2.00	0.63	5.25	28.84	8.50	1.25	11.75	0.63
2.25	0.63	5.50	8.15	8.75	1.25	12.00	0.63
2.50	3.76	5.75	8.15	9.00	1.25	12.25	0.63
2.75	3.76	6.00	8.15	9.25	1.25		
3.00	3.76	6.25	8.15	9.50	0.63		
3.25	3.76	6.50	4.39	9.75	0.63		

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0044)	4.016	0.182	5.25	34.33
OUTFLOW: ID= 1 (0045)	4.016	0.025	7.50	33.94

PEAK FLOW REDUCTION [Qout/Qin](%)= 13.50
TIME SHIFT OF PEAK FLOW (min)=135.00
MAXIMUM STORAGE USED (ha.m.)= 0.1031

CALIB		
STANDHYD (0001)	Area (ha)=	32.52
ID= 1 DT= 5.0 min	Total Imp(%)=	56.00
	Dir. Conn.(%)=	38.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	18.21	14.31
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	465.62	40.00
Mannings n =	0.013	0.250

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

ADD HYD (0024)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0028):	0.88	0.003	8.33	33.27
+ ID2= 2 (0003):	34.47	0.159	8.42	34.47
=====				
ID = 3 (0024):	35.35	0.163	8.42	34.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0024)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0024):	35.35	0.163	8.42	34.44
+ ID2= 2 (0045):	4.02	0.025	7.50	33.94
=====				
ID = 1 (0024):	39.36	0.186	8.33	34.39

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

** SIMULATION : 10y12h TRCA AES **

| READ STORM | Filename: C:\Users\skaturunde\AppData
| | | ata\Local\Temp\
| | | 3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\b4a48bf0
| Ptotal= 62.71 mm | Comments: 10y12h TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	10.66	6.75	4.39	10.00	0.63
0.50	0.63	3.75	10.66	7.00	4.39	10.25	0.63
0.75	0.63	4.00	10.66	7.25	4.39	10.50	0.63
1.00	0.63	4.25	10.66	7.50	2.51	10.75	0.63
1.25	0.63	4.50	28.84	7.75	2.51	11.00	0.63
1.50	0.63	4.75	28.84	8.00	2.51	11.25	0.63

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	3.76	6.250	8.15	9.33	0.63
0.167	0.00	3.250	3.76	6.333	4.39	9.42	0.63
0.250	0.00	3.333	10.66	6.417	4.39	9.50	0.63
0.333	0.63	3.417	10.66	6.500	4.39	9.58	0.63
0.417	0.63	3.500	10.66	6.583	4.39	9.67	0.63
0.500	0.63	3.583	10.66	6.667	4.39	9.75	0.63
0.583	0.63	3.667	10.66	6.750	4.39	9.83	0.63
0.667	0.63	3.750	10.66	6.833	4.39	9.92	0.63
0.750	0.63	3.833	10.66	6.917	4.39	10.00	0.63
0.833	0.63	3.917	10.66	7.000	4.39	10.08	0.63
0.917	0.63	4.000	10.66	7.083	4.39	10.17	0.63
1.000	0.63	4.083	10.66	7.167	4.39	10.25	0.63
1.083	0.63	4.167	10.66	7.250	4.39	10.33	0.63
1.167	0.63	4.250	10.66	7.333	2.51	10.42	0.63
1.250	0.63	4.333	28.84	7.417	2.51	10.50	0.63
1.333	0.63	4.417	28.84	7.500	2.51	10.58	0.63
1.417	0.63	4.500	28.84	7.583	2.51	10.67	0.63
1.500	0.63	4.583	28.84	7.667	2.51	10.75	0.63
1.583	0.63	4.667	28.84	7.750	2.51	10.83	0.63
1.667	0.63	4.750	28.84	7.833	2.51	10.92	0.63
1.750	0.63	4.833	28.84	7.917	2.51	11.00	0.63
1.833	0.63	4.917	28.84	8.000	2.51	11.08	0.63
1.917	0.63	5.000	28.84	8.083	2.51	11.17	0.63
2.000	0.63	5.083	28.84	8.167	2.51	11.25	0.63
2.083	0.63	5.167	28.84	8.250	2.51	11.33	0.63
2.167	0.63	5.250	28.84	8.333	1.25	11.42	0.63
2.250	0.63	5.333	8.15	8.417	1.25	11.50	0.63
2.333	3.76	5.417	8.15	8.500	1.25	11.58	0.63
2.417	3.76	5.500	8.15	8.583	1.25	11.67	0.63
2.500	3.76	5.583	8.15	8.667	1.25	11.75	0.63
2.583	3.76	5.667	8.15	8.750	1.25	11.83	0.63
2.667	3.76	5.750	8.15	8.833	1.25	11.92	0.63
2.750	3.76	5.833	8.15	8.917	1.25	12.00	0.63
2.833	3.76	5.917	8.15	9.000	1.25	12.08	0.63
2.917	3.76	6.000	8.15	9.083	1.25	12.17	0.63
3.000	3.76	6.083	8.15	9.167	1.25	12.25	0.63

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	3.083	3.76	6.167	8.15	9.250	1.25	
Max.Eff.Inten.(mm/hr)=		28.84		22.94			
over (min)		10.00		25.00			
Storage Coeff. (min)=		10.57 (ii)		23.29 (ii)			
Unit Hyd. Tpeak (min)=		10.00		25.00			
Unit Hyd. peak (cms)=		0.11		0.05			
						TOTALS	
PEAK FLOW (cms)=		0.99		0.71		1.675 (iii)	
TIME TO PEAK (hrs)=		5.25		5.33		5.25	
RUNOFF VOLUME (mm)=		61.71		27.36		40.41	
TOTAL RAINFALL (mm)=		62.71		62.71		62.71	
RUNOFF COEFFICIENT =		0.98		0.44		0.64	

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

 | READ STORM | Filename: C:\Users\skatukurunde\AppData
 | | ata\Local\Temp\
 | | 3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\b4a48bf0
 | Ptotal= 62.71 mm | Comments: 10yl2h TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	10.66	6.75	4.39	10.00	0.63
0.50	0.63	3.75	10.66	7.00	4.39	10.25	0.63
0.75	0.63	4.00	10.66	7.25	4.39	10.50	0.63
1.00	0.63	4.25	10.66	7.50	2.51	10.75	0.63
1.25	0.63	4.50	28.84	7.75	2.51	11.00	0.63
1.50	0.63	4.75	28.84	8.00	2.51	11.25	0.63
1.75	0.63	5.00	28.84	8.25	2.51	11.50	0.63
2.00	0.63	5.25	28.84	8.50	1.25	11.75	0.63
2.25	0.63	5.50	8.15	8.75	1.25	12.00	0.63
2.50	3.76	5.75	8.15	9.00	1.25	12.25	0.63
2.75	3.76	6.00	8.15	9.25	1.25		
3.00	3.76	6.25	8.15	9.50	0.63		
3.25	3.76	6.50	4.39	9.75	0.63		

 | CALIB |
 | STANDHYD (0006) | Area (ha)= 3.94
 | ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.90	0.04
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	161.97	40.00
Mannings n =	0.013	0.250

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

----- TRANSFORMED HYETOGRAPH -----
 TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	3.76	6.250	8.15	9.33	0.63
0.167	0.00	3.250	3.76	6.333	4.39	9.42	0.63
0.250	0.00	3.333	10.66	6.417	4.39	9.50	0.63
0.333	0.63	3.417	10.66	6.500	4.39	9.58	0.63
0.417	0.63	3.500	10.66	6.583	4.39	9.67	0.63
0.500	0.63	3.583	10.66	6.667	4.39	9.75	0.63
0.583	0.63	3.667	10.66	6.750	4.39	9.83	0.63
0.667	0.63	3.750	10.66	6.833	4.39	9.92	0.63
0.750	0.63	3.833	10.66	6.917	4.39	10.00	0.63
0.833	0.63	3.917	10.66	7.000	4.39	10.08	0.63
0.917	0.63	4.000	10.66	7.083	4.39	10.17	0.63
1.000	0.63	4.083	10.66	7.167	4.39	10.25	0.63
1.083	0.63	4.167	10.66	7.250	4.39	10.33	0.63
1.167	0.63	4.250	10.66	7.333	2.51	10.42	0.63
1.250	0.63	4.333	28.84	7.417	2.51	10.50	0.63
1.333	0.63	4.417	28.84	7.500	2.51	10.58	0.63
1.417	0.63	4.500	28.84	7.583	2.51	10.67	0.63
1.500	0.63	4.583	28.84	7.667	2.51	10.75	0.63
1.583	0.63	4.667	28.84	7.750	2.51	10.83	0.63
1.667	0.63	4.750	28.84	7.833	2.51	10.92	0.63
1.750	0.63	4.833	28.84	7.917	2.51	11.00	0.63
1.833	0.63	4.917	28.84	8.000	2.51	11.08	0.63
1.917	0.63	5.000	28.84	8.083	2.51	11.17	0.63
2.000	0.63	5.083	28.84	8.167	2.51	11.25	0.63
2.083	0.63	5.167	28.84	8.250	2.51	11.33	0.63
2.167	0.63	5.250	28.84	8.333	1.25	11.42	0.63
2.250	0.63	5.333	8.15	8.417	1.25	11.50	0.63
2.333	3.76	5.417	8.15	8.500	1.25	11.58	0.63
2.417	3.76	5.500	8.15	8.583	1.25	11.67	0.63
2.500	3.76	5.583	8.15	8.667	1.25	11.75	0.63
2.583	3.76	5.667	8.15	8.750	1.25	11.83	0.63
2.667	3.76	5.750	8.15	8.833	1.25	11.92	0.63
2.750	3.76	5.833	8.15	8.917	1.25	12.00	0.63
2.833	3.76	5.917	8.15	9.000	1.25	12.08	0.63
2.917	3.76	6.000	8.15	9.083	1.25	12.17	0.63
3.000	3.76	6.083	8.15	9.167	1.25	12.25	0.63
3.083	3.76	6.167	8.15	9.250	1.25		

Max.Eff.Inten.(mm/hr)=	28.84	13.54
over (min)	5.00	10.00
Storage Coeff. (min)=	5.61 (ii)	7.46 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.20	0.13

			TOTALS
PEAK FLOW (cms)=	0.31	0.00	0.314 (iii)
TIME TO PEAK (hrs)=	5.25	5.25	5.25
RUNOFF VOLUME (mm)=	61.71	22.03	61.31
TOTAL RAINFALL (mm)=	62.71	62.71	62.71
RUNOFF COEFFICIENT =	0.98	0.35	0.98

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. 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(0021) |
 | IN= 2---> OUT= 1 |
DT= 5.0 min

OUTFLOW	STORAGE	OUTFLOW	STORAGE
(cms)	(ha.m.)	(cms)	(ha.m.)

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0.0000 0.0000 | 0.0318 0.4260
0.0318 0.0010 | 4.0000 0.4261

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

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0006)	3.935	0.314	5.25	61.31
OUTFLOW: ID= 1 (0021)	3.935	0.032	6.08	61.31

PEAK FLOW REDUCTION [Qout/Qin] (%)= 10.14
TIME SHIFT OF PEAK FLOW (min)= 50.00
MAXIMUM STORAGE USED (ha.m.)= 0.1331

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	3.76	6.250	8.15	9.33	0.63
0.167	0.00	3.250	3.76	6.333	4.39	9.42	0.63
0.250	0.00	3.333	10.66	6.417	4.39	9.50	0.63
0.333	0.63	3.417	10.66	6.500	4.39	9.58	0.63
0.417	0.63	3.500	10.66	6.583	4.39	9.67	0.63
0.500	0.63	3.583	10.66	6.667	4.39	9.75	0.63
0.583	0.63	3.667	10.66	6.750	4.39	9.83	0.63
0.667	0.63	3.750	10.66	6.833	4.39	9.92	0.63
0.750	0.63	3.833	10.66	6.917	4.39	10.00	0.63
0.833	0.63	3.917	10.66	7.000	4.39	10.08	0.63
0.917	0.63	4.000	10.66	7.083	4.39	10.17	0.63
1.000	0.63	4.083	10.66	7.167	4.39	10.25	0.63
1.083	0.63	4.167	10.66	7.250	4.39	10.33	0.63
1.167	0.63	4.250	10.66	7.333	2.51	10.42	0.63
1.250	0.63	4.333	28.84	7.417	2.51	10.50	0.63
1.333	0.63	4.417	28.84	7.500	2.51	10.58	0.63
1.417	0.63	4.500	28.84	7.583	2.51	10.67	0.63
1.500	0.63	4.583	28.84	7.667	2.51	10.75	0.63
1.583	0.63	4.667	28.84	7.750	2.51	10.83	0.63
1.667	0.63	4.750	28.84	7.833	2.51	10.92	0.63
1.750	0.63	4.833	28.84	7.917	2.51	11.00	0.63
1.833	0.63	4.917	28.84	8.000	2.51	11.08	0.63
1.917	0.63	5.000	28.84	8.083	2.51	11.17	0.63
2.000	0.63	5.083	28.84	8.167	2.51	11.25	0.63
2.083	0.63	5.167	28.84	8.250	2.51	11.33	0.63
2.167	0.63	5.250	28.84	8.333	1.25	11.42	0.63
2.250	0.63	5.333	8.15	8.417	1.25	11.50	0.63
2.333	3.76	5.417	8.15	8.500	1.25	11.58	0.63
2.417	3.76	5.500	8.15	8.583	1.25	11.67	0.63
2.500	3.76	5.583	8.15	8.667	1.25	11.75	0.63
2.583	3.76	5.667	8.15	8.750	1.25	11.83	0.63
2.667	3.76	5.750	8.15	8.833	1.25	11.92	0.63
2.750	3.76	5.833	8.15	8.917	1.25	12.00	0.63
2.833	3.76	5.917	8.15	9.000	1.25	12.08	0.63
2.917	3.76	6.000	8.15	9.083	1.25	12.17	0.63
3.000	3.76	6.083	8.15	9.167	1.25	12.25	0.63
3.083	3.76	6.167	8.15	9.250	1.25		

DUHYD (0007) |
Inlet Cap.= 0.032 |
#of Inlets= 1 |
Total(cms)= 0.0 |

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
TOTAL HYD. (ID= 1):	3.94	0.03	6.08	61.31
MAJOR SYS. (ID= 2):	0.00	0.00	0.00	0.00
MINOR SYS. (ID= 3):	3.94	0.03	6.08	61.31

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM | Filename: C:\Users\skaturunde\AppData
ata\Local\Temp\
3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\b4a48bf0
Ptotal= 62.71 mm | Comments: 10y12h TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	10.66	6.75	4.39	10.00	0.63
0.50	0.63	3.75	10.66	7.00	4.39	10.25	0.63
0.75	0.63	4.00	10.66	7.25	4.39	10.50	0.63
1.00	0.63	4.25	10.66	7.50	2.51	10.75	0.63
1.25	0.63	4.50	28.84	7.75	2.51	11.00	0.63
1.50	0.63	4.75	28.84	8.00	2.51	11.25	0.63
1.75	0.63	5.00	28.84	8.25	2.51	11.50	0.63
2.00	0.63	5.25	28.84	8.50	1.25	11.75	0.63
2.25	0.63	5.50	8.15	8.75	1.25	12.00	0.63
2.50	3.76	5.75	8.15	9.00	1.25	12.25	0.63
2.75	3.76	6.00	8.15	9.25	1.25		
3.00	3.76	6.25	8.15	9.50	0.63		
3.25	3.76	6.50	4.39	9.75	0.63		

Max.Eff.Inten.(mm/hr)= 28.84 20.90
over (min) 5.00 5.00
Storage Coeff. (min)= 2.71 (ii) 4.56 (ii)
Unit Hyd. Tpeak (min)= 5.00 5.00
Unit Hyd. peak (cms)= 0.29 0.23

TOTALS
PEAK FLOW (cms)= 0.03 0.00 0.028 (iii)
TIME TO PEAK (hrs)= 4.83 5.25 5.25
RUNOFF VOLUME (mm)= 61.71 35.33 61.44
TOTAL RAINFALL (mm)= 62.71 62.71 62.71
RUNOFF COEFFICIENT = 0.98 0.56 0.98

CALIB |
STANDHYD (0036) | Area (ha)= 0.35
ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.35	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	48.30	40.00
Mannings n =	0.013	0.250

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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-----
| RESERVOIR( 0039) |
| IN= 2---> OUT= 1 |
| DT= 5.0 min |
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	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0400	0.0050

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0036)	0.350	0.028	5.25	61.44
OUTFLOW: ID= 1 (0039)	0.350	0.027	5.25	61.37


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-----
PEAK FLOW REDUCTION [Qout/Qin](%)= 95.65
TIME SHIFT OF PEAK FLOW (min)= 0.00
MAXIMUM STORAGE USED (ha.m.)= 0.0034
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| READ STORM |
| |
| |
| Ptotal= 62.71 mm |
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Filename: C:\Users\skaturkunde\AppData\Local\Temp\3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\b4a48bf0

Comments: 10y12h TRCA AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	3.50	10.66	6.75	4.39	10.00	0.63
0.50	0.63	3.75	10.66	7.00	4.39	10.25	0.63
0.75	0.63	4.00	10.66	7.25	4.39	10.50	0.63
1.00	0.63	4.25	10.66	7.50	2.51	10.75	0.63
1.25	0.63	4.50	28.84	7.75	2.51	11.00	0.63
1.50	0.63	4.75	28.84	8.00	2.51	11.25	0.63
1.75	0.63	5.00	28.84	8.25	2.51	11.50	0.63
2.00	0.63	5.25	28.84	8.50	1.25	11.75	0.63
2.25	0.63	5.50	8.15	8.75	1.25	12.00	0.63
2.50	3.76	5.75	8.15	9.00	1.25	12.25	0.63
2.75	3.76	6.00	8.15	9.25	1.25		
3.00	3.76	6.25	8.15	9.50	0.63		
3.25	3.76	6.50	4.39	9.75	0.63		

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| CALIB |
| STANDHYD ( 0037) |
| ID= 1 DT= 5.0 min |
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Area (ha)= 1.60
Total Imp(%)= 75.00 Dir. Conn.(%)= 45.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.20	0.40
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	103.28	40.00
Mannings n =	0.013	0.250

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

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---- TRANSFORMED HYETOGRAPH ----

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TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	3.167	3.76	6.250	8.15	9.33	0.63
0.167	0.00	3.250	3.76	6.333	4.39	9.42	0.63
0.250	0.00	3.333	10.66	6.417	4.39	9.50	0.63

0.333	0.63	3.417	10.66	6.500	4.39	9.58	0.63
0.417	0.63	3.500	10.66	6.583	4.39	9.67	0.63
0.500	0.63	3.583	10.66	6.667	4.39	9.75	0.63
0.583	0.63	3.667	10.66	6.750	4.39	9.83	0.63
0.667	0.63	3.750	10.66	6.833	4.39	9.92	0.63
0.750	0.63	3.833	10.66	6.917	4.39	10.00	0.63
0.833	0.63	3.917	10.66	7.000	4.39	10.08	0.63
0.917	0.63	4.000	10.66	7.083	4.39	10.17	0.63
1.000	0.63	4.083	10.66	7.167	4.39	10.25	0.63
1.083	0.63	4.167	10.66	7.250	4.39	10.33	0.63
1.167	0.63	4.250	10.66	7.333	2.51	10.42	0.63
1.250	0.63	4.333	28.84	7.417	2.51	10.50	0.63
1.333	0.63	4.417	28.84	7.500	2.51	10.58	0.63
1.417	0.63	4.500	28.84	7.583	2.51	10.67	0.63
1.500	0.63	4.583	28.84	7.667	2.51	10.75	0.63
1.583	0.63	4.667	28.84	7.750	2.51	10.83	0.63
1.667	0.63	4.750	28.84	7.833	2.51	10.92	0.63
1.750	0.63	4.833	28.84	7.917	2.51	11.00	0.63
1.833	0.63	4.917	28.84	8.000	2.51	11.08	0.63
1.917	0.63	5.000	28.84	8.083	2.51	11.17	0.63
2.000	0.63	5.083	28.84	8.167	2.51	11.25	0.63
2.083	0.63	5.167	28.84	8.250	2.51	11.33	0.63
2.167	0.63	5.250	28.84	8.333	1.25	11.42	0.63
2.250	0.63	5.333	8.15	8.417	1.25	11.50	0.63
2.333	3.76	5.417	8.15	8.500	1.25	11.58	0.63
2.417	3.76	5.500	8.15	8.583	1.25	11.67	0.63
2.500	3.76	5.583	8.15	8.667	1.25	11.75	0.63
2.583	3.76	5.667	8.15	8.750	1.25	11.83	0.63
2.667	3.76	5.750	8.15	8.833	1.25	11.92	0.63
2.750	3.76	5.833	8.15	8.917	1.25	12.00	0.63
2.833	3.76	5.917	8.15	9.000	1.25	12.08	0.63
2.917	3.76	6.000	8.15	9.083	1.25	12.17	0.63
3.000	3.76	6.083	8.15	9.167	1.25	12.25	0.63
3.083	3.76	6.167	8.15	9.250	1.25		

Max.Eff.Inten.(mm/hr)=	28.84	56.54
over (min)	5.00	15.00
Storage Coeff. (min)=	4.28 (ii)	13.15 (ii)
Unit Hyd. Tpeak (min)=	5.00	15.00
Unit Hyd. peak (cms)=	0.23	0.08

PEAK FLOW (cms)=	0.06	0.06	0.118 (iii)
TIME TO PEAK (hrs)=	5.17	5.25	5.25
RUNOFF VOLUME (mm)=	61.71	46.69	53.45
TOTAL RAINFALL (mm)=	62.71	62.71	62.71
RUNOFF COEFFICIENT =	0.98	0.74	0.85

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```

-----
| RESERVOIR( 0038) |
| IN= 2---> OUT= 1 |
| DT= 5.0 min |
-----

```

	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1000	0.0460

	AREA	QPEAK	TPEAK	R.V.
--	------	-------	-------	------

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	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0037)	1.600	0.118	5.25	53.45
OUTFLOW: ID= 1 (0038)	1.600	0.067	5.42	53.38

PEAK FLOW REDUCTION [Qout/Qin] (%) = 57.11
 TIME SHIFT OF PEAK FLOW (min) = 10.00
 MAXIMUM STORAGE USED (ha.m.) = 0.0309

OUTFLOW: ID= 1 (0003) 34.470 0.220 8.17 41.18

PEAK FLOW REDUCTION [Qout/Qin] (%) = 12.44
 TIME SHIFT OF PEAK FLOW (min) = 175.00
 MAXIMUM STORAGE USED (ha.m.) = 1.0689

```

-----
| ADD HYD ( 0008) |
| 1 + 2 = 3 |
-----
          AREA   QPEAK   TPEAK   R.V.
          (ha)   (cms)   (hrs)   (mm)
-----
ID1= 1 ( 0001):  32.52  1.675   5.25   40.41
+ ID2= 2 ( 0038):  1.60  0.067   5.42   53.38
=====
ID = 3 ( 0008):  34.12  1.739   5.25   41.02
    
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| ADD HYD ( 0008) |
| 3 + 2 = 1 |
-----
          AREA   QPEAK   TPEAK   R.V.
          (ha)   (cms)   (hrs)   (mm)
-----
ID1= 3 ( 0008):  34.12  1.739   5.25   41.02
+ ID2= 2 ( 0039):  0.35  0.027   5.25   61.37
=====
ID = 1 ( 0008):  34.47  1.766   5.25   41.23
    
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| ADD HYD ( 0008) |
| 1 + 2 = 3 |
-----
          AREA   QPEAK   TPEAK   R.V.
          (ha)   (cms)   (hrs)   (mm)
-----
*** W A R N I N G : HYDROGRAPH 0007 <ID= 2> IS DRY.
*** W A R N I N G : HYDROGRAPH 0003 = HYDROGRAPH 0001
ID1= 1 ( 0008):  34.47  1.766   5.25   41.23
+ ID2= 2 ( 0007):  0.00  0.000   0.00   0.00
=====
ID = 3 ( 0008):  34.47  1.766   5.25   41.23
    
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| RESERVOIR( 0003) |
| IN= 2----> OUT= 1 |
| DT= 5.0 min |
-----
          OUTFLOW   STORAGE   OUTFLOW   STORAGE
          (cms)   (ha.m.)   (cms)   (ha.m.)
-----
0.0000  0.0000 | 0.3000  1.2650
0.0710  0.4106 | 0.3780  1.4000
0.0880  0.6770 | 0.4800  1.5300
0.1600  0.9180 | 1.5000  5.0000
0.2200  1.0700 | 0.0000  0.0000
-----
          AREA   QPEAK   TPEAK   R.V.
          (ha)   (cms)   (hrs)   (mm)
-----
INFLOW : ID= 2 ( 0008)  34.470  1.766   5.25   41.23
    
```

```

-----
| READ STORM |
| |
| |
| Ptotal= 62.71 mm |
-----
Filename: C:\Users\skatukurunde\AppData
          ata\Local\Temp\
          3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\b4a48bf0
Comments: 10y12h TRCA AES
    
```

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	10.66	6.75	4.39	10.00	0.63
0.50	0.63	3.75	10.66	7.00	4.39	10.25	0.63
0.75	0.63	4.00	10.66	7.25	4.39	10.50	0.63
1.00	0.63	4.25	10.66	7.50	2.51	10.75	0.63
1.25	0.63	4.50	28.84	7.75	2.51	11.00	0.63
1.50	0.63	4.75	28.84	8.00	2.51	11.25	0.63
1.75	0.63	5.00	28.84	8.25	2.51	11.50	0.63
2.00	0.63	5.25	28.84	8.50	1.25	11.75	0.63
2.25	0.63	5.50	8.15	8.75	1.25	12.00	0.63
2.50	3.76	5.75	8.15	9.00	1.25	12.25	0.63
2.75	3.76	6.00	8.15	9.25	1.25		
3.00	3.76	6.25	8.15	9.50	0.63		
3.25	3.76	6.50	4.39	9.75	0.63		

```

-----
| CALIB |
| STANDHYD ( 0023) |
| ID= 1 DT= 5.0 min |
-----
Area (ha) = 0.14
Total Imp(%) = 99.00 Dir. Conn.(%) = 99.00
    
```

	IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha) = 0.14	0.00
Dep. Storage	(mm) = 1.00	1.50
Average Slope	(%) = 1.00	2.00
Length	(m) = 30.55	40.00
Mannings n	= 0.013	0.250

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

```

-----
          TIME   RAIN   TIME   RAIN   TIME   RAIN   TIME   RAIN
          hrs   mm/hr  hrs   mm/hr  hrs   mm/hr  hrs   mm/hr
-----
0.083  0.00 | 3.167  3.76 | 6.250  8.15 | 9.33  0.63
0.167  0.00 | 3.250  3.76 | 6.333  4.39 | 9.42  0.63
0.250  0.00 | 3.333  10.66 | 6.417  4.39 | 9.50  0.63
0.333  0.63 | 3.417  10.66 | 6.500  4.39 | 9.58  0.63
0.417  0.63 | 3.500  10.66 | 6.583  4.39 | 9.67  0.63
0.500  0.63 | 3.583  10.66 | 6.667  4.39 | 9.75  0.63
0.583  0.63 | 3.667  10.66 | 6.750  4.39 | 9.83  0.63
0.667  0.63 | 3.750  10.66 | 6.833  4.39 | 9.92  0.63
0.750  0.63 | 3.833  10.66 | 6.917  4.39 | 10.00 0.63
0.833  0.63 | 3.917  10.66 | 7.000  4.39 | 10.08 0.63
0.917  0.63 | 4.000  10.66 | 7.083  4.39 | 10.17 0.63
1.000  0.63 | 4.083  10.66 | 7.167  4.39 | 10.25 0.63
1.083  0.63 | 4.167  10.66 | 7.250  4.39 | 10.33 0.63
1.167  0.63 | 4.250  10.66 | 7.333  2.51 | 10.42 0.63
    
```


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1.250	0.63	4.333	28.84	7.417	2.51	10.50	0.63
1.333	0.63	4.417	28.84	7.500	2.51	10.58	0.63
1.417	0.63	4.500	28.84	7.583	2.51	10.67	0.63
1.500	0.63	4.583	28.84	7.667	2.51	10.75	0.63
1.583	0.63	4.667	28.84	7.750	2.51	10.83	0.63
1.667	0.63	4.750	28.84	7.833	2.51	10.92	0.63
1.750	0.63	4.833	28.84	7.917	2.51	11.00	0.63
1.833	0.63	4.917	28.84	8.000	2.51	11.08	0.63
1.917	0.63	5.000	28.84	8.083	2.51	11.17	0.63
2.000	0.63	5.083	28.84	8.167	2.51	11.25	0.63
2.083	0.63	5.167	28.84	8.250	2.51	11.33	0.63
2.167	0.63	5.250	28.84	8.333	1.25	11.42	0.63
2.250	0.63	5.333	8.15	8.417	1.25	11.50	0.63
2.333	3.76	5.417	8.15	8.500	1.25	11.58	0.63
2.417	3.76	5.500	8.15	8.583	1.25	11.67	0.63
2.500	3.76	5.583	8.15	8.667	1.25	11.75	0.63
2.583	3.76	5.667	8.15	8.750	1.25	11.83	0.63
2.667	3.76	5.750	8.15	8.833	1.25	11.92	0.63
2.750	3.76	5.833	8.15	8.917	1.25	12.00	0.63
2.833	3.76	5.917	8.15	9.000	1.25	12.08	0.63
2.917	3.76	6.000	8.15	9.083	1.25	12.17	0.63
3.000	3.76	6.083	8.15	9.167	1.25	12.25	0.63
3.083	3.76	6.167	8.15	9.250	1.25		

Max.Eff.Inten.(mm/hr)=	28.84	13.54
over (min)	5.00	5.00
Storage Coeff. (min)=	2.06 (ii)	3.91 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.31	0.25
PEAK FLOW (cms)=	0.01	0.00
TIME TO PEAK (hrs)=	4.83	5.25
RUNOFF VOLUME (mm)=	61.71	22.03
TOTAL RAINFALL (mm)=	62.71	62.71
RUNOFF COEFFICIENT =	0.98	0.35

TOTALS
0.011 (iii)
5.25
61.31
62.71
0.98

DUHYD (0026)				
Inlet Cap.= 0.001				
#of Inlets= 1				
Total(cms)= 0.0				

TOTAL HYD.(ID= 1):	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
-----	-----	-----	-----	-----
MAJOR SYS.(ID= 2):	0.00	0.00	7.33	59.56
MINOR SYS.(ID= 3):	0.14	0.00	3.75	59.56

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM	Filename: C:\Users\skaturunde\AppData
	ata\Local\Temp\
	3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\b4a48bf0
Ptotal= 62.71 mm	Comments: 10y12h TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	10.66	6.75	4.39	10.00	0.63
0.50	0.63	3.75	10.66	7.00	4.39	10.25	0.63
0.75	0.63	4.00	10.66	7.25	4.39	10.50	0.63
1.00	0.63	4.25	10.66	7.50	2.51	10.75	0.63
1.25	0.63	4.50	28.84	7.75	2.51	11.00	0.63
1.50	0.63	4.75	28.84	8.00	2.51	11.25	0.63
1.75	0.63	5.00	28.84	8.25	2.51	11.50	0.63
2.00	0.63	5.25	28.84	8.50	1.25	11.75	0.63
2.25	0.63	5.50	8.15	8.75	1.25	12.00	0.63
2.50	3.76	5.75	8.15	9.00	1.25	12.25	0.63
2.75	3.76	6.00	8.15	9.25	1.25		
3.00	3.76	6.25	8.15	9.50	0.63		
3.25	3.76	6.50	4.39	9.75	0.63		

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. 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(0025)
IN= 2----> OUT= 1
DT= 5.0 min

OUTFLOW STORAGE OUTFLOW STORAGE
(cms) (ha.m.) (cms) (ha.m.)
0.0000 0.0000 0.0011 0.0132
0.0010 0.0010 2.0000 0.0132

CALIB	
STANDHYD (0040)	Area (ha)= 0.88
ID= 1 DT= 5.0 min	Total Imp(%)= 57.00 Dir. Conn.(%)= 42.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.50	0.38
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	76.40	40.00
Mannings n =	0.013	0.250

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

AREA	QPEAK	TPEAK	R.V.	
(ha)	(cms)	(hrs)	(mm)	
INFLOW : ID= 2 (0023)	0.140	0.011	5.25	61.31
OUTFLOW: ID= 1 (0025)	0.140	0.001	7.33	59.56

PEAK FLOW REDUCTION [Qout/Qin] (%)= 9.35
TIME SHIFT OF PEAK FLOW (min)=125.00
MAXIMUM STORAGE USED (ha.m.)= 0.0063

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	3.76	6.250	8.15	9.33	0.63
0.167	0.00	3.250	3.76	6.333	4.39	9.42	0.63
0.250	0.00	3.333	10.66	6.417	4.39	9.50	0.63
0.333	0.63	3.417	10.66	6.500	4.39	9.58	0.63
0.417	0.63	3.500	10.66	6.583	4.39	9.67	0.63
0.500	0.63	3.583	10.66	6.667	4.39	9.75	0.63
0.583	0.63	3.667	10.66	6.750	4.39	9.83	0.63
0.667	0.63	3.750	10.66	6.833	4.39	9.92	0.63

0.750	0.63	3.833	10.66	6.917	4.39	10.00	0.63
0.833	0.63	3.917	10.66	7.000	4.39	10.08	0.63
0.917	0.63	4.000	10.66	7.083	4.39	10.17	0.63
1.000	0.63	4.083	10.66	7.167	4.39	10.25	0.63
1.083	0.63	4.167	10.66	7.250	4.39	10.33	0.63
1.167	0.63	4.250	10.66	7.333	2.51	10.42	0.63
1.250	0.63	4.333	28.84	7.417	2.51	10.50	0.63
1.333	0.63	4.417	28.84	7.500	2.51	10.58	0.63
1.417	0.63	4.500	28.84	7.583	2.51	10.67	0.63
1.500	0.63	4.583	28.84	7.667	2.51	10.75	0.63
1.583	0.63	4.667	28.84	7.750	2.51	10.83	0.63
1.667	0.63	4.750	28.84	7.833	2.51	10.92	0.63
1.750	0.63	4.833	28.84	7.917	2.51	11.00	0.63
1.833	0.63	4.917	28.84	8.000	2.51	11.08	0.63
1.917	0.63	5.000	28.84	8.083	2.51	11.17	0.63
2.000	0.63	5.083	28.84	8.167	2.51	11.25	0.63
2.083	0.63	5.167	28.84	8.250	2.51	11.33	0.63
2.167	0.63	5.250	28.84	8.333	1.25	11.42	0.63
2.250	0.63	5.333	8.15	8.417	1.25	11.50	0.63
2.333	3.76	5.417	8.15	8.500	1.25	11.58	0.63
2.417	3.76	5.500	8.15	8.583	1.25	11.67	0.63
2.500	3.76	5.583	8.15	8.667	1.25	11.75	0.63
2.583	3.76	5.667	8.15	8.750	1.25	11.83	0.63
2.667	3.76	5.750	8.15	8.833	1.25	11.92	0.63
2.750	3.76	5.833	8.15	8.917	1.25	12.00	0.63
2.833	3.76	5.917	8.15	9.000	1.25	12.08	0.63
2.917	3.76	6.000	8.15	9.083	1.25	12.17	0.63
3.000	3.76	6.083	8.15	9.167	1.25	12.25	0.63
3.083	3.76	6.167	8.15	9.250	1.25		

Max.Eff.Inten.(mm/hr)=	28.84	21.44
over (min)	5.00	20.00
Storage Coeff. (min)=	3.57 (ii)	16.64 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.26	0.06
PEAK FLOW (cms)=	0.03	0.02
TIME TO PEAK (hrs)=	5.08	5.33
RUNOFF VOLUME (mm)=	61.71	26.66
TOTAL RAINFALL (mm)=	62.71	62.71
RUNOFF COEFFICIENT =	0.98	0.43

TOTALS
0.048 (iii)

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0027)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0026):	0.00	0.000	7.33	59.56
+ ID2= 2 (0040):	0.88	0.048	5.25	41.37
=====				
ID = 3 (0027):	0.88	0.048	5.25	41.43

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0028)				
IN= 2---> OUT= 1				
DT= 5.0 min				
	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	0.0035	0.0322
	0.0029	0.0145	0.0037	0.0375
	0.0030	0.0193	0.0038	0.0443
	0.0033	0.0269	0.0040	0.0485
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0027)	0.878	0.048	5.25	41.43
OUTFLOW: ID= 1 (0028)	0.878	0.003	8.50	39.97
PEAK FLOW REDUCTION [Qout/Qin] (%) =	7.01			
TIME SHIFT OF PEAK FLOW (min) =	195.00			
MAXIMUM STORAGE USED (ha.m.) =	0.0291			

| READ STORM | Filename: C:\Users\skatukurunde\AppData
| | ata\Local\Temp\
| | 3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\b4a48bf0
| Ptotal= 62.71 mm | Comments: 10y12h TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	10.66	6.75	4.39	10.00	0.63
0.50	0.63	3.75	10.66	7.00	4.39	10.25	0.63
0.75	0.63	4.00	10.66	7.25	4.39	10.50	0.63
1.00	0.63	4.25	10.66	7.50	2.51	10.75	0.63
1.25	0.63	4.50	28.84	7.75	2.51	11.00	0.63
1.50	0.63	4.75	28.84	8.00	2.51	11.25	0.63
1.75	0.63	5.00	28.84	8.25	2.51	11.50	0.63
2.00	0.63	5.25	28.84	8.50	1.25	11.75	0.63
2.25	0.63	5.50	8.15	8.75	1.25	12.00	0.63
2.50	3.76	5.75	8.15	9.00	1.25	12.25	0.63
2.75	3.76	6.00	8.15	9.25	1.25		
3.00	3.76	6.25	8.15	9.50	0.63		
3.25	3.76	6.50	4.39	9.75	0.63		

| CALIB |
| STANDHYD (0033) | Area (ha)= 4.02
| ID= 1 DT= 5.0 min | Total Imp(%) = 57.00 Dir. Conn.(%) = 40.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)= 2.29	1.73
Dep. Storage	(mm)= 1.00	1.50
Average Slope	(%)= 1.00	2.00
Length	(m)= 163.63	40.00
Mannings n	= 0.013	0.250

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

----- TRANSFORMED HYETOGRAPH -----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	3.76	6.250	8.15	9.33	0.63

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0.167	0.00	3.250	3.76	6.333	4.39	9.42	0.63
0.250	0.00	3.333	10.66	6.417	4.39	9.50	0.63
0.333	0.63	3.417	10.66	6.500	4.39	9.58	0.63
0.417	0.63	3.500	10.66	6.583	4.39	9.67	0.63
0.500	0.63	3.583	10.66	6.667	4.39	9.75	0.63
0.583	0.63	3.667	10.66	6.750	4.39	9.83	0.63
0.667	0.63	3.750	10.66	6.833	4.39	9.92	0.63
0.750	0.63	3.833	10.66	6.917	4.39	10.00	0.63
0.833	0.63	3.917	10.66	7.000	4.39	10.08	0.63
0.917	0.63	4.000	10.66	7.083	4.39	10.17	0.63
1.000	0.63	4.083	10.66	7.167	4.39	10.25	0.63
1.083	0.63	4.167	10.66	7.250	4.39	10.33	0.63
1.167	0.63	4.250	10.66	7.333	2.51	10.42	0.63
1.250	0.63	4.333	28.84	7.417	2.51	10.50	0.63
1.333	0.63	4.417	28.84	7.500	2.51	10.58	0.63
1.417	0.63	4.500	28.84	7.583	2.51	10.67	0.63
1.500	0.63	4.583	28.84	7.667	2.51	10.75	0.63
1.583	0.63	4.667	28.84	7.750	2.51	10.83	0.63
1.667	0.63	4.750	28.84	7.833	2.51	10.92	0.63
1.750	0.63	4.833	28.84	7.917	2.51	11.00	0.63
1.833	0.63	4.917	28.84	8.000	2.51	11.08	0.63
1.917	0.63	5.000	28.84	8.083	2.51	11.17	0.63
2.000	0.63	5.083	28.84	8.167	2.51	11.25	0.63
2.083	0.63	5.167	28.84	8.250	2.51	11.33	0.63
2.167	0.63	5.250	28.84	8.333	1.25	11.42	0.63
2.250	0.63	5.333	8.15	8.417	1.25	11.50	0.63
2.333	3.76	5.417	8.15	8.500	1.25	11.58	0.63
2.417	3.76	5.500	8.15	8.583	1.25	11.67	0.63
2.500	3.76	5.583	8.15	8.667	1.25	11.75	0.63
2.583	3.76	5.667	8.15	8.750	1.25	11.83	0.63
2.667	3.76	5.750	8.15	8.833	1.25	11.92	0.63
2.750	3.76	5.833	8.15	8.917	1.25	12.00	0.63
2.833	3.76	5.917	8.15	9.000	1.25	12.08	0.63
2.917	3.76	6.000	8.15	9.083	1.25	12.17	0.63
3.000	3.76	6.083	8.15	9.167	1.25	12.25	0.63
3.083	3.76	6.167	8.15	9.250	1.25		

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	10.66	6.75	4.39	10.00	0.63
0.50	0.63	3.75	10.66	7.00	4.39	10.25	0.63
0.75	0.63	4.00	10.66	7.25	4.39	10.50	0.63
1.00	0.63	4.25	10.66	7.50	2.51	10.75	0.63
1.25	0.63	4.50	28.84	7.75	2.51	11.00	0.63
1.50	0.63	4.75	28.84	8.00	2.51	11.25	0.63
1.75	0.63	5.00	28.84	8.25	2.51	11.50	0.63
2.00	0.63	5.25	28.84	8.50	1.25	11.75	0.63
2.25	0.63	5.50	8.15	8.75	1.25	12.00	0.63
2.50	3.76	5.75	8.15	9.00	1.25	12.25	0.63
2.75	3.76	6.00	8.15	9.25	1.25		
3.00	3.76	6.25	8.15	9.50	0.63		
3.25	3.76	6.50	4.39	9.75	0.63		

 | CALIB |
 | STANDHYD (0041) | Area (ha)= 0.37
 |ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.37	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	49.67	40.00
Mannings n	=	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	3.76	6.250	8.15	9.33	0.63
0.167	0.00	3.250	3.76	6.333	4.39	9.42	0.63
0.250	0.00	3.333	10.66	6.417	4.39	9.50	0.63
0.333	0.63	3.417	10.66	6.500	4.39	9.58	0.63
0.417	0.63	3.500	10.66	6.583	4.39	9.67	0.63
0.500	0.63	3.583	10.66	6.667	4.39	9.75	0.63
0.583	0.63	3.667	10.66	6.750	4.39	9.83	0.63
0.667	0.63	3.750	10.66	6.833	4.39	9.92	0.63
0.750	0.63	3.833	10.66	6.917	4.39	10.00	0.63
0.833	0.63	3.917	10.66	7.000	4.39	10.08	0.63
0.917	0.63	4.000	10.66	7.083	4.39	10.17	0.63
1.000	0.63	4.083	10.66	7.167	4.39	10.25	0.63
1.083	0.63	4.167	10.66	7.250	4.39	10.33	0.63
1.167	0.63	4.250	10.66	7.333	2.51	10.42	0.63
1.250	0.63	4.333	28.84	7.417	2.51	10.50	0.63
1.333	0.63	4.417	28.84	7.500	2.51	10.58	0.63
1.417	0.63	4.500	28.84	7.583	2.51	10.67	0.63
1.500	0.63	4.583	28.84	7.667	2.51	10.75	0.63
1.583	0.63	4.667	28.84	7.750	2.51	10.83	0.63
1.667	0.63	4.750	28.84	7.833	2.51	10.92	0.63
1.750	0.63	4.833	28.84	7.917	2.51	11.00	0.63
1.833	0.63	4.917	28.84	8.000	2.51	11.08	0.63
1.917	0.63	5.000	28.84	8.083	2.51	11.17	0.63
2.000	0.63	5.083	28.84	8.167	2.51	11.25	0.63
2.083	0.63	5.167	28.84	8.250	2.51	11.33	0.63
2.167	0.63	5.250	28.84	8.333	1.25	11.42	0.63
2.250	0.63	5.333	8.15	8.417	1.25	11.50	0.63
2.333	3.76	5.417	8.15	8.500	1.25	11.58	0.63

Max.Eff.Inten.(mm/hr)= 28.84 22.59
 over (min) 5.00 20.00
 Storage Coeff. (min)= 5.64 (ii) 18.44 (ii)
 Unit Hyd. Tpeak (min)= 5.00 20.00
 Unit Hyd. peak (cms)= 0.20 0.06

TOTALS

PEAK FLOW (cms)= 0.13 0.09 0.219 (iii)
 TIME TO PEAK (hrs)= 5.25 5.33 5.25
 RUNOFF VOLUME (mm)= 61.71 27.20 41.00
 TOTAL RAINFALL (mm)= 62.71 62.71 62.71
 RUNOFF COEFFICIENT = 0.98 0.43 0.65

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. 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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 | Ptotal= 62.71 mm | Comments: 10y12h TRCA AES

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2.417	3.76	5.500	8.15	8.583	1.25	11.67	0.63
2.500	3.76	5.583	8.15	8.667	1.25	11.75	0.63
2.583	3.76	5.667	8.15	8.750	1.25	11.83	0.63
2.667	3.76	5.750	8.15	8.833	1.25	11.92	0.63
2.750	3.76	5.833	8.15	8.917	1.25	12.00	0.63
2.833	3.76	5.917	8.15	9.000	1.25	12.08	0.63
2.917	3.76	6.000	8.15	9.083	1.25	12.17	0.63
3.000	3.76	6.083	8.15	9.167	1.25	12.25	0.63
3.083	3.76	6.167	8.15	9.250	1.25		

Max.Eff.Inten.(mm/hr)= 28.84 20.90
 over (min) 5.00 5.00
 Storage Coeff. (min)= 2.76 (ii) 4.61 (ii)
 Unit Hyd. Tpeak (min)= 5.00 5.00
 Unit Hyd. peak (cms)= 0.28 0.23

TOTALS
 PEAK FLOW (cms)= 0.03 0.00 0.030 (iii)
 TIME TO PEAK (hrs)= 5.08 5.25 5.25
 RUNOFF VOLUME (mm)= 61.71 35.33 61.44
 TOTAL RAINFALL (mm)= 62.71 62.71 62.71
 RUNOFF COEFFICIENT = 0.98 0.56 0.98

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 85.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

 | RESERVOIR(0042) |
 | IN= 2---> OUT= 1 |
DT= 5.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0026	0.0348
0.0026	0.0010	4.0000	0.0350

AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
0.370	0.030	5.25	61.44
0.370	0.003	7.42	61.19

PEAK FLOW REDUCTION [Qout/Qin](%)= 8.81
 TIME SHIFT OF PEAK FLOW (min)=130.00
 MAXIMUM STORAGE USED (ha.m.)= 0.0163

 | DUHYD (0043) |
 | Inlet Cap.= 0.003 |
 | #of Inlets= 10 |
Total(cms)= 0.0

AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL HYD.(ID= 1): 0.37	0.00	7.42	61.19
MAJOR SYS.(ID= 2): 0.00	0.00	0.00	0.00
MINOR SYS.(ID= 3): 0.37	0.00	7.42	61.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

 | ADD HYD (0044) |
1 + 2 = 3

AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0033): 4.02	0.219	5.25	41.00
+ ID2= 2 (0043): 0.00	0.000	0.00	0.00
ID = 3 (0044): 4.02	0.219	5.25	41.00

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

 | RESERVOIR(0045) |
 | IN= 2---> OUT= 1 |
DT= 5.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0340	0.1196
0.0088	0.0547	0.0460	0.1470
0.0100	0.0814	0.0530	0.1571
0.0260	0.1053	0.0670	0.1747

AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0044) 4.016	0.219	5.25	41.00
OUTFLOW: ID= 1 (0045) 4.016	0.034	7.33	40.61

PEAK FLOW REDUCTION [Qout/Qin](%)= 15.33
 TIME SHIFT OF PEAK FLOW (min)=125.00
 MAXIMUM STORAGE USED (ha.m.)= 0.1188

 | ADD HYD (0024) |
1 + 2 = 3

AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0028): 0.88	0.003	8.50	39.97
+ ID2= 2 (0003): 34.47	0.220	8.17	41.18
ID = 3 (0024): 35.35	0.223	8.17	41.15

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

 | ADD HYD (0024) |
3 + 2 = 1

AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0024): 35.35	0.223	8.17	41.15
+ ID2= 2 (0045): 4.02	0.034	7.33	40.61
ID = 1 (0024): 39.36	0.256	8.00	41.10

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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** SIMULATION : 25y12h TRCA AES **

1.500	0.73	4.583	33.63	7.667	2.92	10.75	0.73
1.583	0.73	4.667	33.63	7.750	2.92	10.83	0.73
1.667	0.73	4.750	33.63	7.833	2.92	10.92	0.73
1.750	0.73	4.833	33.63	7.917	2.92	11.00	0.73
1.833	0.73	4.917	33.63	8.000	2.92	11.08	0.73
1.917	0.73	5.000	33.63	8.083	2.92	11.17	0.73
2.000	0.73	5.083	33.63	8.167	2.92	11.25	0.73
2.083	0.73	5.167	33.63	8.250	2.92	11.33	0.73
2.167	0.73	5.250	33.63	8.333	1.46	11.42	0.73
2.250	0.73	5.333	9.50	8.417	1.46	11.50	0.73
2.333	4.39	5.417	9.50	8.500	1.46	11.58	0.73
2.417	4.39	5.500	9.50	8.583	1.46	11.67	0.73
2.500	4.39	5.583	9.50	8.667	1.46	11.75	0.73
2.583	4.39	5.667	9.50	8.750	1.46	11.83	0.73
2.667	4.39	5.750	9.50	8.833	1.46	11.92	0.73
2.750	4.39	5.833	9.50	8.917	1.46	12.00	0.73
2.833	4.39	5.917	9.50	9.000	1.46	12.08	0.73
2.917	4.39	6.000	9.50	9.083	1.46	12.17	0.73
3.000	4.39	6.083	9.50	9.167	1.46	12.25	0.73
3.083	4.39	6.167	9.50	9.250	1.46		

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| | ata\Local\Temp\
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| Ptotal= 73.10 mm | Comments: 25y12h TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	12.43	6.75	5.12	10.00	0.73
0.50	0.73	3.75	12.43	7.00	5.12	10.25	0.73
0.75	0.73	4.00	12.43	7.25	5.12	10.50	0.73
1.00	0.73	4.25	12.43	7.50	2.92	10.75	0.73
1.25	0.73	4.50	33.63	7.75	2.92	11.00	0.73
1.50	0.73	4.75	33.63	8.00	2.92	11.25	0.73
1.75	0.73	5.00	33.63	8.25	2.92	11.50	0.73
2.00	0.73	5.25	33.63	8.50	1.46	11.75	0.73
2.25	0.73	5.50	9.50	8.75	1.46	12.00	0.73
2.50	4.39	5.75	9.50	9.00	1.46	12.25	0.73
2.75	4.39	6.00	9.50	9.25	1.46		
3.00	4.39	6.25	9.50	9.50	0.73		
3.25	4.39	6.50	5.12	9.75	0.73		

Max.Eff.Inten.(mm/hr)= 33.63 28.94
over (min) 10.00 25.00
Storage Coeff. (min)= 9.94 (ii) 21.53 (ii)
Unit Hyd. Tpeak (min)= 10.00 25.00
Unit Hyd. peak (cms)= 0.11 0.05

TOTALS
PEAK FLOW (cms)= 1.15 0.92 2.052 (iii)
TIME TO PEAK (hrs)= 5.25 5.33 5.25
RUNOFF VOLUME (mm)= 72.10 34.76 48.95
TOTAL RAINFALL (mm)= 73.10 73.10 73.10
RUNOFF COEFFICIENT = 0.99 0.48 0.67

| CALIB |
| STANDHYD (0001) | Area (ha)= 32.52
| ID= 1 DT= 5.0 min | Total Imp(%)= 56.00 Dir. Conn.(%)= 38.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	18.21	14.31
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	465.62	40.00
Mannings n =	0.013	0.250

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

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

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	4.39	6.250	9.50	9.33	0.73
0.167	0.00	3.250	4.39	6.333	5.12	9.42	0.73
0.250	0.00	3.333	12.43	6.417	5.12	9.50	0.73
0.333	0.73	3.417	12.43	6.500	5.12	9.58	0.73
0.417	0.73	3.500	12.43	6.583	5.12	9.67	0.73
0.500	0.73	3.583	12.43	6.667	5.12	9.75	0.73
0.583	0.73	3.667	12.43	6.750	5.12	9.83	0.73
0.667	0.73	3.750	12.43	6.833	5.12	9.92	0.73
0.750	0.73	3.833	12.43	6.917	5.12	10.00	0.73
0.833	0.73	3.917	12.43	7.000	5.12	10.08	0.73
0.917	0.73	4.000	12.43	7.083	5.12	10.17	0.73
1.000	0.73	4.083	12.43	7.167	5.12	10.25	0.73
1.083	0.73	4.167	12.43	7.250	5.12	10.33	0.73
1.167	0.73	4.250	12.43	7.333	2.92	10.42	0.73
1.250	0.73	4.333	33.63	7.417	2.92	10.50	0.73
1.333	0.73	4.417	33.63	7.500	2.92	10.58	0.73
1.417	0.73	4.500	33.63	7.583	2.92	10.67	0.73

| READ STORM | Filename: C:\Users\skatukurunde\AppData
| | ata\Local\Temp\
| | 3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\bell1363f
| Ptotal= 73.10 mm | Comments: 25y12h TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	12.43	6.75	5.12	10.00	0.73
0.50	0.73	3.75	12.43	7.00	5.12	10.25	0.73
0.75	0.73	4.00	12.43	7.25	5.12	10.50	0.73
1.00	0.73	4.25	12.43	7.50	2.92	10.75	0.73
1.25	0.73	4.50	33.63	7.75	2.92	11.00	0.73
1.50	0.73	4.75	33.63	8.00	2.92	11.25	0.73
1.75	0.73	5.00	33.63	8.25	2.92	11.50	0.73
2.00	0.73	5.25	33.63	8.50	1.46	11.75	0.73
2.25	0.73	5.50	9.50	8.75	1.46	12.00	0.73
2.50	4.39	5.75	9.50	9.00	1.46	12.25	0.73
2.75	4.39	6.00	9.50	9.25	1.46		
3.00	4.39	6.25	9.50	9.50	0.73		
3.25	4.39	6.50	5.12	9.75	0.73		

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| CALIB |
| STANDHYD (0006) | Area (ha)= 3.94
| ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.90	0.04
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	161.97	40.00
Mannings n =	0.013	0.250

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

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

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	4.39	6.250	9.50	9.33	0.73
0.167	0.00	3.250	4.39	6.333	5.12	9.42	0.73
0.250	0.00	3.333	12.43	6.417	5.12	9.50	0.73
0.333	0.73	3.417	12.43	6.500	5.12	9.58	0.73
0.417	0.73	3.500	12.43	6.583	5.12	9.67	0.73
0.500	0.73	3.583	12.43	6.667	5.12	9.75	0.73
0.583	0.73	3.667	12.43	6.750	5.12	9.83	0.73
0.667	0.73	3.750	12.43	6.833	5.12	9.92	0.73
0.750	0.73	3.833	12.43	6.917	5.12	10.00	0.73
0.833	0.73	3.917	12.43	7.000	5.12	10.08	0.73
0.917	0.73	4.000	12.43	7.083	5.12	10.17	0.73
1.000	0.73	4.083	12.43	7.167	5.12	10.25	0.73
1.083	0.73	4.167	12.43	7.250	5.12	10.33	0.73
1.167	0.73	4.250	12.43	7.333	2.92	10.42	0.73
1.250	0.73	4.333	33.63	7.417	2.92	10.50	0.73
1.333	0.73	4.417	33.63	7.500	2.92	10.58	0.73
1.417	0.73	4.500	33.63	7.583	2.92	10.67	0.73
1.500	0.73	4.583	33.63	7.667	2.92	10.75	0.73
1.583	0.73	4.667	33.63	7.750	2.92	10.83	0.73
1.667	0.73	4.750	33.63	7.833	2.92	10.92	0.73
1.750	0.73	4.833	33.63	7.917	2.92	11.00	0.73
1.833	0.73	4.917	33.63	8.000	2.92	11.08	0.73
1.917	0.73	5.000	33.63	8.083	2.92	11.17	0.73
2.000	0.73	5.083	33.63	8.167	2.92	11.25	0.73
2.083	0.73	5.167	33.63	8.250	2.92	11.33	0.73
2.167	0.73	5.250	33.63	8.333	1.46	11.42	0.73
2.250	0.73	5.333	9.50	8.417	1.46	11.50	0.73
2.333	4.39	5.417	9.50	8.500	1.46	11.58	0.73
2.417	4.39	5.500	9.50	8.583	1.46	11.67	0.73
2.500	4.39	5.583	9.50	8.667	1.46	11.75	0.73
2.583	4.39	5.667	9.50	8.750	1.46	11.83	0.73
2.667	4.39	5.750	9.50	8.833	1.46	11.92	0.73
2.750	4.39	5.833	9.50	8.917	1.46	12.00	0.73
2.833	4.39	5.917	9.50	9.000	1.46	12.08	0.73
2.917	4.39	6.000	9.50	9.083	1.46	12.17	0.73
3.000	4.39	6.083	9.50	9.167	1.46	12.25	0.73
3.083	4.39	6.167	9.50	9.250	1.46		

Max.Eff.Inten.(mm/hr)=	33.63	17.35
over (min)	5.00	10.00
Storage Coeff. (min)=	5.28 (ii)	7.01 (ii)
Unit Hyd. Tpeak (min)=	5.00	10.00
Unit Hyd. peak (cms)=	0.21	0.14

TOTALS

PEAK FLOW (cms)=	0.36	0.00	0.366 (iii)
TIME TO PEAK (hrs)=	5.25	5.25	5.25
RUNOFF VOLUME (mm)=	72.10	28.41	71.66
TOTAL RAINFALL (mm)=	73.10	73.10	73.10
RUNOFF COEFFICIENT =	0.99	0.39	0.98

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. 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(0021) |
| IN= 2----> OUT= 1 |
| DT= 5.0 min |

	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0318	0.4260
	0.0318	0.0010	4.0000	0.4261

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0006)	3.935	0.366	5.25	71.66
OUTFLOW: ID= 1 (0021)	3.935	0.032	6.75	71.66

PEAK FLOW REDUCTION [Qout/Qin] (%) = 8.69
TIME SHIFT OF PEAK FLOW (min) = 90.00
MAXIMUM STORAGE USED (ha.m.) = 0.1623

| DUHYD (0007) |
| Inlet Cap.= 0.032 |
| #of Inlets= 1 |
| Total(cms)= 0.0 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL HYD. (ID= 1):	3.94	0.03	6.75	71.66
MAJOR SYS. (ID= 2):	0.00	0.00	0.00	0.00
MINOR SYS. (ID= 3):	3.94	0.03	6.75	71.66

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| READ STORM | Filename: C:\Users\skatururunde\AppData
| | ata\Local\Temp\
| | 3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\be11363f
| Ptotal= 73.10 mm | Comments: 25y12h TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	12.43	6.75	5.12	10.00	0.73
0.50	0.73	3.75	12.43	7.00	5.12	10.25	0.73
0.75	0.73	4.00	12.43	7.25	5.12	10.50	0.73
1.00	0.73	4.25	12.43	7.50	2.92	10.75	0.73
1.25	0.73	4.50	33.63	7.75	2.92	11.00	0.73
1.50	0.73	4.75	33.63	8.00	2.92	11.25	0.73
1.75	0.73	5.00	33.63	8.25	2.92	11.50	0.73
2.00	0.73	5.25	33.63	8.50	1.46	11.75	0.73
2.25	0.73	5.50	9.50	8.75	1.46	12.00	0.73

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2.50	4.39	5.75	9.50	9.00	1.46	12.25	0.73
2.75	4.39	6.00	9.50	9.25	1.46		
3.00	4.39	6.25	9.50	9.50	0.73		
3.25	4.39	6.50	5.12	9.75	0.73		

over (min)	5.00	5.00
Storage Coeff. (min)=	2.55 (ii)	4.29 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00
Unit Hyd. peak (cms)=	0.29	0.23

TOTALS

PEAK FLOW (cms)=	0.03	0.00	0.033 (iii)
TIME TO PEAK (hrs)=	4.83	5.25	5.25
RUNOFF VOLUME (mm)=	72.10	44.03	71.82
TOTAL RAINFALL (mm)=	73.10	73.10	73.10
RUNOFF COEFFICIENT =	0.99	0.60	0.98

 | CALIB |
 | STANDHYD (0036) | Area (ha)= 0.35
 | ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

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

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.35	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	48.30	40.00
Mannings n =	0.013	0.250

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

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

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	3.167	4.39	6.250	9.50	9.33	0.73
0.167	0.00	3.250	4.39	6.333	5.12	9.42	0.73
0.250	0.00	3.333	12.43	6.417	5.12	9.50	0.73
0.333	0.73	3.417	12.43	6.500	5.12	9.58	0.73
0.417	0.73	3.500	12.43	6.583	5.12	9.67	0.73
0.500	0.73	3.583	12.43	6.667	5.12	9.75	0.73
0.583	0.73	3.667	12.43	6.750	5.12	9.83	0.73
0.667	0.73	3.750	12.43	6.833	5.12	9.92	0.73
0.750	0.73	3.833	12.43	6.917	5.12	10.00	0.73
0.833	0.73	3.917	12.43	7.000	5.12	10.08	0.73
0.917	0.73	4.000	12.43	7.083	5.12	10.17	0.73
1.000	0.73	4.083	12.43	7.167	5.12	10.25	0.73
1.083	0.73	4.167	12.43	7.250	5.12	10.33	0.73
1.167	0.73	4.250	12.43	7.333	2.92	10.42	0.73
1.250	0.73	4.333	33.63	7.417	2.92	10.50	0.73
1.333	0.73	4.417	33.63	7.500	2.92	10.58	0.73
1.417	0.73	4.500	33.63	7.583	2.92	10.67	0.73
1.500	0.73	4.583	33.63	7.667	2.92	10.75	0.73
1.583	0.73	4.667	33.63	7.750	2.92	10.83	0.73
1.667	0.73	4.750	33.63	7.833	2.92	10.92	0.73
1.750	0.73	4.833	33.63	7.917	2.92	11.00	0.73
1.833	0.73	4.917	33.63	8.000	2.92	11.08	0.73
1.917	0.73	5.000	33.63	8.083	2.92	11.17	0.73
2.000	0.73	5.083	33.63	8.167	2.92	11.25	0.73
2.083	0.73	5.167	33.63	8.250	2.92	11.33	0.73
2.167	0.73	5.250	33.63	8.333	1.46	11.42	0.73
2.250	0.73	5.333	9.50	8.417	1.46	11.50	0.73
2.333	4.39	5.417	9.50	8.500	1.46	11.58	0.73
2.417	4.39	5.500	9.50	8.583	1.46	11.67	0.73
2.500	4.39	5.583	9.50	8.667	1.46	11.75	0.73
2.583	4.39	5.667	9.50	8.750	1.46	11.83	0.73
2.667	4.39	5.750	9.50	8.833	1.46	11.92	0.73
2.750	4.39	5.833	9.50	8.917	1.46	12.00	0.73
2.833	4.39	5.917	9.50	9.000	1.46	12.08	0.73
2.917	4.39	6.000	9.50	9.083	1.46	12.17	0.73
3.000	4.39	6.083	9.50	9.167	1.46	12.25	0.73
3.083	4.39	6.167	9.50	9.250	1.46		

 | RESERVOIR(0039) |
 | IN= 2----> OUT= 1 |
DT= 5.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0400	0.0050

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0036)	0.350	0.033	5.25	71.82
OUTFLOW: ID= 1 (0039)	0.350	0.031	5.25	71.74

PEAK FLOW REDUCTION [Qout/Qin] (%)= 95.69
 TIME SHIFT OF PEAK FLOW (min)= 0.00
 MAXIMUM STORAGE USED (ha.m.)= 0.0039

 | READ STORM | Filename: C:\Users\skaturunde\AppData
 | | ata\Local\Temp\
 | | 3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\bell1363f
 | Ptotal= 73.10 mm | Comments: 25y12h TRCA AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	3.50	12.43	6.75	5.12	10.00	0.73
0.50	0.73	3.75	12.43	7.00	5.12	10.25	0.73
0.75	0.73	4.00	12.43	7.25	5.12	10.50	0.73
1.00	0.73	4.25	12.43	7.50	2.92	10.75	0.73
1.25	0.73	4.50	33.63	7.75	2.92	11.00	0.73
1.50	0.73	4.75	33.63	8.00	2.92	11.25	0.73
1.75	0.73	5.00	33.63	8.25	2.92	11.50	0.73
2.00	0.73	5.25	33.63	8.50	1.46	11.75	0.73
2.25	0.73	5.50	9.50	8.75	1.46	12.00	0.73
2.50	4.39	5.75	9.50	9.00	1.46	12.25	0.73
2.75	4.39	6.00	9.50	9.25	1.46		
3.00	4.39	6.25	9.50	9.50	0.73		
3.25	4.39	6.50	5.12	9.75	0.73		

Max.Eff.Inten.(mm/hr)= 33.63 25.71

CALIB

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| STANDHYD (0037) | Area (ha)= 1.60
| ID= 1 DT= 5.0 min | Total Imp(%)= 75.00 Dir. Conn.(%)= 45.00

RUNOFF COEFFICIENT = 0.99 0.77 0.87

IMPERVIOUS PERVIOUS (i)
Surface Area (ha)= 1.20 0.40
Dep. Storage (mm)= 1.00 1.50
Average Slope (%)= 1.00 2.00
Length (m)= 103.28 40.00
Mannings n = 0.013 0.250

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

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

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	4.39	6.250	9.50	9.33	0.73
0.167	0.00	3.250	4.39	6.333	5.12	9.42	0.73
0.250	0.00	3.333	12.43	6.417	5.12	9.50	0.73
0.333	0.73	3.417	12.43	6.500	5.12	9.58	0.73
0.417	0.73	3.500	12.43	6.583	5.12	9.67	0.73
0.500	0.73	3.583	12.43	6.667	5.12	9.75	0.73
0.583	0.73	3.667	12.43	6.750	5.12	9.83	0.73
0.667	0.73	3.750	12.43	6.833	5.12	9.92	0.73
0.750	0.73	3.833	12.43	6.917	5.12	10.00	0.73
0.833	0.73	3.917	12.43	7.000	5.12	10.08	0.73
0.917	0.73	4.000	12.43	7.083	5.12	10.17	0.73
1.000	0.73	4.083	12.43	7.167	5.12	10.25	0.73
1.083	0.73	4.167	12.43	7.250	5.12	10.33	0.73
1.167	0.73	4.250	12.43	7.333	2.92	10.42	0.73
1.250	0.73	4.333	33.63	7.417	2.92	10.50	0.73
1.333	0.73	4.417	33.63	7.500	2.92	10.58	0.73
1.417	0.73	4.500	33.63	7.583	2.92	10.67	0.73
1.500	0.73	4.583	33.63	7.667	2.92	10.75	0.73
1.583	0.73	4.667	33.63	7.750	2.92	10.83	0.73
1.667	0.73	4.750	33.63	7.833	2.92	10.92	0.73
1.750	0.73	4.833	33.63	7.917	2.92	11.00	0.73
1.833	0.73	4.917	33.63	8.000	2.92	11.08	0.73
1.917	0.73	5.000	33.63	8.083	2.92	11.17	0.73
2.000	0.73	5.083	33.63	8.167	2.92	11.25	0.73
2.083	0.73	5.167	33.63	8.250	2.92	11.33	0.73
2.167	0.73	5.250	33.63	8.333	1.46	11.42	0.73
2.250	0.73	5.333	9.50	8.417	1.46	11.50	0.73
2.333	4.39	5.417	9.50	8.500	1.46	11.58	0.73
2.417	4.39	5.500	9.50	8.583	1.46	11.67	0.73
2.500	4.39	5.583	9.50	8.667	1.46	11.75	0.73
2.583	4.39	5.667	9.50	8.750	1.46	11.83	0.73
2.667	4.39	5.750	9.50	8.833	1.46	11.92	0.73
2.750	4.39	5.833	9.50	8.917	1.46	12.00	0.73
2.833	4.39	5.917	9.50	9.000	1.46	12.08	0.73
2.917	4.39	6.000	9.50	9.083	1.46	12.17	0.73
3.000	4.39	6.083	9.50	9.167	1.46	12.25	0.73
3.083	4.39	6.167	9.50	9.250	1.46		

Max.Eff.Inten.(mm/hr)= 33.63 67.49
over (min) 5.00 15.00
Storage Coeff. (min)= 4.03 (ii) 12.29 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.24 0.09

TOTALS
PEAK FLOW (cms)= 0.07 0.07 0.139 (iii)
TIME TO PEAK (hrs)= 5.17 5.25 5.25
RUNOFF VOLUME (mm)= 72.10 56.52 63.53
TOTAL RAINFALL (mm)= 73.10 73.10 73.10

| RESERVOIR(0038) |
| IN= 2----> OUT= 1 |
DT= 5.0 min
OUTFLOW STORAGE | OUTFLOW STORAGE
(cms) (ha.m.) | (cms) (ha.m.)
0.0000 0.0000 | 0.1000 0.0460

AREA QPEAK TPEAK R.V.
(ha) (cms) (hrs) (mm)
INFLOW : ID= 2 (0037) 1.600 0.139 5.25 63.53
OUTFLOW: ID= 1 (0038) 1.600 0.080 5.42 63.46

PEAK FLOW REDUCTION [Qout/Qin](%)= 57.55
TIME SHIFT OF PEAK FLOW (min)= 10.00
MAXIMUM STORAGE USED (ha.m.)= 0.0370

| ADD HYD (0008) |
1 + 2 = 3
AREA QPEAK TPEAK R.V.
(ha) (cms) (hrs) (mm)
ID1= 1 (0001): 32.52 2.052 5.25 48.95
+ ID2= 2 (0038): 1.60 0.080 5.42 63.46
=====

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (0008) |
3 + 2 = 1
AREA QPEAK TPEAK R.V.
(ha) (cms) (hrs) (mm)
ID1= 3 (0008): 34.12 2.128 5.25 49.63
+ ID2= 2 (0039): 0.35 0.031 5.25 71.74
=====

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (0008) |
1 + 2 = 3
AREA QPEAK TPEAK R.V.
(ha) (cms) (hrs) (mm)
*** W A R N I N G : HYDROGRAPH 0007 <ID= 2> IS DRY.
*** W A R N I N G : HYDROGRAPH 0003 = HYDROGRAPH 0001
ID1= 1 (0008): 34.47 2.160 5.25 49.85
+ ID2= 2 (0007): 0.00 0.000 0.00 0.00
=====

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ID = 3 (0008): 34.47 2.160 5.25 49.85

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0003)				
IN= 2----> OUT= 1				
DT= 5.0 min				
	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	0.3000	1.2650
	0.0710	0.4106	0.3780	1.4000
	0.0880	0.6770	0.4800	1.5300
	0.1600	0.9180	1.5000	5.0000
	0.2200	1.0700	0.0000	0.0000
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0008)	34.470	2.160	5.25	49.85
OUTFLOW: ID= 1 (0003)	34.470	0.299	7.75	49.81
PEAK FLOW REDUCTION [Qout/Qin] (%) = 13.83				
TIME SHIFT OF PEAK FLOW (min) = 150.00				
MAXIMUM STORAGE USED (ha.m.) = 1.2619				

READ STORM Filename: C:\Users\skatukurunde\AppData\Local\Temp\3bcfcf8a-10fe-4c4f-b03c-d8b6c1fc7471\bel1363f
Ptotal= 73.10 mm Comments: 25y12h TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	12.43	6.75	5.12	10.00	0.73
0.50	0.73	3.75	12.43	7.00	5.12	10.25	0.73
0.75	0.73	4.00	12.43	7.25	5.12	10.50	0.73
1.00	0.73	4.25	12.43	7.50	2.92	10.75	0.73
1.25	0.73	4.50	33.63	7.75	2.92	11.00	0.73
1.50	0.73	4.75	33.63	8.00	2.92	11.25	0.73
1.75	0.73	5.00	33.63	8.25	2.92	11.50	0.73
2.00	0.73	5.25	33.63	8.50	1.46	11.75	0.73
2.25	0.73	5.50	9.50	8.75	1.46	12.00	0.73
2.50	4.39	5.75	9.50	9.00	1.46	12.25	0.73
2.75	4.39	6.00	9.50	9.25	1.46		
3.00	4.39	6.25	9.50	9.50	0.73		
3.25	4.39	6.50	5.12	9.75	0.73		

CALIB STANDHYD (0023) Area (ha) = 0.14
ID= 1 DT= 5.0 min Total Imp(%) = 99.00 Dir. Conn.(%) = 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)	0.14	0.00
Dep. Storage (mm)	1.00	1.50
Average Slope (%)	1.00	2.00
Length (m)	30.55	40.00
Mannings n	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	4.39	6.250	9.50	9.33	0.73
0.167	0.00	3.250	4.39	6.333	5.12	9.42	0.73
0.250	0.00	3.333	12.43	6.417	5.12	9.50	0.73
0.333	0.73	3.417	12.43	6.500	5.12	9.58	0.73
0.417	0.73	3.500	12.43	6.583	5.12	9.67	0.73
0.500	0.73	3.583	12.43	6.667	5.12	9.75	0.73
0.583	0.73	3.667	12.43	6.750	5.12	9.83	0.73
0.667	0.73	3.750	12.43	6.833	5.12	9.92	0.73
0.750	0.73	3.833	12.43	6.917	5.12	10.00	0.73
0.833	0.73	3.917	12.43	7.000	5.12	10.08	0.73
0.917	0.73	4.000	12.43	7.083	5.12	10.17	0.73
1.000	0.73	4.083	12.43	7.167	5.12	10.25	0.73
1.083	0.73	4.167	12.43	7.250	5.12	10.33	0.73
1.167	0.73	4.250	12.43	7.333	2.92	10.42	0.73
1.250	0.73	4.333	33.63	7.417	2.92	10.50	0.73
1.333	0.73	4.417	33.63	7.500	2.92	10.58	0.73
1.417	0.73	4.500	33.63	7.583	2.92	10.67	0.73
1.500	0.73	4.583	33.63	7.667	2.92	10.75	0.73
1.583	0.73	4.667	33.63	7.750	2.92	10.83	0.73
1.667	0.73	4.750	33.63	7.833	2.92	10.92	0.73
1.750	0.73	4.833	33.63	7.917	2.92	11.00	0.73
1.833	0.73	4.917	33.63	8.000	2.92	11.08	0.73
1.917	0.73	5.000	33.63	8.083	2.92	11.17	0.73
2.000	0.73	5.083	33.63	8.167	2.92	11.25	0.73
2.083	0.73	5.167	33.63	8.250	2.92	11.33	0.73
2.167	0.73	5.250	33.63	8.333	1.46	11.42	0.73
2.250	0.73	5.333	9.50	8.417	1.46	11.50	0.73
2.333	4.39	5.417	9.50	8.500	1.46	11.58	0.73
2.417	4.39	5.500	9.50	8.583	1.46	11.67	0.73
2.500	4.39	5.583	9.50	8.667	1.46	11.75	0.73
2.583	4.39	5.667	9.50	8.750	1.46	11.83	0.73
2.667	4.39	5.750	9.50	8.833	1.46	11.92	0.73
2.750	4.39	5.833	9.50	8.917	1.46	12.00	0.73
2.833	4.39	5.917	9.50	9.000	1.46	12.08	0.73
2.917	4.39	6.000	9.50	9.083	1.46	12.17	0.73
3.000	4.39	6.083	9.50	9.167	1.46	12.25	0.73
3.083	4.39	6.167	9.50	9.250	1.46		
Max.Eff.Inten. (mm/hr)=		33.63		17.35			
over (min)		5.00		5.00			
Storage Coeff. (min)=		1.94 (ii)		3.68 (ii)			
Unit Hyd. Tpeak (min)=		5.00		5.00			
Unit Hyd. peak (cms)=		0.31		0.25			
TOTALS							
PEAK FLOW (cms)=		0.01		0.00		0.013 (iii)	
TIME TO PEAK (hrs)=		4.83		5.25		5.25	
RUNOFF VOLUME (mm)=		72.10		28.41		71.66	
TOTAL RAINFALL (mm)=		73.10		73.10		73.10	
RUNOFF COEFFICIENT =		0.99		0.39		0.98	

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. 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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Residential Subdivision

September 2018

RESERVOIR(0025)
IN= 2--> OUT= 1
DT= 5.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0011	0.0132
0.0010	0.0010	2.0000	0.0132

Dep. Storage (mm)= 1.00 1.50
Average Slope (%)= 1.00 2.00
Length (m)= 76.40 40.00
Mannings n = 0.013 0.250

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

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0023)	0.140	0.013	5.25	71.66
OUTFLOW: ID= 1 (0025)	0.140	0.001	8.25	69.90

PEAK FLOW REDUCTION [Qout/Qin] (%) = 8.10
TIME SHIFT OF PEAK FLOW (min) = 180.00
MAXIMUM STORAGE USED (ha.m.) = 0.0076

DUHYD (0026)
Inlet Cap. = 0.001
#of Inlets = 1
Total(cms) = 0.0

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL HYD.(ID= 1):	0.14	0.00	8.25	69.90
MAJOR SYS.(ID= 2):	0.00	0.00	8.25	69.90
MINOR SYS.(ID= 3):	0.14	0.00	3.67	69.90

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

READ STORM
Ptotal= 73.10 mm

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Comments: 25y12h TRCA AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	3.50	12.43	6.75	5.12	10.00	0.73
0.50	0.73	3.75	12.43	7.00	5.12	10.25	0.73
0.75	0.73	4.00	12.43	7.25	5.12	10.50	0.73
1.00	0.73	4.25	12.43	7.50	2.92	10.75	0.73
1.25	0.73	4.50	33.63	7.75	2.92	11.00	0.73
1.50	0.73	4.75	33.63	8.00	2.92	11.25	0.73
1.75	0.73	5.00	33.63	8.25	2.92	11.50	0.73
2.00	0.73	5.25	33.63	8.50	1.46	11.75	0.73
2.25	0.73	5.50	9.50	8.75	1.46	12.00	0.73
2.50	4.39	5.75	9.50	9.00	1.46	12.25	0.73
2.75	4.39	6.00	9.50	9.25	1.46		
3.00	4.39	6.25	9.50	9.50	0.73		
3.25	4.39	6.50	5.12	9.75	0.73		

CALIB
STANDHYD (0040)
ID= 1 DT= 5.0 min

Area (ha) = 0.88
Total Imp(%) = 57.00 Dir. Conn.(%) = 42.00

Surface Area (ha)	IMPERVIOUS	PERVIOUS (i)
	0.50	0.38

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	3.167	4.39	6.250	9.50	9.33	0.73
0.167	0.00	3.250	4.39	6.333	5.12	9.42	0.73
0.250	0.00	3.333	12.43	6.417	5.12	9.50	0.73
0.333	0.73	3.417	12.43	6.500	5.12	9.58	0.73
0.417	0.73	3.500	12.43	6.583	5.12	9.67	0.73
0.500	0.73	3.583	12.43	6.667	5.12	9.75	0.73
0.583	0.73	3.667	12.43	6.750	5.12	9.83	0.73
0.667	0.73	3.750	12.43	6.833	5.12	9.92	0.73
0.750	0.73	3.833	12.43	6.917	5.12	10.00	0.73
0.833	0.73	3.917	12.43	7.000	5.12	10.08	0.73
0.917	0.73	4.000	12.43	7.083	5.12	10.17	0.73
1.000	0.73	4.083	12.43	7.167	5.12	10.25	0.73
1.083	0.73	4.167	12.43	7.250	5.12	10.33	0.73
1.167	0.73	4.250	12.43	7.333	2.92	10.42	0.73
1.250	0.73	4.333	33.63	7.417	2.92	10.50	0.73
1.333	0.73	4.417	33.63	7.500	2.92	10.58	0.73
1.417	0.73	4.500	33.63	7.583	2.92	10.67	0.73
1.500	0.73	4.583	33.63	7.667	2.92	10.75	0.73
1.583	0.73	4.667	33.63	7.750	2.92	10.83	0.73
1.667	0.73	4.750	33.63	7.833	2.92	10.92	0.73
1.750	0.73	4.833	33.63	7.917	2.92	11.00	0.73
1.833	0.73	4.917	33.63	8.000	2.92	11.08	0.73
1.917	0.73	5.000	33.63	8.083	2.92	11.17	0.73
2.000	0.73	5.083	33.63	8.167	2.92	11.25	0.73
2.083	0.73	5.167	33.63	8.250	2.92	11.33	0.73
2.167	0.73	5.250	33.63	8.333	1.46	11.42	0.73
2.250	0.73	5.333	9.50	8.417	1.46	11.50	0.73
2.333	4.39	5.417	9.50	8.500	1.46	11.58	0.73
2.417	4.39	5.500	9.50	8.583	1.46	11.67	0.73
2.500	4.39	5.583	9.50	8.667	1.46	11.75	0.73
2.583	4.39	5.667	9.50	8.750	1.46	11.83	0.73
2.667	4.39	5.750	9.50	8.833	1.46	11.92	0.73
2.750	4.39	5.833	9.50	8.917	1.46	12.00	0.73
2.833	4.39	5.917	9.50	9.000	1.46	12.08	0.73
2.917	4.39	6.000	9.50	9.083	1.46	12.17	0.73
3.000	4.39	6.083	9.50	9.167	1.46	12.25	0.73
3.083	4.39	6.167	9.50	9.250	1.46		

Max.Eff.Inten.(mm/hr)= 33.63 27.11
over (min) = 5.00 20.00
Storage Coeff. (min)= 3.36 (ii) 15.26 (ii)
Unit Hyd. Tpeak (min)= 5.00 20.00
Unit Hyd. peak (cms)= 0.26 0.07

TOTALS
PEAK FLOW (cms)= 0.03 0.02 0.059 (iii)
TIME TO PEAK (hrs)= 5.08 5.33 5.25
RUNOFF VOLUME (mm)= 72.10 33.94 49.96
TOTAL RAINFALL (mm)= 73.10 73.10 73.10
RUNOFF COEFFICIENT = 0.99 0.46 0.68

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

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:

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Residential Subdivision

September 2018

- CN* = 70.0 Ia = Dep. 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 (0033) | Area (ha)= 4.02
| ID= 1 DT= 5.0 min | Total Imp(%)= 57.00 Dir. Conn.(%)= 40.00

ADD HYD (0027)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3				
ID1= 1 (0026):	0.00	0.000	8.25	69.90
+ ID2= 2 (0040):	0.88	0.059	5.25	49.96
=====				
ID = 3 (0027):	0.88	0.059	5.25	50.04

	IMPERVIOUS (ha)	PERVIOUS (i)
Surface Area	2.29	1.73
Dep. Storage	1.00	1.50
Average Slope	1.00	2.00
Length	163.63	40.00
Mannings n	0.013	0.250

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

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0028)	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
IN= 2---> OUT= 1				
DT= 5.0 min				
	0.0000	0.0000	0.0035	0.0322
	0.0029	0.0145	0.0037	0.0375
	0.0030	0.0193	0.0038	0.0443
	0.0033	0.0269	0.0040	0.0485

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0027)	0.879	0.059	5.25	50.04
OUTFLOW: ID= 1 (0028)	0.879	0.004	8.67	48.58

PEAK FLOW REDUCTION [Qout/Qin](%)= 6.12
TIME SHIFT OF PEAK FLOW (min)=205.00
MAXIMUM STORAGE USED (ha.m.)= 0.0358

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| Ptotal= 73.10 mm | Comments: 25yl2h TRCA AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	3.50	12.43	6.75	5.12	10.00	0.73
0.50	0.73	3.75	12.43	7.00	5.12	10.25	0.73
0.75	0.73	4.00	12.43	7.25	5.12	10.50	0.73
1.00	0.73	4.25	12.43	7.50	2.92	10.75	0.73
1.25	0.73	4.50	33.63	7.75	2.92	11.00	0.73
1.50	0.73	4.75	33.63	8.00	2.92	11.25	0.73
1.75	0.73	5.00	33.63	8.25	2.92	11.50	0.73
2.00	0.73	5.25	33.63	8.50	1.46	11.75	0.73
2.25	0.73	5.50	9.50	8.75	1.46	12.00	0.73
2.50	4.39	5.75	9.50	9.00	1.46	12.25	0.73
2.75	4.39	6.00	9.50	9.25	1.46		
3.00	4.39	6.25	9.50	9.50	0.73		
3.25	4.39	6.50	5.12	9.75	0.73		

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	3.167	4.39	6.250	9.50	9.33	0.73
0.167	0.00	3.250	4.39	6.333	5.12	9.42	0.73
0.250	0.00	3.333	12.43	6.417	5.12	9.50	0.73
0.333	0.73	3.417	12.43	6.500	5.12	9.58	0.73
0.417	0.73	3.500	12.43	6.583	5.12	9.67	0.73
0.500	0.73	3.583	12.43	6.667	5.12	9.75	0.73
0.583	0.73	3.667	12.43	6.750	5.12	9.83	0.73
0.667	0.73	3.750	12.43	6.833	5.12	9.92	0.73
0.750	0.73	3.833	12.43	6.917	5.12	10.00	0.73
0.833	0.73	3.917	12.43	7.000	5.12	10.08	0.73
0.917	0.73	4.000	12.43	7.083	5.12	10.17	0.73
1.000	0.73	4.083	12.43	7.167	5.12	10.25	0.73
1.083	0.73	4.167	12.43	7.250	5.12	10.33	0.73
1.167	0.73	4.250	12.43	7.333	2.92	10.42	0.73
1.250	0.73	4.333	33.63	7.417	2.92	10.50	0.73
1.333	0.73	4.417	33.63	7.500	2.92	10.58	0.73
1.417	0.73	4.500	33.63	7.583	2.92	10.67	0.73
1.500	0.73	4.583	33.63	7.667	2.92	10.75	0.73
1.583	0.73	4.667	33.63	7.750	2.92	10.83	0.73
1.667	0.73	4.750	33.63	7.833	2.92	10.92	0.73
1.750	0.73	4.833	33.63	7.917	2.92	11.00	0.73
1.833	0.73	4.917	33.63	8.000	2.92	11.08	0.73
1.917	0.73	5.000	33.63	8.083	2.92	11.17	0.73
2.000	0.73	5.083	33.63	8.167	2.92	11.25	0.73
2.083	0.73	5.167	33.63	8.250	2.92	11.33	0.73
2.167	0.73	5.250	33.63	8.333	1.46	11.42	0.73
2.250	0.73	5.333	9.50	8.417	1.46	11.50	0.73
2.333	4.39	5.417	9.50	8.500	1.46	11.58	0.73
2.417	4.39	5.500	9.50	8.583	1.46	11.67	0.73
2.500	4.39	5.583	9.50	8.667	1.46	11.75	0.73
2.583	4.39	5.667	9.50	8.750	1.46	11.83	0.73
2.667	4.39	5.750	9.50	8.833	1.46	11.92	0.73
2.750	4.39	5.833	9.50	8.917	1.46	12.00	0.73
2.833	4.39	5.917	9.50	9.000	1.46	12.08	0.73
2.917	4.39	6.000	9.50	9.083	1.46	12.17	0.73
3.000	4.39	6.083	9.50	9.167	1.46	12.25	0.73
3.083	4.39	6.167	9.50	9.250	1.46		

Max.Eff.Inten.(mm/hr)= 33.63 28.52
over (min) 5.00 20.00
Storage Coeff. (min)= 5.31 (ii) 16.97 (ii)
Unit Hyd. Tpeak (min)= 5.00 20.00
Unit Hyd. peak (cms)= 0.21 0.06

PEAK FLOW (cms)= 0.15 0.12 *TOTALS*
TIME TO PEAK (hrs)= 5.25 5.33 0.267 (iii)
5.25

15717 Airport Road
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RUNOFF VOLUME (mm)= 72.10 34.57 49.58
TOTAL RAINFALL (mm)= 73.10 73.10 73.10
RUNOFF COEFFICIENT = 0.99 0.47 0.68

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. 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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| Ptotal= 73.10 mm | Comments: 25yl2h TRCA AES
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TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	12.43	6.75	5.12	10.00	0.73
0.50	0.73	3.75	12.43	7.00	5.12	10.25	0.73
0.75	0.73	4.00	12.43	7.25	5.12	10.50	0.73
1.00	0.73	4.25	12.43	7.50	2.92	10.75	0.73
1.25	0.73	4.50	33.63	7.75	2.92	11.00	0.73
1.50	0.73	4.75	33.63	8.00	2.92	11.25	0.73
1.75	0.73	5.00	33.63	8.25	2.92	11.50	0.73
2.00	0.73	5.25	33.63	8.50	1.46	11.75	0.73
2.25	0.73	5.50	9.50	8.75	1.46	12.00	0.73
2.50	4.39	5.75	9.50	9.00	1.46	12.25	0.73
2.75	4.39	6.00	9.50	9.25	1.46		
3.00	4.39	6.25	9.50	9.50	0.73		
3.25	4.39	6.50	5.12	9.75	0.73		

0.833	0.73	3.917	12.43	7.000	5.12	10.08	0.73
0.917	0.73	4.000	12.43	7.083	5.12	10.17	0.73
1.000	0.73	4.083	12.43	7.167	5.12	10.25	0.73
1.083	0.73	4.167	12.43	7.250	5.12	10.33	0.73
1.167	0.73	4.250	12.43	7.333	2.92	10.42	0.73
1.250	0.73	4.333	33.63	7.417	2.92	10.50	0.73
1.333	0.73	4.417	33.63	7.500	2.92	10.58	0.73
1.417	0.73	4.500	33.63	7.583	2.92	10.67	0.73
1.500	0.73	4.583	33.63	7.667	2.92	10.75	0.73
1.583	0.73	4.667	33.63	7.750	2.92	10.83	0.73
1.667	0.73	4.750	33.63	7.833	2.92	10.92	0.73
1.750	0.73	4.833	33.63	7.917	2.92	11.00	0.73
1.833	0.73	4.917	33.63	8.000	2.92	11.08	0.73
1.917	0.73	5.000	33.63	8.083	2.92	11.17	0.73
2.000	0.73	5.083	33.63	8.167	2.92	11.25	0.73
2.083	0.73	5.167	33.63	8.250	2.92	11.33	0.73
2.167	0.73	5.250	33.63	8.333	1.46	11.42	0.73
2.250	0.73	5.333	9.50	8.417	1.46	11.50	0.73
2.333	4.39	5.417	9.50	8.500	1.46	11.58	0.73
2.417	4.39	5.500	9.50	8.583	1.46	11.67	0.73
2.500	4.39	5.583	9.50	8.667	1.46	11.75	0.73
2.583	4.39	5.667	9.50	8.750	1.46	11.83	0.73
2.667	4.39	5.750	9.50	8.833	1.46	11.92	0.73
2.750	4.39	5.833	9.50	8.917	1.46	12.00	0.73
2.833	4.39	5.917	9.50	9.000	1.46	12.08	0.73
2.917	4.39	6.000	9.50	9.083	1.46	12.17	0.73
3.000	4.39	6.083	9.50	9.167	1.46	12.25	0.73
3.083	4.39	6.167	9.50	9.250	1.46		

Max.Eff.Inten.(mm/hr)= 33.63 25.71
over (min) 5.00 5.00
Storage Coeff. (min)= 2.60 (ii) 4.33 (ii)
Unit Hyd. Tpeak (min)= 5.00 5.00
Unit Hyd. peak (cms)= 0.29 0.23

TOTALS

PEAK FLOW (cms)= 0.03 0.00 0.034 (iii)
TIME TO PEAK (hrs)= 4.83 5.25 5.25
RUNOFF VOLUME (mm)= 72.10 44.03 71.82
TOTAL RAINFALL (mm)= 73.10 73.10 73.10
RUNOFF COEFFICIENT = 0.99 0.60 0.98

```
-----
| CALIB |
| STANDHYD ( 0041) | Area (ha)= 0.37
| ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00
-----
```

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.37	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	49.67	40.00
Mannings n =	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	4.39	6.250	9.50	9.33	0.73
0.167	0.00	3.250	4.39	6.333	5.12	9.42	0.73
0.250	0.00	3.333	12.43	6.417	5.12	9.50	0.73
0.333	0.73	3.417	12.43	6.500	5.12	9.58	0.73
0.417	0.73	3.500	12.43	6.583	5.12	9.67	0.73
0.500	0.73	3.583	12.43	6.667	5.12	9.75	0.73
0.583	0.73	3.667	12.43	6.750	5.12	9.83	0.73
0.667	0.73	3.750	12.43	6.833	5.12	9.92	0.73
0.750	0.73	3.833	12.43	6.917	5.12	10.00	0.73

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
-----
| RESERVOIR( 0042) |
| IN= 2----> OUT= 1 |
| DT= 5.0 min |
-----
```

	OUTFLOW	STORAGE	OUTFLOW	STORAGE	
	(cms)	(ha.m.)	(cms)	(ha.m.)	
	0.0000	0.0000	0.0026	0.0348	
	0.0026	0.0010	4.0000	0.0350	
		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0041)	0.370	0.034	5.25	71.82	
OUTFLOW: ID= 1 (0042)	0.370	0.003	8.25	71.58	

PEAK FLOW REDUCTION [Qout/Qin](%)= 7.56

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TIME SHIFT OF PEAK FLOW (min)=180.00
MAXIMUM STORAGE USED (ha.m.)= 0.0199

```

-----
| DUHYD ( 0043) |
| Inlet Cap.= 0.003 |
| #of Inlets= 10 |
| Total(cms)= 0.0 |
-----
          AREA      QPEAK      TPEAK      R.V.
          (ha)      (cms)      (hrs)      (mm)
TOTAL HYD.(ID= 1):  0.37      0.00      8.25      71.58
=====
MAJOR SYS.(ID= 2):  0.00      0.00      0.00      0.00
MINOR SYS.(ID= 3):  0.37      0.00      8.25      71.58

```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| ADD HYD ( 0044) |
| 1 + 2 = 3 |
-----
          AREA      QPEAK      TPEAK      R.V.
          (ha)      (cms)      (hrs)      (mm)
*** W A R N I N G :  HYDROGRAPH 0043 <ID= 2> IS DRY.
*** W A R N I N G :  HYDROGRAPH 0003 = HYDROGRAPH 0001
          ID1= 1 ( 0033):  4.02      0.267      5.25      49.58
          + ID2= 2 ( 0043):  0.00      0.000      0.00      0.00
          =====
          ID = 3 ( 0044):  4.02      0.267      5.25      49.58

```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| RESERVOIR( 0045) |
| IN= 2----> OUT= 1 |
| DT= 5.0 min |
-----
          OUTFLOW      STORAGE      OUTFLOW      STORAGE
          (cms)      (ha.m.)      (cms)      (ha.m.)
          0.0000      0.0000      0.0340      0.1196
          0.0088      0.0547      0.0460      0.1470
          0.0100      0.0814      0.0530      0.1571
          0.0260      0.1053      0.0670      0.1747
          =====
          AREA      QPEAK      TPEAK      R.V.
          (ha)      (cms)      (hrs)      (mm)
INFLOW : ID= 2 ( 0044)  4.016      0.267      5.25      49.58
OUTFLOW: ID= 1 ( 0045)  4.016      0.043      7.33      49.19

```

PEAK FLOW REDUCTION [Qout/Qin](%)= 16.12
TIME SHIFT OF PEAK FLOW (min)=125.00
MAXIMUM STORAGE USED (ha.m.)= 0.1402

```

-----
| ADD HYD ( 0024) |
| 1 + 2 = 3 |
-----
          AREA      QPEAK      TPEAK      R.V.
          (ha)      (cms)      (hrs)      (mm)
          ID1= 1 ( 0028):  0.88      0.004      8.67      48.58
          + ID2= 2 ( 0003):  34.47      0.299      7.75      49.81
          =====
          ID = 3 ( 0024):  35.35      0.302      7.75      49.78

```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

-----
| ADD HYD ( 0024) |
| 3 + 2 = 1 |
-----
          AREA      QPEAK      TPEAK      R.V.
          (ha)      (cms)      (hrs)      (mm)
          ID1= 3 ( 0024):  35.35      0.302      7.75      49.78
          + ID2= 2 ( 0045):  4.02      0.043      7.33      49.19
          =====
          ID = 1 ( 0024):  39.37      0.345      7.67      49.72

```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

** SIMULATION : 50y12h TRCA AES **

```

-----
| READ STORM |
|           |
|           |
| Ptotal= 80.82 mm |
-----
          Filename: C:\Users\skatukurunde\AppData\Local\Temp\
          0e6e5a52-d61c-499c-aa8c-f58ff5ea5cea\db65cf9b
          Comments: 50y12h TRCA AES

```

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	13.74	6.75	5.66	10.00	0.81
0.50	0.81	3.75	13.74	7.00	5.66	10.25	0.81
0.75	0.81	4.00	13.74	7.25	5.66	10.50	0.81
1.00	0.81	4.25	13.74	7.50	3.23	10.75	0.81
1.25	0.81	4.50	37.17	7.75	3.23	11.00	0.81
1.50	0.81	4.75	37.17	8.00	3.23	11.25	0.81
1.75	0.81	5.00	37.17	8.25	3.23	11.50	0.81
2.00	0.81	5.25	37.17	8.50	1.62	11.75	0.81
2.25	0.81	5.50	10.50	8.75	1.62	12.00	0.81
2.50	4.85	5.75	10.50	9.00	1.62	12.25	0.81
2.75	4.85	6.00	10.50	9.25	1.62		
3.00	4.85	6.25	10.50	9.50	0.81		
3.25	4.85	6.50	5.66	9.75	0.81		

```

-----
| CALIB |
| STANDHYD ( 0001) |
| ID= 1 DT= 5.0 min |
-----
          Area (ha)= 32.52
          Total Imp(%)= 56.00 Dir. Conn.(%)= 38.00

```

	IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)= 18.21	14.31
Dep. Storage	(mm)= 1.00	1.50
Average Slope	(%)= 1.00	2.00
Length	(m)= 465.62	40.00
Mannings n	= 0.013	0.250

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

```

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

```

0.083	0.00	3.167	4.85	6.250	10.50	9.33	0.81
0.167	0.00	3.250	4.85	6.333	5.66	9.42	0.81
0.250	0.00	3.333	13.74	6.417	5.66	9.50	0.81
0.333	0.81	3.417	13.74	6.500	5.66	9.58	0.81
0.417	0.81	3.500	13.74	6.583	5.66	9.67	0.81
0.500	0.81	3.583	13.74	6.667	5.66	9.75	0.81
0.583	0.81	3.667	13.74	6.750	5.66	9.83	0.81
0.667	0.81	3.750	13.74	6.833	5.66	9.92	0.81
0.750	0.81	3.833	13.74	6.917	5.66	10.00	0.81
0.833	0.81	3.917	13.74	7.000	5.66	10.08	0.81
0.917	0.81	4.000	13.74	7.083	5.66	10.17	0.81
1.000	0.81	4.083	13.74	7.167	5.66	10.25	0.81
1.083	0.81	4.167	13.74	7.250	5.66	10.33	0.81
1.167	0.81	4.250	13.74	7.333	3.23	10.42	0.81
1.250	0.81	4.333	37.17	7.417	3.23	10.50	0.81
1.333	0.81	4.417	37.17	7.500	3.23	10.58	0.81
1.417	0.81	4.500	37.17	7.583	3.23	10.67	0.81
1.500	0.81	4.583	37.17	7.667	3.23	10.75	0.81
1.583	0.81	4.667	37.17	7.750	3.23	10.83	0.81
1.667	0.81	4.750	37.17	7.833	3.23	10.92	0.81
1.750	0.81	4.833	37.17	7.917	3.23	11.00	0.81
1.833	0.81	4.917	37.17	8.000	3.23	11.08	0.81
1.917	0.81	5.000	37.17	8.083	3.23	11.17	0.81
2.000	0.81	5.083	37.17	8.167	3.23	11.25	0.81
2.083	0.81	5.167	37.17	8.250	3.23	11.33	0.81
2.167	0.81	5.250	37.17	8.333	1.62	11.42	0.81
2.250	0.81	5.333	10.50	8.417	1.62	11.50	0.81
2.333	4.85	5.417	10.50	8.500	1.62	11.58	0.81
2.417	4.85	5.500	10.50	8.583	1.62	11.67	0.81
2.500	4.85	5.583	10.50	8.667	1.62	11.75	0.81
2.583	4.85	5.667	10.50	8.750	1.62	11.83	0.81
2.667	4.85	5.750	10.50	8.833	1.62	11.92	0.81
2.750	4.85	5.833	10.50	8.917	1.62	12.00	0.81
2.833	4.85	5.917	10.50	9.000	1.62	12.08	0.81
2.917	4.85	6.000	10.50	9.083	1.62	12.17	0.81
3.000	4.85	6.083	10.50	9.167	1.62	12.25	0.81
3.083	4.85	6.167	10.50	9.250	1.62		

Max.Eff.Inten.(mm/hr)= 37.17 33.54
 over (min) 10.00 25.00
 Storage Coeff. (min)= 9.55 (ii) 20.48 (ii)
 Unit Hyd. Tpeak (min)= 10.00 25.00
 Unit Hyd. peak (cms)= 0.12 0.05

TOTALS
 PEAK FLOW (cms)= 1.27 1.09 2.340 (iii)
 TIME TO PEAK (hrs)= 5.25 5.33 5.25
 RUNOFF VOLUME (mm)= 79.82 40.51 55.45
 TOTAL RAINFALL (mm)= 80.82 80.82 80.82
 RUNOFF COEFFICIENT = 0.99 0.50 0.69

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
 CN* = 70.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
 THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

 | READ STORM | Filename: C:\Users\skaturunde\AppData
 | | ata\Local\Temp\
 | | 0e6e5a52-d61c-499c-aa8c-f58ff5ea5cea\db65cf9b
 | Ptotal= 80.82 mm | Comments: 50y12h TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	13.74	6.75	5.66	10.00	0.81
0.50	0.81	3.75	13.74	7.00	5.66	10.25	0.81
0.75	0.81	4.00	13.74	7.25	5.66	10.50	0.81
1.00	0.81	4.25	13.74	7.50	3.23	10.75	0.81
1.25	0.81	4.50	37.17	7.75	3.23	11.00	0.81
1.50	0.81	4.75	37.17	8.00	3.23	11.25	0.81
1.75	0.81	5.00	37.17	8.25	3.23	11.50	0.81
2.00	0.81	5.25	37.17	8.50	1.62	11.75	0.81
2.25	0.81	5.50	10.50	8.75	1.62	12.00	0.81
2.50	4.85	5.75	10.50	9.00	1.62	12.25	0.81
2.75	4.85	6.00	10.50	9.25	1.62		
3.00	4.85	6.25	10.50	9.50	0.81		
3.25	4.85	6.50	5.66	9.75	0.81		

 | CALIB |
 | STANDHYD (0006) | Area (ha)= 3.94
 | ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.90	0.04
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	161.97	40.00
Mannings n =	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	4.85	6.250	10.50	9.33	0.81
0.167	0.00	3.250	4.85	6.333	5.66	9.42	0.81
0.250	0.00	3.333	13.74	6.417	5.66	9.50	0.81
0.333	0.81	3.417	13.74	6.500	5.66	9.58	0.81
0.417	0.81	3.500	13.74	6.583	5.66	9.67	0.81
0.500	0.81	3.583	13.74	6.667	5.66	9.75	0.81
0.583	0.81	3.667	13.74	6.750	5.66	9.83	0.81
0.667	0.81	3.750	13.74	6.833	5.66	9.92	0.81
0.750	0.81	3.833	13.74	6.917	5.66	10.00	0.81
0.833	0.81	3.917	13.74	7.000	5.66	10.08	0.81
0.917	0.81	4.000	13.74	7.083	5.66	10.17	0.81
1.000	0.81	4.083	13.74	7.167	5.66	10.25	0.81
1.083	0.81	4.167	13.74	7.250	5.66	10.33	0.81
1.167	0.81	4.250	13.74	7.333	3.23	10.42	0.81
1.250	0.81	4.333	37.17	7.417	3.23	10.50	0.81
1.333	0.81	4.417	37.17	7.500	3.23	10.58	0.81
1.417	0.81	4.500	37.17	7.583	3.23	10.67	0.81
1.500	0.81	4.583	37.17	7.667	3.23	10.75	0.81
1.583	0.81	4.667	37.17	7.750	3.23	10.83	0.81
1.667	0.81	4.750	37.17	7.833	3.23	10.92	0.81
1.750	0.81	4.833	37.17	7.917	3.23	11.00	0.81
1.833	0.81	4.917	37.17	8.000	3.23	11.08	0.81
1.917	0.81	5.000	37.17	8.083	3.23	11.17	0.81
2.000	0.81	5.083	37.17	8.167	3.23	11.25	0.81
2.083	0.81	5.167	37.17	8.250	3.23	11.33	0.81
2.167	0.81	5.250	37.17	8.333	1.62	11.42	0.81
2.250	0.81	5.333	10.50	8.417	1.62	11.50	0.81

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2.333	4.85	5.417	10.50	8.500	1.62	11.58	0.81
2.417	4.85	5.500	10.50	8.583	1.62	11.67	0.81
2.500	4.85	5.583	10.50	8.667	1.62	11.75	0.81
2.583	4.85	5.667	10.50	8.750	1.62	11.83	0.81
2.667	4.85	5.750	10.50	8.833	1.62	11.92	0.81
2.750	4.85	5.833	10.50	8.917	1.62	12.00	0.81
2.833	4.85	5.917	10.50	9.000	1.62	12.08	0.81
2.917	4.85	6.000	10.50	9.083	1.62	12.17	0.81
3.000	4.85	6.083	10.50	9.167	1.62	12.25	0.81
3.083	4.85	6.167	10.50	9.250	1.62		

Max.Eff.Inten.(mm/hr)=	37.17	20.31	
over (min)	5.00	10.00	
Storage Coeff. (min)=	5.07 (ii)	6.74 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.21	0.14	
TOTALS			
PEAK FLOW (cms)=	0.40	0.00	0.404 (iii)
TIME TO PEAK (hrs)=	5.25	5.25	
RUNOFF VOLUME (mm)=	79.82	33.43	79.36
TOTAL RAINFALL (mm)=	80.82	80.82	80.82
RUNOFF COEFFICIENT =	0.99	0.41	0.98

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. 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(0021)			
IN= 2--> OUT= 1			
DT= 5.0 min			
	OUTFLOW	STORAGE	OUTFLOW STORAGE
	(cms)	(ha.m.)	(cms) (ha.m.)
	0.0000	0.0000	0.0318 0.4260
	0.0318	0.0010	4.0000 0.4261

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0006)	3.935	0.404	5.25	79.36
OUTFLOW: ID= 1 (0021)	3.935	0.032	7.00	79.35

PEAK FLOW REDUCTION [Qout/Qin](%)= 7.86
TIME SHIFT OF PEAK FLOW (min)=105.00
MAXIMUM STORAGE USED (ha.m.)= 0.1889

DUHYD (0007)				
Inlet Cap.= 0.032				
#of Inlets= 1				
Total(cms)= 0.0				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
TOTAL HYD.(ID= 1):	3.94	0.03	7.00	79.35
MAJOR SYS.(ID= 2):	0.00	0.00	0.00	0.00
MINOR SYS.(ID= 3):	3.94	0.03	7.00	79.35

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| READ STORM | Filename: C:\Users\skaturunde\AppData
| | ata\Local\Temp\
| | 0e6e5a52-d61c-499c-aa8c-f58ff5ea5cea\db65cf9b
| Ptotal= 80.82 mm | Comments: 50y12h TRCA AES

	TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
	0.25	0.00	3.50	13.74	6.75	5.66	10.00	0.81
	0.50	0.81	3.75	13.74	7.00	5.66	10.25	0.81
	0.75	0.81	4.00	13.74	7.25	5.66	10.50	0.81
	1.00	0.81	4.25	13.74	7.50	3.23	10.75	0.81
	1.25	0.81	4.50	37.17	7.75	3.23	11.00	0.81
	1.50	0.81	4.75	37.17	8.00	3.23	11.25	0.81
	1.75	0.81	5.00	37.17	8.25	3.23	11.50	0.81
	2.00	0.81	5.25	37.17	8.50	1.62	11.75	0.81
	2.25	0.81	5.50	10.50	8.75	1.62	12.00	0.81
	2.50	4.85	5.75	10.50	9.00	1.62	12.25	0.81
	2.75	4.85	6.00	10.50	9.25	1.62		
	3.00	4.85	6.25	10.50	9.50	0.81		
	3.25	4.85	6.50	5.66	9.75	0.81		

| CALIB |
| STANDHYD (0036) | Area (ha)= 0.35
| ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.35	0.00
Dep. Storage	(mm)=	1.00	1.50
Average Slope	(%)=	1.00	2.00
Length	(m)=	48.30	40.00
Mannings n	=	0.013	0.250

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

----- TRANSFORMED HYETOGRAPH -----								
	TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
	0.083	0.00	3.167	4.85	6.250	10.50	9.33	0.81
	0.167	0.00	3.250	4.85	6.333	5.66	9.42	0.81
	0.250	0.00	3.333	13.74	6.417	5.66	9.50	0.81
	0.333	0.81	3.417	13.74	6.500	5.66	9.58	0.81
	0.417	0.81	3.500	13.74	6.583	5.66	9.67	0.81
	0.500	0.81	3.583	13.74	6.667	5.66	9.75	0.81
	0.583	0.81	3.667	13.74	6.750	5.66	9.83	0.81
	0.667	0.81	3.750	13.74	6.833	5.66	9.92	0.81
	0.750	0.81	3.833	13.74	6.917	5.66	10.00	0.81
	0.833	0.81	3.917	13.74	7.000	5.66	10.08	0.81
	0.917	0.81	4.000	13.74	7.083	5.66	10.17	0.81
	1.000	0.81	4.083	13.74	7.167	5.66	10.25	0.81
	1.083	0.81	4.167	13.74	7.250	5.66	10.33	0.81
	1.167	0.81	4.250	13.74	7.333	3.23	10.42	0.81
	1.250	0.81	4.333	37.17	7.417	3.23	10.50	0.81
	1.333	0.81	4.417	37.17	7.500	3.23	10.58	0.81
	1.417	0.81	4.500	37.17	7.583	3.23	10.67	0.81
	1.500	0.81	4.583	37.17	7.667	3.23	10.75	0.81
	1.583	0.81	4.667	37.17	7.750	3.23	10.83	0.81
	1.667	0.81	4.750	37.17	7.833	3.23	10.92	0.81
	1.750	0.81	4.833	37.17	7.917	3.23	11.00	0.81
	1.833	0.81	4.917	37.17	8.000	3.23	11.08	0.81

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1.917	0.81	5.000	37.17	8.083	3.23	11.17	0.81
2.000	0.81	5.083	37.17	8.167	3.23	11.25	0.81
2.083	0.81	5.167	37.17	8.250	3.23	11.33	0.81
2.167	0.81	5.250	37.17	8.333	1.62	11.42	0.81
2.250	0.81	5.333	10.50	8.417	1.62	11.50	0.81
2.333	4.85	5.417	10.50	8.500	1.62	11.58	0.81
2.417	4.85	5.500	10.50	8.583	1.62	11.67	0.81
2.500	4.85	5.583	10.50	8.667	1.62	11.75	0.81
2.583	4.85	5.667	10.50	8.750	1.62	11.83	0.81
2.667	4.85	5.750	10.50	8.833	1.62	11.92	0.81
2.750	4.85	5.833	10.50	8.917	1.62	12.00	0.81
2.833	4.85	5.917	10.50	9.000	1.62	12.08	0.81
2.917	4.85	6.000	10.50	9.083	1.62	12.17	0.81
3.000	4.85	6.083	10.50	9.167	1.62	12.25	0.81
3.083	4.85	6.167	10.50	9.250	1.62		

0.50	0.81	3.75	13.74	7.00	5.66	10.25	0.81
0.75	0.81	4.00	13.74	7.25	5.66	10.50	0.81
1.00	0.81	4.25	13.74	7.50	3.23	10.75	0.81
1.25	0.81	4.50	37.17	7.75	3.23	11.00	0.81
1.50	0.81	4.75	37.17	8.00	3.23	11.25	0.81
1.75	0.81	5.00	37.17	8.25	3.23	11.50	0.81
2.00	0.81	5.25	37.17	8.50	1.62	11.75	0.81
2.25	0.81	5.50	10.50	8.75	1.62	12.00	0.81
2.50	4.85	5.75	10.50	9.00	1.62	12.25	0.81
2.75	4.85	6.00	10.50	9.25	1.62		
3.00	4.85	6.25	10.50	9.50	0.81		
3.25	4.85	6.50	5.66	9.75	0.81		

Max. Eff. Inten. (mm/hr)=	37.17	29.32		
over (min)	5.00	5.00		
Storage Coeff. (min)=	2.45 (ii)	4.12 (ii)		
Unit Hyd. Tpeak (min)=	5.00	5.00		
Unit Hyd. peak (cms)=	0.30	0.24		
PEAK FLOW (cms)=	0.04	0.00	*TOTALS*	0.036 (iii)
TIME TO PEAK (hrs)=	4.83	5.25	5.25	
RUNOFF VOLUME (mm)=	79.82	50.68	79.53	
TOTAL RAINFALL (mm)=	80.82	80.82	80.82	
RUNOFF COEFFICIENT =	0.99	0.63	0.98	

CALIB	Area (ha)=	1.60		
STANDHYD (0037)	Total Imp(%)=	75.00	Dir. Conn.(%)=	45.00
ID= 1 DT= 5.0 min	IMPERVIOUS	PERVIOUS (i)		
Surface Area (ha)=	1.20	0.40		
Dep. Storage (mm)=	1.00	1.50		
Average Slope (%)=	1.00	2.00		
Length (m)=	103.28	40.00		
Mannings n	=	0.013	0.250	

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

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	4.85	6.250	10.50	9.33	0.81
0.167	0.00	3.250	4.85	6.333	5.66	9.42	0.81
0.250	0.00	3.333	13.74	6.417	5.66	9.50	0.81
0.333	0.81	3.417	13.74	6.500	5.66	9.58	0.81
0.417	0.81	3.500	13.74	6.583	5.66	9.67	0.81
0.500	0.81	3.583	13.74	6.667	5.66	9.75	0.81
0.583	0.81	3.667	13.74	6.750	5.66	9.83	0.81
0.667	0.81	3.750	13.74	6.833	5.66	9.92	0.81
0.750	0.81	3.833	13.74	6.917	5.66	10.00	0.81
0.833	0.81	3.917	13.74	7.000	5.66	10.08	0.81
0.917	0.81	4.000	13.74	7.083	5.66	10.17	0.81
1.000	0.81	4.083	13.74	7.167	5.66	10.25	0.81
1.083	0.81	4.167	13.74	7.250	5.66	10.33	0.81
1.167	0.81	4.250	13.74	7.333	3.23	10.42	0.81
1.250	0.81	4.333	37.17	7.417	3.23	10.50	0.81
1.333	0.81	4.417	37.17	7.500	3.23	10.58	0.81
1.417	0.81	4.500	37.17	7.583	3.23	10.67	0.81
1.500	0.81	4.583	37.17	7.667	3.23	10.75	0.81
1.583	0.81	4.667	37.17	7.750	3.23	10.83	0.81
1.667	0.81	4.750	37.17	7.833	3.23	10.92	0.81
1.750	0.81	4.833	37.17	7.917	3.23	11.00	0.81
1.833	0.81	4.917	37.17	8.000	3.23	11.08	0.81
1.917	0.81	5.000	37.17	8.083	3.23	11.17	0.81
2.000	0.81	5.083	37.17	8.167	3.23	11.25	0.81
2.083	0.81	5.167	37.17	8.250	3.23	11.33	0.81
2.167	0.81	5.250	37.17	8.333	1.62	11.42	0.81
2.250	0.81	5.333	10.50	8.417	1.62	11.50	0.81
2.333	4.85	5.417	10.50	8.500	1.62	11.58	0.81
2.417	4.85	5.500	10.50	8.583	1.62	11.67	0.81
2.500	4.85	5.583	10.50	8.667	1.62	11.75	0.81
2.583	4.85	5.667	10.50	8.750	1.62	11.83	0.81

RESERVOIR(0039)	OUTFLOW	STORAGE	OUTFLOW	STORAGE
IN= 2----> OUT= 1	(cms)	(ha.m.)	(cms)	(ha.m.)
DT= 5.0 min	0.0000	0.0000	0.0400	0.0050
AREA	QPEAK	TPEAK	R.V.	
(ha)	(cms)	(hrs)	(mm)	
INFLOW : ID= 2 (0036)	0.350	0.036	5.25	79.53
OUTFLOW: ID= 1 (0039)	0.350	0.035	5.25	79.46
PEAK FLOW REDUCTION [Qout/Qin] (%)=	95.71			
TIME SHIFT OF PEAK FLOW (min)=	0.00			
MAXIMUM STORAGE USED (ha.m.)=	0.0043			

READ STORM | Filename: C:\Users\skatukurunde\AppData
| | ata\Local\Temp\
| | 0e6e5a52-d61c-499c-aa8c-f58ff5ea5cea\db65cf9b
| Ptotal= 80.82 mm | Comments: 50y12h TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	13.74	6.75	5.66	10.00	0.81

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2.667	4.85	5.750	10.50	8.833	1.62	11.92	0.81
2.750	4.85	5.833	10.50	8.917	1.62	12.00	0.81
2.833	4.85	5.917	10.50	9.000	1.62	12.08	0.81
2.917	4.85	6.000	10.50	9.083	1.62	12.17	0.81
3.000	4.85	6.083	10.50	9.167	1.62	12.25	0.81
3.083	4.85	6.167	10.50	9.250	1.62		

Max.Eff.Inten.(mm/hr)=	37.17	75.56		
over (min)	5.00	15.00		
Storage Coeff. (min)=	3.87 (ii)	11.76 (ii)		
Unit Hyd. Tpeak (min)=	5.00	15.00		
Unit Hyd. peak (cms)=	0.25	0.09		
TOTALS				
PEAK FLOW (cms)=	0.07	0.08	0.156 (iii)	
TIME TO PEAK (hrs)=	5.17	5.25	5.25	
RUNOFF VOLUME (mm)=	79.82	63.89	71.06	
TOTAL RAINFALL (mm)=	80.82	80.82	80.82	
RUNOFF COEFFICIENT =	0.99	0.79	0.88	

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```

| RESERVOIR( 0038) |
| IN= 2---> OUT= 1 |
| DT= 5.0 min      |
-----
|          | OUTFLOW | STORAGE | OUTFLOW | STORAGE
|          | (cms)   | (ha.m.) | (cms)   | (ha.m.)
|-----|-----|-----|-----|-----
|          | 0.0000 | 0.0000 | 0.1000 | 0.0460
-----
|          | AREA   | QPEAK   | TPEAK   | R.V.
|          | (ha)   | (cms)   | (hrs)   | (mm)
|-----|-----|-----|-----|-----
INFLOW : ID= 2 ( 0037) | 1.600 | 0.156 | 5.25 | 71.06
OUTFLOW: ID= 1 ( 0038) | 1.600 | 0.090 | 5.42 | 70.99
-----
|          | PEAK FLOW REDUCTION [Qout/Qin] (%)= 57.84
|          | TIME SHIFT OF PEAK FLOW (min)= 10.00
|          | MAXIMUM STORAGE USED (ha.m.)= 0.0415
-----

```

```

| ADD HYD ( 0008) |
| 1 + 2 = 3      |
-----
|          | AREA   | QPEAK   | TPEAK   | R.V.
|          | (ha)   | (cms)   | (hrs)   | (mm)
|-----|-----|-----|-----|-----
ID1= 1 ( 0001): | 32.52 | 2.340 | 5.25 | 55.45
+ ID2= 2 ( 0038): | 1.60  | 0.090 | 5.42 | 70.99
-----
ID = 3 ( 0008): | 34.12 | 2.426 | 5.25 | 56.18
-----

```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

| ADD HYD ( 0008) |
| 3 + 2 = 1      |
-----
|          | AREA   | QPEAK   | TPEAK   | R.V.
|          | (ha)   | (cms)   | (hrs)   | (mm)
|-----|-----|-----|-----|-----
ID1= 3 ( 0008): | 34.12 | 2.426 | 5.25 | 56.18
-----

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+ ID2= 2 ( 0039): | 0.35 0.035 5.25 79.46
-----
ID = 1 ( 0008): | 34.47 2.460 5.25 56.41
-----

```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

| ADD HYD ( 0008) |
| 1 + 2 = 3      |
-----
|          | AREA   | QPEAK   | TPEAK   | R.V.
|          | (ha)   | (cms)   | (hrs)   | (mm)
|-----|-----|-----|-----|-----
*** W A R N I N G : HYDROGRAPH 0007 <ID= 2> IS DRY.
*** W A R N I N G : HYDROGRAPH 0003 = HYDROGRAPH 0001
ID1= 1 ( 0008): | 34.47 2.460 5.25 56.41
+ ID2= 2 ( 0007): | 0.00 0.000 0.00 0.00
-----
ID = 3 ( 0008): | 34.47 2.460 5.25 56.41
-----

```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```

| RESERVOIR( 0003) |
| IN= 2---> OUT= 1 |
| DT= 5.0 min      |
-----
|          | OUTFLOW | STORAGE | OUTFLOW | STORAGE
|          | (cms)   | (ha.m.) | (cms)   | (ha.m.)
|-----|-----|-----|-----|-----
|          | 0.0000 | 0.0000 | 0.3000 | 1.2650
|          | 0.0710 | 0.4106 | 0.3780 | 1.4000
|          | 0.0880 | 0.6770 | 0.4800 | 1.5300
|          | 0.1600 | 0.9180 | 1.5000 | 5.0000
|          | 0.2200 | 1.0700 | 0.0000 | 0.0000
-----

```

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0008)	34.470	2.460	5.25	56.41
OUTFLOW: ID= 1 (0003)	34.470	0.378	7.58	56.37

PEAK FLOW REDUCTION [Qout/Qin] (%)= 15.36
TIME SHIFT OF PEAK FLOW (min)=140.00
MAXIMUM STORAGE USED (ha.m.)= 1.4001

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| READ STORM | Filename: C:\Users\skaturunde\AppData
|            |          ata\Local\Temp\
|            |          0e6e5a52-d61c-499c-aa8c-f58ff5ea5cea\db65cf9b
| Ptotal= 80.82 mm | Comments: 50y12h TRCA AES
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TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	3.50	13.74	6.75	5.66	10.00	0.81
0.50	0.81	3.75	13.74	7.00	5.66	10.25	0.81
0.75	0.81	4.00	13.74	7.25	5.66	10.50	0.81
1.00	0.81	4.25	13.74	7.50	3.23	10.75	0.81
1.25	0.81	4.50	37.17	7.75	3.23	11.00	0.81
1.50	0.81	4.75	37.17	8.00	3.23	11.25	0.81
1.75	0.81	5.00	37.17	8.25	3.23	11.50	0.81
2.00	0.81	5.25	37.17	8.50	1.62	11.75	0.81
2.25	0.81	5.50	10.50	8.75	1.62	12.00	0.81
2.50	4.85	5.75	10.50	9.00	1.62	12.25	0.81
2.75	4.85	6.00	10.50	9.25	1.62		
3.00	4.85	6.25	10.50	9.50	0.81		

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3.25 4.85 | 6.50 5.66 | 9.75 0.81 |

| CALIB |
| STANDHYD (0023) | Area (ha)= 0.14
| ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.14	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	30.55	40.00
Mannings n =	0.013	0.250

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

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

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	3.167	4.85	6.250	10.50	9.33	0.81
0.167	0.00	3.250	4.85	6.333	5.66	9.42	0.81
0.250	0.00	3.333	13.74	6.417	5.66	9.50	0.81
0.333	0.81	3.417	13.74	6.500	5.66	9.58	0.81
0.417	0.81	3.500	13.74	6.583	5.66	9.67	0.81
0.500	0.81	3.583	13.74	6.667	5.66	9.75	0.81
0.583	0.81	3.667	13.74	6.750	5.66	9.83	0.81
0.667	0.81	3.750	13.74	6.833	5.66	9.92	0.81
0.750	0.81	3.833	13.74	6.917	5.66	10.00	0.81
0.833	0.81	3.917	13.74	7.000	5.66	10.08	0.81
0.917	0.81	4.000	13.74	7.083	5.66	10.17	0.81
1.000	0.81	4.083	13.74	7.167	5.66	10.25	0.81
1.083	0.81	4.167	13.74	7.250	5.66	10.33	0.81
1.167	0.81	4.250	13.74	7.333	3.23	10.42	0.81
1.250	0.81	4.333	37.17	7.417	3.23	10.50	0.81
1.333	0.81	4.417	37.17	7.500	3.23	10.58	0.81
1.417	0.81	4.500	37.17	7.583	3.23	10.67	0.81
1.500	0.81	4.583	37.17	7.667	3.23	10.75	0.81
1.583	0.81	4.667	37.17	7.750	3.23	10.83	0.81
1.667	0.81	4.750	37.17	7.833	3.23	10.92	0.81
1.750	0.81	4.833	37.17	7.917	3.23	11.00	0.81
1.833	0.81	4.917	37.17	8.000	3.23	11.08	0.81
1.917	0.81	5.000	37.17	8.083	3.23	11.17	0.81
2.000	0.81	5.083	37.17	8.167	3.23	11.25	0.81
2.083	0.81	5.167	37.17	8.250	3.23	11.33	0.81
2.167	0.81	5.250	37.17	8.333	1.62	11.42	0.81
2.250	0.81	5.333	10.50	8.417	1.62	11.50	0.81
2.333	4.85	5.417	10.50	8.500	1.62	11.58	0.81
2.417	4.85	5.500	10.50	8.583	1.62	11.67	0.81
2.500	4.85	5.583	10.50	8.667	1.62	11.75	0.81
2.583	4.85	5.667	10.50	8.750	1.62	11.83	0.81
2.667	4.85	5.750	10.50	8.833	1.62	11.92	0.81
2.750	4.85	5.833	10.50	8.917	1.62	12.00	0.81
2.833	4.85	5.917	10.50	9.000	1.62	12.08	0.81
2.917	4.85	6.000	10.50	9.083	1.62	12.17	0.81
3.000	4.85	6.083	10.50	9.167	1.62	12.25	0.81
3.083	4.85	6.167	10.50	9.250	1.62		

Max. Eff. Inten. (mm/hr)=	37.17	20.31
over (min)	5.00	5.00
Storage Coeff. (min)=	1.86 (ii)	3.53 (ii)
Unit Hyd. Tpeak (min)=	5.00	5.00

Unit Hyd. peak (cms)=	0.32	0.26	
PEAK FLOW (cms)=	0.01	0.00	0.014 (iii)
TIME TO PEAK (hrs)=	4.83	5.25	5.25
RUNOFF VOLUME (mm)=	79.82	33.43	79.35
TOTAL RAINFALL (mm)=	80.82	80.82	80.82
RUNOFF COEFFICIENT =	0.99	0.41	0.98

TOTALS

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. 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(0025) |
| IN= 2----> OUT= 1 |
| DT= 5.0 min |

	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0011	0.0132
	0.0010	0.0010	2.0000	0.0132

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0023)	0.140	0.014	5.25	79.35
OUTFLOW: ID= 1 (0025)	0.140	0.001	8.25	77.56

PEAK FLOW REDUCTION [Qout/Qin] (%)= 7.38
TIME SHIFT OF PEAK FLOW (min)=180.00
MAXIMUM STORAGE USED (ha.m.)= 0.0085

| DUHYD (0026) |
| Inlet Cap.= 0.001 |
| #of Inlets= 1 |
| Total(cms)= 0.0 |

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
TOTAL HYD. (ID= 1):	0.14	0.00	8.25	77.56
MAJOR SYS. (ID= 2):	0.00	0.00	8.25	77.56
MINOR SYS. (ID= 3):	0.14	0.00	3.58	77.56

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| READ STORM | Filename: C:\Users\skatururunde\AppData
| | ata\Local\Temp\
| | 0e6e5a52-d61c-499c-aa8c-f58ff5ea5cea\db65cf9b
| Ptotal= 80.82 mm | Comments: 50y12h TRCA AES

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	0.00	3.50	13.74	6.75	5.66	10.00	0.81
0.50	0.81	3.75	13.74	7.00	5.66	10.25	0.81
0.75	0.81	4.00	13.74	7.25	5.66	10.50	0.81
1.00	0.81	4.25	13.74	7.50	3.23	10.75	0.81
1.25	0.81	4.50	37.17	7.75	3.23	11.00	0.81
1.50	0.81	4.75	37.17	8.00	3.23	11.25	0.81

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1.75	0.81	5.00	37.17	8.25	3.23	11.50	0.81
2.00	0.81	5.25	37.17	8.50	1.62	11.75	0.81
2.25	0.81	5.50	10.50	8.75	1.62	12.00	0.81
2.50	4.85	5.75	10.50	9.00	1.62	12.25	0.81
2.75	4.85	6.00	10.50	9.25	1.62		
3.00	4.85	6.25	10.50	9.50	0.81		
3.25	4.85	6.50	5.66	9.75	0.81		

3.083	4.85	6.167	10.50	9.250	1.62		
Max.Eff.Inten.(mm/hr)=		37.17		31.46			
over (min)		5.00		15.00			
Storage Coeff. (min)=		3.23 (ii)		14.44 (ii)			
Unit Hyd. Tpeak (min)=		5.00		15.00			
Unit Hyd. peak (cms)=		0.27		0.08			

TOTALS

PEAK FLOW (cms)=	0.04	0.03	0.068 (iii)
TIME TO PEAK (hrs)=	5.08	5.25	5.25
RUNOFF VOLUME (mm)=	79.82	39.61	56.49
TOTAL RAINFALL (mm)=	80.82	80.82	80.82
RUNOFF COEFFICIENT =	0.99	0.49	0.70

 | CALIB |
 | STANDHYD (0040) | Area (ha)= 0.88
 | ID= 1 DT= 5.0 min | Total Imp(%)= 57.00 Dir. Conn.(%)= 42.00

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.50	0.38
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	76.40	40.00
Mannings n =	0.013	0.250

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

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

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	0.00	3.167	4.85	6.250	10.50	9.33	0.81
0.167	0.00	3.250	4.85	6.333	5.66	9.42	0.81
0.250	0.00	3.333	13.74	6.417	5.66	9.50	0.81
0.333	0.81	3.417	13.74	6.500	5.66	9.58	0.81
0.417	0.81	3.500	13.74	6.583	5.66	9.67	0.81
0.500	0.81	3.583	13.74	6.667	5.66	9.75	0.81
0.583	0.81	3.667	13.74	6.750	5.66	9.83	0.81
0.667	0.81	3.750	13.74	6.833	5.66	9.92	0.81
0.750	0.81	3.833	13.74	6.917	5.66	10.00	0.81
0.833	0.81	3.917	13.74	7.000	5.66	10.08	0.81
0.917	0.81	4.000	13.74	7.083	5.66	10.17	0.81
1.000	0.81	4.083	13.74	7.167	5.66	10.25	0.81
1.083	0.81	4.167	13.74	7.250	5.66	10.33	0.81
1.167	0.81	4.250	13.74	7.333	3.23	10.42	0.81
1.250	0.81	4.333	37.17	7.417	3.23	10.50	0.81
1.333	0.81	4.417	37.17	7.500	3.23	10.58	0.81
1.417	0.81	4.500	37.17	7.583	3.23	10.67	0.81
1.500	0.81	4.583	37.17	7.667	3.23	10.75	0.81
1.583	0.81	4.667	37.17	7.750	3.23	10.83	0.81
1.667	0.81	4.750	37.17	7.833	3.23	10.92	0.81
1.750	0.81	4.833	37.17	7.917	3.23	11.00	0.81
1.833	0.81	4.917	37.17	8.000	3.23	11.08	0.81
1.917	0.81	5.000	37.17	8.083	3.23	11.17	0.81
2.000	0.81	5.083	37.17	8.167	3.23	11.25	0.81
2.083	0.81	5.167	37.17	8.250	3.23	11.33	0.81
2.167	0.81	5.250	37.17	8.333	1.62	11.42	0.81
2.250	0.81	5.333	10.50	8.417	1.62	11.50	0.81
2.333	4.85	5.417	10.50	8.500	1.62	11.58	0.81
2.417	4.85	5.500	10.50	8.583	1.62	11.67	0.81
2.500	4.85	5.583	10.50	8.667	1.62	11.75	0.81
2.583	4.85	5.667	10.50	8.750	1.62	11.83	0.81
2.667	4.85	5.750	10.50	8.833	1.62	11.92	0.81
2.750	4.85	5.833	10.50	8.917	1.62	12.00	0.81
2.833	4.85	5.917	10.50	9.000	1.62	12.08	0.81
2.917	4.85	6.000	10.50	9.083	1.62	12.17	0.81
3.000	4.85	6.083	10.50	9.167	1.62	12.25	0.81

 | ADD HYD (0027) |
 | 1 + 2 = 3 | AREA QPEAK TPEAK R.V.
(ha) (cms) (hrs) (mm)
 ID1= 1 (0026): 0.00 0.000 8.25 77.56
 + ID2= 2 (0040): 0.88 0.068 5.25 56.49
 =====
 ID = 3 (0027): 0.88 0.068 5.25 56.59

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

 | RESERVOIR(0028) |
 | IN= 2----> OUT= 1 |
DT= 5.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0035	0.0322
0.0029	0.0145	0.0037	0.0375
0.0030	0.0193	0.0038	0.0443
0.0033	0.0269	0.0040	0.0485

INFLOW : ID= 2 (0027)	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
0.880	0.880	0.068	5.25	56.59
OUTFLOW: ID= 1 (0028)	0.880	0.004	8.75	55.13

PEAK FLOW REDUCTION [Qout/Qin](%)= 5.53
 TIME SHIFT OF PEAK FLOW (min)=210.00
 MAXIMUM STORAGE USED (ha.m.)= 0.0409

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 | | ata\Local\Temp\
 | | 0e6e5a52-d61c-499c-aa8c-f58ff5ea5cea\db65cf9b
 | Ptotal= 80.82 mm | Comments: 50y12h TRCA AES

TIME RAIN | TIME RAIN | TIME RAIN | TIME RAIN

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hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	13.74	6.75	5.66	10.00	0.81
0.50	0.81	3.75	13.74	7.00	5.66	10.25	0.81
0.75	0.81	4.00	13.74	7.25	5.66	10.50	0.81
1.00	0.81	4.25	13.74	7.50	3.23	10.75	0.81
1.25	0.81	4.50	37.17	7.75	3.23	11.00	0.81
1.50	0.81	4.75	37.17	8.00	3.23	11.25	0.81
1.75	0.81	5.00	37.17	8.25	3.23	11.50	0.81
2.00	0.81	5.25	37.17	8.50	1.62	11.75	0.81
2.25	0.81	5.50	10.50	8.75	1.62	12.00	0.81
2.50	4.85	5.75	10.50	9.00	1.62	12.25	0.81
2.75	4.85	6.00	10.50	9.25	1.62		
3.00	4.85	6.25	10.50	9.50	0.81		
3.25	4.85	6.50	5.66	9.75	0.81		

2.500	4.85	5.583	10.50	8.667	1.62	11.75	0.81
2.583	4.85	5.667	10.50	8.750	1.62	11.83	0.81
2.667	4.85	5.750	10.50	8.833	1.62	11.92	0.81
2.750	4.85	5.833	10.50	8.917	1.62	12.00	0.81
2.833	4.85	5.917	10.50	9.000	1.62	12.08	0.81
2.917	4.85	6.000	10.50	9.083	1.62	12.17	0.81
3.000	4.85	6.083	10.50	9.167	1.62	12.25	0.81
3.083	4.85	6.167	10.50	9.250	1.62		

Max.Eff.Inten. (mm/hr)= 37.17 33.07
 over (min) 5.00 20.00
 Storage Coeff. (min)= 5.10 (ii) 16.09 (ii)
 Unit Hyd. Tpeak (min)= 5.00 20.00
 Unit Hyd. peak (cms)= 0.21 0.06

TOTALS
 PEAK FLOW (cms)= 0.17 0.14 0.304 (iii)
 TIME TO PEAK (hrs)= 5.25 5.33 5.25
 RUNOFF VOLUME (mm)= 79.82 40.31 56.11
 TOTAL RAINFALL (mm)= 80.82 80.82 80.82
 RUNOFF COEFFICIENT = 0.99 0.50 0.69

 | CALIB |
 | STANDHYD (0033) | Area (ha)= 4.02
 | ID= 1 DT= 5.0 min | Total Imp(%)= 57.00 Dir. Conn.(%)= 40.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.29	1.73
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	163.63	40.00
Mannings n =	0.013	0.250

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

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

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

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	4.85	6.250	10.50	9.33	0.81
0.167	0.00	3.250	4.85	6.333	5.66	9.42	0.81
0.250	0.00	3.333	13.74	6.417	5.66	9.50	0.81
0.333	0.81	3.417	13.74	6.500	5.66	9.58	0.81
0.417	0.81	3.500	13.74	6.583	5.66	9.67	0.81
0.500	0.81	3.583	13.74	6.667	5.66	9.75	0.81
0.583	0.81	3.667	13.74	6.750	5.66	9.83	0.81
0.667	0.81	3.750	13.74	6.833	5.66	9.92	0.81
0.750	0.81	3.833	13.74	6.917	5.66	10.00	0.81
0.833	0.81	3.917	13.74	7.000	5.66	10.08	0.81
0.917	0.81	4.000	13.74	7.083	5.66	10.17	0.81
1.000	0.81	4.083	13.74	7.167	5.66	10.25	0.81
1.083	0.81	4.167	13.74	7.250	5.66	10.33	0.81
1.167	0.81	4.250	13.74	7.333	3.23	10.42	0.81
1.250	0.81	4.333	37.17	7.417	3.23	10.50	0.81
1.333	0.81	4.417	37.17	7.500	3.23	10.58	0.81
1.417	0.81	4.500	37.17	7.583	3.23	10.67	0.81
1.500	0.81	4.583	37.17	7.667	3.23	10.75	0.81
1.583	0.81	4.667	37.17	7.750	3.23	10.83	0.81
1.667	0.81	4.750	37.17	7.833	3.23	10.92	0.81
1.750	0.81	4.833	37.17	7.917	3.23	11.00	0.81
1.833	0.81	4.917	37.17	8.000	3.23	11.08	0.81
1.917	0.81	5.000	37.17	8.083	3.23	11.17	0.81
2.000	0.81	5.083	37.17	8.167	3.23	11.25	0.81
2.083	0.81	5.167	37.17	8.250	3.23	11.33	0.81
2.167	0.81	5.250	37.17	8.333	1.62	11.42	0.81
2.250	0.81	5.333	10.50	8.417	1.62	11.50	0.81
2.333	4.85	5.417	10.50	8.500	1.62	11.58	0.81
2.417	4.85	5.500	10.50	8.583	1.62	11.67	0.81

 | READ STORM | Filename: C:\Users\skaturunde\AppData
 | | ata\Local\Temp\
 | | 0e6e5a52-d61c-499c-aa8c-f58ff5ea5cea\db65cf9b
 | Ptotal= 80.82 mm | Comments: 50y12h TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	13.74	6.75	5.66	10.00	0.81
0.50	0.81	3.75	13.74	7.00	5.66	10.25	0.81
0.75	0.81	4.00	13.74	7.25	5.66	10.50	0.81
1.00	0.81	4.25	13.74	7.50	3.23	10.75	0.81
1.25	0.81	4.50	37.17	7.75	3.23	11.00	0.81
1.50	0.81	4.75	37.17	8.00	3.23	11.25	0.81
1.75	0.81	5.00	37.17	8.25	3.23	11.50	0.81
2.00	0.81	5.25	37.17	8.50	1.62	11.75	0.81
2.25	0.81	5.50	10.50	8.75	1.62	12.00	0.81
2.50	4.85	5.75	10.50	9.00	1.62	12.25	0.81
2.75	4.85	6.00	10.50	9.25	1.62		
3.00	4.85	6.25	10.50	9.50	0.81		
3.25	4.85	6.50	5.66	9.75	0.81		

 | CALIB |
 | STANDHYD (0041) | Area (ha)= 0.37
 | ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.37	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	49.67	40.00

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Mannings n = 0.013 0.250

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

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

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	4.85	6.250	10.50	9.33	0.81
0.167	0.00	3.250	4.85	6.333	5.66	9.42	0.81
0.250	0.00	3.333	13.74	6.417	5.66	9.50	0.81
0.333	0.81	3.417	13.74	6.500	5.66	9.58	0.81
0.417	0.81	3.500	13.74	6.583	5.66	9.67	0.81
0.500	0.81	3.583	13.74	6.667	5.66	9.75	0.81
0.583	0.81	3.667	13.74	6.750	5.66	9.83	0.81
0.667	0.81	3.750	13.74	6.833	5.66	9.92	0.81
0.750	0.81	3.833	13.74	6.917	5.66	10.00	0.81
0.833	0.81	3.917	13.74	7.000	5.66	10.08	0.81
0.917	0.81	4.000	13.74	7.083	5.66	10.17	0.81
1.000	0.81	4.083	13.74	7.167	5.66	10.25	0.81
1.083	0.81	4.167	13.74	7.250	5.66	10.33	0.81
1.167	0.81	4.250	13.74	7.333	3.23	10.42	0.81
1.250	0.81	4.333	37.17	7.417	3.23	10.50	0.81
1.333	0.81	4.417	37.17	7.500	3.23	10.58	0.81
1.417	0.81	4.500	37.17	7.583	3.23	10.67	0.81
1.500	0.81	4.583	37.17	7.667	3.23	10.75	0.81
1.583	0.81	4.667	37.17	7.750	3.23	10.83	0.81
1.667	0.81	4.750	37.17	7.833	3.23	10.92	0.81
1.750	0.81	4.833	37.17	7.917	3.23	11.00	0.81
1.833	0.81	4.917	37.17	8.000	3.23	11.08	0.81
1.917	0.81	5.000	37.17	8.083	3.23	11.17	0.81
2.000	0.81	5.083	37.17	8.167	3.23	11.25	0.81
2.083	0.81	5.167	37.17	8.250	3.23	11.33	0.81
2.167	0.81	5.250	37.17	8.333	1.62	11.42	0.81
2.250	0.81	5.333	10.50	8.417	1.62	11.50	0.81
2.333	4.85	5.417	10.50	8.500	1.62	11.58	0.81
2.417	4.85	5.500	10.50	8.583	1.62	11.67	0.81
2.500	4.85	5.583	10.50	8.667	1.62	11.75	0.81
2.583	4.85	5.667	10.50	8.750	1.62	11.83	0.81
2.667	4.85	5.750	10.50	8.833	1.62	11.92	0.81
2.750	4.85	5.833	10.50	8.917	1.62	12.00	0.81
2.833	4.85	5.917	10.50	9.000	1.62	12.08	0.81
2.917	4.85	6.000	10.50	9.083	1.62	12.17	0.81
3.000	4.85	6.083	10.50	9.167	1.62	12.25	0.81
3.083	4.85	6.167	10.50	9.250	1.62		

Max.Eff.Inten.(mm/hr)= 37.17 29.32
 over (min) 5.00 5.00
 Storage Coeff. (min)= 2.49 (ii) 4.16 (ii)
 Unit Hyd. Tpeak (min)= 5.00 5.00
 Unit Hyd. peak (cms)= 0.29 0.24

TOTALS
 PEAK FLOW (cms)= 0.04 0.00 0.038 (iii)
 TIME TO PEAK (hrs)= 4.83 5.25 5.25
 RUNOFF VOLUME (mm)= 79.82 50.68 79.53
 TOTAL RAINFALL (mm)= 80.82 80.82 80.82
 RUNOFF COEFFICIENT = 0.99 0.63 0.98

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.

RESERVOIR(0042)	OUTFLOW	STORAGE	OUTFLOW	STORAGE
IN= 2---> OUT= 1	(cms)	(ha.m.)	(cms)	(ha.m.)
DT= 5.0 min	0.0000	0.0000	0.0026	0.0348
	0.0026	0.0010	4.0000	0.0350
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0041)	0.370	0.038	5.25	79.53
OUTFLOW: ID= 1 (0042)	0.370	0.003	8.25	79.28
	PEAK FLOW REDUCTION [Qout/Qin](%)= 6.84			
	TIME SHIFT OF PEAK FLOW (min)=180.00			
	MAXIMUM STORAGE USED (ha.m.)= 0.0225			

DUHYD (0043)	AREA	QPEAK	TPEAK	R.V.
Inlet Cap.= 0.003	(ha)	(cms)	(hrs)	(mm)
#of Inlets= 10				
Total(cms)= 0.0				
TOTAL HYD.(ID= 1):	0.37	0.00	8.25	79.28
MAJOR SYS.(ID= 2):	0.00	0.00	0.00	0.00
MINOR SYS.(ID= 3):	0.37	0.00	8.25	79.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0044)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
*** W A R N I N G : HYDROGRAPH 0043 <ID= 2> IS DRY.				
*** W A R N I N G : HYDROGRAPH 0003 = HYDROGRAPH 0001				
ID1= 1 (0033):	4.02	0.304	5.25	56.11
+ ID2= 2 (0043):	0.00	0.000	0.00	0.00
ID = 3 (0044):	4.02	0.304	5.25	56.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0045)	OUTFLOW	STORAGE	OUTFLOW	STORAGE
IN= 2---> OUT= 1	(cms)	(ha.m.)	(cms)	(ha.m.)
DT= 5.0 min	0.0000	0.0000	0.0340	0.1196
	0.0088	0.0547	0.0460	0.1470
	0.0100	0.0814	0.0530	0.1571
	0.0260	0.1053	0.0670	0.1747

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0044)	4.016	0.304	5.25	56.11
OUTFLOW: ID= 1 (0045)	4.016	0.052	7.25	55.72

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PEAK FLOW REDUCTION [Qout/Qin] (%) = 17.21
TIME SHIFT OF PEAK FLOW (min) = 120.00
MAXIMUM STORAGE USED (ha.m.) = 0.1561

IMPERVIOUS PERVIOUS (i)
Surface Area (ha) = 18.21 14.31
Dep. Storage (mm) = 1.00 1.50
Average Slope (%) = 1.00 2.00
Length (m) = 465.62 40.00
Mannings n = 0.013 0.250

| ADD HYD (0024) |
1 + 2 = 3
AREA QPEAK TPEAK R.V.
(ha) (cms) (hrs) (mm)
ID1= 1 (0028): 0.88 0.004 8.75 55.13
+ ID2= 2 (0003): 34.47 0.378 7.58 56.37

ID = 3 (0024): 35.35 0.382 7.58 56.34

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| ADD HYD (0024) |
3 + 2 = 1
AREA QPEAK TPEAK R.V.
(ha) (cms) (hrs) (mm)
ID1= 3 (0024): 35.35 0.382 7.58 56.34
+ ID2= 2 (0045): 4.02 0.052 7.25 55.72

ID = 1 (0024): 39.37 0.433 7.58 56.28

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

** SIMULATION : 100y12h TRCA AES **

| READ STORM | Filename: C:\Users\skaturunde\AppData
| | ata\Local\Temp\
| | 0e6e5a52-d61c-499c-aa8c-f58ff5ea5cea\7fc786e5
| Ptotal= 88.54 mm | Comments: 100y12h TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	15.05	6.75	6.20	10.00	0.89
0.50	0.89	3.75	15.05	7.00	6.20	10.25	0.89
0.75	0.89	4.00	15.05	7.25	6.20	10.50	0.89
1.00	0.89	4.25	15.05	7.50	3.54	10.75	0.89
1.25	0.89	4.50	40.71	7.75	3.54	11.00	0.89
1.50	0.89	4.75	40.71	8.00	3.54	11.25	0.89
1.75	0.89	5.00	40.71	8.25	3.54	11.50	0.89
2.00	0.89	5.25	40.71	8.50	1.77	11.75	0.89
2.25	0.89	5.50	11.51	8.75	1.77	12.00	0.89
2.50	5.31	5.75	11.51	9.00	1.77	12.25	0.89
2.75	5.31	6.00	11.51	9.25	1.77		
3.00	5.31	6.25	11.51	9.50	0.89		
3.25	5.31	6.50	6.20	9.75	0.89		

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

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

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	5.31	6.250	11.51	9.33	0.89
0.167	0.00	3.250	5.31	6.333	6.20	9.42	0.89
0.250	0.00	3.333	15.05	6.417	6.20	9.50	0.89
0.333	0.89	3.417	15.05	6.500	6.20	9.58	0.89
0.417	0.89	3.500	15.05	6.583	6.20	9.67	0.89
0.500	0.89	3.583	15.05	6.667	6.20	9.75	0.89
0.583	0.89	3.667	15.05	6.750	6.20	9.83	0.89
0.667	0.89	3.750	15.05	6.833	6.20	9.92	0.89
0.750	0.89	3.833	15.05	6.917	6.20	10.00	0.89
0.833	0.89	3.917	15.05	7.000	6.20	10.08	0.89
0.917	0.89	4.000	15.05	7.083	6.20	10.17	0.89
1.000	0.89	4.083	15.05	7.167	6.20	10.25	0.89
1.083	0.89	4.167	15.05	7.250	6.20	10.33	0.89
1.167	0.89	4.250	15.05	7.333	3.54	10.42	0.89
1.250	0.89	4.333	40.71	7.417	3.54	10.50	0.89
1.333	0.89	4.417	40.71	7.500	3.54	10.58	0.89
1.417	0.89	4.500	40.71	7.583	3.54	10.67	0.89
1.500	0.89	4.583	40.71	7.667	3.54	10.75	0.89
1.583	0.89	4.667	40.71	7.750	3.54	10.83	0.89
1.667	0.89	4.750	40.71	7.833	3.54	10.92	0.89
1.750	0.89	4.833	40.71	7.917	3.54	11.00	0.89
1.833	0.89	4.917	40.71	8.000	3.54	11.08	0.89
1.917	0.89	5.000	40.71	8.083	3.54	11.17	0.89
2.000	0.89	5.083	40.71	8.167	3.54	11.25	0.89
2.083	0.89	5.167	40.71	8.250	3.54	11.33	0.89
2.167	0.89	5.250	40.71	8.333	1.77	11.42	0.89
2.250	0.89	5.333	11.51	8.417	1.77	11.50	0.89
2.333	5.31	5.417	11.51	8.500	1.77	11.58	0.89
2.417	5.31	5.500	11.51	8.583	1.77	11.67	0.89
2.500	5.31	5.583	11.51	8.667	1.77	11.75	0.89
2.583	5.31	5.667	11.51	8.750	1.77	11.83	0.89
2.667	5.31	5.750	11.51	8.833	1.77	11.92	0.89
2.750	5.31	5.833	11.51	8.917	1.77	12.00	0.89
2.833	5.31	5.917	11.51	9.000	1.77	12.08	0.89
2.917	5.31	6.000	11.51	9.083	1.77	12.17	0.89
3.000	5.31	6.083	11.51	9.167	1.77	12.25	0.89
3.083	5.31	6.167	11.51	9.250	1.77		

Max.Eff.Inten.(mm/hr)= 40.71 38.26
over (min) 10.00 20.00
Storage Coeff. (min)= 9.21 (ii) 19.58 (ii)
Unit Hyd. Tpeak (min)= 10.00 20.00
Unit Hyd. peak (cms)= 0.12 0.06

TOTALS

PEAK FLOW (cms)= 1.40 1.29 2.673 (iii)
TIME TO PEAK (hrs)= 5.25 5.33 5.25
RUNOFF VOLUME (mm)= 87.54 46.45 62.07
TOTAL RAINFALL (mm)= 88.54 88.54 88.54
RUNOFF COEFFICIENT = 0.99 0.52 0.70

| CALIB |
| STANDHYD (0001) | Area (ha)= 32.52
| ID= 1 DT= 5.0 min | Total Imp(%)= 56.00 Dir. Conn.(%)= 38.00

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- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

1.167	0.89	4.250	15.05	7.333	3.54	10.42	0.89
1.250	0.89	4.333	40.71	7.417	3.54	10.50	0.89
1.333	0.89	4.417	40.71	7.500	3.54	10.58	0.89
1.417	0.89	4.500	40.71	7.583	3.54	10.67	0.89
1.500	0.89	4.583	40.71	7.667	3.54	10.75	0.89
1.583	0.89	4.667	40.71	7.750	3.54	10.83	0.89
1.667	0.89	4.750	40.71	7.833	3.54	10.92	0.89
1.750	0.89	4.833	40.71	7.917	3.54	11.00	0.89
1.833	0.89	4.917	40.71	8.000	3.54	11.08	0.89
1.917	0.89	5.000	40.71	8.083	3.54	11.17	0.89
2.000	0.89	5.083	40.71	8.167	3.54	11.25	0.89
2.083	0.89	5.167	40.71	8.250	3.54	11.33	0.89
2.167	0.89	5.250	40.71	8.333	1.77	11.42	0.89
2.250	0.89	5.333	11.51	8.417	1.77	11.50	0.89
2.333	5.31	5.417	11.51	8.500	1.77	11.58	0.89
2.417	5.31	5.500	11.51	8.583	1.77	11.67	0.89
2.500	5.31	5.583	11.51	8.667	1.77	11.75	0.89
2.583	5.31	5.667	11.51	8.750	1.77	11.83	0.89
2.667	5.31	5.750	11.51	8.833	1.77	11.92	0.89
2.750	5.31	5.833	11.51	8.917	1.77	12.00	0.89
2.833	5.31	5.917	11.51	9.000	1.77	12.08	0.89
2.917	5.31	6.000	11.51	9.083	1.77	12.17	0.89
3.000	5.31	6.083	11.51	9.167	1.77	12.25	0.89
3.083	5.31	6.167	11.51	9.250	1.77		

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 | | ata\Local\Temp\
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 | Ptotal= 88.54 mm | Comments: 100y12h TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	15.05	6.75	6.20	10.00	0.89
0.50	0.89	3.75	15.05	7.00	6.20	10.25	0.89
0.75	0.89	4.00	15.05	7.25	6.20	10.50	0.89
1.00	0.89	4.25	15.05	7.50	3.54	10.75	0.89
1.25	0.89	4.50	40.71	7.75	3.54	11.00	0.89
1.50	0.89	4.75	40.71	8.00	3.54	11.25	0.89
1.75	0.89	5.00	40.71	8.25	3.54	11.50	0.89
2.00	0.89	5.25	40.71	8.50	1.77	11.75	0.89
2.25	0.89	5.50	11.51	8.75	1.77	12.00	0.89
2.50	5.31	5.75	11.51	9.00	1.77	12.25	0.89
2.75	5.31	6.00	11.51	9.25	1.77		
3.00	5.31	6.25	11.51	9.50	0.89		
3.25	5.31	6.50	6.20	9.75	0.89		

Max.Eff.Inten. (mm/hr)= 40.71 23.37
 over (min) 5.00 10.00
 Storage Coeff. (min)= 4.89 (ii) 6.50 (ii)
 Unit Hyd. Tpeak (min)= 5.00 10.00
 Unit Hyd. peak (cms)= 0.22 0.14

TOTALS
 PEAK FLOW (cms)= 0.44 0.00 0.443 (iii)
 TIME TO PEAK (hrs)= 5.25 5.25 5.25
 RUNOFF VOLUME (mm)= 87.54 38.67 87.05
 TOTAL RAINFALL (mm)= 88.54 88.54 88.54
 RUNOFF COEFFICIENT = 0.99 0.44 0.98

 CALIB |
 | STANDHYD (0006) | Area (ha)= 3.94
 | ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	3.90	0.04
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	161.97	40.00
Mannings n =	0.013	0.250

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

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

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	5.31	6.250	11.51	9.33	0.89
0.167	0.00	3.250	5.31	6.333	6.20	9.42	0.89
0.250	0.00	3.333	15.05	6.417	6.20	9.50	0.89
0.333	0.89	3.417	15.05	6.500	6.20	9.58	0.89
0.417	0.89	3.500	15.05	6.583	6.20	9.67	0.89
0.500	0.89	3.583	15.05	6.667	6.20	9.75	0.89
0.583	0.89	3.667	15.05	6.750	6.20	9.83	0.89
0.667	0.89	3.750	15.05	6.833	6.20	9.92	0.89
0.750	0.89	3.833	15.05	6.917	6.20	10.00	0.89
0.833	0.89	3.917	15.05	7.000	6.20	10.08	0.89
0.917	0.89	4.000	15.05	7.083	6.20	10.17	0.89
1.000	0.89	4.083	15.05	7.167	6.20	10.25	0.89
1.083	0.89	4.167	15.05	7.250	6.20	10.33	0.89

 RESERVOIR(0021) |
 | IN= 2----> OUT= 1 |
DT= 5.0 min

	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0318	0.4260
	0.0318	0.0010	4.0000	0.4261

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0006)	3.935	0.443	5.25	87.05
OUTFLOW: ID= 1 (0021)	3.935	0.032	7.17	87.05

 PEAK FLOW REDUCTION [Qout/Qin] (%)= 7.18
 TIME SHIFT OF PEAK FLOW (min)=115.00
 MAXIMUM STORAGE USED (ha.m.)= 0.2016

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-----
| DUHYD ( 0007) |
| Inlet Cap.= 0.032 |
| #of Inlets= 1 |
| Total(cms)= 0.0 |
-----
          AREA      QPEAK      TPEAK      R.V.
          (ha)      (cms)      (hrs)      (mm)
-----
TOTAL HYD.(ID= 1):  3.94      0.03      7.17      87.05
=====
MAJOR SYS.(ID= 2):  0.00      0.00      0.00      0.00
MINOR SYS.(ID= 3):  3.94      0.03      7.17      87.05

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NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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-----
| READ STORM |
|            |
|            |
| Ptotal= 88.54 mm |
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          Local\Temp\
          0e6e5a52-d61c-499c-aa8c-f58ff5ea5cea\7fc786e5
          Comments: 100y12h TRCA AES

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TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	15.05	6.75	6.20	10.00	0.89
0.50	0.89	3.75	15.05	7.00	6.20	10.25	0.89
0.75	0.89	4.00	15.05	7.25	6.20	10.50	0.89
1.00	0.89	4.25	15.05	7.50	3.54	10.75	0.89
1.25	0.89	4.50	40.71	7.75	3.54	11.00	0.89
1.50	0.89	4.75	40.71	8.00	3.54	11.25	0.89
1.75	0.89	5.00	40.71	8.25	3.54	11.50	0.89
2.00	0.89	5.25	40.71	8.50	1.77	11.75	0.89
2.25	0.89	5.50	11.51	8.75	1.77	12.00	0.89
2.50	5.31	5.75	11.51	9.00	1.77	12.25	0.89
2.75	5.31	6.00	11.51	9.25	1.77		
3.00	5.31	6.25	11.51	9.50	0.89		
3.25	5.31	6.50	6.20	9.75	0.89		

0.667	0.89	3.750	15.05	6.833	6.20	9.92	0.89
0.750	0.89	3.833	15.05	6.917	6.20	10.00	0.89
0.833	0.89	3.917	15.05	7.000	6.20	10.08	0.89
0.917	0.89	4.000	15.05	7.083	6.20	10.17	0.89
1.000	0.89	4.083	15.05	7.167	6.20	10.25	0.89
1.083	0.89	4.167	15.05	7.250	6.20	10.33	0.89
1.167	0.89	4.250	15.05	7.333	3.54	10.42	0.89
1.250	0.89	4.333	40.71	7.417	3.54	10.50	0.89
1.333	0.89	4.417	40.71	7.500	3.54	10.58	0.89
1.417	0.89	4.500	40.71	7.583	3.54	10.67	0.89
1.500	0.89	4.583	40.71	7.667	3.54	10.75	0.89
1.583	0.89	4.667	40.71	7.750	3.54	10.83	0.89
1.667	0.89	4.750	40.71	7.833	3.54	10.92	0.89
1.750	0.89	4.833	40.71	7.917	3.54	11.00	0.89
1.833	0.89	4.917	40.71	8.000	3.54	11.08	0.89
1.917	0.89	5.000	40.71	8.083	3.54	11.17	0.89
2.000	0.89	5.083	40.71	8.167	3.54	11.25	0.89
2.083	0.89	5.167	40.71	8.250	3.54	11.33	0.89
2.167	0.89	5.250	40.71	8.333	1.77	11.42	0.89
2.250	0.89	5.333	11.51	8.417	1.77	11.50	0.89
2.333	5.31	5.417	11.51	8.500	1.77	11.58	0.89
2.417	5.31	5.500	11.51	8.583	1.77	11.67	0.89
2.500	5.31	5.583	11.51	8.667	1.77	11.75	0.89
2.583	5.31	5.667	11.51	8.750	1.77	11.83	0.89
2.667	5.31	5.750	11.51	8.833	1.77	11.92	0.89
2.750	5.31	5.833	11.51	8.917	1.77	12.00	0.89
2.833	5.31	5.917	11.51	9.000	1.77	12.08	0.89
2.917	5.31	6.000	11.51	9.083	1.77	12.17	0.89
3.000	5.31	6.083	11.51	9.167	1.77	12.25	0.89
3.083	5.31	6.167	11.51	9.250	1.77		

```

Max.Eff.Inten.(mm/hr)= 40.71      32.96
over (min)              5.00      5.00
Storage Coeff. (min)= 2.36 (ii)  3.97 (ii)
Unit Hyd. Tpeak (min)= 5.00      5.00
Unit Hyd. peak (cms)= 0.30      0.24

```

```

*TOTALS*
PEAK FLOW (cms)= 0.04      0.00      0.040 (iii)
TIME TO PEAK (hrs)= 5.08      5.25      5.25
RUNOFF VOLUME (mm)= 87.54      57.45      87.24
TOTAL RAINFALL (mm)= 88.54      88.54      88.54
RUNOFF COEFFICIENT = 0.99      0.65      0.99

```

```

-----
| CALIB |
| STANDHYD ( 0036) |
| ID= 1 DT= 5.0 min |
-----
          Area (ha)= 0.35
          Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

```

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.35	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	48.30	40.00
Mannings n =	0.013	0.250

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

```

-----
          ----- TRANSFORMED HYETOGRAPH -----
          TIME      RAIN | TIME      RAIN |' TIME      RAIN | TIME      RAIN
          hrs      mm/hr | hrs      mm/hr |' hrs      mm/hr | hrs      mm/hr
0.083  0.00 | 3.167  5.31 | 6.250 11.51 | 9.33  0.89
0.167  0.00 | 3.250  5.31 | 6.333  6.20 | 9.42  0.89
0.250  0.00 | 3.333 15.05 | 6.417  6.20 | 9.50  0.89
0.333  0.89 | 3.417 15.05 | 6.500  6.20 | 9.58  0.89
0.417  0.89 | 3.500 15.05 | 6.583  6.20 | 9.67  0.89
0.500  0.89 | 3.583 15.05 | 6.667  6.20 | 9.75  0.89
0.583  0.89 | 3.667 15.05 | 6.750  6.20 | 9.83  0.89

```

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```

-----
| RESERVOIR( 0039) |
| IN= 2---> OUT= 1 |
| DT= 5.0 min |
-----
          OUTFLOW      STORAGE | OUTFLOW      STORAGE
          (cms)      (ha.m.) | (cms)      (ha.m.)
0.0000  0.0000 | 0.0400  0.0050

```

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0036)	0.350	0.040	5.25	87.24
OUTFLOW: ID= 1 (0039)	0.350	0.038	5.25	87.16

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PEAK FLOW REDUCTION [Qout/Qin] (%) = 95.73
 TIME SHIFT OF PEAK FLOW (min) = 0.00
 MAXIMUM STORAGE USED (ha.m.) = 0.0048

1.417	0.89	4.500	40.71	7.583	3.54	10.67	0.89
1.500	0.89	4.583	40.71	7.667	3.54	10.75	0.89
1.583	0.89	4.667	40.71	7.750	3.54	10.83	0.89
1.667	0.89	4.750	40.71	7.833	3.54	10.92	0.89
1.750	0.89	4.833	40.71	7.917	3.54	11.00	0.89
1.833	0.89	4.917	40.71	8.000	3.54	11.08	0.89
1.917	0.89	5.000	40.71	8.083	3.54	11.17	0.89
2.000	0.89	5.083	40.71	8.167	3.54	11.25	0.89
2.083	0.89	5.167	40.71	8.250	3.54	11.33	0.89
2.167	0.89	5.250	40.71	8.333	1.77	11.42	0.89
2.250	0.89	5.333	11.51	8.417	1.77	11.50	0.89
2.333	5.31	5.417	11.51	8.500	1.77	11.58	0.89
2.417	5.31	5.500	11.51	8.583	1.77	11.67	0.89
2.500	5.31	5.583	11.51	8.667	1.77	11.75	0.89
2.583	5.31	5.667	11.51	8.750	1.77	11.83	0.89
2.667	5.31	5.750	11.51	8.833	1.77	11.92	0.89
2.750	5.31	5.833	11.51	8.917	1.77	12.00	0.89
2.833	5.31	5.917	11.51	9.000	1.77	12.08	0.89
2.917	5.31	6.000	11.51	9.083	1.77	12.17	0.89
3.000	5.31	6.083	11.51	9.167	1.77	12.25	0.89
3.083	5.31	6.167	11.51	9.250	1.77		

 READ STORM | Filename: C:\Users\skaturunde\AppData
 | | ata\Local\Temp\
 | | 0e6e5a52-d61c-499c-aa8c-f58ff5ea5cea\7fc786e5
 | Ptotal= 88.54 mm | Comments: 100y12h TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	15.05	6.75	6.20	10.00	0.89
0.50	0.89	3.75	15.05	7.00	6.20	10.25	0.89
0.75	0.89	4.00	15.05	7.25	6.20	10.50	0.89
1.00	0.89	4.25	15.05	7.50	3.54	10.75	0.89
1.25	0.89	4.50	40.71	7.75	3.54	11.00	0.89
1.50	0.89	4.75	40.71	8.00	3.54	11.25	0.89
1.75	0.89	5.00	40.71	8.25	3.54	11.50	0.89
2.00	0.89	5.25	40.71	8.50	1.77	11.75	0.89
2.25	0.89	5.50	11.51	8.75	1.77	12.00	0.89
2.50	5.31	5.75	11.51	9.00	1.77	12.25	0.89
2.75	5.31	6.00	11.51	9.25	1.77		
3.00	5.31	6.25	11.51	9.50	0.89		
3.25	5.31	6.50	6.20	9.75	0.89		

Max.Eff.Inten.(mm/hr)= 40.71 83.62
 over (min) 5.00 15.00
 Storage Coeff. (min)= 3.73 (ii) 11.31 (ii)
 Unit Hyd. Tpeak (min)= 5.00 15.00
 Unit Hyd. peak (cms)= 0.25 0.09

TOTALS

PEAK FLOW (cms)= 0.08 0.09 0.172 (iii)
 TIME TO PEAK (hrs)= 5.08 5.25 5.25
 RUNOFF VOLUME (mm)= 87.54 71.32 78.61
 TOTAL RAINFALL (mm)= 88.54 88.54 88.54
 RUNOFF COEFFICIENT = 0.99 0.81 0.89

 CALIB |
 | STANDHYD (0037) | Area (ha)= 1.60
 | ID= 1 DT= 5.0 min | Total Imp(%)= 75.00 Dir. Conn.(%)= 45.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.20	0.40
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	103.28	40.00
Mannings n =	0.013	0.250

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

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

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	5.31	6.250	11.51	9.33	0.89
0.167	0.00	3.250	5.31	6.333	6.20	9.42	0.89
0.250	0.00	3.333	15.05	6.417	6.20	9.50	0.89
0.333	0.89	3.417	15.05	6.500	6.20	9.58	0.89
0.417	0.89	3.500	15.05	6.583	6.20	9.67	0.89
0.500	0.89	3.583	15.05	6.667	6.20	9.75	0.89
0.583	0.89	3.667	15.05	6.750	6.20	9.83	0.89
0.667	0.89	3.750	15.05	6.833	6.20	9.92	0.89
0.750	0.89	3.833	15.05	6.917	6.20	10.00	0.89
0.833	0.89	3.917	15.05	7.000	6.20	10.08	0.89
0.917	0.89	4.000	15.05	7.083	6.20	10.17	0.89
1.000	0.89	4.083	15.05	7.167	6.20	10.25	0.89
1.083	0.89	4.167	15.05	7.250	6.20	10.33	0.89
1.167	0.89	4.250	15.05	7.333	3.54	10.42	0.89
1.250	0.89	4.333	40.71	7.417	3.54	10.50	0.89
1.333	0.89	4.417	40.71	7.500	3.54	10.58	0.89

 | RESERVOIR(0038) |
 | IN= 2---> OUT= 1 |
DT= 5.0 min

	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.1000	0.0460

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0037)	1.600	0.172	5.25	78.61
OUTFLOW: ID= 1 (0038)	1.600	0.100	5.42	78.54

PEAK FLOW REDUCTION [Qout/Qin] (%) = 58.11
 TIME SHIFT OF PEAK FLOW (min) = 10.00
 MAXIMUM STORAGE USED (ha.m.) = 0.0460

 | ADD HYD (0008) |
1 + 2 = 3

	AREA	QPEAK	TPEAK	R.V.
--	------	-------	-------	------

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	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0001):	32.52	2.673	5.25	62.07
+ ID2= 2 (0038):	1.60	0.100	5.42	78.54
=====				
ID = 3 (0008):	34.12	2.769	5.25	62.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0008)				
3 + 2 = 1				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0008):	34.12	2.769	5.25	62.84
+ ID2= 2 (0039):	0.35	0.038	5.25	87.16
=====				
ID = 1 (0008):	34.47	2.807	5.25	63.08

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0008)				
1 + 2 = 3				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
*** W A R N I N G : HYDROGRAPH 0007 <ID= 2> IS DRY.				
*** W A R N I N G : HYDROGRAPH 0003 = HYDROGRAPH 0001				
ID1= 1 (0008):	34.47	2.807	5.25	63.08
+ ID2= 2 (0007):	0.00	0.000	0.00	0.00
=====				
ID = 3 (0008):	34.47	2.807	5.25	63.08

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0003)				
IN= 2----> OUT= 1				
DT= 5.0 min				
	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	0.3000	1.2650
	0.0710	0.4106	0.3780	1.4000
	0.0880	0.6770	0.4800	1.5300
	0.1600	0.9180	1.5000	5.0000
	0.2200	1.0700	0.0000	0.0000
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0008)	34.470	2.807	5.25	63.08
OUTFLOW: ID= 1 (0003)	34.470	0.479	7.42	63.04

PEAK FLOW REDUCTION [Qout/Qin](%)= 17.07
TIME SHIFT OF PEAK FLOW (min)=130.00
MAXIMUM STORAGE USED (ha.m.)= 1.5289

READ STORM	
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	ata\Local\Temp\
	0e6e5a52-d61c-499c-aa8c-f58ff5ea5cea\7fc786e5
Ptotal= 88.54 mm	Comments: 100y12h TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	15.05	6.75	6.20	10.00	0.89
0.50	0.89	3.75	15.05	7.00	6.20	10.25	0.89
0.75	0.89	4.00	15.05	7.25	6.20	10.50	0.89
1.00	0.89	4.25	15.05	7.50	3.54	10.75	0.89
1.25	0.89	4.50	40.71	7.75	3.54	11.00	0.89
1.50	0.89	4.75	40.71	8.00	3.54	11.25	0.89
1.75	0.89	5.00	40.71	8.25	3.54	11.50	0.89
2.00	0.89	5.25	40.71	8.50	1.77	11.75	0.89
2.25	0.89	5.50	11.51	8.75	1.77	12.00	0.89
2.50	5.31	5.75	11.51	9.00	1.77	12.25	0.89
2.75	5.31	6.00	11.51	9.25	1.77		
3.00	5.31	6.25	11.51	9.50	0.89		
3.25	5.31	6.50	6.20	9.75	0.89		

CALIB	
STANDHYD (0023)	
ID= 1 DT= 5.0 min	
Area (ha)=	0.14
Total Imp(%)=	99.00 Dir. Conn.(%)= 99.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	0.14	0.00
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	30.55	40.00
Mannings n =	0.013	0.250

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

---- TRANSFORMED HYETOGRAPH ----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	5.31	6.250	11.51	9.33	0.89
0.167	0.00	3.250	5.31	6.333	6.20	9.42	0.89
0.250	0.00	3.333	15.05	6.417	6.20	9.50	0.89
0.333	0.89	3.417	15.05	6.500	6.20	9.58	0.89
0.417	0.89	3.500	15.05	6.583	6.20	9.67	0.89
0.500	0.89	3.583	15.05	6.667	6.20	9.75	0.89
0.583	0.89	3.667	15.05	6.750	6.20	9.83	0.89
0.667	0.89	3.750	15.05	6.833	6.20	9.92	0.89
0.750	0.89	3.833	15.05	6.917	6.20	10.00	0.89
0.833	0.89	3.917	15.05	7.000	6.20	10.08	0.89
0.917	0.89	4.000	15.05	7.083	6.20	10.17	0.89
1.000	0.89	4.083	15.05	7.167	6.20	10.25	0.89
1.083	0.89	4.167	15.05	7.250	6.20	10.33	0.89
1.167	0.89	4.250	15.05	7.333	3.54	10.42	0.89
1.250	0.89	4.333	40.71	7.417	3.54	10.50	0.89
1.333	0.89	4.417	40.71	7.500	3.54	10.58	0.89
1.417	0.89	4.500	40.71	7.583	3.54	10.67	0.89
1.500	0.89	4.583	40.71	7.667	3.54	10.75	0.89
1.583	0.89	4.667	40.71	7.750	3.54	10.83	0.89
1.667	0.89	4.750	40.71	7.833	3.54	10.92	0.89
1.750	0.89	4.833	40.71	7.917	3.54	11.00	0.89
1.833	0.89	4.917	40.71	8.000	3.54	11.08	0.89
1.917	0.89	5.000	40.71	8.083	3.54	11.17	0.89
2.000	0.89	5.083	40.71	8.167	3.54	11.25	0.89
2.083	0.89	5.167	40.71	8.250	3.54	11.33	0.89
2.167	0.89	5.250	40.71	8.333	1.77	11.42	0.89
2.250	0.89	5.333	11.51	8.417	1.77	11.50	0.89

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2.333	5.31	5.417	11.51	8.500	1.77	11.58	0.89
2.417	5.31	5.500	11.51	8.583	1.77	11.67	0.89
2.500	5.31	5.583	11.51	8.667	1.77	11.75	0.89
2.583	5.31	5.667	11.51	8.750	1.77	11.83	0.89
2.667	5.31	5.750	11.51	8.833	1.77	11.92	0.89
2.750	5.31	5.833	11.51	8.917	1.77	12.00	0.89
2.833	5.31	5.917	11.51	9.000	1.77	12.08	0.89
2.917	5.31	6.000	11.51	9.083	1.77	12.17	0.89
3.000	5.31	6.083	11.51	9.167	1.77	12.25	0.89
3.083	5.31	6.167	11.51	9.250	1.77		

Max.Eff.Inten.(mm/hr)=	40.71	23.37	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.80 (ii)	3.41 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.32	0.26	
TOTALS			
PEAK FLOW (cms)=	0.02	0.00	0.016 (iii)
TIME TO PEAK (hrs)=	5.08	5.25	
RUNOFF VOLUME (mm)=	87.54	38.67	87.05
TOTAL RAINFALL (mm)=	88.54	88.54	88.54
RUNOFF COEFFICIENT =	0.99	0.44	0.98

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. 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(0025)				
IN= 2---> OUT= 1				
DT= 5.0 min				
	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	0.0011	0.0132
	0.0010	0.0010	2.0000	0.0132

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0023)	0.140	0.016	5.25	87.05
OUTFLOW: ID= 1 (0025)	0.140	0.001	8.25	85.29

PEAK FLOW REDUCTION [Qout/Qin](%)= 6.79
TIME SHIFT OF PEAK FLOW (min)=180.00
MAXIMUM STORAGE USED (ha.m.)= 0.0095

DUHYD (0026)				
Inlet Cap.= 0.001				
#of Inlets= 1				
Total(cms)= 0.0				
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
TOTAL HYD.(ID= 1):	0.14	0.00	8.25	85.29
MAJOR SYS.(ID= 2):	0.00	0.00	8.25	85.29
MINOR SYS.(ID= 3):	0.14	0.00	3.50	85.29

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

| READ STORM | Filename: C:\Users\skatukurunde\AppData
| | ata\Local\Temp\
| | 0e6e5a52-d61c-499c-aa8c-f58ff5ea5cea\7fc786e5
| Ptotal= 88.54 mm | Comments: 100y12h TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	15.05	6.75	6.20	10.00	0.89
0.50	0.89	3.75	15.05	7.00	6.20	10.25	0.89
0.75	0.89	4.00	15.05	7.25	6.20	10.50	0.89
1.00	0.89	4.25	15.05	7.50	3.54	10.75	0.89
1.25	0.89	4.50	40.71	7.75	3.54	11.00	0.89
1.50	0.89	4.75	40.71	8.00	3.54	11.25	0.89
1.75	0.89	5.00	40.71	8.25	3.54	11.50	0.89
2.00	0.89	5.25	40.71	8.50	1.77	11.75	0.89
2.25	0.89	5.50	11.51	8.75	1.77	12.00	0.89
2.50	5.31	5.75	11.51	9.00	1.77	12.25	0.89
2.75	5.31	6.00	11.51	9.25	1.77		
3.00	5.31	6.25	11.51	9.50	0.89		
3.25	5.31	6.50	6.20	9.75	0.89		

| CALIB |
| STANDHYD (0040) | Area (ha)= 0.88
| ID= 1 DT= 5.0 min | Total Imp(%)= 57.00 Dir. Conn.(%)= 42.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)= 0.50	0.38
Dep. Storage	(mm)= 1.00	1.50
Average Slope	(%)= 1.00	2.00
Length	(m)= 76.40	40.00
Mannings n	= 0.013	0.250

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

----- TRANSFORMED HYETOGRAPH -----							
TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	5.31	6.250	11.51	9.33	0.89
0.167	0.00	3.250	5.31	6.333	6.20	9.42	0.89
0.250	0.00	3.333	15.05	6.417	6.20	9.50	0.89
0.333	0.89	3.417	15.05	6.500	6.20	9.58	0.89
0.417	0.89	3.500	15.05	6.583	6.20	9.67	0.89
0.500	0.89	3.583	15.05	6.667	6.20	9.75	0.89
0.583	0.89	3.667	15.05	6.750	6.20	9.83	0.89
0.667	0.89	3.750	15.05	6.833	6.20	9.92	0.89
0.750	0.89	3.833	15.05	6.917	6.20	10.00	0.89
0.833	0.89	3.917	15.05	7.000	6.20	10.08	0.89
0.917	0.89	4.000	15.05	7.083	6.20	10.17	0.89
1.000	0.89	4.083	15.05	7.167	6.20	10.25	0.89
1.083	0.89	4.167	15.05	7.250	6.20	10.33	0.89
1.167	0.89	4.250	15.05	7.333	3.54	10.42	0.89
1.250	0.89	4.333	40.71	7.417	3.54	10.50	0.89
1.333	0.89	4.417	40.71	7.500	3.54	10.58	0.89
1.417	0.89	4.500	40.71	7.583	3.54	10.67	0.89
1.500	0.89	4.583	40.71	7.667	3.54	10.75	0.89
1.583	0.89	4.667	40.71	7.750	3.54	10.83	0.89
1.667	0.89	4.750	40.71	7.833	3.54	10.92	0.89
1.750	0.89	4.833	40.71	7.917	3.54	11.00	0.89

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1.833	0.89	4.917	40.71	8.000	3.54	11.08	0.89
1.917	0.89	5.000	40.71	8.083	3.54	11.17	0.89
2.000	0.89	5.083	40.71	8.167	3.54	11.25	0.89
2.083	0.89	5.167	40.71	8.250	3.54	11.33	0.89
2.167	0.89	5.250	40.71	8.333	1.77	11.42	0.89
2.250	0.89	5.333	11.51	8.417	1.77	11.50	0.89
2.333	5.31	5.417	11.51	8.500	1.77	11.58	0.89
2.417	5.31	5.500	11.51	8.583	1.77	11.67	0.89
2.500	5.31	5.583	11.51	8.667	1.77	11.75	0.89
2.583	5.31	5.667	11.51	8.750	1.77	11.83	0.89
2.667	5.31	5.750	11.51	8.833	1.77	11.92	0.89
2.750	5.31	5.833	11.51	8.917	1.77	12.00	0.89
2.833	5.31	5.917	11.51	9.000	1.77	12.08	0.89
2.917	5.31	6.000	11.51	9.083	1.77	12.17	0.89
3.000	5.31	6.083	11.51	9.167	1.77	12.25	0.89
3.083	5.31	6.167	11.51	9.250	1.77		

OUTFLOW: ID= 1 (0028) 0.880 0.004 9.00 61.78

PEAK FLOW REDUCTION [Qout/Qin] (%) = 5.14
TIME SHIFT OF PEAK FLOW (min) = 225.00
MAXIMUM STORAGE USED (ha.m.) = 0.0462

| READ STORM | Filename: C:\Users\skatururunde\AppData
| | ata\Local\Temp\
| | 0e6e5a52-d61c-499c-aa8c-f58ff5ea5cea\7fc786e5
| Ptotal= 88.54 mm | Comments: 100y12h TRCA AES

Max.Eff.Inten.(mm/hr)= 40.71 35.93
over (min) 5.00 15.00
Storage Coeff. (min)= 3.11 (ii) 13.74 (ii)
Unit Hyd. Tpeak (min)= 5.00 15.00
Unit Hyd. peak (cms)= 0.27 0.08

TOTALS
PEAK FLOW (cms)= 0.04 0.03 0.076 (iii)
TIME TO PEAK (hrs)= 5.08 5.25 5.25
RUNOFF VOLUME (mm)= 87.54 45.46 63.13
TOTAL RAINFALL (mm)= 88.54 88.54 88.54
RUNOFF COEFFICIENT = 0.99 0.51 0.71

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	15.05	6.75	6.20	10.00	0.89
0.50	0.89	3.75	15.05	7.00	6.20	10.25	0.89
0.75	0.89	4.00	15.05	7.25	6.20	10.50	0.89
1.00	0.89	4.25	15.05	7.50	3.54	10.75	0.89
1.25	0.89	4.50	40.71	7.75	3.54	11.00	0.89
1.50	0.89	4.75	40.71	8.00	3.54	11.25	0.89
1.75	0.89	5.00	40.71	8.25	3.54	11.50	0.89
2.00	0.89	5.25	40.71	8.50	1.77	11.75	0.89
2.25	0.89	5.50	11.51	8.75	1.77	12.00	0.89
2.50	5.31	5.75	11.51	9.00	1.77	12.25	0.89
2.75	5.31	6.00	11.51	9.25	1.77		
3.00	5.31	6.25	11.51	9.50	0.89		
3.25	5.31	6.50	6.20	9.75	0.89		

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. 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 (0033) | Area (ha) = 4.02
| ID= 1 DT= 5.0 min | Total Imp(%) = 57.00 Dir. Conn.(%) = 40.00

ADD HYD (0027)	AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0026):	0.00	0.000	8.25	85.29
+ ID2= 2 (0040):	0.88	0.076	5.25	63.13
=====				
ID = 3 (0027):	0.88	0.076	5.25	63.25

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	2.29	1.73
Dep. Storage (mm)=	1.00	1.50
Average Slope (%)=	1.00	2.00
Length (m)=	163.63	40.00
Mannings n =	0.013	0.250

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

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0028)	OUTFLOW	STORAGE	OUTFLOW	STORAGE
IN= 2---> OUT= 1	(cms)	(ha.m.)	(cms)	(ha.m.)
DT= 5.0 min				
0.0000	0.0000		0.0035	0.0322
0.0029	0.0145		0.0037	0.0375
0.0030	0.0193		0.0038	0.0443
0.0033	0.0269		0.0040	0.0485
	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0027)	0.880	0.076	5.25	63.25

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	5.31	6.250	11.51	9.33	0.89
0.167	0.00	3.250	5.31	6.333	6.20	9.42	0.89
0.250	0.00	3.333	15.05	6.417	6.20	9.50	0.89
0.333	0.89	3.417	15.05	6.500	6.20	9.58	0.89
0.417	0.89	3.500	15.05	6.583	6.20	9.67	0.89
0.500	0.89	3.583	15.05	6.667	6.20	9.75	0.89
0.583	0.89	3.667	15.05	6.750	6.20	9.83	0.89
0.667	0.89	3.750	15.05	6.833	6.20	9.92	0.89
0.750	0.89	3.833	15.05	6.917	6.20	10.00	0.89
0.833	0.89	3.917	15.05	7.000	6.20	10.08	0.89
0.917	0.89	4.000	15.05	7.083	6.20	10.17	0.89
1.000	0.89	4.083	15.05	7.167	6.20	10.25	0.89
1.083	0.89	4.167	15.05	7.250	6.20	10.33	0.89
1.167	0.89	4.250	15.05	7.333	3.54	10.42	0.89

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1.250	0.89	4.333	40.71	7.417	3.54	10.50	0.89
1.333	0.89	4.417	40.71	7.500	3.54	10.58	0.89
1.417	0.89	4.500	40.71	7.583	3.54	10.67	0.89
1.500	0.89	4.583	40.71	7.667	3.54	10.75	0.89
1.583	0.89	4.667	40.71	7.750	3.54	10.83	0.89
1.667	0.89	4.750	40.71	7.833	3.54	10.92	0.89
1.750	0.89	4.833	40.71	7.917	3.54	11.00	0.89
1.833	0.89	4.917	40.71	8.000	3.54	11.08	0.89
1.917	0.89	5.000	40.71	8.083	3.54	11.17	0.89
2.000	0.89	5.083	40.71	8.167	3.54	11.25	0.89
2.083	0.89	5.167	40.71	8.250	3.54	11.33	0.89
2.167	0.89	5.250	40.71	8.333	1.77	11.42	0.89
2.250	0.89	5.333	11.51	8.417	1.77	11.50	0.89
2.333	5.31	5.417	11.51	8.500	1.77	11.58	0.89
2.417	5.31	5.500	11.51	8.583	1.77	11.67	0.89
2.500	5.31	5.583	11.51	8.667	1.77	11.75	0.89
2.583	5.31	5.667	11.51	8.750	1.77	11.83	0.89
2.667	5.31	5.750	11.51	8.833	1.77	11.92	0.89
2.750	5.31	5.833	11.51	8.917	1.77	12.00	0.89
2.833	5.31	5.917	11.51	9.000	1.77	12.08	0.89
2.917	5.31	6.000	11.51	9.083	1.77	12.17	0.89
3.000	5.31	6.083	11.51	9.167	1.77	12.25	0.89
3.083	5.31	6.167	11.51	9.250	1.77		

2.75	5.31	6.00	11.51	9.25	1.77	
3.00	5.31	6.25	11.51	9.50	0.89	
3.25	5.31	6.50	6.20	9.75	0.89	

 | CALIB |
 | STANDHYD (0041) | Area (ha)= 0.37
 |ID= 1 DT= 5.0 min | Total Imp(%)= 99.00 Dir. Conn.(%)= 99.00

Surface Area	(ha)=	0.37	PERVIOUS (i)	0.00
Dep. Storage	(mm)=	1.00		1.50
Average Slope	(%)=	1.00		2.00
Length	(m)=	49.67		40.00
Mannings n	=	0.013		0.250

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

---- TRANSFORMED HYETOGRAPH ----

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.083	0.00	3.167	5.31	6.250	11.51	9.33	0.89
0.167	0.00	3.250	5.31	6.333	6.20	9.42	0.89
0.250	0.00	3.333	15.05	6.417	6.20	9.50	0.89
0.333	0.89	3.417	15.05	6.500	6.20	9.58	0.89
0.417	0.89	3.500	15.05	6.583	6.20	9.67	0.89
0.500	0.89	3.583	15.05	6.667	6.20	9.75	0.89
0.583	0.89	3.667	15.05	6.750	6.20	9.83	0.89
0.667	0.89	3.750	15.05	6.833	6.20	9.92	0.89
0.750	0.89	3.833	15.05	6.917	6.20	10.00	0.89
0.833	0.89	3.917	15.05	7.000	6.20	10.08	0.89
0.917	0.89	4.000	15.05	7.083	6.20	10.17	0.89
1.000	0.89	4.083	15.05	7.167	6.20	10.25	0.89
1.083	0.89	4.167	15.05	7.250	6.20	10.33	0.89
1.167	0.89	4.250	15.05	7.333	3.54	10.42	0.89
1.250	0.89	4.333	40.71	7.417	3.54	10.50	0.89
1.333	0.89	4.417	40.71	7.500	3.54	10.58	0.89
1.417	0.89	4.500	40.71	7.583	3.54	10.67	0.89
1.500	0.89	4.583	40.71	7.667	3.54	10.75	0.89
1.583	0.89	4.667	40.71	7.750	3.54	10.83	0.89
1.667	0.89	4.750	40.71	7.833	3.54	10.92	0.89
1.750	0.89	4.833	40.71	7.917	3.54	11.00	0.89
1.833	0.89	4.917	40.71	8.000	3.54	11.08	0.89
1.917	0.89	5.000	40.71	8.083	3.54	11.17	0.89
2.000	0.89	5.083	40.71	8.167	3.54	11.25	0.89
2.083	0.89	5.167	40.71	8.250	3.54	11.33	0.89
2.167	0.89	5.250	40.71	8.333	1.77	11.42	0.89
2.250	0.89	5.333	11.51	8.417	1.77	11.50	0.89
2.333	5.31	5.417	11.51	8.500	1.77	11.58	0.89
2.417	5.31	5.500	11.51	8.583	1.77	11.67	0.89
2.500	5.31	5.583	11.51	8.667	1.77	11.75	0.89
2.583	5.31	5.667	11.51	8.750	1.77	11.83	0.89
2.667	5.31	5.750	11.51	8.833	1.77	11.92	0.89
2.750	5.31	5.833	11.51	8.917	1.77	12.00	0.89
2.833	5.31	5.917	11.51	9.000	1.77	12.08	0.89
2.917	5.31	6.000	11.51	9.083	1.77	12.17	0.89
3.000	5.31	6.083	11.51	9.167	1.77	12.25	0.89
3.083	5.31	6.167	11.51	9.250	1.77		

Max.Eff.Inten.(mm/hr)=	40.71	37.72
over (min)	5.00	20.00
Storage Coeff. (min)=	4.92 (ii)	15.34 (ii)
Unit Hyd. Tpeak (min)=	5.00	20.00
Unit Hyd. peak (cms)=	0.22	0.07
PEAK FLOW (cms)=	0.18	0.16
TIME TO PEAK (hrs)=	5.25	5.25
RUNOFF VOLUME (mm)=	87.54	46.23
TOTAL RAINFALL (mm)=	88.54	88.54
RUNOFF COEFFICIENT =	0.99	0.52

TOTALS
 0.341 (iii)

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 70.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

 | READ STORM | Filename: C:\Users\skatukurunde\AppData
 | | ata\Local\Temp\
 | | 0e6e5a52-d61c-499c-aa8c-f58ff5ea5cea\7fc786e5
 | Ptotal= 88.54 mm | Comments: 100y12h TRCA AES

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN
hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	0.00	3.50	15.05	6.75	6.20	10.00	0.89
0.50	0.89	3.75	15.05	7.00	6.20	10.25	0.89
0.75	0.89	4.00	15.05	7.25	6.20	10.50	0.89
1.00	0.89	4.25	15.05	7.50	3.54	10.75	0.89
1.25	0.89	4.50	40.71	7.75	3.54	11.00	0.89
1.50	0.89	4.75	40.71	8.00	3.54	11.25	0.89
1.75	0.89	5.00	40.71	8.25	3.54	11.50	0.89
2.00	0.89	5.25	40.71	8.50	1.77	11.75	0.89
2.25	0.89	5.50	11.51	8.75	1.77	12.00	0.89
2.50	5.31	5.75	11.51	9.00	1.77	12.25	0.89

Max.Eff.Inten.(mm/hr)=	40.71	32.96
over (min)	5.00	5.00

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```
Storage Coeff. (min)= 2.41 (ii) 4.01 (ii)
Unit Hyd. Tpeak (min)= 5.00 5.00
Unit Hyd. peak (cms)= 0.30 0.24

*TOTALS*
PEAK FLOW (cms)= 0.04 0.00 0.042 (iii)
TIME TO PEAK (hrs)= 5.08 5.25 5.25
RUNOFF VOLUME (mm)= 87.54 57.45 87.24
TOTAL RAINFALL (mm)= 88.54 88.54 88.54
RUNOFF COEFFICIENT = 0.99 0.65 0.99
```

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

- (i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 85.0 Ia = Dep. Storage (Above)
- (ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
- (iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

```
-----
| RESERVOIR( 0042) |
| IN= 2---> OUT= 1 |
| DT= 5.0 min |
-----
      OUTFLOW    STORAGE    |    OUTFLOW    STORAGE
      (cms)      (ha.m.)    |    (cms)      (ha.m.)
0.0000          0.0000    |  0.0026          0.0348
0.0026          0.0010    |  4.0000          0.0350

      AREA      QPEAK      TPEAK      R.V.
      (ha)      (cms)      (hrs)      (mm)
INFLOW : ID= 2 ( 0041)  0.370      0.042      5.25      87.24
OUTFLOW: ID= 1 ( 0042)  0.370      0.003      8.33      87.00
```

```
PEAK FLOW REDUCTION [Qout/Qin](%)= 6.24
TIME SHIFT OF PEAK FLOW (min)=185.00
MAXIMUM STORAGE USED (ha.m.)= 0.0251
```

```
-----
| DUHYD ( 0043) |
| Inlet Cap.= 0.003 |
| #of Inlets= 10 |
| Total(cms)= 0.0 |
-----
      AREA      QPEAK      TPEAK      R.V.
      (ha)      (cms)      (hrs)      (mm)
TOTAL HYD.(ID= 1):  0.37      0.00      8.33      87.00
=====
MAJOR SYS.(ID= 2):  0.00      0.00      0.00      0.00
MINOR SYS.(ID= 3):  0.37      0.00      8.33      87.00
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
-----
| ADD HYD ( 0044) |
| 1 + 2 = 3 |
-----
      AREA      QPEAK      TPEAK      R.V.
      (ha)      (cms)      (hrs)      (mm)
*** W A R N I N G : HYDROGRAPH 0043 <ID= 2> IS DRY.
*** W A R N I N G : HYDROGRAPH 0003 = HYDROGRAPH 0001
      ID1= 1 ( 0033):  4.02      0.341      5.25      62.75
+ ID2= 2 ( 0043):  0.00      0.000      0.00      0.00
=====
      ID = 3 ( 0044):  4.02      0.341      5.25      62.75
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
-----
| RESERVOIR( 0045) |
| IN= 2---> OUT= 1 |
| DT= 5.0 min |
-----
      OUTFLOW    STORAGE    |    OUTFLOW    STORAGE
      (cms)      (ha.m.)    |    (cms)      (ha.m.)
0.0000          0.0000    |  0.0340          0.1196
0.0088          0.0547    |  0.0460          0.1470
0.0100          0.0814    |  0.0530          0.1571
0.0260          0.1053    |  0.0670          0.1747
```

```
      AREA      QPEAK      TPEAK      R.V.
      (ha)      (cms)      (hrs)      (mm)
INFLOW : ID= 2 ( 0044)  4.016      0.341      5.25      62.75
OUTFLOW: ID= 1 ( 0045)  4.016      0.064      6.83      62.36
```

```
PEAK FLOW REDUCTION [Qout/Qin](%)= 18.75
TIME SHIFT OF PEAK FLOW (min)= 95.00
MAXIMUM STORAGE USED (ha.m.)= 0.1709
```

```
-----
| ADD HYD ( 0024) |
| 1 + 2 = 3 |
-----
      AREA      QPEAK      TPEAK      R.V.
      (ha)      (cms)      (hrs)      (mm)
      ID1= 1 ( 0028):  0.88      0.004      9.00      61.78
+ ID2= 2 ( 0003):  34.47      0.479      7.42      63.04
=====
      ID = 3 ( 0024):  35.35      0.483      7.42      63.01
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
-----
| ADD HYD ( 0024) |
| 3 + 2 = 1 |
-----
      AREA      QPEAK      TPEAK      R.V.
      (ha)      (cms)      (hrs)      (mm)
      ID1= 3 ( 0024):  35.35      0.483      7.42      63.01
+ ID2= 2 ( 0045):  4.02      0.064      6.83      62.36
=====
      ID = 1 ( 0024):  39.37      0.546      7.42      62.94
```

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

**TABLE 1: WATER BUDGET - PRE DEVELOPMENT
WATER BALANCE/WATER BUDGET ASSESSMENT**

Catchment Designation	Site	
	Landscape	Total
Area (m ²)	447500	447500
Pervious Area (m ²)	447500	447500
Impervious Area (m ²)		0
Infiltration Factors		
Topography Infiltration Factor- Rolling	0.1	
Soil Infiltration Factor- Sandy	0.3	
Land Cover Infiltration Factor- Cultivated	0.1	
MOE Infiltration Factor	0.5	
Inputs (per unit area)		
Precipitation (mm/year)	876	876
Run-On (mm/year)		
Other Inputs (mm/year)		
Total Inputs (mm/year)	876	876
Outputs (per unit area)		
Precipitation Surplus (mm/year)	274	274
Net Surplus (mm/year)	274	274
Downspout Disconnection Retention*	0	0
Evapotranspiration (mm/year)	602	602
Roof Evapotranspiration (mm/year)**	0	0
Rooftop Runoff Lawn Evaporation (mm/year)	0	0
Total Evapotranspiration (mm/yr)	602	602
Infiltration (mm/year)	137	137
Rooftop Infiltration (mm/year)**	0	0
Total Infiltration (mm/year)	137	137
Runoff Pervious Area (mm/year)	137	137
Runoff Impervious Area (mm/year)	0	0
Total Runoff (mm/year)	137	137
Total Outputs (mm/year)	876	876
Difference (Inputs - Outputs)	0	0
Input Volumes		
Precipitation (m ³ /year)	392010	392010
Run On (m ³ /year)	0	0
Other Inputs (m ³ /year)	0	0
Total Inputs (m³/year)	392010	392010
Outputs (Volumes)		
Precipitation Surplus (m ³ /year)	122615	122615
Net Surplus (m ³ /year)	122615	122615
Downspout Disconnection Retention* (m ³ /year)	0	0
Evapotranpiration (m ³ /year)	269395	269395
Roof Evapotranspiration (m ³ /year)	0	0
Rooftop Runoff Lawn Evaporation (m ³ /year)	0	0
Total Evapotranspiration (m³/year)	269395	269395
Infiltration (m ³ /year)	61308	61308
Rooftop Infiltration (m ³ /year)	0	0
Total Infiltration (m³/year)	61308	61308
Runoff Pervious Area (m ³ /year)	61308	61308
Runoff Impervious Area (m ³ /year)	0	0
Total Runoff (m³/year)	61308	61308
Total Outputs (m³/year)	392010	392010
Difference (Inputs - Outputs)	0	0

(From TRSPA Tool)

(From TRSPA Tool)

**TABLE 2: WATER BUDGET - POST-DEVELOPMENT WITHOUT MITIGATION
WATER BALANCE/WATER BUDGET ASSESSMENT**

Catchment Designation	Site									
	Lawn areas (Detached SF)	Lawn areas (Townhouses)	Park	Roofs	Front Porch Area	Pond	Pumping Station	ROW (Roads, Laneways)	Driveways	Total
Area (m ²)	110857	4694	21300	133413	4133	24800	300	121000	27003	447500
Pervious Area (m ²)	110857	4694	21300	0	0	0	0	0	0	136851
Impervious Area (m ²)	0	0	0	133413	4133	24800	300	121000	27003	310649
Infiltration Factors										
Topography Infiltration Factor	0.1	0.1	0.1	N/A	N/A	N/A	N/A	N/A	N/A	
Soil Infiltration Factor-Sandy	0.3	0.3	0.3	N/A	N/A	N/A	N/A	N/A	N/A	
Land Cover Infiltration Factor	0.1	0.1	0.1	N/A	N/A	N/A	N/A	N/A	N/A	
MOE Infiltration Factor	0.5	0.5	0.5	N/A	N/A	N/A	N/A	N/A	N/A	
Inputs (per unit area)										
Precipitation (mm/year)	876	876	876	876	876	876	876	876	876	876
Total Inputs (mm/year)	876	876	876	876	876	876	876	876	876	876
Outputs (per unit area)										
Precipitation Surplus (mm/year)	274	274	274	788	788	788	792	788	788	631
Net Surplus (mm/year)	274	274	274	788	788	788	792	788	788	631
Downspout Disconnection Retention ¹	0	0	0	0	0	0	0	0	0	0
Evapotranspiration (mm/year)	602	602	602	0	88	88	88	88	88	219
Roof Evapotranspiration (mm/year) ²	0	0	0	88	0	0	0	0	0	10
Rooftop Runoff Lawn Evaporation (mm/year)	0	0	0	0	0	0	0	0	0	0
Total Evapotranspiration (mm/yr)	602	602	602	88	88	88	88	88	88	245
Infiltration (mm/year)	137	137	137	0	0	0	0	0	0	42
Rooftop Infiltration (mm/year) ²	0	0	0	0	0	0	0	0	0	0
Mitigation Infiltration	0	0	0	0	0	0	0	0	0	0
Total Infiltration (mm/year)	137	137	137	0	0	0	0	0	0	42
Runoff Pervious Area (mm/year)	137	137	137	0	0	0	0	0	0	42
Runoff Impervious Area (mm/year)	0	0	0	788	788	788	792	788	788	547
Total Runoff (mm/year)	137	137	137	788	788	788	792	788	788	589
Total Outputs (mm/year)	876	876	876	876	876	876	880	876	876	876
Difference (Inputs - Outputs)	0	0	0	0	0	0	0	0	0	0
Input Volumes										
Precipitation (m ³ /year)	97111	4112	18659	116870	3621	21725	263	105996	23655	392010
Total Inputs (m³/year)	97111	4112	18659	116870	3621	21725	264	105996	23655	392011
Outputs (Volumes)										
Precipitation Surplus (m ³ /year)	30375	1286	5836	105183	3258	19552	238	95396	21289	282414
Net Surplus (m ³ /year)	30375	1286	5836	105183	3258	19552	238	95396	21289	282414
Downspout Disconnection Retention ² (m ³ /year)	0	0	0	0	0	0	0	0	0	0
Evapotranspiration (m ³ /year)	66736	2826	12823	0	362	2172	26	10600	2365	97910
Roof Evapotranspiration (m ³ /year)	0	0	0	11687	0	0	0	0	0	11687
Rooftop Runoff Lawn Evaporation (m ³ /year)	0	0	0	0	0	0	0	0	0	0
Total Evapotranspiration (m³/year)	66736	2826	12823	11687	362	2172	26	10600	2365	109597
Infiltration (m ³ /year)	15187	643	2918	0	0	0	0	0	0	18749
Rooftop Infiltration (m ³ /year)	0	0	0	0	0	0	0	0	0	0
Total Infiltration (m³/year)	15187	643	2918	0	0	0	0	0	0	18749
Runoff Pervious Area (m ³ /year)	15187	643	2918	0	0	0	0	0	0	18749
Runoff Impervious Area (m ³ /year)	0	0	0	105183	3258	19552	238	95396	21289	244917
Total Runoff (m³/year)	15187	643	2918	105183	3258	19552	238	95396	21289	263665
Total Outputs (m³/year)	97111	4112	18659	116870	3621	21725	264	105996	23655	392011
Difference (Inputs - Outputs)	0	0	0	0	0	0	0	0	0	0

1 - Assumes 10% Evaporation from Impervious Surfaces

2- Residential Condominium and High Density area excluded

Water Balance Mitigation Calculations

Pre Development Infiltration =	61,308 m ³ /y
Post Development Infiltration =	18,749 m ³ /y
Post to Pre Deficit =	42,559 m³/y

Topsoil Amendment Infiltration =	10,312 m ³ /y
Downspout Disconnection Retention =	3,463 m ³ /y
Post to Pre Deficit =	28,784 m³/y

In order to meet the annual pre-development infiltration deficit, the runoff from the site directed to the permeable pavers shall be equal to the annual deficit volume. Therefore,

Annual Precipitation Depth =	28,784	m ³ /year
Required Annual Precipitation Depth to meet deficit =	647	mm/yr

A precipitation analysis (rainfall & snowfall) was conducted to estimate an event with sufficient precipitation that produces an annual runoff volume of 28784 m³/year (or a total depth of annual rainfall equal to 647 mm)

The analysis was performed on daily precipitation data collected from Richmond Hill from 1965 to 2002 by Environment Canada. The data was then arranged into four categories for each year: Total Annual Depth of Precipitation from events less than or equal to 5mm, 10mm, 15mm and 20mm. This yearly data was then used to determine an average annual precipitation depth. The results of the analysis are summarized in Table A and Figure A.

Based on this analysis, it is concluded that precipitation events of depth less than or equal to 21.00 mm will produce an annual amount of precipitation equal to 647 mm/yr

**TABLE 3: WATER BUDGET - POST-DEVELOPMENT WITH MITIGATION
WATER BALANCE/WATER BUDGET ASSESSMENT**

	Site										
	Lawn areas (Detached SF)	Lawn areas (Townhouses)	Park	Roofs- To Trenches	Other Roofs (Not to Trenches)	Front Porch Area	Pond	ROW(Roads, Laneways)	Driveways	Pumping Station	Total
Catchment Designation											
Area (m ²)	110857	4694	21300	44452	88961	4133	24800	121000	27003	300	447500
Pervious Area (m ²)	110857	4694	21300	0	0	0	0	0	0	0	136851
Impervious Area (m ²)	0	0	0	41760	88961	4133	24800	121000	27003	300	307957
Infiltration Factors											
Topography Infiltration Factor	0.1	0.1	0.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Soil Infiltration Factor	0.3	0.3	0.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Land Cover Infiltration Factor	0.1	0.1	0.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
MOE Infiltration Factor	0.5	0.5	0.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Inputs (per unit area)											
Precipitation (mm/year)	876	876	876	876	876	876	876	876	876	876	876
Total Inputs (m³/year)	876	876	876	876	876	876	876	876	876	876	876
Outputs (per unit area)											
Precipitation Surplus (mm/year) ¹	274	274	274	788.4	788	788	788	788	788	788	631
Net Surplus (mm/year)	274	274	274	788.4	788	788	788	788	788	788	631
Downspout Disconnection Retention ²	0	0	0	0	197.1	197.1	0	0	0	0	41
Evapotranspiration (mm/year)	602	602	602	0	87.6	87.6	88	88	88	88	236
Roof Evapotranspiration (mm/year) ²	0	0	0	88	285	285	0	0	0	0	68
Rooftop Runoff Lawn Evaporation (mm/year)	0	0	0	0	161	146	0	0	0	0	33
Total Evapotranspiration (mm/yr)	602	602	602	88	533	518	88	88	88	88	337
Infiltration (mm/year)	137	137	137	0	0	0	0	0	0	0	42
Rooftop Infiltration (mm/year) ²	0	0	0	788	37	51	0	0	0	0	86
Topsoil Amendment Mitigation Infiltration	75	75	75	0	0	0	0	0	0	0	23
Total Infiltration (mm/year)	212	212	212	788	37	51	0	0	0	0	151
Runoff Pervious Area (mm/year)	62	62	62	0	0	0	0	0	0	0	19
Runoff Impervious Area (mm/year)	0	0	0	0	307	307	788	788	788	788	369
Total Runoff (mm/year)	62	62	62	0	307	307	788	788	788	788	388
Total Outputs (mm/year)	876	876	876	876	876	876	876	876	876	876	876
Difference (Inputs - Outputs)	0	0	0	0	0	0	0	0	0	0	0
Input Volumes											
Precipitation (m ³ /year)	97111	4112	18659	38940	77930	3621	21725	105996	23655	263	392010
Total Inputs (m³/year)	97111	4112	18659	38940	77930	3621	21725	105996	23655	263	392010
Outputs (Volumes)											
Precipitation Surplus (m ³ /year)	30375	1286	5836	35046	70137	3258	19552	95396	21289	237	282413
Net Surplus (m ³ /year)	30375	1286	5836	35046	70137	3258	19552	95396	21289	237	282413
Downspout Disconnection Retention ² (m ³ /year)	0	0	0	0	815	4888	0	0	0	0	5703
Evapotranspiration (m ³ /year)	66736	2826	12823	0	7793	362	2172	10600	2365	26	105703
Roof Evapotranspiration (m ³ /year)	0	0	0	3894	25327	1177	0	0	0	0	30398
Rooftop Runoff Lawn Evaporation (m ³ /year)	0	0	0	0	14284	602	0	0	0	0	14886
Total Evapotranspiration (m³/year)	66736	2826	12823	3894	47404	2141	2172	10600	2365	26	150987
Infiltration (m ³ /year)	15187	643	2918	0	0	0	0	0	0	0	18749
Rooftop Infiltration (m ³ /year)	0	0	0	35046	3251	212	0	0	0	0	38509
Topsoil Amendment Mitigation Infiltration (m ³ /year)	8353	354	1605	0	0	0	0	0	0	0	10312
Total Infiltration (m³/year)	23540	997	4523	35046	3251	212	0	0	0	0	67569
Runoff Pervious Area (m ³ /year)	6834	289	1313	0	0	0	0	0	0	0	8437
Runoff Impervious Area (m ³ /year)	0	0	0	0	27275	1267	19552	95396	21289	237	165017
Total Runoff (m³/year)	6834	289	1313	0	27275	1267	19552	95396	21289	237	173454
Total Outputs (m³/year)	97111	4112	18659	38940	77930	3621	21725	105996	23655	263	392010
Difference (Inputs - Outputs)	0	0	0	0	0	0	0	0	0	0	0

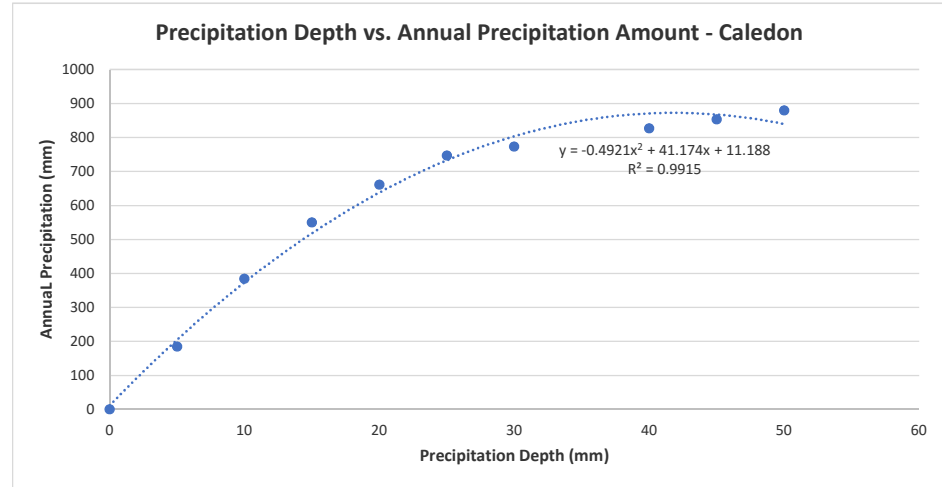
1 - Assumes 10% Evaporation from Impervious Surfaces

Year	Rainfall Depth					
	<= 5mm	<= 10mm	<= 15mm	<=20mm	<=25mm	<=50mm
1977	165	414	579	697	762	1044
1978	155	358	466	639	682	745
1979	203	347	581	704	817	970
1980	183	368	496	674	746	832
1981	197	362	528	670	715	885
1982	174	374	600	697	769	988
1983	164	364	559	662	860	920
1984	174	342	465	641	801	915
1985	188	427	608	743	813	987
1986	162	317	536	722	794	893
1987	175	427	564	657	723	808
1988	196	396	509	598	619	660
1989	190	318	489	589	655	784
1990	188	505	632	741	852	949
1991	196	318	590	692	755	810
1992	200	377	558	661	753	925
1993	184	363	513	600	738	780
1994	172	375	609	640	685	759
1995	181	387	476	541	676	917
1996	225	423	621	723	855	1049
1997	178	406	523	630	721	749
1998	144	285	431	517	581	753
1999	121	322	395	518	540	667
2000	196	381	499	519	608	896
2001	149	366	489	581	691	789
2002	155	336	494	593	642	735
2003	184	383	555	676	761	943
2004	234	441	622	672	764	791
2005	203	336	493	612	660	808
2006	171	416	604	712	803	982
	180	374	536	644	728	858

0	0
5	185
10	384
15	550
20	661
25	747
30	774
40	827
45	853
50	880

$y = -0.5171x^2 + 43.505x - 3.9842$
 rainfall depth

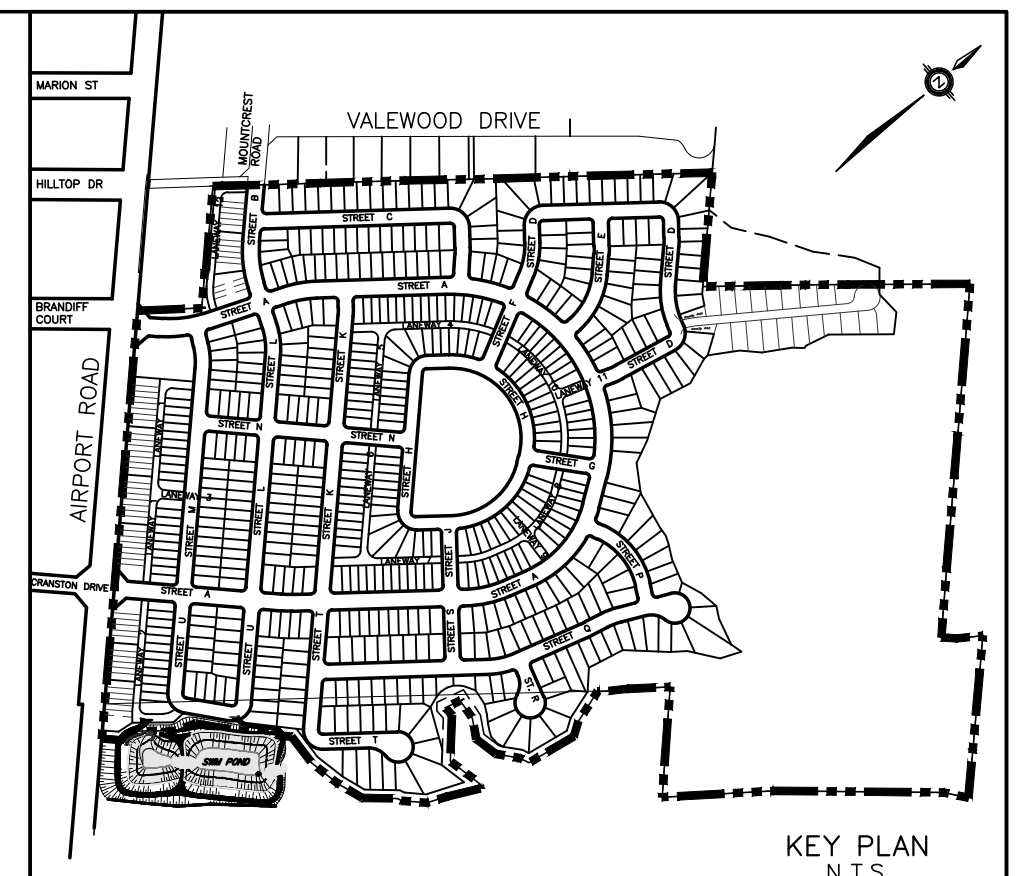
5	10	15	21	25	50
205	374	518	659	733	840



APPENDIX E

Engineering Drawings

**PLEASE REFER TO SUBMISSION
PACKAGE FOR FULL ENGINEERING
DRAWING SET**



- NOTES**
- THE LOCATION OF ALL UNDERGROUND AND ABOVE GROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON CONTRACT DRAWINGS, AND WHERE SHOWN THE ACCURACY OF THE LOCATION AND ELEVATION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY EXACT LOCATION AND ELEVATION OF SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITIES OF DAMAGE.
 - ALL AREAS DISTURBED DURING CONSTRUCTION OF SEWERS AND WATERMANS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER, TO THE SATISFACTION OF THE TOWN OF CALEDON.
- LEGEND**
- DENOTES VALVE AND BOX
 - DENOTES HYDRANT
 - DENOTES CATCHBASIN
 - DENOTES DOUBLE CATCHBASIN
 - DENOTES STORM MANHOLE
 - DENOTES SANITARY MANHOLE
 - DENOTES LOTS WITH WATER AND SANITARY CONNECTIONS TO WATERMAIN AND SANITARY SEWER ON AIRPORT ROAD
 - DENOTES ROAD HIGH POINT
 - DENOTES MAJOR FLOW CAPTURE POINT
 - DENOTES LIMIT OF SUBDIVISION
 - DENOTES TOP ELEVATION
 - DENOTES STORM IN OBVERT ELEVATION
 - DENOTES STORM OUT OBVERT ELEVATION
 - DENOTES SANITARY IN OBVERT ELEVATION
 - DENOTES SANITARY OUT OBVERT ELEVATION
 - DENOTES LOTS WITH INFILTRATION GALLERY AT BACK OF LOTS
 - DENOTES LOTS WITH INFILTRATION GALLERY IN FRONT OF LOTS
 - DENOTES LOTS WITH SANITARY SEWER TO PUMPING STATION
 - DENOTES INFILTRATION GALLERY

NO.	BY	DATE	REVISION	CONCL.	TOWN	APPRO.

NO.	DATE	ISSUED FOR

2. 18/09/07 SECOND SUBMISSION TO THE TOWN OF CALEDON / REGION OF PEEL / TRCA
 1. 17/05/26 FIRST SUBMISSION TO THE TOWN OF CALEDON / REGION OF PEEL / TRCA

BENCH MARK:
 ELEVATIONS ARE GEODETIC AND ARE REFERRED TO THE TOWN OF CALEDON BENCH MARK No. 23, HAVING AN ELEVATION OF 308.817 METRES.

RESIDENTIAL SUBDIVISION
15717 AIRPORT ROAD

SCHAEFFERS
 CONSULTING ENGINEERS

6 Rousore Drive, Concord, Ontario L4K 4R3
 Tel: (905) 738-6100
 Fax: (905) 738-6875
 E-mail: design@schaeffers.com

Region of Peel
 Working for you

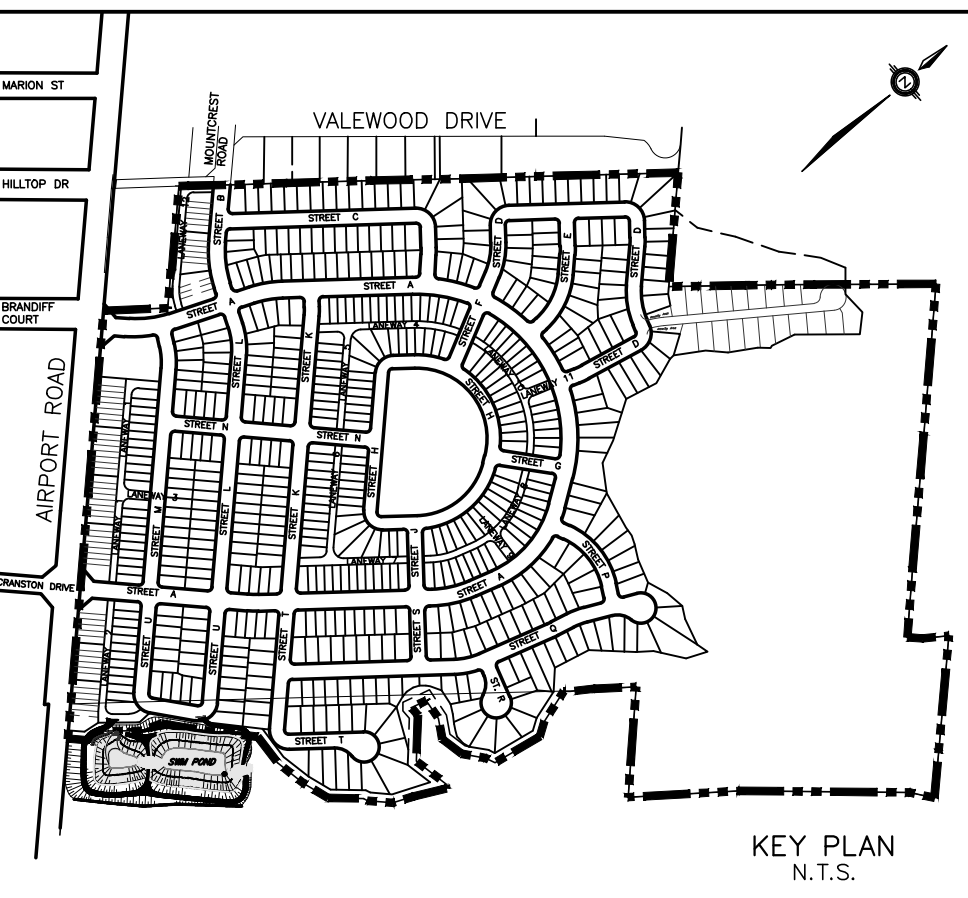
TOWN OF CALEDON

GENERAL BELOW GROUND SERVICES PLAN

TOWN FILES: 01-RZ 17-06 & 21T-17004
 REGION FILES: 02-17-001C & 21T-17004C

SCALE: 1:1500 PROJECT No. 2016-4453
 DESIGNED BY: F.T. DRAWN BY: B.M. DRAWING No. GP-1
 CHECKED BY: P.S. DATE: MAY 2017

NOTE:
 FOR GENERAL PLAN IN 1:1000 SCALE
 REFER TO DWG. No. GP-2 TO GP-5



NOTES

1. THE LOCATION OF ALL UNDERGROUND AND ABOVE GROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON CONTRACT DRAWINGS, AND WHERE SHOWN THE ACCURACY OF THE LOCATION AND ELEVATION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY EXACT LOCATION AND ELEVATION OF SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITIES OF DAMAGE.
2. ALL AREAS DISTURBED DURING CONSTRUCTION OF SEWERS AND WATERMANS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER, TO THE SATISFACTION OF THE TOWN OF CALEDON.

- LEGEND**
- DENOTES VALVE AND BOX
 - DENOTES HYDRANT
 - DENOTES CATCHBASIN
 - DENOTES DOUBLE CATCHBASIN
 - DENOTES STORM MANHOLE
 - DENOTES SANITARY MANHOLE
 - DENOTES OVERLAND FLOW ROUTE
 - DENOTES LOTS WITH WATER AND SANITARY CONNECTIONS TO WATERMAIN AND SANITARY SEWER ON AIRPORT ROAD
 - DENOTES ROAD HIGH POINT
 - DENOTES MAJOR FLOW CAPTURE POINT
 - DENOTES PROPOSED ELEVATION
 - DENOTES EXISTING ELEVATION
 - DENOTES EXISTING CONTOUR
 - DENOTES LIMIT OF SUBDIVISION
 - DENOTES RETAINING WALL
 - DENOTES LOTS WITH INFILTRATION GALLERY AT BACK OF LOTS
 - DENOTES LOTS WITH INFILTRATION GALLERY IN FRONT OF LOTS
 - DENOTES LOTS WITH SANITARY SEWER TO PUMPING STATION

NO.	BY	DATE	REVISION	CONCL. CHECKED	TOWN APPR'D

NO.	DATE	ISSUED FOR

2. 18/09/07 SECOND SUBMISSION TO THE TOWN OF CALEDON / REGION OF PEEL / TRCA
 1. 17/05/26 FIRST SUBMISSION TO THE TOWN OF CALEDON / REGION OF PEEL / TRCA

BENCH MARK:
 ELEVATIONS ARE GEODETIC AND ARE REFERRED TO THE TOWN OF CALEDON BENCH MARK No. 23, HAVING AN ELEVATION OF 308.817 METRES.

RESIDENTIAL SUBDIVISION
 15717 AIRPORT ROAD

SCHAEFFERS
 CONSULTING ENGINEERS

6 Roussee Drive, Concord, Ontario L4K 4R3
 Tel: (905) 738-6100
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 E-mail: design@schaeffers.com

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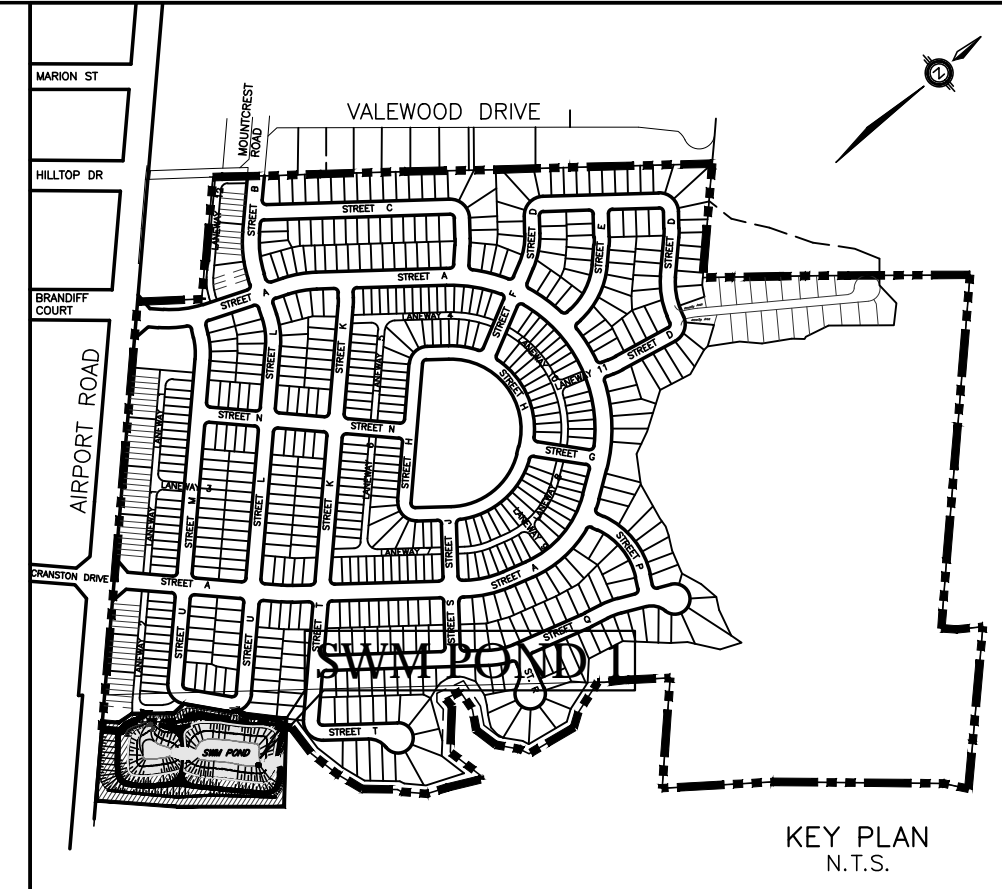
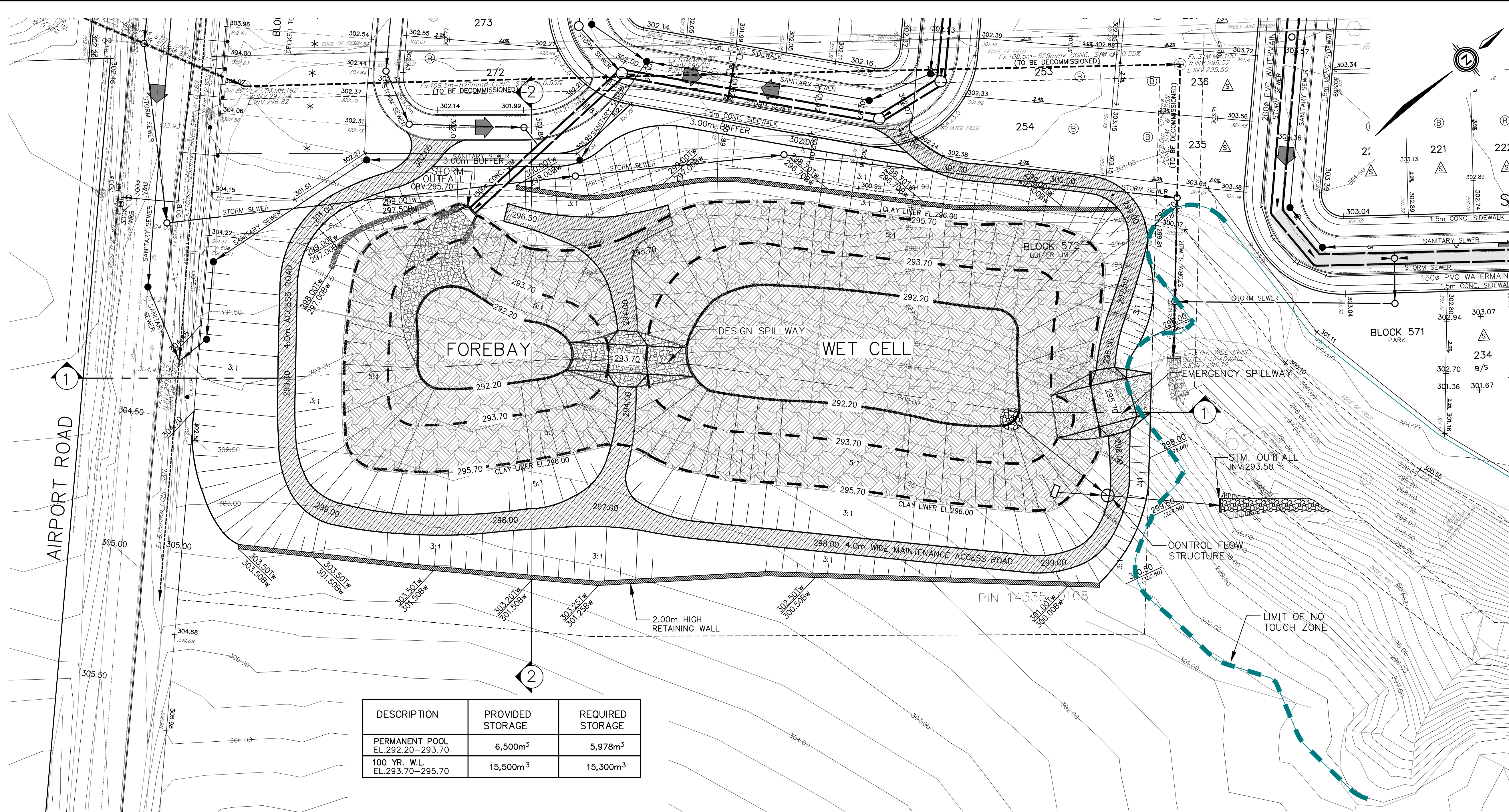
TOWN OF CALEDON

OVERALL GRADING PLAN

TOWN FILES: POPA 17-01,RZ 17-06 & 21T-17004
 REGION FILES: 02-17-001C & 21T-17004C

SCALE: 1:1500	PROJECT No. 2016-4453
DESIGNED BY: F.T.	DRAWN BY: B.M.
CHECKED BY: P.S.	DATE: MAY 2017
	DRAWING No. GR-1

NOTE:
 FOR GRADING PLAN IN 1:1000 SCALE
 REFER TO DWG. No. GR-2 TO GR-5



NOTES
 1. THE LOCATION OF ALL UNDERGROUND AND ABOVE GROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON CONTRACT DRAWINGS, AND WHERE SHOWN THE ACCURACY OF THE LOCATION AND ELEVATION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. PRIOR TO COMMENCING CONSTRUCTION, THE CONTRACTOR SHALL VERIFY EXACT LOCATION AND ELEVATION OF SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITIES OF DAMAGE.
 2. ALL AREAS DISTURBED DURING CONSTRUCTION OF SEWERS AND WATERMANS TO BE RESTORED TO ORIGINAL CONDITION OR BETTER, TO THE SATISFACTION OF THE TOWN OF CALEDON.

- LEGEND**
- 210.07 (211.00) DENOTES PROPOSED ELEVATION
 - 211.0 DENOTES EXISTING ELEVATION
 - DENOTES EXISTING CONTOUR ELEVATION
 - - - - DENOTES 100 YR. WATER LEVEL
 - DENOTES PERMANENT POOL LEVEL
 - DENOTES PROPOSED POND CONTOUR LINE
 - [Pattern] DENOTES RIP-RAP STONE
 - [Pattern] DENOTES 1.0m CLAY LINER
 - [Pattern] DENOTES ACCESS ROAD
 - [Pattern] DENOTES NO TOUCH ZONE
 - [Pattern] DENOTES RETAINING WALL

DESCRIPTION	PROVIDED STORAGE	REQUIRED STORAGE
PERMANENT POOL EL. 292.20-293.70	6,500m ³	5,978m ³
100 YR. W.L. EL. 293.70-295.70	15,500m ³	15,300m ³

NOTE:
 FOR SWM POND SECTIONS 1 AND 2
 REFER TO DWG. No. SWM-2

NO.	BY	DATE	REVISION	CONCL. CHECKED	TOWN APPRD.

NO.	DATE	ISSUED FOR

2. 18/09/07 SECOND SUBMISSION TO THE TOWN OF CALEDON / REGION OF PEEL / TRCA
 1. 17/05/26 FIRST SUBMISSION TO THE TOWN OF CALEDON / REGION OF PEEL / TRCA

BENCH MARK:
 ELEVATIONS ARE GEODETIC AND ARE REFERRED TO THE TOWN OF CALEDON BENCH MARK No. 23, HAVING AN ELEVATION OF 308.817 METRES.



RESIDENTIAL SUBDIVISION
 15717 AIRPORT ROAD

SCHAEFFERS
 CONSULTING ENGINEERS
 6 Rounsee Drive, Concord, Ontario L4K 4R3
 Tel: (905) 738-6100
 Fax: (905) 738-6875
 E-mail: design@schaeffers.com



SWM POND 1

TOWN FILES: POPA 17-01,RZ 17-06 & 21T-17004
 REGION FILES: 02-17-001C & 21T-17004C

SCALE: 1:500	PROJECT No. 2016-4453
DESIGNED BY: A.B.O.	DRAWN BY: R.M.M.
CHECKED BY: P.S.	DATE: MAY 2017
	DRAWING No. SWM-1