FARSIGHT HOMES
FUNCTIONAL SERVICING AND STORMWATER MANAGEMENT REPORT

Prepared for: FarSight Homes

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File: 13:286

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1.0 INTRODUCTION

Sabourin Kimble & Associates Ltd. has been retained by FarSight Homes to carry out the Functional Servicing and Stormwater Management Report for the proposed FarSight Homes subdivision in the Village of Ballantrae-Musselman's Lake. The Functional Servicing and Stormwater Management Report has been prepared in support of the Draft Plan of Subdivision for the development lands.

This report identifies how servicing and stormwater management will be provided and how that will fit into the overall development framework. The proposed development is predicated on the provision of a revision to the Regional Storm floodplain area. It is proposed to remove an existing trapezoidal man-made channel and associated agricultural floodplain and replace it with a naturalized channel and associated natural heritage features forming the centerpiece of this development. The revised channel and floodplain area has been designed based on a cut and fill approach resulting a net gain in natural habitat and floodplain storage. This report provides a complete evaluation of the existing and proposed floodplain hydraulics plus a detailed assessment of the resulting floodplain storage.

This investigation also includes an examination of site grading, water supply and storm and sanitary drainage including preliminary designs for each service internal to the site. A complete stormwater management analysis has been carried out including the identification of site constraints and criteria, plus preliminary designs for the overall stormwater management concept.

2.0 STUDY AREA

The proposed FarSight subdivision is located in the Ballantrae-Musselman's Lake community in the Town of Whitchurch-Stouffville. The subject lands consist of three (3) combined properties which are within Lot 19 and 20 of Concession 8, with municipal addresses of 5426, 5452 and 5584 Lakeshore Rd. The proposed development is located within the East Holland River sub-watershed, which is tributary to Lake Simcoe. As such, the works will be subject to standards of both the Lake Simcoe Region Conservation Authority (LSRCA) and the Town of Whitchurch-Stouffville.

The study area is located southeast of the intersection of Highway 48 and Aurora Road, approximately 600m northwest of Musselman's Lake. As shown in Figure 1, the FarSight Homes Lands are bounded by existing cultivated land to the north and east, an existing subdivision on Sommer Rumm Crescent to the west, and Lakeshore Road to the south.

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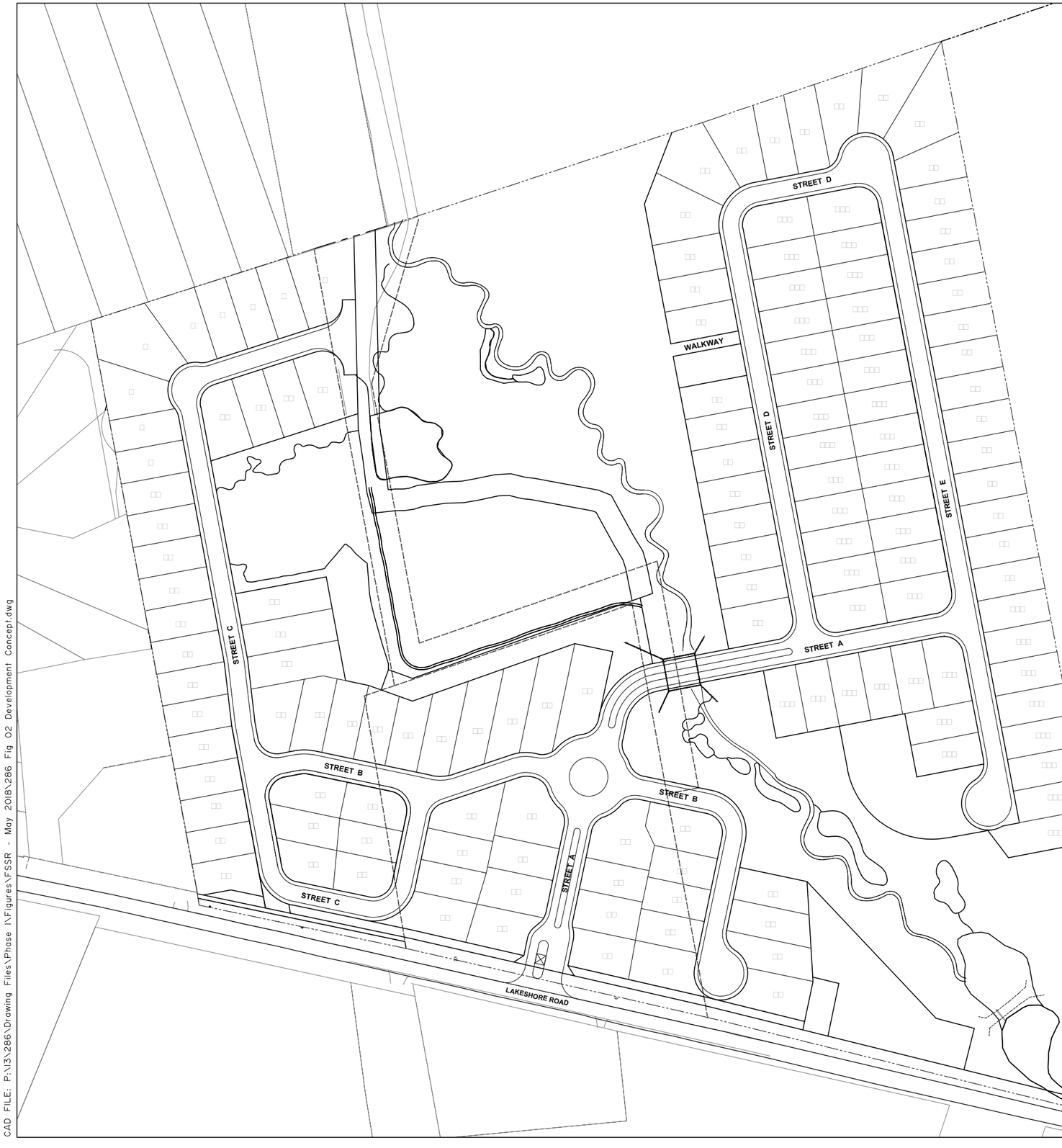
STUDY AREA

FIGURE No.

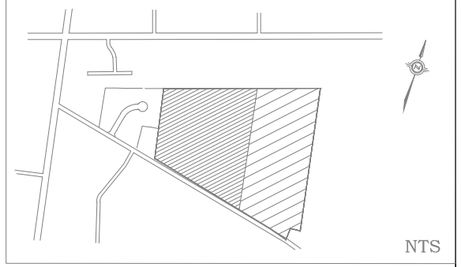
1

3.0 DEVELOPMENT CONCEPT

As shown in Figure 2, a development concept has been prepared which contemplates 141 single family residential lots. The proposed draft plan of subdivision anticipates that the proposed revision to the open space/floodplain area is acceptable. The subject lands will be developed as 141 condominium single detached residential units over 7.2 hectares with an additional 2.3 hectares of private road. The development lands will also include a total of 0.5 hectares of dedicated stormwater management blocks located in three (3) separate locations. The redefined floodplain area will be added to two (2) preserved woodlot areas to provide a combined natural heritage system of 5.9 hectares in size. The private roadway system will be self-contained and will connect to Lakeshore Road in one centralized location



KEY PLAN



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DRAFT PLAN PREPARED BY
ALCORN AND ASSOCIATES

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DEVELOPMENT CONCEPT

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PROJECT NUMBER	FIGURE NO.
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4.0 SUPPORTING STUDIES

4.1 Infiltration Potential Investigation

In support of the consideration of providing Low Impact Development (LID) works on the subject lands, WSP Canada Inc. completed a hydrogeological investigation, which identified in-situ infiltration rates and groundwater levels near proposed stormwater management locations and other areas around the site.

In-situ infiltration testing was completed at four (4) test pits in the subject lands, two in the western proposed stormwater management block and two in the east. Testing was conducted using the Nova Scotia Pask Permeameter twice at each location, at 1m and 2m below ground surface.

Soils in the east SWM block are composed of sandy soils with only trace silts. The recommended conservative design infiltration rate with factor of safety 2.5 for these two locations is 40mm/hr. Boreholes BH16-3 and BH16-4 located north of the SWM block, reported similar soil composition to these test pits, therefore the 40mm/hr infiltration rate has been applied to the entire east half of the site for design purposes.
In the west SWM block, the test pit identified silt and clay, with only trace sand. The recommended infiltration rate with factor of safety for these two test pits is 16mm/hr. Boreholes BH16-1 and BH16-5 located east of the SWM block, show a similar soil profile as that of the test pits, therefore a design infiltration rate of 16mm/hr has been selected for the entire west half of the site.

A bi-monthly monitoring program was implemented in June 2016 to record groundwater levels at the Site every two (2) months for a period of one year. The purpose of the bi-monthly monitoring program was to characterize seasonal variations in groundwater level and to determine the seasonal high groundwater level. Groundwater levels were obtained at twelve (12) locations throughout the site. The monitoring results indicate that the seasonally high ground water elevations are in the order of 332.1 in the northwest of the site, and has a gradual gradient of approximately 1% to the southeast resulting in a ground water elevation of approximately 328.7m. A copy of the WSP infiltration assessment is included in Appendix A.

5.0 MUNICIPAL SERVICES

5.1 Site Grading

The existing grades generally fall from northwest to southeast towards Lakeshore Road. High points in the east and west side direct flow inwards to the central drainage feature. The existing ground has mild slope of approximately 0.5 to 2.0 percent, and there is approximately 6m of total fall across the site.

The development concept and associated limits were developed based on a revised centralized channel design. The channel and associated floodplain relocation will be realized through a cut and fill approach to provide a more appropriate natural heritage feature through the center of the development site. A balanced cut/fill plan was developed for the revised channel resulting in the following site grading considerations:

i. Sufficient cover must be provided such that, a storm sewer could discharge into the channel above the 100yr flood elevation,
ii. Proposed grading should be provided to ensure that storm sewers with conventional cover would be located above the seasonally high groundwater levels,
iii. Rear lot corners should be established a minimum 2m above the observed high groundwater level to allow potential for rear lot LIDs,
iv. Basement underside of footings should be located high enough to reduce susceptible to interference with the water table.

In an effort to effectively address these constraints, the proposed grading plan involves raising the internal areas of the site by approximately 1 to 2m. As shown in Figure 3 (back pocket), lots will be protected from the Regional storm flood elevation of the proposed channel with 0.3 to 0.5m of freeboard. Internal lot grading includes a mix of front draining and split draining lots. The bulk of the lots around the site perimeter and adjacent to natural channel will be graded as walkouts or deck lots. This approach maximizes the ability to raise the site and still match into existing perimeter grades. The grading approach for the lots and roads has been designed to satisfy current Town of Whitchurch-Stouffville grading criteria.

5.2 Storm Drainage

5.2.1 Existing Conditions

As shown in Figure 4, there are no existing storm sewers within the site. The site drains overland to a watercourse which flows through the subject site and outlets to a culvert under Lakeshore Road. The watercourse bisecting the site is a tributary of the East Holland River and consists of three (3) distinct sections. Originating at Aurora Sideroad, a man-made channel flows south through an easement in favour of the Town to a location approximately halfway through the site. The altered channel outlets to an ill-defined channel area which continues south and outlets to a small wetland/pond prior to discharging under Lakeshore Road.

5.2.2 External Drainage Areas

The site accepts external drainage from lands to the north and east of the site. A small drainage area from the rear yards of existing residential units to the northwest will discharge overland flow into the proposed storm sewer system for the subdivision. Existing agricultural fields and a portion of a small woodlot contribute overland flow to the east limit of the site. A portion of these lands will be accepted into the storm drainage system for the site with the remaining area directed around the site and into the centralized floodplain area. The external areas have been considered in the storm drainage system design outlined in the following section plus the stormwater management system design outlined in section 7.0 of this report.

LEGEND:

- PRE DEVELOPMENT DRAINAGE BOUNDARY
- EXISTING REGIONAL FLOODLINE
- OVERLAND FLOW ROUTE
- EXISTING WATERCOURSE
- PROPERTY LINE

SYSTEM OUTLET

LAKESHORE ROAD

1:2500

EXISTING STORM DRAINAGE

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PROJECT NUMBER	FIGURE NO.
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5.2.3 Proposed Storm Servicing

As shown in Figure 5 (back pocket), the site will be serviced with storm sewers which outlet to the receiving watercourse in four (4) distinct locations. In the east and south portions of the site, the storm sewer system has been designed to outlet to a centralized stormwater management facility which provides infiltration, water quality and water quantity controls. The grading and ground water constraints in the west portion of the site do not support a centralized infiltration/stormwater management facility. Therefore, stormwater management controls are provided through the use of oversized storm sewers in combination with an oil/grit separator and sand filter. Within this servicing area, the oversized pipes and the associated lot grading results in a number of lots which are difficult to service with a conventional gravity storm house connection. Based on the preliminary design, there are twenty-eight (28) units where a gravity house connection is considered not feasible and as a result, a foundation drain sump pump will be required. These units are shown with an asterisk in Figure 5. The need for sump pumps on all lots within the plan will be further reviewed as part of the detailed design process.

The storm sewer system has been sized according to the Town of Whitchurch-Stouffville design criteria. Major system capture design and calculations will be provided as part of the detailed design for the site.

Preliminary storm sewer design sheets and a storm drainage plan are included in Appendix B.

5.3 Sanitary Drainage

5.3.1 Existing Conditions

There are no existing sanitary sewers within the subject lands or on Lakeshore Road to the south. The sanitary drainage from the site will ultimately flow to the existing sewage treatment plant located within the Ballantrae Golf and Country Club community as outlined in the following sections.

5.3.2 Proposed Sanitary Servicing

As shown in Figure 6 (back pocket), the entire site will be serviced with a sanitary sewer system that drains to a centralized private pumping station. As shown in Figure 7 (back pocket), from the pumping station, sanitary flows will be conveyed to the sanitary treatment facility via forcemain located within the existing easement (in favour of the Town), east along Aurora Sideroad and into the sewage treatment plant via an access road. Capacity at the sewage treatment plant is outlined in the following section 5.3.3.

The proposed sanitary sewers have been designed according to Town of Whitchurch-Stouffville design criteria and are sufficiently deep to service each residential unit by gravity. The sanitary sewer crossing of the revised watercourse has been designed with sufficient depth to allow 1.5 metres of cover between the proposed channel invert and the obvert of the sanitary sewer. The design of the private pumping station and wet-well will be completed as part of the detailed design of the subdivision.

A sanitary design sheet and sanitary drainage plan are included in Appendix B.

5.3.3 Existing Sanitary Sewage Treatment Plant

The Ballantrae Wastewater Treatment Plant (WWTP) services the Ballantrae Golf and Country Club and associated community. Currently, the WWTP services approximately 894 units, a Public School, a Community Centre, the golf course and club house.
The Ballantrae WWTP consists of Sequencing Batch Reactor (SBR) technology, followed by tertiary filtration, and ultraviolet light disinfection. The WWTP has a Certificate of Approval (C of A) rated average day flow (ADF) capacity of 1,045 m^3/d. The WWTP is currently operating at approximately 42 percent of the rated capacity.

In October 2014, Hatch Mott MacDonald completed a review of the existing WWTP capacity anticipating the addition of approximately 200 dwelling units. The report provides a complete review of the historic and projected flows to the plant plus an assessment of the additional capacity available. The report concluded that the plant has capacity to treat the additional 200 units which would increase the operation of the WWTP to approximately 80 percent of the plant's rated capacity. A copy of the WWTP assessment report is included in Appendix B.

In the interim since this 2014 assessment, 94 of the 200 units have been approved for a proposed development plan within the Ballantrae Village limits. It is proposed to discharge and treat the sewage from the 140 units in this plan within the WWTP anticipating that the additional 34 units (in excess of the allotted 200 units) will be serviced in the remaining 20% of the plant's rated capacity. A review of this approach is underway and will be forwarded upon completion.

5.4 Water Supply

As shown in Figure 8 (back pocket), there is an existing 300 mm diameter watermain located on Lakeshore Road. A private watermain system will be provided with connection to the existing municipal supply through a proposed meter chamber located at the entrance to the development. Internal watermains will be designed to provide adequate domestic and fire flows to the proposed development. Detailed modelling of the system will be provided as part of the detailed design for the system.

6.0 STORMWATER MANAGEMENT CRITERIA

Stormwater management criteria for the subject site were established according to the LSRCA's *Technical Guidelines for Stormwater Management Submissions (2016),* the LSRCA's *Phosphorus Offsetting Policy (*effective January 1st, 2018*),* the Ontario Ministry of the Environment's MOE *Stormwater Management Planning and Design Manual (2003),* and pre-consultation with the Town of Whitchurch-Stouffville.

Table 1 - Stormwater Management Criteria

Control	Criteria
Water Quality	Enhanced fisheries protection as outlined in the MOE Stormwater Management Practices Planning and Design Manual. Zero net increase in phosphorous loading from pre-development conditions with compensation for exceedances according to the Phosphorus Offsetting Policy.
Erosion Control	Detention of the 25mm 4 hour Chicago storm runoff for a minimum of 24 hours.
Water Quantity	Control post development flows to pre-development levels for the 2 through 100 year storms.
Water Balance	Maintain the pre-development water balance under post development conditions.

6.1 LID Guidelines

In April 2015, LSRCA published the Lake Simcoe Watershed LID SWM Guidelines for Municipalities. The main objective of the guideline is to identify minimal impact design standard approaches for Low Impact Development stormwater management techniques. Much of the document is focused on better site design techniques to control and reduce runoff volume from any given development site. A number of stormwater volume reduction performance goals are identified in the document with the following goal outlined for new development:

For new, nonlinear developments that create more than 0.5 hectares of new impervious surface on sites without restrictions, stormwater runoff volumes will be controlled and the post-construction runoff volume shall be retained on site from runoff of the first 25 mm of rainfall from all impervious surfaces on the site.

7.0 Overall Stormwater Management Strategy

The stormwater management approach has been developed to reflect the LID Guidelines and the infiltration capacity of the site and provide infiltration capacity for the 25mm storm runoff volume from impervious surfaces. It is proposed that these works will adequately address the overall stormwater management criteria for water quality control and erosion control as outlined in Table 1. Additional water quantity storage will be provided in order to adequately meet pre-development peak flow targets.

Eleven (11) distinct infiltration systems will be provided throughout the site as shown in Figure 9 (back pocket). Rear yard granular galleries have been provided in eight locations and have been identified as LID's 1, 2, 5, 6, 8, 9, 10 and 11. These galleries will accept rear yard drainage from rear lot catchbasins outfitted with perforated leads as shown in Figure 10. In the event that any of the galleries become full, an overflow will be provided which outlets to a street storm sewer or directly to a centralized stormwater management facility. Three (3) centralized infiltration galleries (identified as LIDs 3, 4 and 7) have also been proposed and are incorporated into an open bottom storage system (Stormtech) which also provides water quantity control.

Water quantity control has been provided by four (4) distinct systems as shown in Figure 11 (back pocket). Open bottom Stormtech storage systems have been combined with infiltration LIDs 3, 4 and 7 to provide the additional storage required to meet water quantity targets. In the western area of the plan (identified as area 201), existing groundwater elevations are too high to incorporate infiltration works. However, water quantity storage will be provided in a 900x1800 mm box storage pipe. Each of the four water quantity storage facilities is equipped with an oil grit separator to provide quality control and stacked orifice plate controls. Additional quality control for catchment 201 is provided by a plunge pool/sand filter combination.

Allowable release rates, post development flows and runoff volumes have been evaluated for each system. The technical details of the proposed stormwater management system are provided in the following sections.

LEGEND

- 5 / 0.17 — LID IDENTIFICATION NUMBER / IMPERVIOUS AREA (HA)
- LID DRAINAGE BOUNDARY
- GROUNDWATER ELEVATION OBSERVATION WELL
- LID FOOTPRINT
- INTERPOLATED GROUNDWATER CONTOUR

OW-5 – 332.11

GROUNDWATER ELEV: 328.90
GRANULAR INVERT: 329.77

OW-4 – 328.65

OW-3 – 329.21

GROUNDWATER ELEV: 328.80
GRANULAR INVERT: 329.40

OW-2 – 328.79

OW-1 – 328.68

GROUNDWATER ELEV: 328.50
GRANULAR INVERT: 329.27

OW-6 – 331.68

GW – 331.5

GW – 331

GW – 330.5

GW – 330

GW – 329.5

GW – 329

GW – 328.5

WALKWAY

LID 3

LID 4

LID 7

	IMPERVIOUS AREA (HA)
11	0.13
3	0.65
2	0.51
1	0.28
4	1.43
5	0.17
8	0.13
9	0.17
7	1.16
10	0.11
6	0.09

1:2000

LID DRAINAGE

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PROJECT NUMBER	FIGURE NO.
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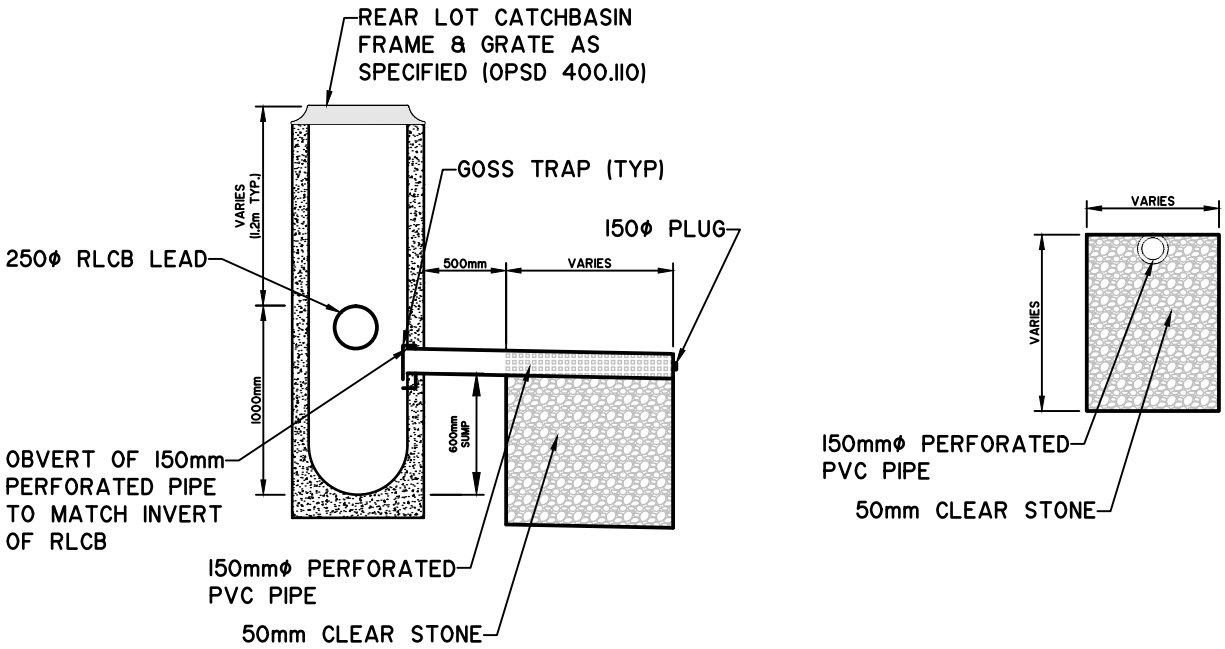

TYPICAL PERVIOUS RLCB

(MODIFIED OPSD 705.010)

NTS

TYPICAL RLCB

SABOURIN KIMBLE & ASSOCIATES LTD.

CONSULTING ENGINEERS

PROJECT NUMBER	FIGURE NO.
13286	10

LEGEND:

- PRE-DEVELOPMENT DRAINAGE BOUNDARY
- EXISTING REGIONAL FLOODLINE
- OVERLAND FLOW ROUTE
- EXISTING WATERCOURSE
- PROPERTY LINE
- 100 — SUBCATCHMENT ID
- 26.83 — SUBCATCHMENT AREA (HA)
- 56% — PERCENT IMPERVIOUS

SYSTEM OUTLET

100
26.83
-

LAKESHORE ROAD

1:2500

PRE DEVELOPMENT DRAINAGE AREA

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PROJECT NUMBER	FIGURE NO.
13.286	11

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7.1 Stormwater Management Facility Details

7.1.1 Pre-Development Flows

A pre-development VO3 hydrology model was developed to establish the target discharges for the site. As shown in Figure 12 the study and areas immediately adjacent, and tributary to the site were modelled to establish the target flows. The lands north of the site were not considered in the evaluation of target discharges as they are not tributary to the stormwater management system for the subject site. In keeping with LSRCA criteria return period flows were generated for 12 hour SCS and a 4 hour Chicago storms. The resultant peak flows are summarized in Table 2.

Table 2 – Pre Development Peak Flows

Storm	12 Hour SCS (cms)	4 Hour Chicago (cms)
2 Year	0.20	0.14
5 Year	0.35	0.26
10 Year	0.48	0.35
25 Year	0.64	0.45
50 Year	0.76	0.59
100 Year	0.89	0.73

7.1.2 Existing Groundwater Levels

As outlined in Section 5 of this report, the site grading and servicing has been raised as much as possible to minimize interference with high groundwater levels. The proposed grading and servicing scheme allows for adequate separation of the proposed infiltration facilities from high groundwater levels within the interior of the site. However, given the requirement to meet existing perimeter grades and reduce further intrusions into the relocated channel area, a number of the proposed LID facilities do not provide the required 1.0 metre (minimum) separation from the high groundwater elevation. As outlined in Table 3, rear yard LID facilities 1, 5 and 11 plus the centralized infiltration facilities do not provide the required 1.0 metre separation.

Table 3 – Existing Groundwater Levels at LIDs

LID Number	Bottom Elevation (m)	High Groundwater Elevation (m)	Separation (m)	Average Normal Groundwater Elevation (m)	Separation Under Average GW Conditions (m)
1	329.05	328.65	0.40	328.50	0.55
2	330.87	328.85	2.02	328.50	2.37
3	329.77	329.15	0.62	328.50	1.27
4	329.40	328.80	0.60	328.40	1.00
5	329.78	329.00	0.78	328.50	1.28
6	330.56	328.95	1.61	328.50	2.06
7	329.27	328.70	0.57	328.25	1.02
8	332.08	331.00	1.08	330.75	1.33
9	331.65	330.45	1.20	329.80	1.85
10	332.48	329.75	2.73	329.00	3.48
11	332.65	332.11	0.54	331.50	1.15

While this is not an ideal design situation, at no time do any of the facilities come in contact with the high groundwater elevations. Further, the high groundwater elevation generally only occurs in the period of April/May and recedes thereafter. The on-site infiltration tests identified that sufficient capacity exists to meet the 25mm infiltration objective. Therefore, it is recommended to proceed with the design of the 25mm infiltration facilities anticipating a limited time period where the buffer to the high groundwater elevation is less than 1.0 metre.

7.1.3 Water Quality Control

Each subcatchment will be equipped with an oil and grit separator in combination with either infiltration galleries or a sand filter to achieve 80% total suspended solids (TSS) removal required for enhanced water quality control protection. The quality control works for each subcatchment and their corresponding TSS removal efficiencies are summarized in Table 4.

Table 4 - Total Suspended Solids Removal

Subcatchment ID	OGS	Infiltration	Sand Filter	Total Removal Efficiency
201	60%	-	60%	84%
202	60%	70%	-	88%
203	60%	70%	-	88%
204	60%	70%	-	88%

The calculations in support of the quality control volumes are included in Appendix C.

In order to ensure zero net increase in phosphorous loading from pre-development conditions per the Lake Simcoe guidelines, the Ministry of the Environment Lake Simcoe Phosphorus Budget Tool was utilized to calculate phosphorous loads under pre development, post development unmitigated and post development mitigated conditions. For this development, the mitigation measures included sand filters, and infiltration facilities in addition to the naturalization of the floodplain. Consideration of these facilities resulted in a net phosphorous decrease of 1.21kg per year as outlined in Table 5.

Table 5 - Phosphorus Removal

Development Condition	Phosphorus Load (kg/yr)
Pre-Development	7.25
Post Development – No Mitigation	14.86
Post Development Mitigated	6.03
Net Increase	-1.21

Phosphorus calculations have been included in Appendix C.

7.1.4 Erosion Control and LIDs

In order to satisfy the Erosion Control criteria and LSRCA LID Guidelines, LIDs will provide infiltration of the equivalent of 25mm of runoff from impervious surfaces over the entire site. LID works are located in subcatchments 202, 203 and 204 as shown on Figure 11. The LID volumes are summarized in Table 6. LID requirements to satisfy extended detention and LSRCA LID guidelines are summarized in Table 7.

Table 6 - LID Volumes

LID #	Impervious Area (ha)	Storage Volume (m^3)	
		Required	Provided
1	0.28	70	113
2	0.51	129	182
3	0.65	164	209
4	1.43	358	544
5	0.17	43	44
6	0.09	21	10
7	1.16	291	292
8	0.13	32	34
9	0.17	43	43
10	0.11	27	37
11	0.13	32	20
Total	**4.83**	**1208**	**1528**

Table 7 - Required Extended Detention Volumes

Facility	Drainage Area (ha)	Impervious Area (ha)	Percent Impervious	Extended Detention Volume (m^3)	
				Required	Provided
201	1.80	1.06	59%	265	20
202	2.53	1.32	52%	333	406
203	0.80	0.70	87%	173	300
204	3.01	1.73	57%	432	792
205	17.26	1.25	-	312	10
Overall	-	6.06	-	1514	1528

The calculations in support of the erosion control volume is included in Appendix C.

7.1.5 Water Quantity Control

The route reservoir modelling ability of the VO3 hydrology model was used to determine the water quantity storage volumes for each facility.

In order to match or reduce the pre-development subcatchment peak flows under post-development conditions, storage facilities were designed and equipped with stacked orifice plate control structures. Based on these design characteristics, the elevation/storage/discharge characteristics were developed utilizing the V03 hydrologic

model. The resulting characteristics are summarized in Tables 8 through 11. Refer to Figure 11 for facility locations.

Table 8 - Elevation/Storage/Discharge Characteristics –Storage Pipe – Subcatchment 201

Storm	Ponding Elevation (m)	Storage Provided (m^3)	Peak Discharge (m^3/sec)
2 Year	331.72	256	0.02
5 Year	332.02	307	0.10
10 Year	332.20	325	0.23
25 Year	332.32	338	0.32
50 Year	332.40	346	0.44
100 Year	332.47	354	0.49

Table 9 - Elevation/Storage/Discharge Characteristics – Stormtech – Subcatchment 202

Storm	Ponding Elevation (m)	Storage Provided (m^3)	Peak Discharge (m^3/sec)
2 Year	330.25	280	0.05
5 Year	330.50	388	0.07
10 Year	330.69	466	0.08
25 Year	330.92	549	0.09
50 Year	331.16	612	0.11
100 Year	331.44	674	0.12

Table 10 - Elevation/Storage/Discharge Characteristics – Stormtech - Subcatchment 203

Storm	Ponding Elevation (m)	Storage Provided (m^3)	Peak Discharge (m^3/sec)
2 Year	331.42	123	0.06
5 Year	331.62	157	0.07
10 Year	331.80	183	0.08
25 Year	332.00	210	0.09
50 Year	332.20	230	0.10
100 Year	332.46	256	0.12

Table 11 - Elevation/Storage/Discharge Characteristics – Stormtech - Subcatchment 204

Storm	Ponding Elevation (m)	Storage Provided (m^3)	Peak Discharge (m^3/sec)
2 Year	330.12	616	0.02
5 Year	330.25	804	0.04
10 Year	330.37	972	0.05
25 Year	330.50	1167	0.06
50 Year	330.60	1316	0.07
100 Year	330.72	1469	0.08

Calculations in support of the hydrologic model stage-storage curve inputs are included in Appendix C.

The quantity control works are successful in maintaining or reducing the peak flows at the site outlet at Lakeshore Road. The resulting target peak discharges and required storage volumes are summarized in Table 12.

Table 22 – Peak Flow and Storage Requirements

Storm	Peak Flow @ Outlet (m^3/sec)				Required Storage Volume(m^3)			
	Pre-development		Post-development		Storage Pipe 201	Stm tech 202	Stm tech 203	Stm tech 204
	SCS	Chicago	SCS	Chicago				
2 Year	0.20	0.14	0.20	0.14	256	280	123	616
5 Year	0.35	0.26	0.34	0.26	307	388	157	804
10 Year	0.48	0.35	0.48	0.35	325	466	183	972
25 Year	0.64	0.45	0.61	0.44	338	549	210	1167
50 Year	0.76	0.59	0.70	0.55	346	612	230	1316
100 Year	0.89	0.73	0.79	0.67	354	674	256	1469

The hydrology model input, output and supporting calculations are included in Appendix D.

8.0 FLOODPLAIN ANALYSIS

The proposed development is predicated on the provision of a revision to the Regional Storm floodplain area. It is proposed to remove an existing trapezoidal man-made channel and associated agricultural floodplain and replace it with a naturalized channel and associated natural heritage features forming the centerpiece of this development. The revised channel and floodplain area has been designed based on a cut and fill approach resulting a net gain in natural habitat and floodplain storage.

8.1 Existing Conditions

The hydraulics model for the site was obtained from the LSRCA in March 2013. This model has since been updated with ground surface topography and additional cross sections to achieve a more representative model output. The Pre Development Floodplain is shown on Figure 13.

8.2 Proposed Conditions

The proposed floodplain includes the revised channel area and a naturalized floodplain which slopes up at 0.5% to meet the 3:1 slopes supporting the rear yards at the edge of the development. The Post Development Floodplain is shown on Figure 14. The resulting water surface elevations are compared to existing elevations in Table 13.

Table 33 – Regional Water Surface Elevations

HEC-RAS Cross Section	Pre Development (m)	Post Development (m)
3108.75	331.49	331.46
3108.5	331.33	331.17
3108.4	331.31	331.09
3108.3	331.26	331.12
3108.25	331.10	331.09
3108	330.92	331.08
3107.75	330.79	331.06
3107.5	330.70	331.05
3107.4	330.24	330.91
3107.3	330.20	330.23
3107.2	330.11	330.19
3107	329.82	330.05
3106.5	329.73	329.71
3106	329.76	329.76

As shown in Table 13, the resultant water surface elevations are not increased upstream of the site as a result of the channel modification.

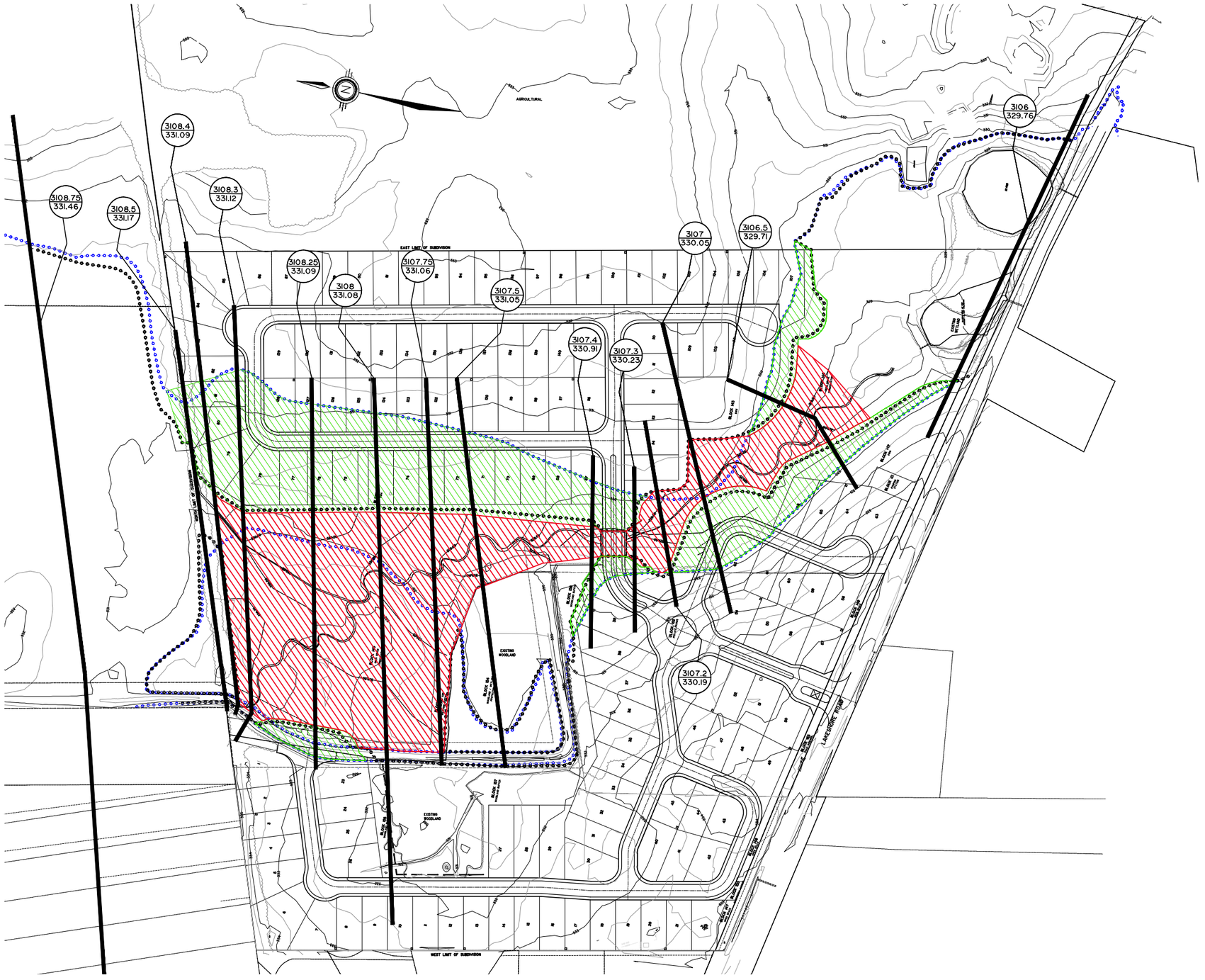
8.3 Floodplain Storage

In support of the proposed grading below the regional floodline, a cut/fill analysis was completed to ensure floodplain storage is maintained under post development conditions. Some reductions in storage were observed at 0.25 meter increments, however the on-site works result in an overall net increase in floodplain storage. The investigation results are summarized in Table 11 below with cut and fill areas shown on Figure 15.

Table 4 – Floodplain Storage

Elevation	Storage (m^3)		
	Pre-Development	**Post-Development**	**Net Gain or Loss**
331.25	119	0	-119
331.00	1142	1864	722
330.75	1722	6334	4612
330.50	2295	4958	2663
330.25	2129	2557	428
330.00	1622	1605	-17
329.75	1882	1374	-508
329.50	4316	3576	-740
329.25	3231	2828	-403
329.00	2236	2275	39
328.75	1866	1800	-66
328.50	431	431	0
328.25	134	134	0
Total	**23124**	**29735**	**6611**

While floodplain storage is not maintained at each elevation interval, a net gain in total floodplain storage is realized. The supporting calculations are included in Appendix E.



LEGEND:

- PROPOSED FLOODPLAIN
- HEC-RAS STATION / REGIONAL WATER SURFACE ELEVATION (3107.2 / 330.11)
- HEC-RAS SECTION LINE
- FILL UNDER REGIONAL FLOODLINE
- CUT UNDER REGIONAL FLOODLINE
- EXISTING FLOODPLAIN

1:2500

CUT AND FILL AREAS

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

PROJECT NUMBER	FIGURE NO.
13:286	15

CAD FILE: P:\13\286\Drawing Files\Phase 1\Figures\FSSR - May 2018\286 Fig XX Floodplain Storage.dwg

9.0 EROSION AND SEDIMENTATION CONTROLS

During construction of any portion of the subject lands adequate erosion and sedimentation controls must be implemented to safeguard them against potential impacts. The removal of vegetation, grading and soil compaction should be minimized and limited to only those areas that require alteration to existing grades. In support of the detailed design for any development proposal, a comprehensive construction erosion and sedimentation control plan should be prepared. This plan should detail the works proposed to control erosion on-site and sediment transport from the site to match or exceed current Municipal and Provincial standards. Works such as sediment control fencing, controlled stripping/earthworks practices, undisturbed buffers, filter strips, catchbasin silt sacks and catchbasin/storm sewer sediment traps should be implemented. Specific sedimentation control measures must be designed to safeguard the infiltration facilities from plugging with construction sediment. In support of the erosion and sedimentation control, a construction implementation plan and maintenance protocol should also be established.

Sedimentation control practices will be implemented for all construction activities within the Study Area, including tree removal, topsoil stripping, underground sewer construction, road construction and house construction. Sedimentation control measures are to be installed and operational prior to any construction activity, and are to remain in place until such time as the residential dwellings are constructed and the lot grading complete with established sod.

10.0 CONCLUSIONS

Based on the findings of this Functional Servicing Study and Stormwater Management Analysis, the following conclusions are reached:

- The subject lands will be developed as residential land use.
- The site will be graded for residential use with a “cut and fill” approach satisfying current Town of Whitchurch Stouffville criteria.
- The site will be serviced by a storm sewer system having four (4) separate outfalls which discharge into the main watercourse discharging ultimately to a Holland East tributary.
- Interior of the site will be filled above the existing grade to give storm sewers and LID works clearance from the seasonally high water table.
- During each phase of construction, adequate erosion and sedimentation controls must be provided in accordance with LSRCA’s Sediment and Erosion Control guidelines.

APPENDIX A

WSP INFILTRATION ASSESSMENT

FAR SIGHT HOMES

HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY

5426, 5452 AND 5584 LAKESHORE ROAD, BALLANTRAE, ONTARIO

JUNE 29, 2018

DRAFT

HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY

5426, 5452 AND 5584 LAKESHORE ROAD, BALLANTRAE, ONTARIO

FAR SIGHT HOMES

DRAFT

PROJECT NO.: 161-06960-00
DATE: JUNE 29, 2018

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WSP Canada Inc.

June 29, 2018

DRAFT

FAR SIGHT HOMES
12 Greenvalley Circle, RR3
Newmarket, Ontario
L3Y 4W1

Attention: Mr. Randy Alcorn

Dear Sir:

Subject: Hydrogeological Assessment and Water Balance Study
5426, 5452 and 5584 Lakeshore Road, Ballantrae, Ontario

WSP Canada Inc. is pleased to submit the attached report to document the Hydrogeological Assessment and Water Balance Study prepared for a proposed subdivision development at 5426, 5452 and 5584 Lakeshore Road, Ballantrae, Ontario.

The report provides an assessment of the existing hydrogeological conditions beneath the Site as well as water budgets for existing and future conditions to illustrate the likely changes in water balance that would be expected due to the proposed development. The post-development water budget considers the influence of the stormwater management system that has been proposed to mitigate potential impacts of introducing impervious surfaces.

Thank you for the opportunity to carry out this study on your behalf. We trust that this information is sufficient for your current needs. If you have any questions or require further information, please contact us.

Yours truly,

Lloyd Lemon, P.Geo., M.Sc.
Senior Project Geoscientist

JSW/nah

WSP ref.: 161-06960-00
\\caaur1dat01.gcg.local\vol1\Data\Proj\16\06960-00\105 Hydrogeological Study\Wp\KH - Hydrogeological Study and Water Balance Assessment.docx

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EXECUTIVE SUMMARY

WSP Canada Inc. (WSP) was retained by Far Sight Homes to prepare a Hydrogeological Assessment and Water Balance Study for the proposed residential development located at 5426, 5452 and 5584 Lakeshore Road, Ballantrae, Ontario (Site).

The proposed development area lies within the Oak Ridges Moraine physiographic region as defined by Chapman and Putnam (1984). The Oak Ridges Moraine is typically characterized by sand or gravel hills with level tracts of sand between them. The area in and surrounding the Site consists of Kame moraines.

The Site currently contains a wetland along the southern property boundary adjacent to the manmade pond. The wetland is fed by run-off from the Site and discharges off-site to through the southern property boundary via a culvert underneath Lakeshore Road.

Based on the stratigraphy observed during the borehole drilling and test pit excavations at the Site and well records from Ministry of Environment and Climate Change Water Well Information System, the Site is predominantly underlain by alternating layers of sand and silt with isolated layers of fill, silty sand/sandy silt and clayey silt observed in certain boreholes.

Based on water elevations from April 2017 that were collected as part of the bi-monthly monitoring program, the local groundwater flow direction is to the southeast across the Site. Groundwater levels at the Site fluctuated from a seasonal high of 0.2 m bgs (April 2017) to a seasonal low of 4.57 m bgs (October 2016). The seasonal high was observed at OW16-1 which is located in the area of the realigned drainage channel.

In-situ hydraulic conductivity testing was conducted at all six (6) monitoring wells on June 30, 2016. The results of these test indicate that the hydraulic conductivity of the soil at the Site range from 1.17 $x10^{-4}$ m/sec to 1.47 $x10^{-5}$ m/sec. These results are consistent with the observed soil descriptions of medium to fine sand in which the monitoring wells are screened.

Representative samples of groundwater were collected from the six (6) monitoring wells on June 30, 2016. The results of the tests indicated that parameter concentrations are less than Ministry of the Environment and Climate Change (MOECC) Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition for All Types of Property Use (Coarse Textured Soil).

The Climate-Based Water Budget indicates that average annual precipitation over the past 30 years is 857.7 mm/year. The available moisture surplus at the Site ranges between 283.8 mm/yr to 292.8mm/year depending on the type of soil and vegetation cover. The moisture surplus will reflect the infiltration and runoff based on the soil properties, slopes, and vegetation within individual catchments.

Under existing conditions, there are two (2) on-site catchments and three (1) off-site catchment. Runoff generated on-site outlets at two (2) different locations.

(a) Runoff from the majority of the Site is directed to the drainage ditch which connects to the existing wetland and discharges over the southern property boundary via a culvert underneath Lakeshore Road.

(b) Runoff from a small portion of the site located in the southwest corner flows off-site to the south via overland flow.

The Pre-Development Water Budget reflects infiltration for the Site of approximately 61,016 m^3/yr and runoff from the Site of approximately 20,663 m^3/yr.

The Post-Development Water Budget reflects changes in land use to include increased areas of impervious surfaces (i.e. roads, buildings etc.) and re-grading. Under the proposed development conditions there are ten (10) on-site catchments and three (3) off-site catchment. A significant portion of the runoff is directed to three (3) different StormTech infiltration chambers while the remainder is conveyed to the drainage channels by the proposed storm sewers and/or overland flow. Runoff directed to the drainage channels flows to the existing wetland and is discharge off-site via the culvert underneath Lakeshore road.

The Post-Development Water Budget predicts a total on-site infiltration of 91,350 m^3/yr. Of the total infiltration, 47,067 m^3/yr infiltrates through pervious areas and 44,283 m^3/yr infiltrates as a result of runoff from developed areas being directed to the on-site infiltration chambers. Overall, this is a increase of 50% relative to the Pre-Development case, and represents an infiltration surplus of 30,334 m^3/yr. At this time, additional mitigation measures are not required as there is an infiltration surplus.

The Post-Development Water Budget predicts a net runoff of 21,338 m^3/yr over the Site area. This is an increase of 3% or 675 m^3/yr relative to the Pre-Development case. The estimated runoff exiting the Site via the wetland and culvert is predicted to increase by 6% and the runoff directed off-site to the southwest will decrease by 100%.

The Site lies within an area designated as WHPA-Q. Policies in the Lakes Simcoe and Couchiching Source Protection Plan for WHPA-Q require that recharge be maintained or enhanced. The water balance calculations demonstrate that the development, as proposed with the stormwater management design as prepared by Sabourin Kimball & Associates Ltd. (2018), will enhance the pre-development infiltration and hence, complies with these policies.

The majority of the Site is not within a mapped SGRA. A small portion of the southeast corner of the site that has already been developed is shown to have high sensitivity. The proposed development design provides for a very minor increase in net off-site run-off and enhancement of on-site recharge. This is not anticipated to negatively impact the features protected by the SGRA or ESGRA policy areas.

The majority of the central and east part of the Site is mapped as a Highly Vulnerable Aquifer under the Assessment Report for the Lakes Simcoe and Couchiching Source Protection Area as well as the Oak Ridges Moraine Conservation Plan. The proposed land use as residential is expected to have minimal potential to affect underlying groundwater resources.

SIGNATURES

PREPARED BY

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REVIEWED BY

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Senior Project Geoscientist

This report was prepared by WSP Canada Inc. for the account of FAR SIGHT HOMES, in accordance with the professional services agreement. The disclosure of any information contained in this report is the sole responsibility of the intended recipient. The material in it reflects WSP Canada Inc.'s best judgement in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. WSP Canada Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. This limitations statement is considered part of this report.

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1 INTRODUCTION

WSP Canada Inc. (WSP) was retained by Alcorn & Associates Limited to prepare a Hydrogeological Assessment and Water Balance Study for the proposed subdivision development located at 5426, 5452 and 5584 Lakeshore Road, Ballantrae, Ontario, herein referred to as the Site. The location of the Site is shown on **Figure 1**.

The Site is located approximately 430 m east of Highway 48 and approximately 200 meters south of Aurora Road in Ballantrae, Ontario. The Site is approximately 26.9 hectares (66.5 acres) in size, rectangular in shape, and is currently occupied by agricultural fields, wooded areas, uncultivated land, three (3) residential dwellings and a pond in the southeast corner. The existing conditions at the Site are shown in **Figure 2** and the development plans provided by WSP are included in **Appendix A**.

The proposed development conditions are shown in **Figure 3** and have been included in **Appendix A**. Under post-development conditions, the Site will include 141 residential lots draining to a series of StormTech infiltration chambers and the on-site creek which flows through the center of the Site.

This report documents the work performed to provide an understanding of the hydrogeological conditions at the Site, to prepare a water balance, and to provide preliminary recommendations for Site design and construction.

1.1 OBJECTIVES AND SCOPE

The need for a Hydrogeological Assessment and Water Balance Study was identified to help support the development application process and to quantify changes in Site runoff, infiltration and evapotranspiration between the pre- and post-development conditions for the development plan.

The Hydrogeological Assessment and Water Balance Study has been designed to:

- Review historical information and integrate findings.
- Identify the inventory of groundwater users within 500 m of the property.
- Confirm groundwater flow directions and patterns.
- Confirm and identify potential watershed divides, if any, which control groundwater flow.
- Characterize the water quality of the shallow groundwater.
- Characterize the relationships between on-site groundwater flow systems and adjacent surface water bodies.
- Create an annual water budget for the existing conditions at the property for use as a baseline.
- Determine a future annual water budget for the proposed development scenario.
- Identify significant changes to the water balance or to the form and function of the groundwater or surface water systems that might result from future plans and provide recommendations for mitigative measures to address these changes.
- Prepare a project report.

1.2 ANALYSIS AND DOCUMENTATION

The following published information and mapping was reviewed and considered in our analysis of the Site:

- Hydrogeological Assessment – 5452 Lakeshore Road, WSP, January 2016
- Hydrogeological Assessments - Conservation Authority Guidelines to Support Development Applications, April 2013.
- Assessment Report, South Georgian Bay Lake Simcoe Source Protection Region, Part 1 (Lake Simcoe, May 2015 update). Approved Lakes Simcoe and Couchiching Source Protection Plan.
- Ministry of Environment and Climate Change Water Well Information System (MOECC WWIS);

— Other sources of information as listed in Section 8.0.

2 REGIONAL SETTING

2.1 PHYSIOGRAPHY

The regional physiography for the Site area is shown in **Figure 4**. The proposed development area lies within the Oak Ridges Moraine physiographic region as defined by Chapman and Putnam (1984). The Oak Ridges Moraine consists of sand or gravel hills with level tracts of sand between them. The landforms in the area within and surrounding the Site consist of kame moraines.

2.2 DRAINAGE

Regional topography is illustrated on **Figure 5**. The topography of the Site is generally sloping toward the center and south of the property. The topography at the Site has elevation that ranges from 331 metres above sea level (m asl) to 334 m asl. The topography is generally higher to the north and along the west and east edges and lower in the center and to the south edge of the Site.

The Site is located approximately 2.1 km north of the divide between the Lake Simcoe Watershed and the Lake Ontario Watershed.

The Site currently contains a wetland along the southern property boundary adjacent to the manmade pond. The wetland is fed by run-off from the Site and discharges off-site to through the southern property boundary via a culvert underneath Lakeshore Road. The area of the pond is not within the current boundary of the proposed development.

2.3 REGIONAL GEOLOGY

The near surface soils are the top unit in a layered sequence of glacial and interglacial sediments that comprise the stratigraphic profile overlying bedrock beneath the Lake Simcoe region. The distribution of surficial soil types in and around the Site are shown on **Figure 6**. The surficial soils at the Site are predominantly characterized by sand deposits. The deposits and stratigraphy for the regional area are described in a series of papers and posters prepared by the Geological Survey of Canada under the direction of Dr. David Sharpe.

The stratigraphic profile beneath Oak Ridges Moraine area typically includes the following layers, from youngest to oldest:

1) Recent deposits.
2) Oak Ridges Moraine (ORM) Sediments
3) Newmarket Till.
4) Thorncliffe Formation.
5) Sunnybrook Drift.
6) Scarborough Formation.
7) Don Formation.
8) York Till.
9) Bedrock.

The Site area is located within the ORM and some of these deposits may not all be observed at this location.

The ORM sediments are a complex package of granular sediments deposited in the meltwater at the later stages of the last glacial period, which serve as the topographic and groundwater divide between Lake Simcoe and Lake Ontario. These deposits generally become finer, and typically become thinner and eventually pinch out away from the original outlets of meltwater. Certain areas with the ORM sediments may be overlain by a thin layer of Halton Till.

The Newmarket Till represents a regionally extensive stratum that is associated with the most recent period of glaciation. This till is typically dense to very hard and sandy to silty in texture with relatively low gravel content.

The stratigraphic layers between the Newmarket Till and the underlying bedrock are commonly grouped as the Lower Sediments. The Lower Sediments are considered to have been formed by similar cycles of earlier glacial advances and retreats and associated meltwater events that resulted in the deposition of the Newmarket Till and Oak Ridges Moraine sediments. Five (5) stratigraphic layers that constitute the Lower Sediments are described below, although not all are interpreted to occur below the study area.

- The Thorncliffe Formation is a complex of stratified glaciofluvial and glaciolacustrine deposits. The texture of the Thorncliffe Formation is highly variable and is best described as fine-grained, with interbedded coarse-grained material capable of yielding notable amounts of water.
- The Sunnybrook Drift is a fine-grained material deposited in glacial and proglacial lacustrine depositional environments (diamicton). The advance of the ice sheet blocked the main drainage from the regional basin, which caused water levels to rise and form a deep lacustrine environment with deposits including varved clays.
- The Scarborough Formation is a coarsening upward sequence of sediment that ranges from clay/silt rythmites (fine-grained) to channelized cross-bedded sands (coarse-grained). The coarser fractions of this delta are a potential source of groundwater.
- The Don Formation is only rarely preserved within southern Ontario and consists of alternating beds of fossiliferous sand and mud.
- The York Till was deposited immediately overlying the bedrock by the preceding Illinoian glaciation. This till occurs only sporadically within the study area and is believed to be preserved in lows upon the bedrock surface. The till is dark grey with a sandy silt matrix and includes clusters of the underlying shale.

The bedrock in the study area is mapped as shale/limestone/dolostone/siltstone of the Blue Mountain Formation (Brennand et al., 1998) as illustrated on **Figure 7**. The depth to bedrock is estimated to be between 80 to 85 metres below ground surface, based on bedrock topography mapping and topographic mapping of the ground surface (Department of Energy, Mines and Resources, 1985). A map of overburden thickness is provided in **Figure 8**. The thickness of overburden is typically greatest along the crest of the Oak Ridges Moraine or in areas where there are topographic lows in the underlying bedrock surface.

2.4 REGIONAL HYDROGEOLOGY

The movement of groundwater through the subsurface is controlled by the hydraulic gradients and the relative distribution of coarse and fine-grained sediments. In general, water will move laterally through coarse-grained sediments (sands and gravels) and vertically through fine-grained sediments (silts and clays). As such, the geologic units are typically grouped into hydrostratigraphic units that reflect the capacity of the geologic units to transmit water. Hydrostratigraphic units are considered to be either aquifers (with good capacity to transmit water) or aquitards (which typically impede transmission of water). Ultimately the distribution and interconnection of aquifers and aquitards are responsible for observed groundwater movement.

Earthfx Inc. (2006) grouped the regional stratigraphic profile into a seven-layer hydrostratigraphic profile as follows:

1) Recent Deposits
2) Oak Ridges Aquifer Complex (ORAC).
3) Newmarket Aquitard.

4) Thorncliffe Aquifer Complex.
5) Sunnybrook Aquitard.
6) Scarborough Aquifer Complex.
7) Bedrock.

The Oak Ridges Aquifer Complex is a regional aquifer system in Ontario that corresponds to the area where the Oak Ridges Sediments are deposited. The aquifer is a significant source of groundwater for domestic, commercial, industrial, institutional, agricultural, and municipal water supplies. The ORAC provides baseflow to the headwaters of creeks and rivers where the Halton Aquitard is absent. The shallow water table will typically be observed within this layer. The ORAC is present at the Site.

The Newmarket Aquitard consists of the Newmarket Till and low permeability deposits that are known to infill the erosional channels. The Newmarket Aquitard is considered to be a leaky confining layer that provides protection from contamination to aquifers within the underlying hydrostratigraphic units. The Newmarket Aquitard may be present at ground surface beneath the southern part of the Site.

The Thorncliffe Aquifer Complex consists of fine to coarse-grained sediments of the Thorncliffe Formation. Local sand and gravel deposits within the Thorncliffe Aquifer Complex provide high yield wells. Groundwater in this layer is typically under pressure and in areas to the south of Aurora, the groundwater is under artesian pressure which can result in flowing wells.

The Sunnybrook Aquitard separates the Thorncliffe and Scarborough Aquifer Complexes. This aquitard demonstrates low permeability, provides some resistance to vertical groundwater movement, and protects the underlying aquifer from potential contaminant movement.

The Scarborough Aquifer Complex consists of fine to coarse-grained sediments associated with the Scarborough Formation. In general, these sediments tend to be coarse-grained and thicker where they fill topographic lows and valleys in the underlying bedrock surface. Groundwater within the Scarborough Aquifer Complex is typically under pressure, but only local artesian conditions occur. Locally, the Scarborough Aquifer Complex produces high well yields suitable for municipal or commercial wells. Due to its depth and presence of shallower aquifers, the Scarborough Aquifer Complex is not exploited extensively for private water supplies.

2.4.1 REGIONAL GROUNDWATER MOVEMENT

In general terms, precipitation infiltrates vertically into the surficial sand/gravel soil units. Groundwater will primarily move downward to the water table within the upper aquifer or aquitard unit. Groundwater will then tend to flow up or down through the aquitard units and laterally within the aquifers. Groundwater flow patterns can be influenced by established watercourses where there is potential for groundwater discharge to supply baseflow into the watercourses. The rate of groundwater discharge is controlled by the relative permeability of the recent deposits at the base of the streams. Discharge as baseflow is typically low through fine-grained base soils and higher where the streams have eroded down into coarser aquifers.

The horizontal groundwater movement through the subsurface aquifers tends to reflect the ground surface topography and the presence of stream channels.

3 WORK PERFORMED

The work program for the Hydrogeological Assessment and Water Balance Study included the following activities:

1) Description of the natural Site conditions: surface features, surface topography, soil types and stratigraphy.
2) Identification of current users of groundwater within 500 m of the subject property through the review of the Ministry of Environment and Climate Change (MOECC) Water Well Information System.
3) Installation of six (6) groundwater monitoring wells at various locations throughout the Site.
4) Monitoring of groundwater quality and elevations in the monitoring well network.

5) Single-well response tests on the six (6) monitoring wells to determine the relative horizontal hydraulic conductivity of saturated soils adjacent to the well screen.
6) Preparation of an annual climatic water budget and Site-specific water balance for Pre and Post-Development conditions.

3.1 BACKGROUND REVIEW OF GEOLOGICAL CONDITIONS

The geologic conditions beneath the proposed development were reviewed using published map sources, records from work on adjacent properties, and the WWIS database as maintained by the MOECC.

Water well records within a 500-metre radius of the Site were reviewed to obtain information on existing wells and to provide information on the geology of the area. A summary of the well record search is provided in Table B-1, **Appendix B** and water well record locations are plotted on **Figure 9**.

In addition, stratigraphy information from WSP's previous Hydrogeological Assessment (WSP, 2016) for 5452 Lakeshore Road was incorporated as part of the background review. Six (6) monitoring wells (MW15-1 to MW15-6) and six (6) test pits (TP14-01 to TP14-06) were completed as part of the previous Hydrogeological Assessment for 5452 Lakeshore Road. The locations of these boreholes and test pits are shown on **Figure 2**.

3.2 BOREHOLE DRILLING AND TEST PIT EXCAVATION

Ontario One Call was consulted to identify where existing public utilities entered the Site boundaries prior to initiating on-site activities. In addition, given that the Site is a private property, WSP retained the services of a private utility locator to clear the specific borehole and test pit locations from potential interference with private utilities.

The borehole drilling and monitoring well installation was carried out between May 30 and June 3, 2016 while the test pits were excavated on June 27, 2016, after the receipt of utility clearances. Drilling and excavation services were provided by Strata Soil Sampling of Mount Albert, Ontario and Burns Brothers Excavating of Stouffville, Ontario, respectively. A Geoprobe® model 782DT direct push rig was used for borehole drilling and monitoring well installation. A WSP technician was on-site to supervise the drilling, monitor installation and test pit activities.

The borehole and test pit locations are shown on **Figure 2**. The drilling program consisted of installing six (6) monitoring wells, designated as OW16-1 to OW16-6, to depths ranging from 5.2 m and 6.1 m below ground surface (bgs). An additional five (5) boreholes, designated as BH16-1 to BH16-5, were advanced to a depth of 8.1m bgs in support of the Geotechnical Investigation. Four (4) test pits, designated TP16-1 to TP16-4 were also excavated to depths ranging from 3.00 m to 3.20 m bgs. Records of the observed stratigraphy in the boreholes and test pits are provided in **Appendix C**.

3.3 MONITORING WELL INSTALLATION

The positions of the monitoring well screens in OW16-1 to OW16-6 were determined based on the observed soil profile and were targeted to correspond with identified sandy or wet and more permeable layers of the soil within the upper 7 m of ground surface. This depth was determined based on observations from past investigations in the area.

The monitoring wells were constructed upon reaching the target depth in the direct push boreholes. The wells were constructed in individual boreholes using 52 mm (2 inch) inside nominal diameter (ID), schedule 40, environmental grade PVC riser pipes and well screens. The well screens are factory slotted with No. 10 slot size, and are 3.05 m (10 feet) long. The wells were constructed to leave the PVC riser pipe between 0.84 and 0.88 m above ground surface.

The borehole annulus around the well screens were filled with No. 2 silica sand to approximately 0.6 m above the top of the well screen to provide a filter pack. A low-permeability seal was placed above the filter pack using bentonite pellets. A 1.5 m long, lockable, steel, protective casing was placed over the PVC riser pipe.

The monitoring well installations were completed to O. Reg. 903 standards and a well tag was submitted to the MOE by the licensed driller for each individual well. The monitoring well construction details are summarized in on borehole records provided in **Appendix C**.

3.4 GROUNDWATER LEVEL MEASUREMENTS

Observations during the drilling OW16-1 to OW16-6 confirmed that the water table is relatively shallow beneath the Site. The well screen intervals were placed at depth in stratigraphic positions that were considered to have potential to yield water.

The depth to groundwater was measured in monitoring wells and were observed in the test pit excavations. Static groundwater elevations were estimated by subtracting the measured water depth from the determined reference elevation at each monitoring well. The groundwater elevations in OW16-1 to OW6-6 were measured immediately after construction and in May and June 2016.

A bi-monthly monitoring program was implemented in June 2016 to record groundwater levels at the Site every two (2) months for a period of one year. The purpose of the bi-monthly monitoring program was to characterize seasonal variations in groundwater level and to determine the seasonal high groundwater level. In addition to recording water levels at wells installed as part of this investigation, water levels at the pre-existing wells from the original Hydrogeological Assessment for 5452 Lakeshore Road (WSP, 2016) were recorded. A summary of groundwater elevations is provided in Table D-1 of **Appendix D**.

3.5 WELL DEVELOPMENT

The monitoring wells were developed after installation to remove silt and sediment. The purpose of development is to ensure that representative formation water is obtained for water quality analysis.

The volume of water in the well casing was estimated based on the static groundwater level measurement. A dedicated Waterra™ Inertial pump was installed in the monitoring well and used to remove water from the well. Standing water was observed in all six (6) monitoring wells.

3.6 SINGLE-WELL HYDRAULIC RESPONSE TEST

Single well hydraulic response tests were performed to estimate the saturated hydraulic conductivity of the soil materials adjacent to the well screens in the six (6) monitoring wells on June 30, 2016. For this program, the single well hydraulic response test consisted of monitoring the recovery of the water level to the static position after pumping the monitoring well for a specified period of time. One (1) test was performed on each well. Prior to the start of the tests, the static water level was measured in each monitoring well. For all single-well hydraulic response tests, the water level within the monitoring wells returned to the static level within a few minutes.

The hydraulic conductivity was estimated from the data using the methods of Hvorslev (1951). The computer program AquiferTest™ was used to assist in estimating hydraulic conductivity results. Analysis results are included in **Appendix E**.

3.7 WATER QUALITY

Representative samples of groundwater were collected from the six (6) monitoring wells on June 30, 2016. A duplicate sample was taken for QA/QC purposes. Samples were collected via the dedicated Waterra™ inertial pump placed in the monitoring well. Field measurements of temperature, electrical conductivity, and pH were recorded at the time of sample collection. The water samples were collected in sample bottles prepared by and provided by ALS Environmental Laboratories (ALS) located in Waterloo, Ontario.

The water quality samples were submitted to determine concentrations of:

- General water quality parameters (major cations, major anions, pH)
- Dissolved Metals
- Dissolved Organic Carbon
- Nutrients.

The Certificates of Analysis provided by ALS are provided in **Appendix F**.

The water quality results were reviewed with respect to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition for All Types of Property Use (Coarse Textured Soil), hereinto referred to as the "MOECC Table 2 SCS", as outlined in the Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (April 15, 2011). This table was selected as it provides a conservative assessment of potential water quality concerns in groundwater as the area surrounding the Site is serviced by municipal water supplies.

3.8 WATER BUDGET ANALYSIS

A Water Budget provides an accounting of the water inputs and water outputs within a defined area. In this case, the area of the proposed development is used to estimate the water budgets in the existing condition (Pre-Development) and in the future condition (Post-Development).

The basic assumption of a water budget analysis is that there is a balance between water inputs and outputs, unless there is a clear understanding that water is being removed from storage within the system. The water budget is typically represented in a simple form as:

Water In = Water Out

P + EI = ET + IR + RO + EO

Where:

P	=	Precipitation
EI	=	External Inputs (including run-on, irrigation, and vertical/lateral transfers)
ET	=	Evapotranspiration
IR	=	Infiltration Recharge
RO	=	Runoff
EO	=	External Outputs (including water taking, and vertical/lateral transfers)

In more complex scenarios, lateral inputs through groundwater and surface water, movement between subsurface aquifer layers, and removal from storage can also be considered.

The objectives of the Water Budget Analysis are to:

a) quantify the water budget equation for the existing conditions;
b) quantify the water budget equation for proposed future conditions; and
c) illustrate that there is either no significant change (i.e. a water balance) between the existing or future conditions, or that mitigation methods can be employed to minimize the estimated change.

The Water Budget Analysis was completed in four main steps:

Step 1) Analysis of Climatic Data;

Step 2) Pre-Development Water Budget;

Step 3) Post-Development Water Budget; and

Step 4) Post-Development Water Budget (including mitigation).

A previous iteration of the Water Balance Study identified potential infiltration deficits that were subsequently addressed by the current stormwater management plan. In this case, Steps 3 and 4 were combined. The water budget analysis has been completed using methods outlined in "Hydrogeological Technical Information Requirements for Land Development Applications" (MOECC, 1995).

3.8.1 ANALYSIS OF CLIMATE DATA

Climate data available from on-line resources maintained by the Meteorological Service of Canada (Environmental Canada) were obtained and analyzed to determine the appropriate values for annual average precipitation and evapotranspiration. The surplus left over after subtraction of the evapotranspiration from the average precipitation is considered to represent the quantity of water available for infiltration and runoff under existing conditions.

Climate data was obtained for the King Smoke Tree Climate Station for the period from 1981 until 2010. These data are provided in Table G-1, **Appendix G**. Mean monthly temperatures were calculated by averaging mean monthly minimum and maximum temperatures. Temperature data were derived from the 30 year (1981-2010) climate data summaries.

The Thornthwaite-Mather method was used to estimate potential and actual evapotranspiration on a monthly basis. The Thornthwaite-Mather method is based on an empirical relationship between potential evapotranspiration and mean air temperature. The method also takes into account the water holding capacity for the soil to compute the actual evapotranspiration and the resulting moisture surplus that is available for infiltration and runoff.

The water holding capacity of the soil depends on two different factors – the soil type and structure, and the type of vegetation growing on the surface. Different types of soil hold different amounts of moisture storage capacity, while different species of vegetation will send roots into the soil to different depths and therefore retain varying amounts of moisture. The water holding capacity for each soil type/vegetation type combination found on the Site was determined from the Environmental Design Criteria of the Storm Water Management Planning and Design Manual published by the Ontario Ministry of the Environment and Climate Change ("MOECC") in 2003.

The monthly estimates were used to calculate an annual average for precipitation, potential evapotranspiration, actual evapotranspiration, and available moisture surplus for each combination of soil and vegetation type found on-site. The moisture surplus represents the quantity of water available for infiltration and runoff on an annual average basis. Tables that document the details of the Thornthwaite-Mather analysis for the combinations of soil type and land use are provided in **Appendix G.**

3.8.2 PRE-DEVELOPMENT WATER BUDGET

The Pre-Development Water Budget was estimated using the approach recommended in Table 2 of the "Hydrogeological Technical Information Requirements for Land Development Applications" (MOECC, 1995). The steps taken to estimate the Pre-Development Water Budget included:

1) Identify sensitive features and to observe existing topography, soil types, and other controls on infiltration and runoff.
2) Delineating drainage catchments and sub-catchments based on observed drainage outlets and physical characteristics as described below.
3) Estimating the quantities of infiltration and runoff for each of the sub-catchment areas and preparing summary estimates for catchments related to identified drainage outlets and for the proposed development area.

The drainage catchments and sub-catchments were defined by considering the following factors:

- Existing elevations;
- Existing property boundaries;
- Post-development features and property boundaries;

- Natural topographical features;
- Slope ratio; and
- Land cover, and
- Land use.

The sub-catchments defined for the Pre-Development Water Budget also considered the proposed development areas and future drainage considerations for the proposed development. This was incorporated into the analysis to be able to demonstrate changes in drainage to the identified outlets and infiltration beneath the development area. The defined sub-catchments for the Pre-Development Water Budget are shown on **Figure 11** and in Table H-1, **Appendix H**.

The Infiltration Factor for each Pre-Development sub-catchment was estimated by adding the sub-factors for topography, soil type, and land cover as recommended in the MOECC methodology. A geographic information system (GIS) was used to evaluate the topography, soil type and land use for each of the Pre-Development, Current Condition, and Post-Development scenarios and to generate a set of sub-catchments that can be used in analysis of each scenario. Section 6 provides a characterization of the Site in terms of the topography, soil type, and land use as input into the water budget analysis. The calculated infiltration factor for each catchment was reviewed and updated manually, as a confirmation that they reflect actual conditions. Assumptions applied to the Pre-Development water budget scenario are described in Section 6.2.

The volume of Pre-Development Infiltration was estimated as the product of [sub-catchment area] x [moisture surplus] x [Infiltration factor]. The Pre-Development Runoff was estimated by subtracting the volume of infiltration from the total volume of moisture surplus for each sub-catchment. A detailed table to document the calculations of the Pre-development Water Budget is provided in **Appendix H**.

3.8.3 POST-DEVELOPMENT WATER BUDGET

The Post-Development Water Budget was estimated using a similar approach as outlined for the Pre-Development case. The proposed development plan and future drainage plan were used to establish new drainage sub-catchments that relate to the outlets identified in the Pre-Development case. Within each drainage sub-catchment, the area of pervious soils and impervious development (roads, driveways, amenities, and roofs) were estimated based on the Site and grading plans as provided by Sabourin Kimble & Associates Ltd.

For the pervious areas, the quantity of infiltration was calculated using the [pervious area] x [precipitation surplus] x [Infiltration Factor]. The Infiltration Factors were reviewed to correspond to the Post-Development conditions. The runoff for the pervious areas was estimated by subtracting the volume of infiltration from the total volume of precipitation surplus for the pervious area in each sub-catchment.

The volume of runoff from the impervious surfaces was estimated using the area of impervious surfaces and the volume of precipitation. A factor of 10% was considered to represent some evaporation in the course of runoff. This value is consistent with assumptions made on adjacent lands.

The Site will be municipally serviced for water and sewage. The Post-Development Water Budget reflects this.

The Post-Development Water Budget was compared to the Pre-Development Water Budget to evaluate the effects of the proposed development. A previous iteration of the Water Balance Study identified potential infiltration deficits that were subsequently addressed by the current stormwater management plan. The Post-Development Water Budget takes into account mitigation measures used to address the infiltration deficit that would exist if no mitigation measures were incorporated. As such, the Post-Development Water Budget did not require subsequent re-estimation to account for mitigation measures.

Details of the Post-Development Water Budget calculations are provided in **Appendix I**.

4 OBSERVATIONS

The information obtained during previous site studies was reviewed and analyzed to characterize the soil profile and the groundwater system at the Site.

4.1 SOIL PROFILE

Based on the stratigraphy observed during the borehole drilling and test pit excavations, the Site is predominantly underlain by alternating layers of sand and silt with isolated layers of fill, silty sand/sandy silt and clayey silt observed in certain boreholes.

A layer of topsoil ranging from 130 – 360 mm in depth was observed in OW1, OW2, OW5, OW6 and BH16-1 to BH16-5. Topsoil was not observed in OW3 and OW5. The topsoil was underlain by different soil types depending on location and these included: sand, sandy silt, silty sand and clayey silt. Layers of silty sand fill were also identified in BH16-1 and BH16-3 immediately below the topsoil. The first layer of stratigraphy typically extended to a depth of 1.5 – 1.8 m bgs. Below this level, the stratigraphy predominantly consisted of alternating layers of sand and silt of combinations of both down to a maximum depth of 8.1 m bgs.

The stratigraphy observed within the test pits was generally consistent with stratigraphy observed within the boreholes. A layer of topsoil ranging from 150 mm to 300 m was observed within all test pits. Silty sand and fine to medium sand were identified in TP16-1 and TP16-2. A layer of gravelly coarse sand was observed in TP16-2 between 0.70 m and 1.00 m bgs. A layer of sand underlay the topsoil in TP16-3 which was followed by silt. The stratigraphy at TP16-4 differed slightly from the rest of the test pits. The topsoil at this location was underlain by a layer of silty sand followed by layers of clayey silt and silt and clay. A layer of sand extending from 2.50 m bgs to borehole termination underlay the silt and clay in TP16-4.

The stratigraphy observed during the borehole and test pit investigations is generally consistent with the stratigraphy information reported in the water well records obtained through the MOECC borehole logs. Table B-1 in **Appendix B** provides a list of water well records. Borehole and test pit logs are provided in **Appendix C**.

4.2 GROUNDWATER ELEVATIONS

Upon completion of drilling, the water level within each monitoring well was observed and recorded. The water levels ranged from 0.7 m bgs to 3.0 m bgs on May 30 and 31, 2018. Groundwater levels at the Site were subsequently monitored on a bi-monthly basis (every two months) for a period of one year during 2016 and 2017. The results of the monitoring program indicate that that groundwater levels at the Site fluctuate from a seasonal high of 0.2 m bgs (April 2017) to a seasonal low of 4.57 m bgs (October 2016). The seasonal high was observed at OW16-1 which is located in the area of the realigned drainage channel.

Figure 10 presents a map illustrating Groundwater Elevations. The inferred groundwater flow direction based on April 2017 groundwater elevations is to the east across the Site. This inferred flow pattern is somewhat inconsistent with the topography observed at the Site. The monitoring well locations were chosen near the corners of the property and this may reduce the influence of topography and surface water drainage patterns in the center of the Site.

The Site's location to the north of the regional groundwater divide indicates that the local groundwater flow feeds the regional groundwater system to the north.

4.3 WATER USE

The three (3) residential dwellings located on the Site obtain water from municipal services and have private individual sewage systems. The proposed development will be municipally serviced for water and sewage.

4.3.1 MOECC WATER WELL SEARCH

A list of MOECC water well records within 500 m of the Site is provided in **Appendix B**. **Figure 9** illustrates the locations of wells located within 500 m of the Site property as per the MOECC WWIS. The well record database includes one hundred and seventy-two (172) water well records within a 500-metre radius of the Site. Of the well records, one hundred and nineteen (119) are water supply wells for domestic, irrigation, livestock, commercial and public purposes, twenty-three (23) are test holes or monitoring wells, twenty-six (26) are abandoned for other purposes, and five (5) are for other purposes.

Of the one hundred and nineteen (119) water supply wells, fifty-four (54) draw water from sand lenses at a depth less than 20 m, fifty-four (54) draw water from sand lenses at depths ranging between 20 and 40 m, and seven (7) draw water from silt, clay and sand lenses greater than 40 m. It is our understanding that this area is now municipally serviced for water. As such, it is likely that many of the domestic water supply wells have been removed from active use.

It is possible that the MOECC WWIS database includes other wells that are incorrectly located and there may be some wells for which well records are not on file at the MOECC.

4.4 SINGLE-WELL HYDRAULIC RESPONSE TESTS

The hydraulic conductivity estimates obtained from the monitoring wells for the single well hydraulic response tests ranged from 1.17 $x10^{-4}$ m/sec to 1.47 $x10^{-5}$ m/sec for the six (6) on-site monitoring wells. The highest and lowest hydraulic conductivity values were observed at OW16-3 and OW16-2 which are located in the southeast corner and central portion of the Site, respectively. These results are consistent with the observed soil descriptions of medium to fine sand in which the monitoring wells are screened.

The results of the single-well hydraulic response test are summarized in **Appendix E**.

4.5 WATER QUALITY

The results of water quality testing at the six (6) on-site monitoring wells are summarized in **Table 2**. The water quality analysis reports as provided by ALS are presented in **Appendix F**.

The concentrations of the parameters tested are less than the MOECC Table 2 SCS values.

5 WATER BUDGET ANALYSIS

The Water Budget Analysis is presented in the following sections. Section 5.1 describes the analysis of historical climate data to estimate annual average precipitation and potential evapotranspiration. Section 5.2 describes the Pre-Development Water Budget. Section 5.3 Describes the Post-Development Water Budget. Section 5.4 revisits the Post-Development Water Budget to consider the potential benefits of identified mitigation opportunities.

5.1 CLIMATE-BASED WATER BUDGET

The climate-based water budget calculations are included in Tables G-1 to G-4 (**Appendix G**) and are summarized in **Table 3**. The average annual precipitation for the thirty year normal data between 1981 and 2010 is about 857.7 mm/m^2/year (mm/year). The annual potential evapotranspiration is calculated in Table G-1 at 584.0 mm/year. This equates to a potential water surplus of 369.8 mm/year and a soil moisture deficit of 96.1 mm/year. Thus the net annual water surplus based on potential evapotranspiration is 273.7 mm/year.

The calculations were expanded to include the water holding capacity of the soil as presented in Tables G-2 to G-4. This will produce a total moisture surplus based on the calculated actual evapotranspiration. Four (4) combinations of soil type and vegetation type were identified on the Site property for the Pre-Development and Post-Development scenarios. The majority of the surficial soil at the site is considered to be silt loam. The land use classifications and the corresponding water holding capacities are:

- Silt Loam, Urban Lawn (125 mm/year);
- Silt Loam, Cultivated (200 mm/year);
- Silt Loam, Uncultivated (250 mm/year); and
- Silt Loam, Woodland (400 mm/year).

Consideration of these factors produces a range of net annual moisture surplus between 283.8 and 301.8 mm/year as summarized in **Table 3**. The soils with higher water holding capacity effectively increase the water removed as evapotranspiration.

The calculated moisture surplus occurs during the winter, spring and fall months, and a water deficit occurs during the summer months. Much of the water surplus in the winter accumulates as snow. Snowmelt during the spring results in the runoff or infiltration of precipitation that is effectively equivalent to the winter and spring water surplus.

5.2 PRE-DEVELOPMENT WATER BUDGET

The Pre-Development Water Budget was developed based on topographic information provided by Ontario Base Mapping and the Site Grading Plan provided by Sabourin Kimble & Associates Ltd.

5.2.1 PRE-DEVELOPMENT CATCHMENTS

Figure 11 illustrates the delineation of drainage catchments and sub-catchments for the Site. The Site is comprised of two (2) internal (on-site) and three (3) external (off-site) catchment areas. The catchment areas have been further subdivided. The drainage sub-catchments are based on similar slopes, soils, and vegetation/land use. The drainage sub-catchments also include consideration of post-development drainage boundaries so that changes to drainage areas can be evaluated for the post-development conditions. The outlets for drainage of the identified Pre-Development catchments are as follows:

On-Site Catchments:

- **Pre-Development On-Site Catchment A:** Drains to the existing drainage channel which flows south to the existing wetland. Runoff in the wetland drains off-site through the southern property boundary through a culvert underneath Lakeshore Road.
- **Pre-Development On-Site Catchment B:** Drains off-site to the south via overland flow.

Off-Site Catchment:

- **Pre-Development Off-Site Catchment C:** Drains to on-site sub-catchment A-774 and is directed to the existing drainage channel which flows south to the existing wetland. Runoff in the wetland drains off-site through the southern property boundary through a culvert underneath Lakeshore Road.
- **Pre-Development Off-Site Catchment D:** Drains to on-site sub-catchment A-113 and is directed to the existing drainage channel which flows south to the existing wetland. Runoff in the wetland drains off-site through the southern property boundary through a culvert underneath Lakeshore Road.
- **Pre-Development Off-Site Catchment E:** Drains to on-site sub-catchment A-800 and is directed to the existing drainage channel which flows south to the existing wetland. Runoff in the wetland drains off-site through the southern property boundary through a culvert underneath Lakeshore Road.

Table H-1 (**Appendix H**) provides a summary of the data attributes used to estimate the infiltration factor for each pre-development catchment and sub-catchment. The infiltration factor determined the proportion of the annual water surplus that would infiltrate or runoff within each sub-catchment.

5.2.2 PRE-DEVELOPMENT ANALYSIS

Properties associated with area, slope, soil type, and land cover were analyzed and assigned to each Pre-Development sub-catchment. The values assigned to each Pre-Development sub-catchment are provided in Table H-1. These values were used to estimate an Infiltration Factor. The Infiltration Factors were reviewed to confirm that they are appropriate and adjusted if necessary. Existing paved areas were assumed to be impervious and to generate runoff equivalent to the precipitation volume minus a 10% evaporative loss. Gravel areas were assumed to have a surplus equivalent to that of urban lawn areas.

Table H-1 includes the overall analysis of the total Study Area's infiltration and runoff. Table H-1 also documents the calculation of volumes associated with input and output parameters for the Pre-Development conditions. These volumes are also expressed in terms of the number of mm of water within each sub-catchment area.

A summary of the Pre-Development water budget calculations is provided in **Table 4**. These values will be used to assess the changes that proposed development will create relative to the pre-development conditions.

5.2.3 PRE-DEVELOPMENT INFILTRATION

The estimated total infiltration for the Site is 61,016 m^3/yr or an equivalent of 226.7 mm/year (mm/m^2/yr). The calculated infiltration represents approximately 26.4% of the annual precipitation (857.7 mm/yr) and 74.7% of the estimated annual water surplus (303.5 mm/yr).

5.2.4 PRE-DEVELOPMENT RUNOFF

The total runoff for the Site is 20,663 m^3/yr or an equivalent of 76.8 mm/year. The calculated runoff represents approximately 9.0% of the annual precipitation (857.7 mm/yr) and 25.3% of the estimated annual water surplus (303.5 mm/yr).

5.3 WATER BUDGET– POST-DEVELOPMENT CONDITIONS

The Post-Development Water Budget was based on the proposed concept plan presented as **Figure 12**. The Post-Development scenario introduces 141 residential dwellings, new driveway and roadway areas, and three (3) StormTech infiltration chambers.

5.3.1 POST-DEVELOPMENT CATCHMENTS

Under post-development conditions, the Site is comprised of ten (10) on-site catchments and three (3) off-site catchments. Sub-catchment delineations in Pre-Development conditions were maintained for the Post-Development analysis.

Under Post-Development conditions, the drainage ditch that is present under pre-development conditions is maintained through the wooded area. In addition, a new meandering drainage channel that drains off-site to the southeast is introduced.

Runoff from within the developed areas of the Site drains to one of the three (3) StormTech infiltration chambers via the on-site storm sewer system or directly to the on-site channel via overland flow and the on-site storm sewer system. Overflow from the StormTech infiltration chambers is released through a series of headwalls throughout the

Site. Runoff discharged through the headwalls drains to the on-site channel which flows off-site in the southeast corner. The outlets for each Catchment are summarized below:

On-Site Catchments:

- **Post-Development On-Site Catchment 201-A:** Drains to a series of rear lot catch basins (RLCB) via overland flow which connect to the on-site sewer system in Catchment 201b. Runoff collected in the storm sewer is directed to a storage pipe underneath the roadway in Catchment 201-b for quantity control (i.e. no infiltration), and is subsequently released to an oil-grit separator (OGS) and sand filter plunge pool that connects to the existing ditch in Catchment 205 and on-site channel. The channel flows connects to the existing wetland adjacent to the southern property boundary which discharges off-site through the southern property boundary via a culvert underneath Lakeshore Road.
- **Post-Development On-Site Catchment 201-B:** Drains to series of catch basins and manholes located in the roadway of Catchment 201b. Runoff collected in the storm sewer is directed to a storage pipe underneath the roadway in Catchment 201-b for quantity control (i.e. no infiltration), and is subsequently released to an oil-grit separator (OGS) and sand filter plunge pool that connects to the existing ditch in Catchment 205 and on-site channel. The channel connects to the existing wetland adjacent to the southern property boundary which discharges off-site through the southern property boundary via a culvert underneath Lakeshore Road.
- **Post-Development On-Site Catchment 202:** Twenty-three (23) of the lots within the Catchment contribute 75% of their roof runoff to rear yard bio-swales (which eventually drain to the storm sewer) and 25% contribute directly to the storm sewer. Seven (7) of the lots within the catchment contribute 100% of their roof runoff to the storm sewer (i.e. directly connected) while the remaining four (4) drain to the storm sewer system via overland flow. All runoff collected within the storm sewer is directed a StormTech infiltration chamber (StormTech 4) located in sub-catchment 208-650 for infiltration. Any overflow is released through a headwall which drains to the on-site channel. The channel connects to the existing wetland adjacent to the southern property boundary which discharges off-site through the southern property boundary via a culvert underneath Lakeshore Road.
- **Post-Development On-Site Catchment 203:** Drains to the on-site storm sewers via direct connection and overland flow. Runoff collected in the storm sewer is directed to a StormTech infiltration chamber underneath sub-catchment 203-592 and 205-649 for infiltration. Any overflow is released through a headwall which drains to the on-site channel. The channel connects to the existing wetland adjacent to the southern property boundary which discharges off-site through the southern property boundary via a culvert underneath Lakeshore Road. .
- **Post-Development On-Site Catchment 204-A:** Drains to the on-site storm sewers via direct connection, rear yard bio-swale or overland flow. Runoff collected in the storm sewer is directed to a StormTech infiltration chamber underneath sub-catchment 208-623 for infiltration. Any overflow is released through a headwall which drains to the on-site channel. The channel connects to the existing wetland adjacent to the southern property boundary which discharges off-site through the southern property boundary via a culvert underneath Lakeshore Road.
- **Post-Development On-Site Catchment 204-B:** Drains to the on-site storm sewers via RLCBs or direct connection. Runoff collected in the storm sewer is directed to a StormTech infiltration chamber underneath sub-catchment 208-623 for infiltration. Any overflow is released through a headwall which drains to the on-site channel. The channel connects to the existing wetland adjacent to the southern property boundary which discharges off-site through the southern property boundary via a culvert underneath Lakeshore Road.
- **Post-Development On-Site Catchment 205:** Drains to the on-site channel which connects to the existing wetland adjacent to the southern property boundary and discharges off-site through the southern property boundary via a culvert underneath Lakeshore Road.
- **Post-Development On-Site Catchment 206:** Drains to a series of RLCBs which connect to the storm sewer in Catchment 203. Refer to Catchment 203 (above) for further drainage information.
- **Post-Development On-Site Catchment 207:** Drains to a series of RLCBs at the east side of Catchment 204b which connect to the storm sewer. Refer to Catchment 204b (above) for further drainage information.
- **Post-Development On-Site Catchment 208:** Drains to the on-site channel which connects to the existing wetland. Runoff discharges off-site through the southern property boundary via a culvert underneath Lakeshore Road.

Off-Site Catchment(s):

- **Post-Development Off-Site Catchment 209:** Drains to the on-site channel in Catchment 208 which connects to the existing wetland. Runoff discharges off-site through the southern property boundary via a culvert underneath Lakeshore Road.
- **Post-Development Off-Site Catchment 210:** Drains to the on-site drainage channel in Catchment 205 which connects to the existing wetland. Runoff discharges off-site through the southern property boundary via a culvert underneath Lakeshore Road.
- **Post-Development Off-Site Catchment 211:** Drains to the on-site channel in Catchment 208 which connects to the existing wetland. Runoff discharges off-site through the southern property boundary via a culvert underneath Lakeshore Road.

Runoff from the developed areas in on-site catchment areas will be affected by the creation of buildings and driveway areas.

5.3.2 POST-DEVELOPMENT ANALYSIS

Properties associated with area, slope, soil type, and land cover were analyzed and assigned to each Post-Development sub-catchment. The values assigned to each Post-Development sub-catchment are provided in Table I-1 (**Appendix I**). These values were used to estimate an Infiltration Factor. The Infiltration Factors were reviewed to confirm that they are appropriate and adjusted if necessary.

Table I-1 includes the overall analysis of the total Study Area's infiltration and runoff. Table I-1 also documents the calculation of volumes associated with input and output parameters for the Post-Development condition. These volumes are also expressed in terms of the number of mm of water within each sub-catchment area. The volumes are summed by catchment and for the total property area.

Assumptions incorporated into the water budget for the Post-Development scenario included:

1) Impervious surfaces (roads, driveways and buildings) are assumed to have a 10% evaporative loss.
2) Runoff is assumed to be conveyed directly to the outlets and not infiltrated.
3) Runoff from external sub-catchments is released to the closest on-site sub-catchment, unless otherwise stated.
4) The sand filter plunge pool does not infiltrate runoff that it receives.

A summary of the Post-Development water budget calculations is provided in **Table 4**.

5.3.3 POST-DEVELOPMENT INFILTRATION

In the post-development condition, the Site will contain approximately 65,881 m^2 of impervious surfaces (24.5% impervious). This would result in a net infiltration of 91,350 m^3/year or 339.4 mm/yr. Of the total infiltration, 47,067 m^3/yr infiltrates directly through pervious areas and 44,283 m^3/yr is runoff that infiltrates through the three (3) StormTech infiltration chambers. The net infiltration would reflect approximately 39.6% of the precipitation (857.7 mm/yr).

5.3.4 POST-DEVELOPMENT RUNOFF

The introduction of impervious surfaces will increase the total runoff from the developed area. The total runoff generated by the proposed development area is 65,621 m^3/yr or 243.8 mm/year, however, the on-site infiltration trenches will receive and infiltrate approximately 44,283 m^3/yr of this runoff which leads to a net runoff generation of 21,338 m^3/yr or 79.3 mm/yr. The total calculated Post-Development runoff represents approximately 9.2% of the annual precipitation (857.7 mm/yr).

5.3.5 COMPARISON WITH PRE-DEVELOPMENT

Table 4 provides a comparison of the water budget estimates for the Pre-Development and Post-Development cases with mitigation measures included. The total on-site infiltration is increased by approximately 50% or 30,334 m^3/yr. The introduction of additional impervious surfaces, with mitigation measures in place, increases total runoff by 3% or 675 m^3/yr.

The estimated runoff to the southeast is predicted to increase by 6% or 1,261 m^3/yr while the runoff that previously exited the Site in the southwest corner is reduced to 0 m^3/yr. By incorporating the three (3) StormTech infiltration chambers, approximately 67.5% of the runoff generated by the development is now infiltrated.

Runoff and infiltration are maintained in the external catchments as the land use changes for this Site occur on-site. Changes to runoff and infiltration will occur primarily on-site where residence and driveway are constructed and where site re-grading will occur.

The primary objective of the water balance mitigation analysis is to determine whether the annual infiltration to groundwater beneath the development area can be maintained. Given that an infiltration surplus of 30,334 m^3/yr exists under post-development conditions, no additional mitigation measures are required at this time.

5.4 WATER QUALITY

The water budget analysis must also consider potential changes to water quality that could be experienced in relation to the proposed development. The following sections describe the typical contaminants associated with the current and future land uses.

5.4.1 EXISTING CONDITIONS

The Site is currently vacant. As such, there are no activities present that could potentially impact groundwater quality at this time.

5.4.2 FUTURE CONDITIONS

The proposed Post-Development condition includes new driveway and roadway areas. These areas may be a future source of contamination to groundwater infiltration or surface water runoff by winter road de-icing agents. The most effective method of reducing potential impacts from salt or other winter road de-icing agents is to minimize the mass/volume of material applied through the use of Best Management Practices (BMPs). Any pervious areas used for winter snow storage may also become potential sources of contamination from winter road de-icing agents. BMPs recommend storing snow on impervious surfaces.

The driveway and roadway areas may also be a potential sources of petroleum hydrocarbons. These are typically contained in vehicles. The release of these substances will typically be the result of accidents. These potential releases could result in impairment of water quality by infiltrating into the groundwater. The risk of an accident occurring at the Site is low considering the only traffic will be the residents who occupy the building.

In pervious areas, soil-enrichment agents (i.e. fertilizers) and/or herbicides may also be a source of contamination. Application of these products should be minimized in order to reduce potential contamination.

6 POLICY AREAS

6.1 WELLHEAD PROTECTION AREAS

The Regional Municipality of York Official Plan (YROP) delineates Wellhead Protection Areas (WHPA) for protection of the groundwater supplies that are used to provide the primary source of potable drinking water to the communities of Aurora, Newmarket, and Ballantrae. In addition to the YROP, a Provincial initiative on Drinking Water Source Protection under *The Clean Water Act*, 2006 has been underway since 2006 to develop Drinking Water Source Protection Plans. The WHPA and vulnerability scores from the Assessment Report for the Lakes Simcoe and Couchiching Source Protection Area are provided as **Figure 13**.

The Site does not lie within delineated WHPA for wells in Aurora or Ballantrae.

Figure 14 illustrates that the entire Site lies within an area designated as WHPA-Q. Policies in the Lakes Simcoe and Couchiching Source Protection Plan for WHPA-Q require that recharge be maintained or enhanced. The water balance calculations presented above demonstrate that the development as proposed, with the stormwater management design as prepared by Sabourin Kimball & Associates Ltd. (2018) will enhance the pre-development infiltration and hence, complies with these policies.

6.2 SIGNIFICANT GROUNDWATER RECHARGE AREAS

Policies 6.36 DP through 6.40 DP of the Lake Simcoe Protection Plan address Significant Groundwater Recharge Areas (SGRA).

The Assessment Report for the Lakes Simcoe and Couchiching Source Protection Area contains mapping of Significant Groundwater Recharge Areas (SGRA). SGRA are regional areas that receive more than the average estimated recharge for a watershed area.

The majority of the Site is not within a mapped SGRA as shown on **Figure 14**. A small portion of the southeast corner of the site that has already been developed is shown to have high sensitivity.

The proposed development design provides for a very minor increase in net off-site run-off and enhancement of on-site recharge. This is not anticipated to negatively impact the features protected by the SGRA or ESGRA policy areas.

6.3 HIGHLY VULNERABLE AQUIFERS

The *Clean Water Act*, 2006, via the Source Protection Plans, and the Oak Ridges Moraine Conservation Plan contain policies that apply to Highly Vulnerable Aquifers. **Figure 15** presents the mapping of Highly Vulnerable Aquifers (HVA) from the Assessment Report for the Lakes Simcoe and Couchiching Source Protection Area. HVA are considered susceptible to contamination of groundwater from activities on the surface or shallow subsurface. The majority of the central and east part of the Site is mapped as a Highly Vulnerable Aquifer. The proposed land use as residential is expected to have minimal potential to affect underlying groundwater resources.

Figure 16 presents the mapping for highly vulnerable aquifers as protected by policies under the Oak Ridges Moraine Conservation Plan. The Site is mapped within an area of High Aquifer Vulnerability.

7 CONCLUSIONS

(1) WSP Canada Inc. (WSP) was retained by Far Sight Homes to prepare a Hydrogeological Assessment and Water Balance Study for the proposed residential development located at 5426, 5452 and 5584 Lakeshore Road, Ballantrae, Ontario (Site).

(2) The proposed development area lies within the Oak Ridges Moraine physiographic region as defined by Chapman and Putnam (1984). The Oak Ridges Moraine is typically characterized by sand or gravel hills with level tracts of sand between them. The area in and surrounding the Site consists of Kame moraines.

(3) The Site currently contains a wetland along the southern property boundary adjacent to the manmade pond. The wetland is fed by run-off from the Site and discharges off-site to through the southern property boundary via a culvert underneath Lakeshore Road.

(4) Based on the stratigraphy observed during the borehole drilling and test pit excavations at the Site and well records from Ministry of Environment and Climate Change Water Well Information System, the Site is predominantly underlain by alternating layers of sand and silt with isolated layers of fill, silty sand/sandy silt and clayey silt observed in certain boreholes.

(5) Based on water elevations from April 2017 that were collected as part of the bi-monthly monitoring program, the groundwater flow direction is to the southeast across the Site. Groundwater levels at the Site fluctuated from a seasonal high of 0.2 m bgs (April 2017) to a seasonal low of 4.57 m bgs (October 2016). The seasonal high was observed at OW16-1 which is located in the area of the realigned drainage channel.

(6) In-situ hydraulic conductivity testing was conducted at all six (6) monitoring wells on June 30, 2016/ The results of these test indicate that the hydraulic conductivity of the soil at the Site range from 1.17 $x10^{-4}$ m/sec to 1.47 $x10^{-5}$ m/sec. These results are consistent with the observed soil descriptions of medium to fine sand in which the monitoring wells are screened.

(7) Representative samples of groundwater were collected from the six (6) monitoring wells on June 30, 2016. The results of the test indicated that parameter concentrations are less than Ministry of the Environment and Climate Change (MOECC) Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition for All Types of Property Use (Coarse Textured Soil).

(8) The Climate-Based Water Budget indicates that average annual precipitation over the past 30 years is 857.7 mm/year. The available moisture surplus at the Site ranges between 283.8 mm/yr to 292.8mm/year depending on the type of soil and vegetation cover. The moisture surplus will reflect the infiltration and runoff based on the soil properties, slopes, and vegetation within individual catchments.

(9) Under existing conditions, there are two (2) on-site catchments and three (1) off-site catchment. Runoff generated on-site outlets at two (2) different locations.

   (a) Runoff from the majority of the Site is directed to the drainage ditch which connects to the existing wetland and discharges over the southern property boundary via a culvert underneath Lakeshore Road.

   (b) Runoff from a small portion of the site located in the southwest corner flows off-site to the south via overland flow.

   The Pre-Development Water Budget reflects infiltration for the Site of approximately 61,016 m^3/yr and runoff from the Site of approximately 20,663 m^3/yr.

(10) The Post-Development Water Budget reflects changes in land use to include increased areas of impervious surfaces (i.e. roads, buildings etc.) and re-grading. Under the proposed development conditions there are ten (10) on-site catchments and three (3) off-site catchment. A significant portion of the runoff is directed to three (3) different StormTech infiltration chambers while the remainder is conveyed to the drainage channels by the proposed storm sewers and/or overland flow. Runoff directed to the drainage channels flows to the existing wetland and is discharge off-site via the culvert underneath Lakeshore road.

(11) The Post-Development Water Budget predicts a total on-site infiltration of 91,350 m^3/yr. Of the total infiltration, 47,067 m^3/yr infiltrates through pervious areas and 44,283 m^3/yr infiltrates as a result of runoff from developed areas being directed to the on-site infiltration chambers. Overall, this is a increase of 50% relative to the Pre-Development case, and represents an infiltration surplus of 30,334 m^3/yr. At this time, additional mitigation measures are not required as there is an infiltration surplus.

(12) The Post-Development Water Budget predicts a net runoff of 21,338 m^3/yr over the Site area. This is an increase of 3% or 675 m^3/yr relative to the Pre-Development case. The estimated runoff exiting the Site via the wetland and culvert is predicted to increase by 6% and the runoff directed off-site to the southwest will decrease by 100%.

(13) The Site lies within an area designated as WHPA-Q. Policies in the Lakes Simcoe and Couchiching Source Protection Plan for WHPA-Q require that recharge be maintained or enhanced. The water balance calculations demonstrate that the development as proposed, with the stormwater management design as prepared by Sabourin Kimball & Associates Ltd. (2018) will enhance the pre-development infiltration and hence, complies with these policies.

(14) The majority of the Site is not within a mapped SGRA. A small portion of the southeast corner of the site that has already been developed is shown to have high sensitivity. The proposed development design provides for a very minor increase in net off-site run-off and enhancement of on-site recharge. This is not anticipated to negatively impact the features protected by the SGRA or ESGRA policy areas.

(15) The majority of the central and east part of the Site is mapped as a Highly Vulnerable Aquifer under the Assessment Report for the Lakes Simcoe and Couchiching Source Protection Area as well as the Oak Ridges Moraine Conservation Plan. The proposed land use as residential is expected to have minimal potential to affect underlying groundwater resources.

This concludes the Hydrogeological Assessment and Water Balance Study. We trust that this report satisfies your requirements. If you have any questions or concerns regarding this report, do not hesitate to contact our office.

8 REFERENCES

- Chapman, L.J. and D.F. Putnam, 1984. The Physiography of Southern Ontario. Ontario Geological Survey, Third Edition. 270 pp. Accompanied by Map P.2715, Scale 1:600,000.
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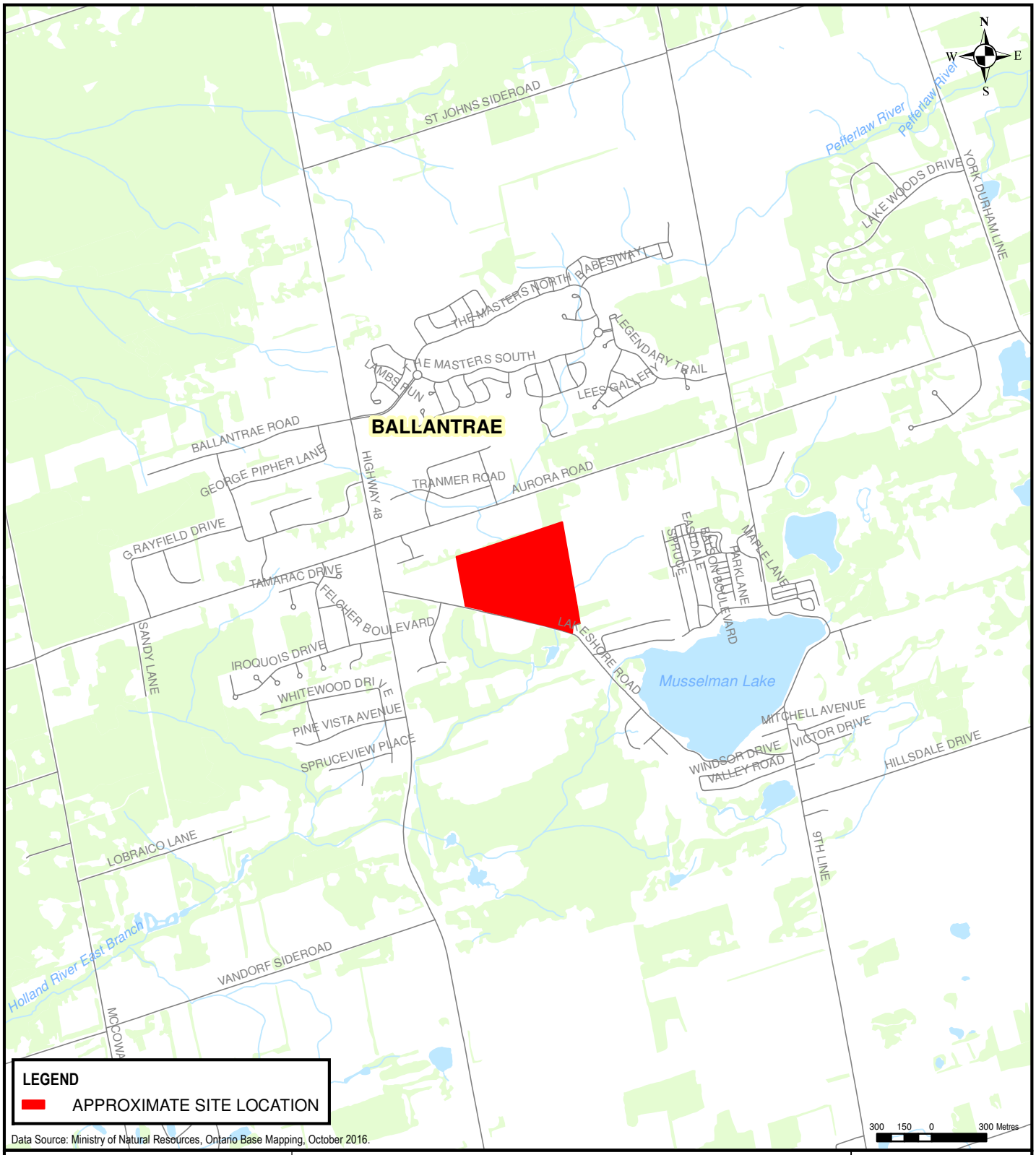
FIGURES



Data Source: Ministry of Natural Resources, Ontario Base Mapping, October 2016.

126 DON HILLOCK DRIVE, UNIT 2
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TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

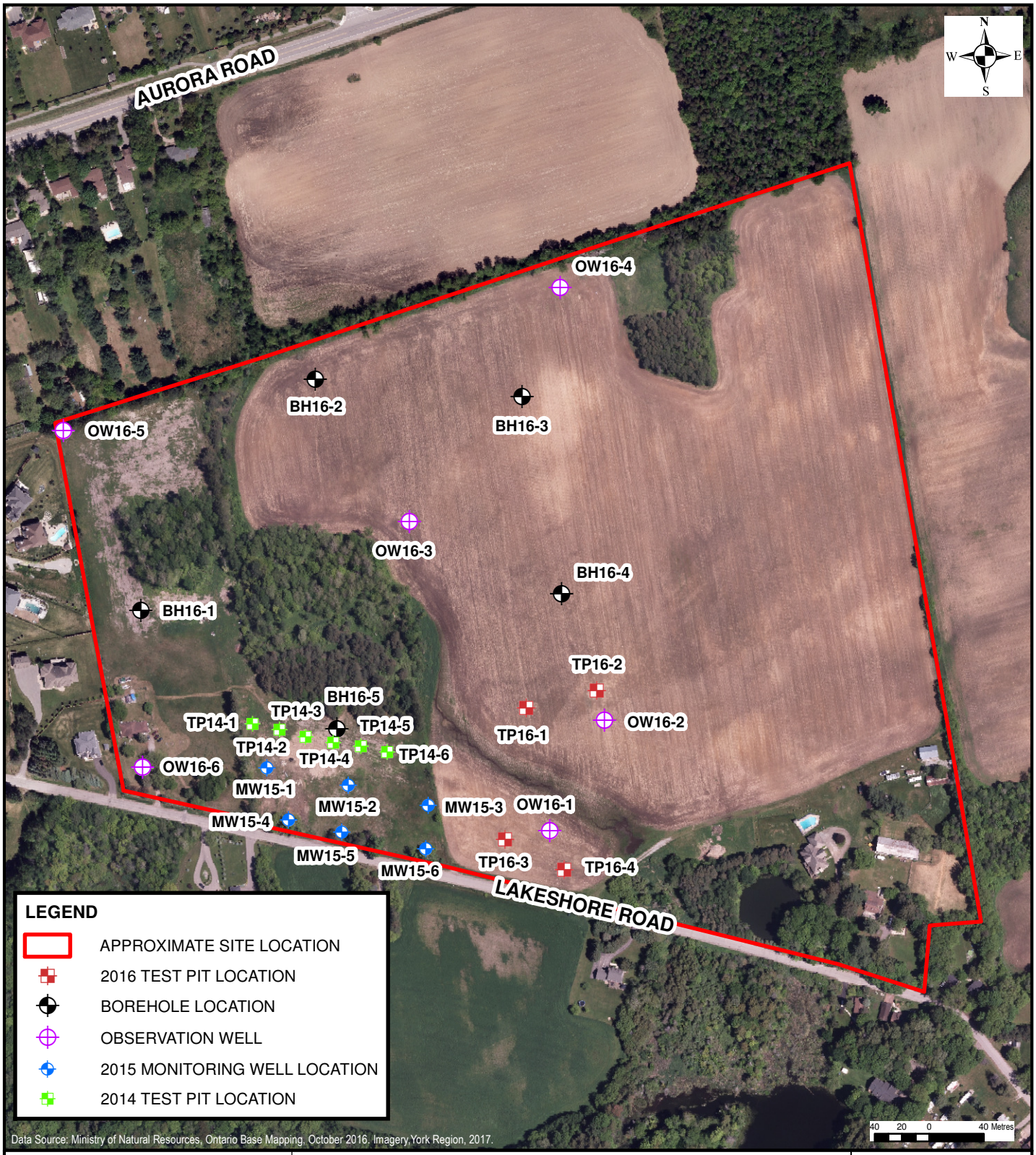
PROJECT: HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452 & 5584 LAKESHORE ROAD
BALLANTRAE, ONTARIO

TITLE: SITE LOCATION MAP

CLIENT: FAR SIGHT HOMES

SCALE:	1:30,000
DRAWN BY:	TP
CHECKED BY:	LL
PROJECT NO:	161-06960-00 105
DATE:	JUNE 2018
FIGURE NO:	1
REV.:	-

Document Path: T:\161-06960-00\MXD\105\2018\161-06960-00 105 Figure 1 Location Map.mxd



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PROJECT: HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY 5426, 5452 & 5584 LAKESHORE ROAD BALLANTRAE, ONTARIO	SCALE: 1:4,000
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TITLE: EXISTING CONDITIONS	PROJECT NO: 161-06960-00 105
	DATE: JUNE 2018
CLIENT: FAR SIGHT HOMES	FIGURE NO: 2 / REV.: -

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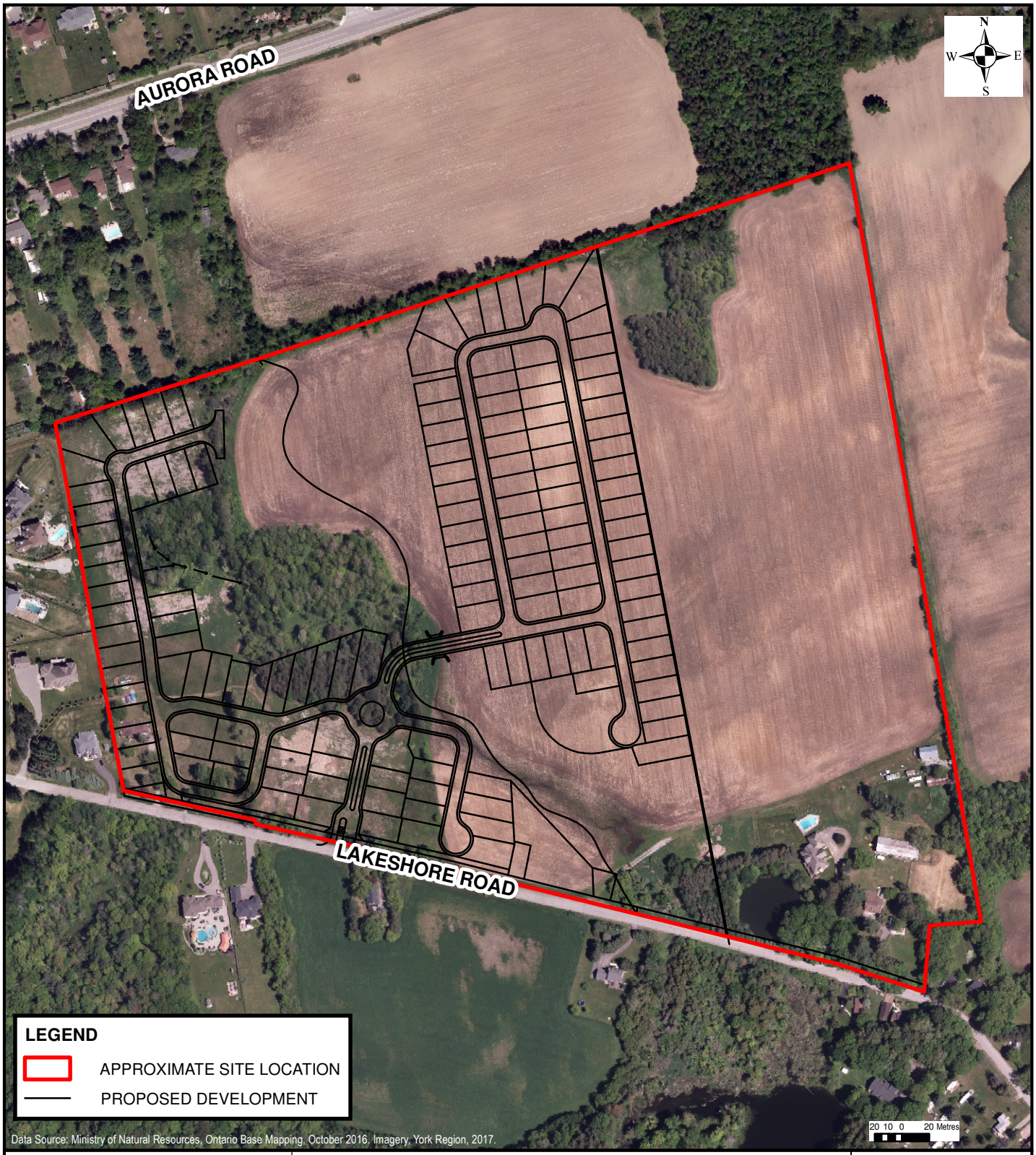

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PROJECT: HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452 & 5584 LAKESHORE ROAD
BALLANTRAE, ONTARIO

TITLE: PROPOSED DEVELOPMENT

CLIENT: FAR SIGHT HOMES

SCALE:	1:4,000
DRAWN BY:	TP
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PROJECT NO:	161-06960-00 105
DATE:	JUNE 2018
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REV.:	-

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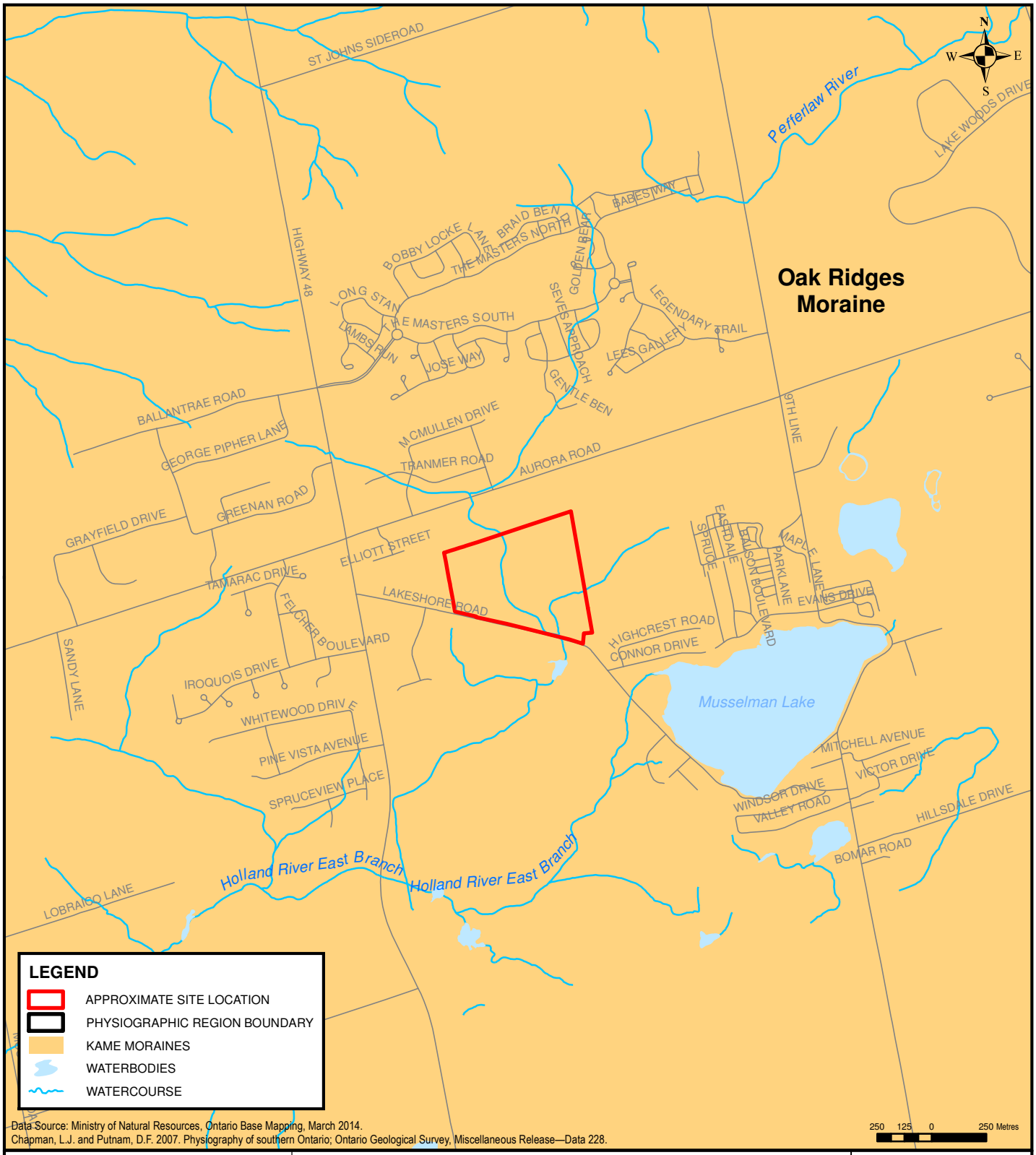

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PROJECT: HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY 5426, 5452 & 5584 LAKESHORE ROAD BALLANTRAE, ONTARIO	SCALE: 1:25,000
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	DATE: JUNE 2018
CLIENT: FAR SIGHT HOMES	FIGURE NO: 4 / REV.: -

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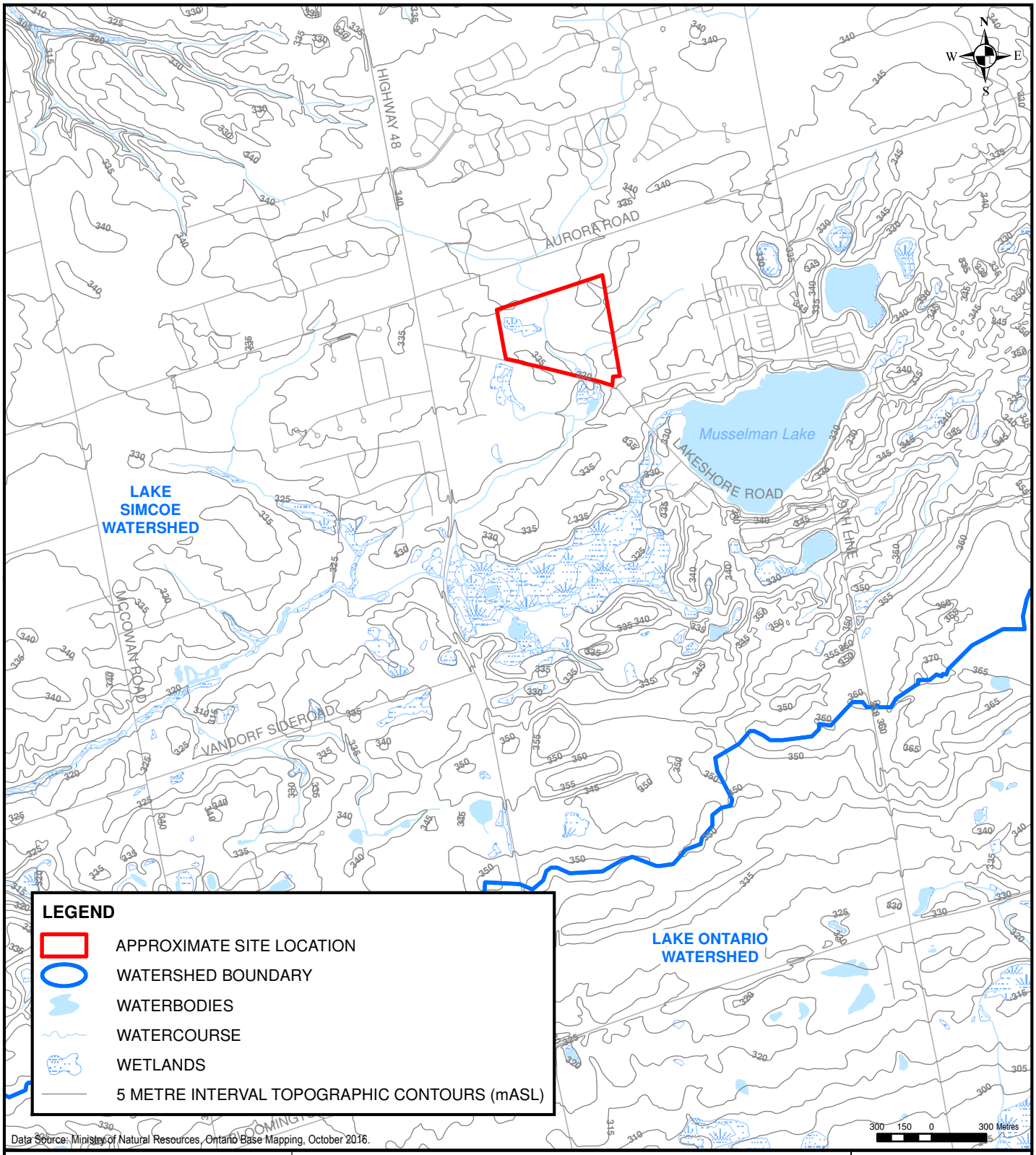

Data Source: Ministry of Natural Resources, Ontario Base Mapping, October 2016.

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PROJECT: HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452 & 5584 LAKESHORE ROAD
BALLANTRAE, ONTARIO

TITLE: REGIONAL TOPOGRAPHY AND DRAINAGE

CLIENT: FAR SIGHT HOMES

SCALE:	1:30,000
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CHECKED BY:	LL
PROJECT NO:	161-06960-00 105
DATE:	JUNE 2018
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REV.:	-

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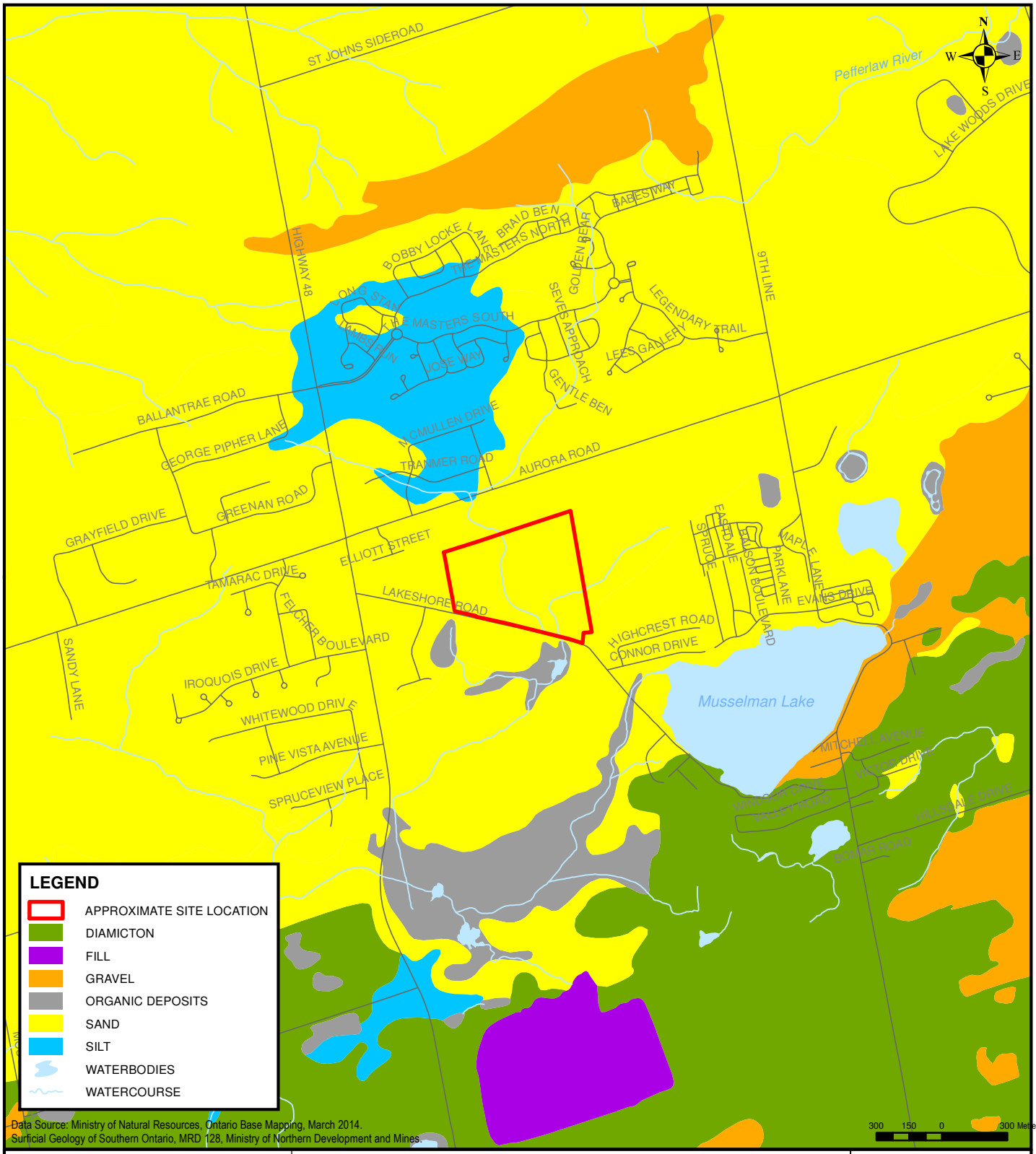

Data Source: Ministry of Natural Resources, Ontario Base Mapping, March 2014.
Surficial Geology of Southern Ontario, MRD 128, Ministry of Northern Development and Mines.

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PROJECT: HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY 5426, 5452 & 5584 LAKESHORE ROAD BALLANTRAE, ONTARIO	SCALE: 1:25,000
	DRAWN BY: TP / CHECKED BY: LL
TITLE: SURFICIAL GEOLOGY	PROJECT NO: 161-06960-00 105
	DATE: JUNE 2018
CLIENT: FAR SIGHT HOMES	FIGURE NO: 6 / REV.: -

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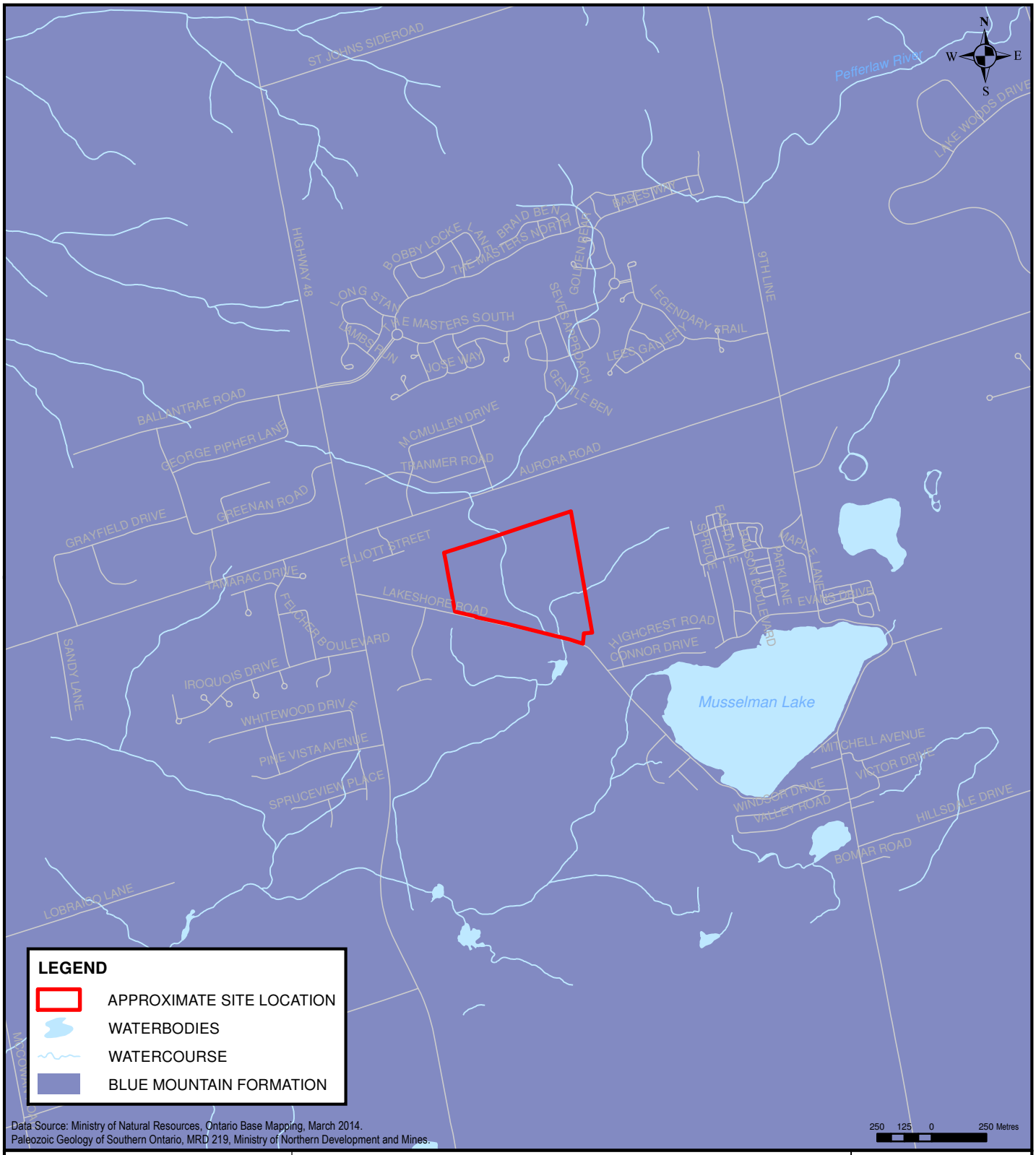

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PROJECT: HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY 5426, 5452 & 5584 LAKESHORE ROAD BALLANTRAE, ONTARIO	SCALE: 1:25,000	
	DRAWN BY: TP	CHECKED BY: LL
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	DATE: JUNE 2018	
CLIENT: FAR SIGHT HOMES	FIGURE NO: 7	REV.: -

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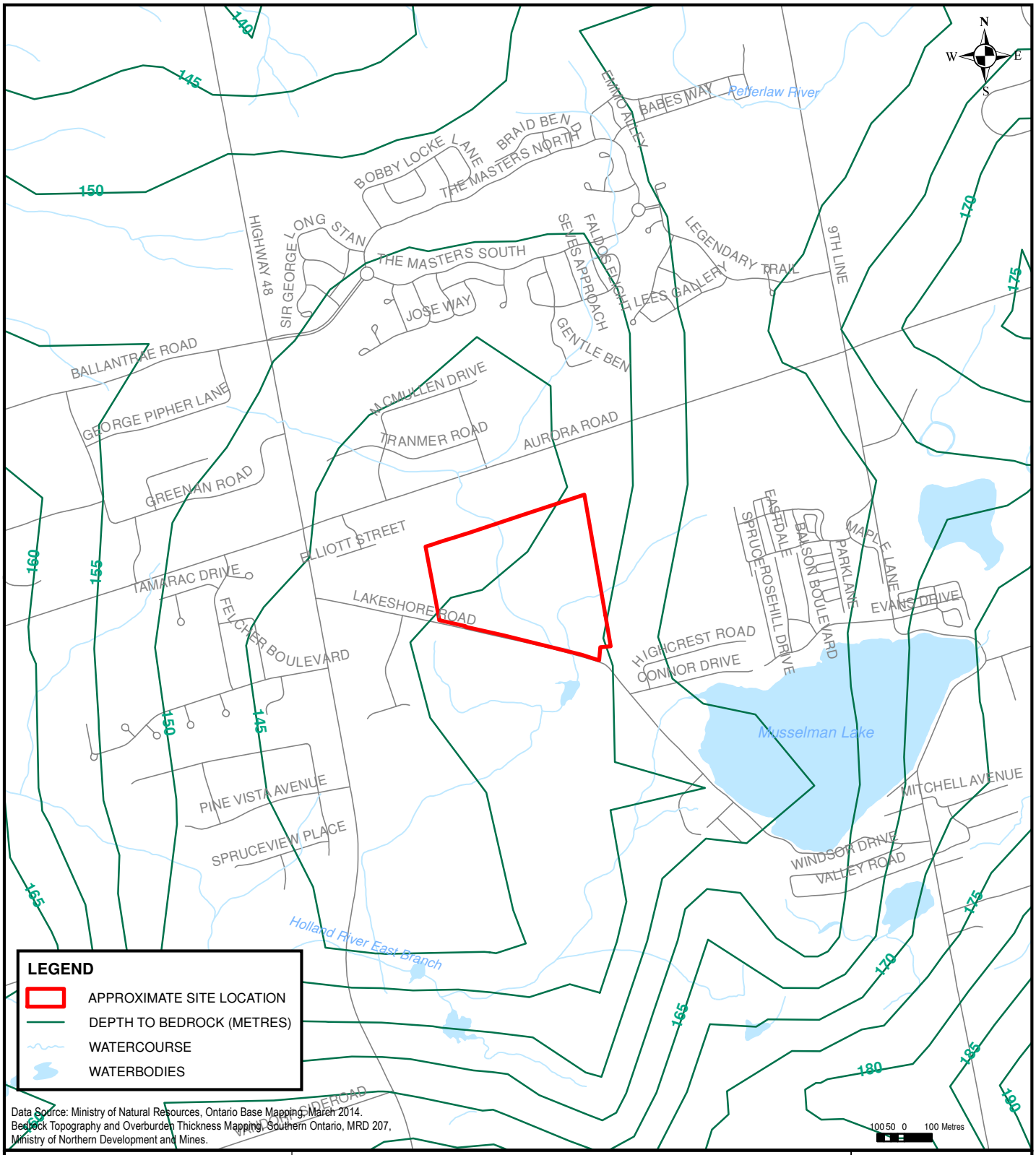

LEGEND

- APPROXIMATE SITE LOCATION
- DEPTH TO BEDROCK (METRES)
- WATERCOURSE
- WATERBODIES

Data Source: Ministry of Natural Resources, Ontario Base Mapping, March 2014.
Bedrock Topography and Overburden Thickness Mapping, Southern Ontario, MRD 207, Ministry of Northern Development and Mines.

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PROJECT: HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY 5426, 5452 & 5584 LAKESHORE ROAD BALLANTRAE, ONTARIO	SCALE: 1:20,000
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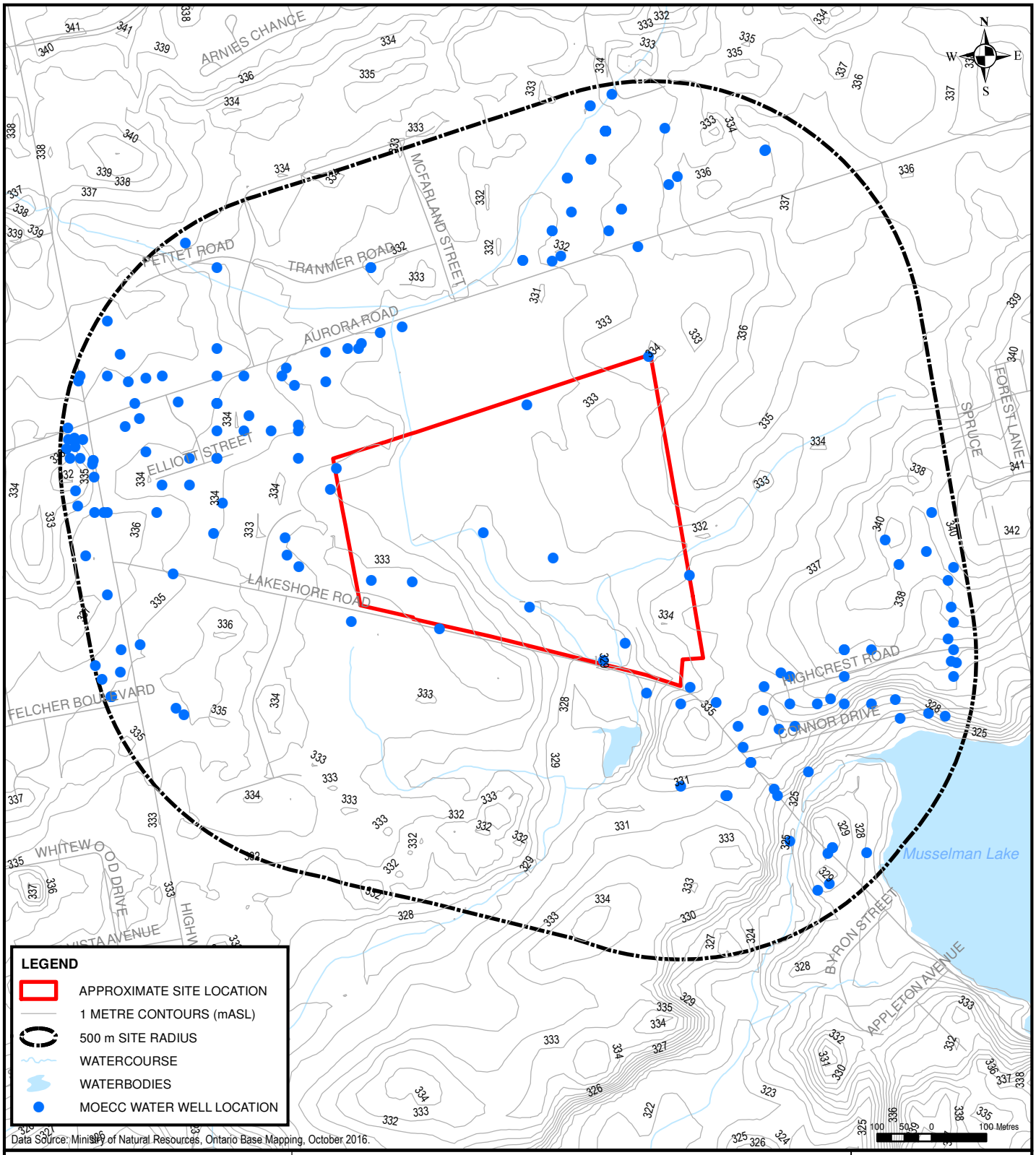
Document Path: T:\161-06960-00\MXD\105\2018\161-06960-00 105 Figure 8 Overburden Thickness.mxd



126 DON HILLOCK DRIVE, UNIT 2
AURORA, ONTARIO CANADA L4G 0G9
TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

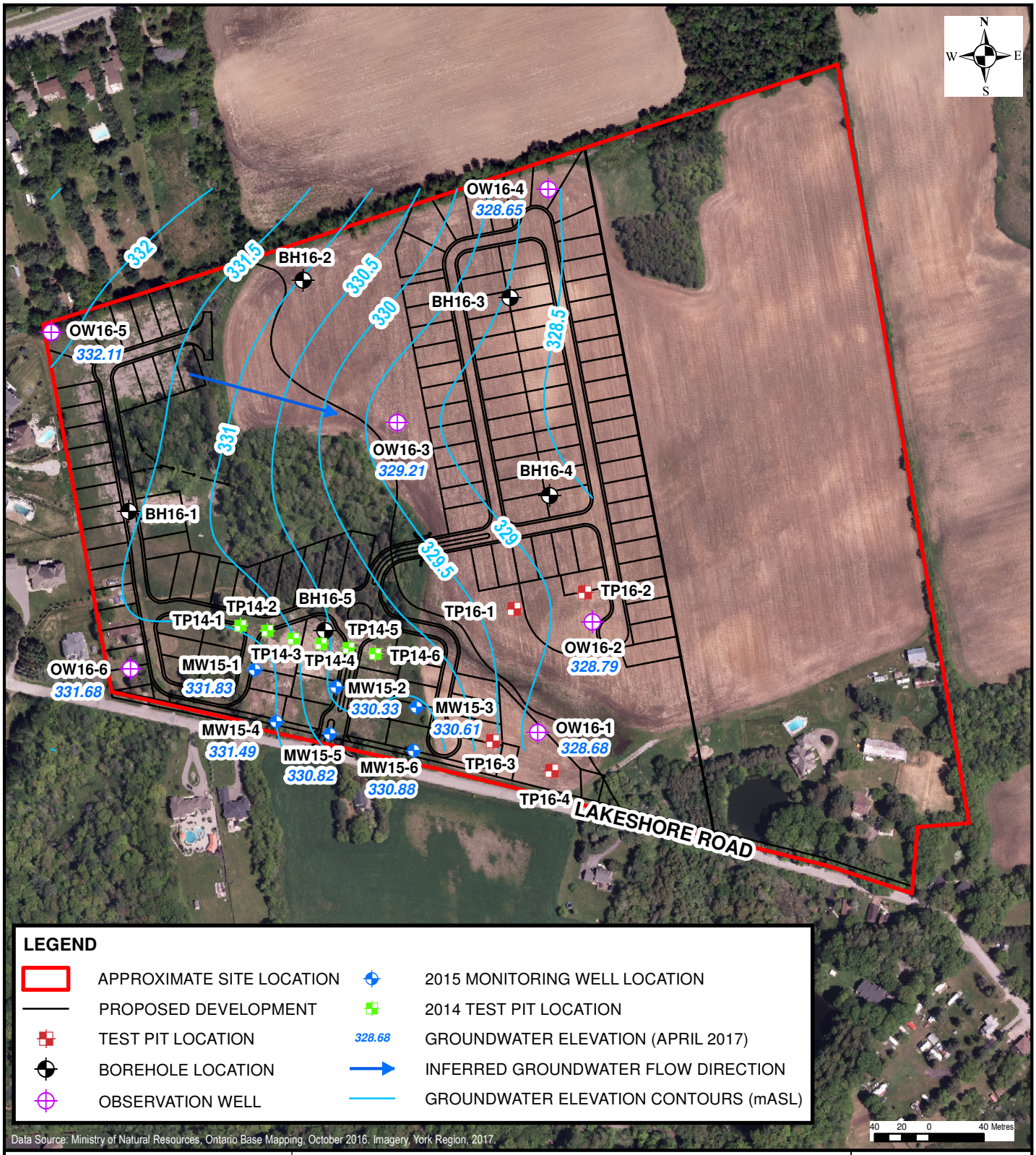
PROJECT: HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452 & 5584 LAKESHORE ROAD
BALLANTRAE, ONTARIO

TITLE: MOECC WATER WELLS

CLIENT: FAR SIGHT HOMES

SCALE:	1:10,000
DRAWN BY:	TP
CHECKED BY:	LL
PROJECT NO:	161-06960-00 105
DATE:	JUNE 2018
FIGURE NO:	9
REV.:	-

Document Path: T:\161-06960-00\MXD\105\2018\161-06960-00 105 Figure 9 MOECC Wells.mxd



Data Source: Ministry of Natural Resources, Ontario Base Mapping, October 2016. Imagery, York Region, 2017.

wsp

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PROJECT: HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452 & 5584 LAKESHORE ROAD
BALLANTRAE, ONTARIO

TITLE: GROUNDWATER ELEVATIONS

CLIENT: FAR SIGHT HOMES

SCALE: 1:4,000

DRAWN BY: TP

CHECKED BY: LL

PROJECT NO: 161-06960-00 105

DATE: JUNE 2018

FIGURE NO: 10

REV.: -

Document Path: T:\161-06960-00\MXD\105\2018\161-06960-00 105 Figure 10 Groundwater Flow.mxd

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TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

LEGEND

- PRE DEVELOPMENT CATCHMENT AREAS
- BUILDING
- CULTIVATED
- DRIVEWAY
- GRAVEL
- LAWNS
- PATIO
- PONDS
- ROAD
- UNCULTIVATED
- WOODED AREAS
- PRE DEVELOPMENT FLOW DIRECTION
- WATERCOURSE

20 10 0 20 Metres

Data Source: Ministry of Natural Resources, Ontario Base Mapping, October 2016.

CLIENT:

FAR SIGHT HOMES

PROJECT:

HYDROGEOLOGICAL ASSESSMENT AND
WATER BALANCE STUDY
5426, 5452 & 5584 LAKESHORE ROAD
BALLANTRAE, ONTARIO

PROJECT NO:	DATE:
161-06960-00 105	JUNE 2018

DESIGNED BY: -

DRAWN BY: T.P.

CHECKED BY: LL

FIGURE NO:	SCALE:
11	1:3,000

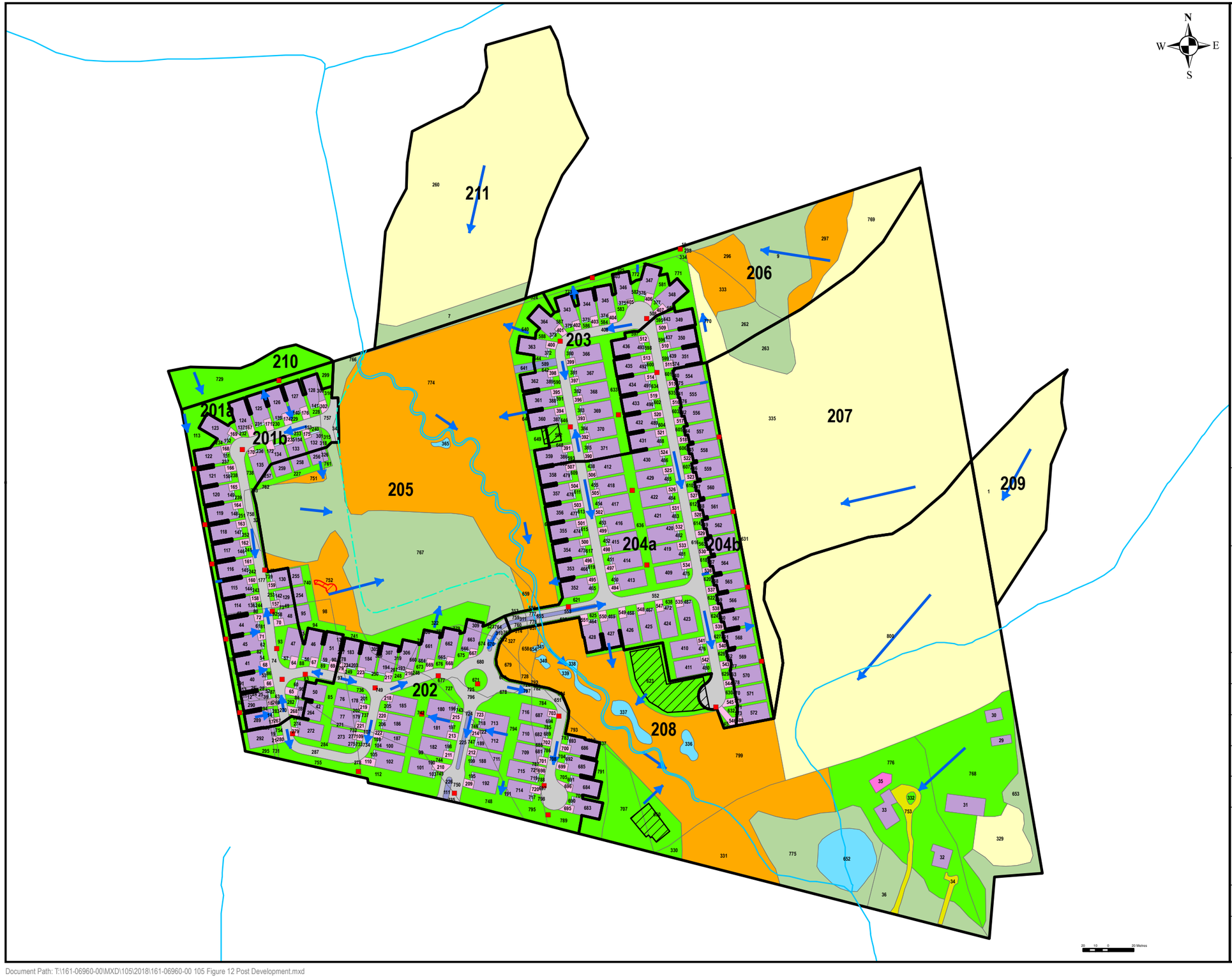
TITLE:

PRE DEVELOPMENT SITE CATCHMENT AREAS

DISCIPLINE: ENVIRONMENT

ISSUE:	REV.:
-	-

Document Path: T:\161-06960-00\MXD\105\2018\161-06960-00 105 Figure 11 Pre Development.mxd



wsp

126 DON HILLOCK DRIVE, UNIT 2
AURORA, ONTARIO CANADA L4G 0G9
TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

LEGEND

- POST DEVELOPMENT CATCHMENT AREAS
- BUILDING
- CONCRETE
- CULTIVATED
- DRIVEWAY
- GRAVEL
- LAWNS
- PATIO
- PONDS
- PORCH
- ROAD
- UNCULTIVATED
- WOODED AREAS
- POST DEVELOPMENT FLOW DIRECTION
- CREEK REALIGNMENT
- CATCHBASIN
- DITCH
- STORMTECH INFILTRATION CHAMBERS
- SAND FILTER & PLUNGE POOL

CLIENT:

FAR SIGHT HOMES

PROJECT:

HYDROGEOLOGICAL ASSESSMENT AND
WATER BALANCE STUDY
5426, 5452 & 5584 LAKESHORE ROAD
BALLANTRAE, ONTARIO

PROJECT NO:	DATE:
161-06960-00 105	JUNE 2018

DESIGNED BY:
-

DRAWN BY:
T.P.

CHECKED BY:
LL

FIGURE NO:	SCALE:
12	1:3,000

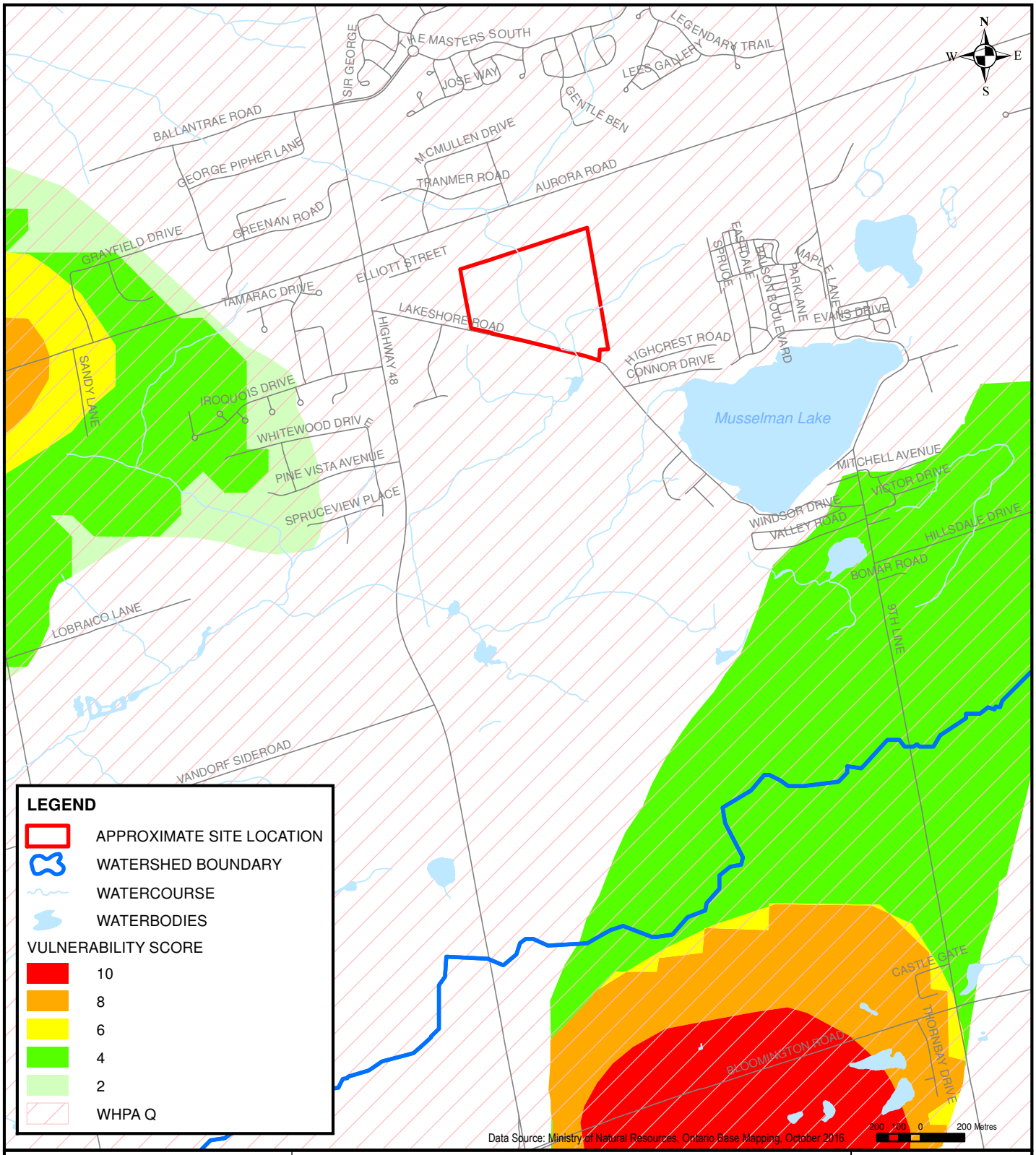
TITLE:

POST DEVELOPMENT SITE CATCHMENT AREAS

DISCIPLINE:
ENVIRONMENT

ISSUE:	REV.:
-	-

Document Path: T:\161-06960-00\MXD\105\2018\161-06960-00 105 Figure 12 Post Development.mxd



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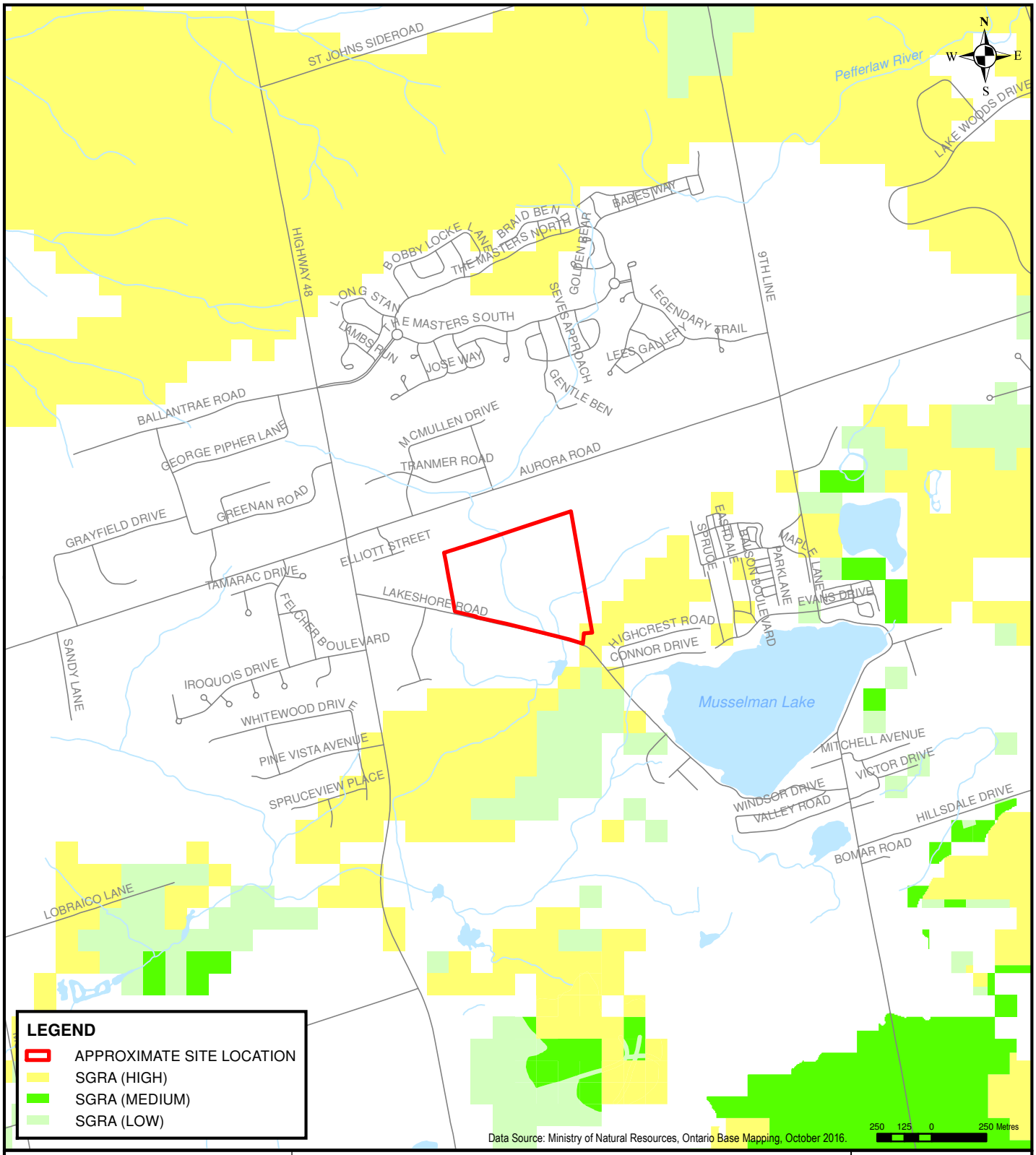
PROJECT: HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452 & 5584 LAKESHORE ROAD
BALLANTRAE, ONTARIO

TITLE: WELLHEAD PROTECTION AREAS

CLIENT: FAR SIGHT HOMES

SCALE:	1:25,000
DRAWN BY:	TP
CHECKED BY:	LL
PROJECT NO:	161-06960-00 105
DATE:	JUNE 2018
FIGURE NO:	13
REV.:	-

Document Path: T:\161-06960-00\MXD\105\2018\161-06960-00 105 Figure 13 WHPA.mxd



126 DON HILLOCK DRIVE, UNIT 2
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TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

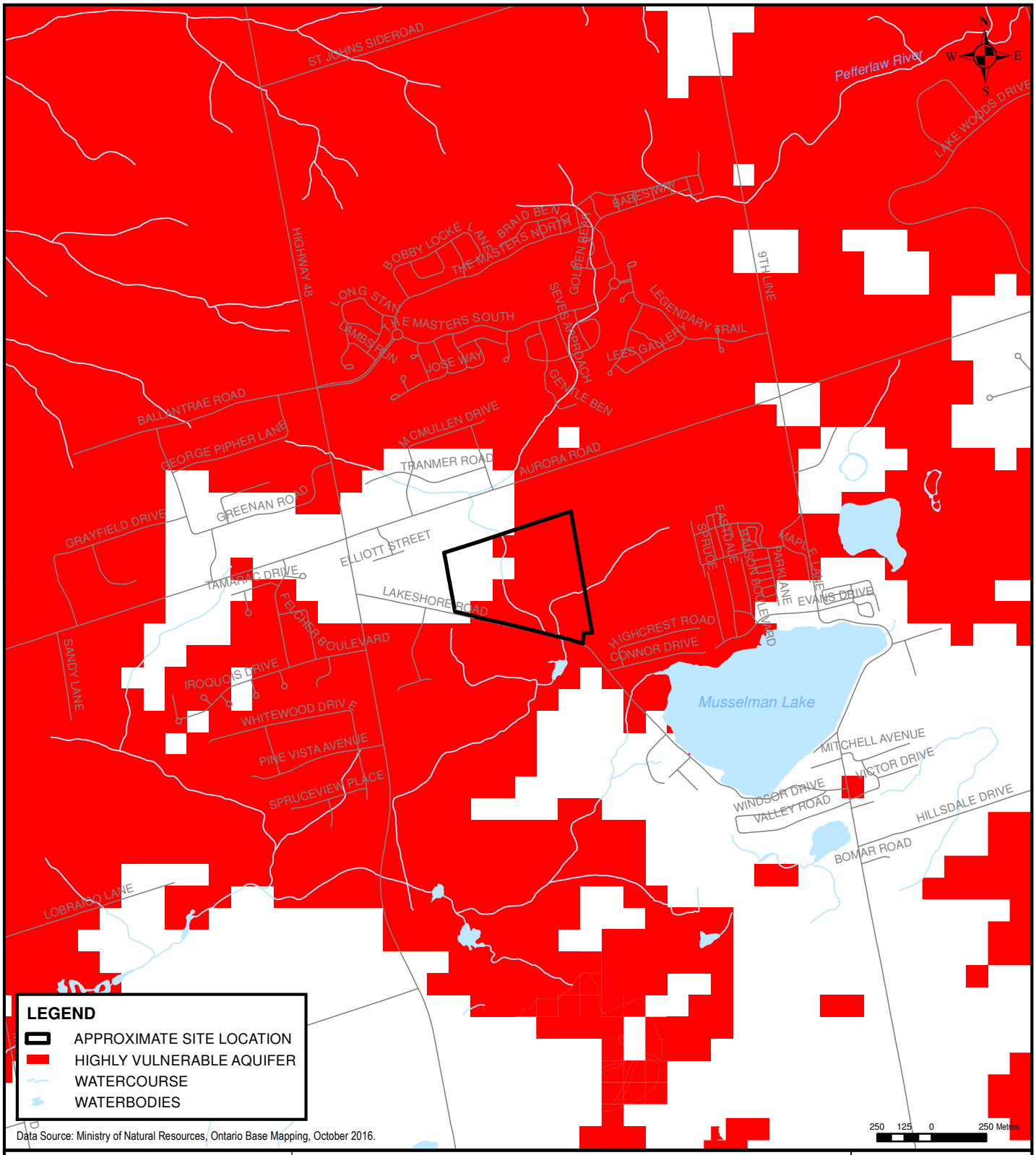
PROJECT: HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452 & 5584 LAKESHORE ROAD
BALLANTRAE, ONTARIO

TITLE: SIGNIFICANT GROUNDWATER RECHARGE AREAS

CLIENT: FAR SIGHT HOMES

SCALE:	1:25,000
DRAWN BY:	TP
CHECKED BY:	LL
PROJECT NO:	161-06960-00 105
DATE:	JUNE 2018
FIGURE NO:	14
REV.:	-

Document Path: T:\161-06960-00\MXD\105\2018\161-06960-00 105 Figure 14 SGRA.mxd



Data Source: Ministry of Natural Resources, Ontario Base Mapping, October 2016.

126 DON HILLOCK DRIVE, UNIT 2
AURORA, ONTARIO CANADA L4G 0G9
TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

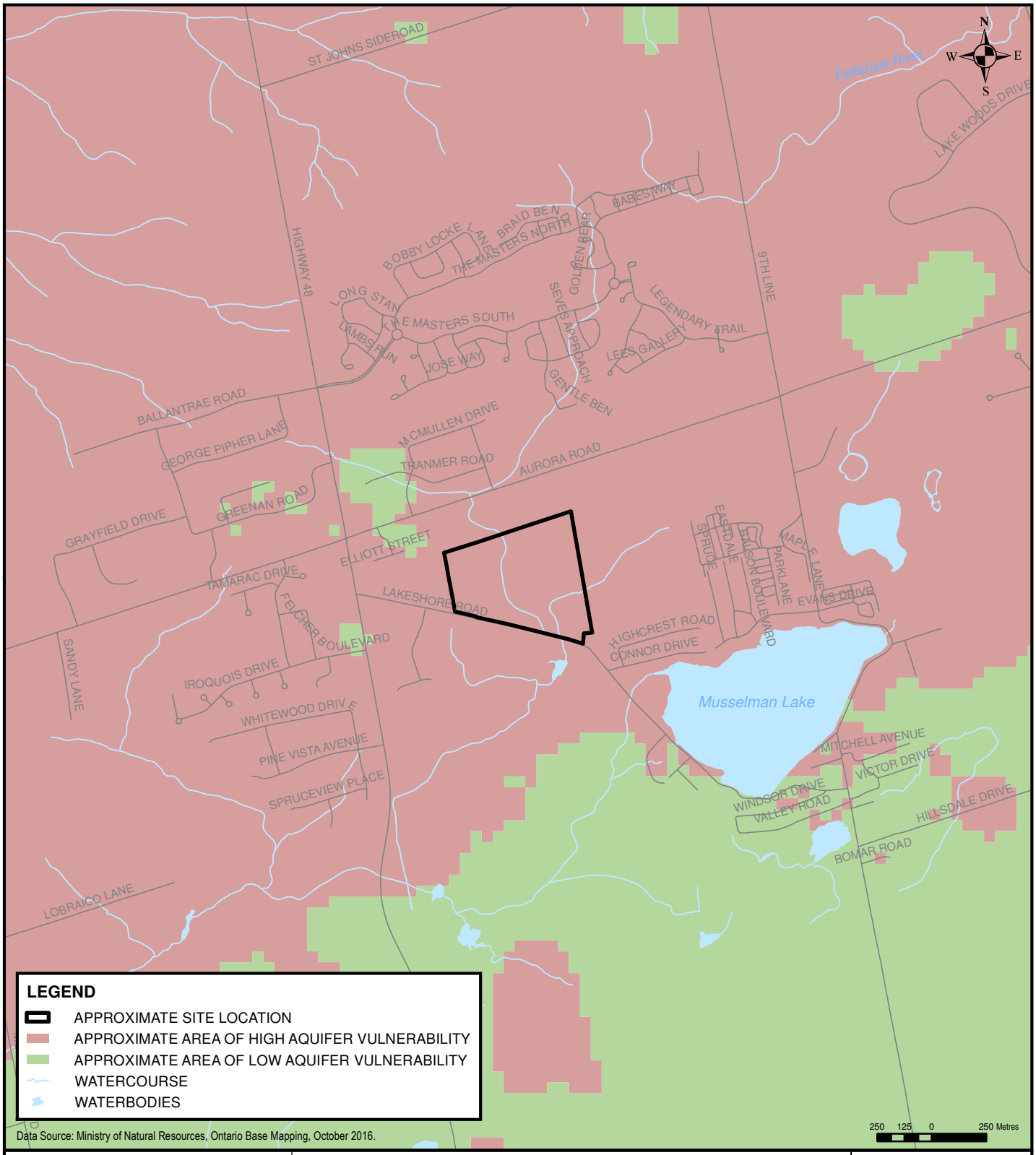
PROJECT: HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452 & 5584 LAKESHORE ROAD
BALLANTRAE, ONTARIO

TITLE: HIGHLY VULNERABLE AQUIFERS

CLIENT: FAR SIGHT HOMES

SCALE:	1:25,000
DRAWN BY:	TP
CHECKED BY:	LL
PROJECT NO:	161-06960-00 105
DATE:	JUNE 2018
FIGURE NO:	15
REV.:	-

Document Path: T:\161-06960-00\MXD\105\2018\161-06960-00 105 Figure 15 HVA.mxd



126 DON HILLOCK DRIVE, UNIT 2
AURORA, ONTARIO CANADA L4G 0G9
TEL.: 905-750-3080 | FAX: 905-727-0463 | WWW.WSP.COM

PROJECT: HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452 & 5584 LAKESHORE ROAD
BALLANTRAE, ONTARIO

TITLE: OAK RIDGES MORAINE AQUIFER VULNERABILITY

CLIENT: FAR SIGHT HOMES

SCALE:	1:25,000
DRAWN BY:	TP
CHECKED BY:	LL
PROJECT NO:	161-06960-00 105
DATE:	JUNE 2018
FIGURE NO:	16
REV.:	-

Document Path: T:\161-06960-00\MXD\105\2018\161-06960-00 105 Figure 16 ORM Vulnerability.mxd

TABLES

TABLE 1
MONITORING WELL CONSTRUCTION DETAILS
HYDROGEOLOGICAL STUDY AND WATER BUDGET ASSESSMENT
5426, 5452 & 5584 Lakeshore Road, Ballantrae
Town of Whicthurch Stouffville, ON

Monitor Designation	Co-ordinates		Diameters		Depth	Elevations									
					Total	Top of Pipe	Ground	Bottom of Borehole	Bottom of Monitor	Screen		Sand Pack		Bentonite Seals	
	Northing	Easting	Borehole	Monitor						Bottom of	Top of	Bottom of	Top of	Bottom of	Top of
	m	m	mm	mm	m bgs	m ASL	m ASL	m ASL	m ASL	m ASL	m ASL	m ASL	m ASL	m ASL	m ASL
OW16-1	635722	4887799	210	51	6.10	329.82	328.88	322.78	322.78	322.78	325.83	322.78	326.48	326.48	328.88
OW16-2	635472	4887940	210	51	6.10	332.29	331.40	325.30	325.30	325.30	328.35	325.30	329.00	329.00	331.40
OW16-3			210	51	6.10	330.99	330.10	324.00	324.00	324.00	327.05	324.00	327.70	327.70	330.10
OW16-4			210	51	6.10	332.29	331.39	325.29	325.29	325.29	328.34	325.29	328.99	328.99	331.39
OW16-5	635563	4887612	210	51	5.20	335.10	334.14	328.04	328.94	328.94	331.99	328.94	332.64	332.64	334.14
OW16-6	635924	4888765	210	51	6.10	334.15	333.19	327.09	327.09	327.09	330.19	327.09	330.69	330.69	333.19

Notes:

1) "m agl" indicates metres above ground level.
2) "m bgs" indicates metres below ground surface
3) "m" indicates metres
4) "m ASL" indicates metres above sea level.

TABLE 2
WATER QUALITY RESULTS
HYDROGEOLOGICAL STUDY AND WATER
5426, 5452 & 5584 Lakeshore Road, Ballantrae,
Town of Whichurch-Stouffville, ON

Parameters Sample Date	UNIT	Table 2 SCS [1]	OW16-1 30-Jun-16	OW16-2 30-Jun-16	OW16-3 30-Jun-16	OW16-4 30-Jun-16	OW16-5 30-Jun-16	OW16-6 30-Jun-16
Water Quality Assessment								
Electrical Conductivity	uS/cm	-	780	570	750	490	470	1100
pH	pH Units	-	7.94	7.93	7.84	8.06	7.92	7.87
Saturation pH	-	-	7.02	7.11	6.81	7.18	7.01	6.80
Langelier Index	-	-	0.916	0.817	1.03	0.876	0.913	1.07
Total Hardness (as CaCO3)	mg/L	-	290	300	370	290	280	470
Total Dissolved Solids	mg/L	-	440	350	430	320	280	640
Alkalinity (as CaCO3)	mg/L	-	250	180	320	170	240	290
Bicarbonate (as CaCO3)	mg/L	-	250	180	320	160	240	280
Carbonate (as CaCO3)	mg/L	-	2.0	1.4	2.1	1.8	1.9	2.0
Chloride	mg/L	790	93	24	38	7.3	3.8	160
Nitrate as N	mg/L	-	<0.10	15.0	0.37	14.8	0.60	<0.10
Nitrite as N	mg/L	-	<0.010	<0.010	0.141	0.065	<0.010	<0.010
Sulphate	mg/L	-	10	16	13	20	6.1	15
Ortho Phosphate as P	mg/L	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Ammonia as N	mg/L	-	0.30	0.097	0.082	0.49	<0.050	0.088
Total Phosphorus	mg/L	-						
Dissolved Organic Carbon	mg/L	-	3.3	3.0	1.8	1.7	1.9	4.8
Calcium	mg/L	-	110	120	140	110	110	170
Magnesium	mg/L	-	4.7	2.8	5.5	7.1	3.6	7.4
Sodium	mg/L	490	61	2.2	24	3.3	2.5	110
Potassium	mg/L	-	3	3	4	4	<1	1
Aluminum	mg/L	-						
Antimony	mg/L	0.006						
Arsenic	mg/L	0.025						
Barium	mg/L	1						
Beryllium	mg/L	0.004						
Boron	mg/L	5						
Cadmium	mg/L	0.0027						
Chromium	mg/L	0.050						
Cobalt	mg/L	0.0038						
Copper	mg/L	0.087	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Iron	mg/L	-	0.16	<0.02	0.31	<0.02	<0.02	0.65
Lead	mg/L	0.01						
Manganese	mg/L	-	0.39	0.03	0.65	0.12	0.02	0.15
Molybdenum	mg/L	0.07						
Nickel	mg/L	0.100						
Selenium	mg/L	0.01						
Silicon	mg/L							
Silver	mg/L	0.0015						
Strontium	mg/L	-						
Thallium	mg/L	0.002						
Titanium	mg/L	-						
Uranium	mg/L	0.02						
Vanadium	mg/L	0.0062						
Zinc	mg/L	1.1	<0.01	<0.01	0.01	<0.01	<0.01	<0.01

NOTES

1) Table 2 SCS = Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act (April 2011).

2) Yellow shading indicates parameter reportable detection limit exceeds Table 2 SCS.

TABLE 3 CLIMATIC WATER BUDGET SUMMARY TABLE
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

Year of Climate Data Used	Total Adjusted Potential Evapotranspiration	Total Water Surplus	Total Precipitation	Soil Type	Land Use	Water Holding Capacity	Total Actual Evapotranspiration	Total Moisture Surplus used for Water Balance
	mm/yr	mm/yr	mm/yr			mm/yr	mm/yr	mm/yr
CLIMATE NORMAL 1981-2010	584.0	273.7	857.7	Sand Loam	Residential Lawn	150	555.9	301.8
					Cultivated	200	564.9	292.8
					Uncultivated	250	567.9	289.8
					Mature Woodland	400	573.9	283.8

NOTES:
1) Water Holding Capacity obtained from Environmental Design Criteria of the SWM Planning and Design Manual published by the MOE in 2003 (table can be found in Appendix B)

TABLE 4 WATER BUDGET SUMMARY WITH MITIGATION
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

Characteristics		Pre-development		Post-development		Change	
		Volume (m^3/yr)	mm/yr	Volume (m^3/yr)	mm/yr	Volume (m^3/yr)	%
Input	Precipitation	230,841	857.7	230,841	857.7	0	0%
	Run-On	2,482	9.2	2,482	9.2	0	0%
	Total In	**233,323**	**866.9**	**233,323**	**866.9**	**0**	**0.0%**
Output	*Infiltration via Pervious Areas*	61,016	226.7	47,067	174.9	-13,949	-23%
	Add: Infiltration via Stormtech Systems	0	0.0	44,283	164.5	44,283	>100%
	Total Infiltration	61,016	226.7	91,350	339.4	30,334	50%
	Runoff	20,663	76.8	65,621	243.8	44,958	218%
	Less: Runoff Directed to Stormtech Systems	0	0.0	44,283	164.5	-44,283	<-100%
	Total Runoff	20,663	76.8	21,338	79.3	675	3%
	Evapotranspiration	151,644	563.4	120,635	448.2	-31,009	-20%
	Total Out	**233,323**	**866.9**	**233,323**	**866.9**	**0**	**0.0%**

Off-Site Runoff Change - By Pre-Development Drainage Outlet

Outlet	Description	Contributing Catchments - Pre-Development	Contributing Catchments - Post-Development	Pre-Development		Post-Development		Runoff Change*	
				Area	Volume	Area	Volume		
				m^2	m^3	m^2	m^3	m^3	%
Off-Site South East	Flows off-site to the southeast via the creek.	Catchment A	Catchments 201a, 201b, 205 and 209	262,459	20,077	145,220	21,338	1,261	6%
Off-Site South West	Flows off-site to the southwest via overland flow.	Catchment B	None	6,680	586	0	0	-586	-100%
Stormtech 3 Infiltration Chamber	Infiltration through Stormtech 3 infiltration chamber in sub-catchment 203-592.	None	Catchments 203 and 208	0	0	25,612	7,360	7,360	>100%
Stormtech 4 Infiltration Chamber	Infiltration through Stormtech 4 infiltration chamber in sub-catchment 209-623.	None	Catchments 204a, 204b and 207	0	0	72,087	23,115	23,115	>100%
Stormtech 7 Infiltration Chamber	Infiltration through Stormtech 7 infiltration chamber in sub-catchment 209-650.	None	Catchment 202	0	0	26,221	13,809	13,809	>100%
Total				**269,139**	**20,663**	**269,139**	**65,621**	**44,958**	**218%**

*The total runoff change represents the additional amount of runoff generated by impervious surfaces in the post-development scenario but does not represent the actual change in runoff since a large portion is infiltrated through the Stormtech infiltration chambers.

Breakdown of Post-Development Run-Off by Land Use

Land Use	Description	Post-Development		Runoff
		Area	Volume	
		m^2	m^3	m^3
Total Buildings	Includes residential homes.	42,570	32,861	32,861
Paved Areas	Includes roads, patios, porches and driveways.	23,311	17,995	17,995
Impervious Areas		**65,881**	**50,856**	**50,856**
Pervious Areas	Includes residential lawns, gravel, uncultivate, cultivated and wooded areas.	203,258	14,766	14,766
Pervious Areas		**203,258**	**14,766**	**14,766**
TOTAL RUN-OFF		**269,139**	**65,621**	**65,621**

APPENDIX

A STORMWATER MANAGEMENT PLAN

LEGEND

- DRAINAGE BOUNDARY
- OVERLAND FLOW ROUTE
- SUMP PUMP REQUIRED
- 201 / 1.89 / 0.45 - SUBCATCHMENT ID / SUBCATCHMENT AREA (HA) / PERCENT IMPERVIOUS
- REGIONAL FLOODLINE

208 | 0.27 | -

205 | 14.30 | -

203 | 1.02 | 68%

204 | 3.26 | 53%

207 | 3.88 | -

201 | 1.89 | 56%

202 | 2.51 | 53%

0.9m x 1.8m BOX STORAGE PIPE AT 0.4%

HEADWALL 1
INVERT: 330.51

SAND FILTER AND PLUNGE POOL

CROSSING
RISE: 1.60m
SPAN: 14.94m
LENGTH: 14.0m

MH 109
S 330.97
N 330.82
W 330.74

STORMTECH 3
GROUNDWATER ELEV: 328.50
GRANULAR INVERT: 329.77
CELL INVERT: 330.73
GROUND SURFACE: 333.16

HEADWALL 4
INVERT: 330.70

STORMTECH 4
GROUNDWATER ELEV: 328.40
GRANULAR INVERT: 329.40
CELL INVERT: 329.73
GROUND SURFACE: 332.16

HEADWALL 3
INVERT: 329.60

MH 101
N 329.78
SW 329.73

HEADWALL 2
INVERT: 329.56

MH 6
W 329.78
NE 329.70

STORMTECH 7
GROUNDWATER ELEV: 328.25
GRANULAR INVERT: 329.27
CELL INVERT: 329.65
GROUND SURFACE: 332.08

SYSTEM OUTLET

STREET A
STREET B
STREET C
STREET D
STREET E
WALKWAY
LAKESHORE ROAD

1:1000

POST DEVELOPMENT DRAINAGE AREA PLAN

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

PROJECT NUMBER	FIGURE NUMBER
13.286	6

PLOT DATE: 6/7/2018 4:26 PM CAD FILE: P:\13\286\Drawing Files\Phase 1\Stormwater Management Drawings\Stormwater Management Concept.dwg

APPENDIX

B MOECC WATER WELL RECORDS

Appendix C - Summary of MOECC Water Well Records within 500 m
5426, 5452 & 5584 Lakeshore Road, Ballantrae, ON
Town of Whitchurch-Stouffville

Well ID	Coordinates		Elevation	Depth	Water Level	Water Yield	Water Use	Water Status	Top	Bottom	Colour	Material 1	Material 2	Material 3
	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
1907350	637530.6	4877209	334.978942	55.1688	7.01	22.73045	Water Supply	Domestic+	0.00	2.44	BROWN	SAND	CLAY	
									2.44	11.58	BROWN	CLAY	SOFT	
									11.58	17.07	BROWN	SILT	WATER-BEARING	
									17.07	27.43	GREY	SILT	WATER-BEARING	
									27.43	40.54	GREY	CLAY	SILT	WATER-BEARING
									40.54	50.90	GREY	SILT	GRAVEL	WATER-BEARING
									50.90	53.34	GREY	SAND	GRAVEL	WATER-BEARING
									53.34	55.17	BROWN	SAND	GRAVEL	WATER-BEARING
6908306	637531.6	4877004	334.796844	22.86	2.7432	13.63827	Water Supply	Domestic	0.00	0.91		FINE SAND		
									0.91	3.05	GREY	CLAY		
									3.05	20.73		FINE SAND		
									20.73	22.86		MEDIUM SAND		
6908307	637619.6	4876933	336.035339	16.1544	13.41120	22.73045	Water Supply	Domestic	0.00	16.15		FINE SAND		
6908308	637412.6	4877084	328.987609	22.2504	3.6576	18.18436	Water Supply	Domestic	0.00	0.30		TOPSOIL		
									0.30	3.66		CLAY		
									3.66	18.59		MEDIUM SAND		
									18.59	22.25		MEDIUM SAND		
6908313	636584.6	4877211	337.095886	19.5072	12.192	18.18436	Water Supply	Domestic	0.00	6.10		PREVIOUSLY DUG		
									6.10	12.19	BROWN	CLAY		
									12.19	19.51		FINE SAND		
6908316	637579.6	4876977	336.360473	15.24	11.5824	18.18436	Water Supply	Domestic	0.00	15.24		MEDIUM SAND		
6908318	636911.6	4877124	333.458984	14.3256	10.9728	13.63827	Water Supply	Domestic	0.00	14.33		COARSE SAND		
6908320	636815.6	4877224	334.129791	41.148	9.144	9.09218	Water Supply	Domestic	0.00	4.88		PREVIOUSLY DUG		
									4.88	12.19		CLAY	FINE SAND	
									12.19	18.29		FINE SAND		
									18.29	27.43	BLUE	CLAY		
									27.43	35.05		CLAY	MEDIUM SAND	
									35.05	41.15	BLUE	FINE SAND		
6908321	636807.6	4877556	334.979339	17.3736	7.62	0	Water Supply	Domestic	0.00	7.62		PREVIOUSLY DUG		
									7.62	14.33	YELLOW	CLAY	SILT	
									14.33	17.37	RED	FINE SAND		
									0.00	7.32		PREVIOUSLY DUG		

Appendix C - Summary of MOECC Water Well Records within 500 m
5426, 5452 & 5584 Lakeshore Road, Ballantrae, ON
Town of Whitchurch-Stouffville

Well ID	Coordinates		Elevation	Depth	Water Level	Water Yield	Water Use	Water Status	Top	Bottom	Colour	Material 1	Material 2	Material 3
	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
6908322	636658.6	4877286	335.528747	70.104	2.7432	22.73045	Test Hole	Not Used	7.32	19.81	BROWN	MEDIUM SAND	SILT	
									19.81	70.10		QUICKSAND	CLAY	
6910269	636924.6	4877623	331.815948	9.144	6.096	22.73045	Water Supply	Domestic	0.00	0.30	BLACK	TOPSOIL	MEDIUM SAND	
									0.30	9.14	RED	MEDIUM SAND		
6910343	637004.6	4877663	330.422821	24.6888	6.096	22.73045	Water Supply	Domestic	0.00	7.62	BROWN	MEDIUM SAND	CLAY	
									7.62	21.64	BLUE	SILT	CLAY	
									21.64	24.69	GREY	FINE SAND		
6910344	636964.6	4877653	331.290435	25.2984	6.4008	27.27654	Water Supply	Domestic	0.00	7.62	BROWN	MEDIUM SAND	CLAY	
									7.62	22.25	BLUE	SILT	CLAY	
									22.25	25.30	GREY	FINE SAND		
6910345	636929.6	4877633	331.653472	24.384	6.096	36.36872	Water Supply	Domestic	0.00	10.97	BROWN	MEDIUM SAND	CLAY	
									10.97	21.64	BLUE	SILT	CLAY	
									21.64	24.38	GREY	FINE SAND		
6910538	636904.6	4877623	332.273437	26.5176	6.4008	27.27654	Water Supply	Domestic	0.00	4.88	BROWN	MEDIUM SAND		
									4.88	5.79	BROWN	CLAY		
									5.79	15.85	BROWN	MEDIUM SAND		
									15.85	16.46	GREY	MEDIUM SAND		
									16.46	19.51	GREY	CLAY	GRAVEL	
									19.51	20.12	GREY	MEDIUM SAND		
									20.12	21.03	GREY	CLAY		
									21.03	23.16	GREY	MEDIUM SAND		
									23.16	24.69	GREY	SILT		
									24.69	26.52	BROWN	MEDIUM SAND		
6910730	636864.6	4877563	333.999969	25.908	6.7056	9.09218	Water Supply	Domestic	0.00	1.22	BROWN	MEDIUM SAND		
									1.22	3.05	BROWN	MEDIUM SAND	CLAY	
									3.05	8.53	BROWN	CLAY	GRAVEL	
									8.53	14.94	BROWN	FINE SAND		
									14.94	17.37	GREY	MEDIUM SAND	CLAY	
									17.37	21.03	GREY	CLAY		
									21.03	24.38	GREY	SILT		
									24.38	25.91	BROWN	MEDIUM SAND		
6910818	636814.6	4877483	335.244171	10.668	6.096	22.73045	Water Supply	Domestic	0.00	0.30		TOPSOIL	MEDIUM SAND	
									0.30	6.71	BROWN	FINE SAND	CLAY	
									6.71	10.67	BROWN	MEDIUM SAND		
6911078	636604.6	4876953	335.685699	32.9184	6.096	45.4609	Water Supply	Domestic	0.00	6.10	BROWN	SAND		
									6.10	10.97	BROWN	CLAY		
									10.97	29.87	GREY	CLAY	SILT	
									29.87	32.92	GREY	SAND		
6912956	637072.6	4877111	335.056365	22.86	15.24	36.36872	Water Supply	Domestic	0.00	5.18		PREVIOUSLY DUG		
									5.18	13.72	BROWN	FINE SAND		
									13.72	19.81	BROWN	CLAY	SAND	

Appendix C - Summary of MOECC Water Well Records within 500 m
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Town of Whitchurch-Stouffville

Well ID	Coordinates		Elevation	Depth	Water Level	Water Yield	Water Use	Water Status	Top	Bottom	Colour	Material 1	Material 2	Material 3
	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
									19.81	22.86	BROWN	FINE SAND		
6913612	636554.6	4877323	336.25476	33.528	4.8768	18.18436	Water Supply	Domestic	0.00	3.66	BROWN	CLAY		
									3.66	6.71	BROWN	COARSE SAND		
									6.71	24.38	BROWN	CLAY	SAND	
									24.38	32.61	BLUE	CLAY		
									32.61	33.53	GREY	FINE SAND		
6913839	636784.6	4877573	335.005065	12.192	11.5824	22.73045	Water Supply	Domestic	0.00	0.61		TOPSOIL		
									0.61	5.49	BROWN	CLAY	SANDY	
									5.49	6.10		SAND		
									6.10	12.19	BROWN	CLAY	SANDY	
6913958	637514.6	4876823	334.196075	15.8496	11.5824	27.27654	Water Supply	Domestic	0.00	0.61	BLACK	TOPSOIL		
									0.61	9.14	BROWN	CLAY	STONES	
									9.14	12.19	BLUE	CLAY		
									12.19	15.85	BROWN	SAND		
6914298	636664.6	4877473	336.559387	31.3944	12.192	22.73045	Water Supply	Domestic	0.00	3.96	BROWN	SAND		
									3.96	8.53	YELLOW	CLAY		
									8.53	19.81	BROWN	SILT	CLAY	
									19.81	26.21	GREY	CLAY		
									26.21	28.04	GREY	SILT		
									28.04	29.57	GREY	CLAY		
									29.57	31.39	BROWN	SAND	WATER-BEARING	
6914300	636714.6	4877473	336.552886	33.528	11.5824	22.73045	Water Supply	Domestic	0.00	3.96	BROWN	SAND		
									3.96	9.14	YELLOW	CLAY		
									9.14	20.42	BROWN	SILT	CLAY	
									20.42	27.43	GREY	CLAY		
									27.43	29.26	GREY	SILT		
									29.26	32.00	GREY	CLAY		
									32.00	33.53	BROWN	SAND	WATER-BEARING	
6914301	636664.6	4877523	337.079132	32.3088	12.4968	40.91481	Water Supply	Domestic	0.00	3.66	BROWN	SAND		
									3.66	8.23	YELLOW	CLAY	SAND	
									8.23	20.73	BROWN	SILT	CLAY	
									20.73	27.43	GREY	CLAY		
									27.43	28.65	GREY	SILT		
									28.65	30.48	GREY	CLAY		
									30.48	32.31	BROWN	SAND	WATER-BEARING	
6914306	636764.6	4877473	335.989959	30.1752	11.8872	31.82263	Water Supply	Domestic	0.00	4.88	BROWN	SAND		
									4.88	10.36	YELLOW	CLAY		
									10.36	20.42	BROWN	SILT	CLAY	
									20.42	28.35	GREY	CLAY		
									28.35	30.18	BROWN	SAND		
									0.00	6.10	BROWN	SAND		

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Town of Whitchurch-Stouffville

Well ID	Coordinates		Elevation	Depth	Water Level	Water Yield	Water Use	Water Status	Top	Bottom	Colour	Material 1	Material 2	Material 3
	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
6914307	636564.6	4877373	335.602752	34.1376	12.192	18.18436	Water Supply	Domestic	6.10	9.45	YELLOW	CLAY		
									9.45	19.51	BROWN	SILT	CLAY	
									19.51	27.43	GREY	CLAY		
									27.43	29.26	GREY	SILT		
									29.26	32.61	GREY	CLAY		
									32.61	34.14	BROWN	SAND		
6914555	636614.6	4877373	335.578369	33.528	11.5824	31.82263	Water Supply	Domestic	0.00	5.18	BROWN	SAND		
									5.18	9.75	YELLOW	CLAY	SAND	
									9.75	20.73	BROWN	SILT	CLAY	
									20.73	27.43	GREY	CLAY		
									27.43	29.57	GREY	SILT		
									29.57	31.09	GREY	CLAY		
									31.09	33.53	BROWN	FINE SAND	WATER-BEARING	
6915200	636664.6	4877423	335.774414	33.8328	11.5824	45.4609	Water Supply	Domestic	0.00	5.18	BROWN	SAND		
									5.18	9.45	YELLOW	CLAY		
									9.45	20.73	BROWN	SILT	CLAY	
									20.73	27.74	GREY	CLAY		
									27.74	29.57	GREY	SILT		
									29.57	31.39	GREY	CLAY		
									31.39	33.83	BROWN	FINE SAND	VERY	
6915201	636614.6	4877423	335.848358	34.1376	12.4968	18.18436	Water Supply	Domestic	0.00	4.88	BROWN	SAND		
									4.88	8.84	YELLOW	CLAY		
									8.84	19.81	BROWN	SAND	SILT	CLAY
									19.81	27.43	GREY	CLAY		
									27.43	30.48	GREY	SILT		
									30.48	31.70	GREY	CLAY		
									31.70	34.14	BROWN	SAND		
6915203	636714.6	4877573	336.055572	34.1376	12.8016	36.36872	Water Supply	Domestic	0.00	6.71	BROWN	SAND		
									6.71	9.45	YELLOW	CLAY		
									9.45	21.03	BROWN	SILT	CLAY	
									21.03	32.92	GREY	CLAY		
									32.92	34.14	BROWN	SAND		
6915204	636664.6	4877523	337.079132	35.9664	11.8872	45.4609	Water Supply	Domestic	0.00	7.32	BROWN	SAND		
									7.32	9.75	YELLOW	CLAY	SAND	
									9.75	21.34	BROWN	SILT	CLAY	
									21.34	34.14	GREY	CLAY		
									34.14	35.97	GREY	SAND		
6915207	636814.6	4877473	335.2453	31.3944	11.8872	40.91481	Water Supply	Domestic	0.00	5.49	BROWN	SAND		
									5.49	8.84	YELLOW	CLAY	SAND	
									8.84	20.12	BROWN	SILT	CLAY	
									20.12	29.87	GREY	CLAY		

Appendix C - Summary of MOECC Water Well Records within 500 m
5426, 5452 & 5584 Lakeshore Road, Ballantrae, ON
Town of Whitchurch-Stouffville

Well ID	Coordinates		Elevation	Depth	Water Level	Water Yield	Water Use	Water Status	Top	Bottom	Colour	Material 1	Material 2	Material 3
	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
									29.87	31.39	BROWN	SAND		
6915208	636814.6	4877423	335.13739	34.1376	12.192	36.36872	Water Supply	Domestic	0.00	6.10	BROWN	SAND		
									6.10	9.14	YELLOW	CLAY	SAND	
									9.14	19.81	BROWN	SILT	CLAY	
									19.81	31.70	GREY	CLAY		
									31.70	34.14	BROWN	SAND		
6915336	636664.6	4877573	336.830963	34.7472	13.1064	45.4609	Water Supply	Domestic	0.00	5.49	BROWN	SAND		
									5.49	9.75	YELLOW	CLAY	SAND	
									9.75	20.73	BROWN	SILT	SAND	CLAY
									20.73	32.92	GREY	CLAY		
									32.92	34.75	BROWN	SAND		
6916128	636664.6	4877423	335.774414	32.6136	12.8016	54.55308	Water Supply	Domestic	0.00	7.92	BROWN	SAND		
									7.92	10.67	YELLOW	CLAY	SAND	
									10.67	20.12	YELLOW	SILT	CLAY	
									20.12	28.65	GREY	CLAY	SILT	
									28.65	31.39	GREY	CLAY		
									31.39	32.61	BROWN	SAND		
6916129	636664.6	4877523	337.079132	33.8328	8.2296	22.73045	Water Supply	Domestic	0.00	6.71	BROWN	SAND		
									6.71	10.36	YELLOW	CLAY	SAND	
									10.36	20.73	YELLOW	SILT	CLAY	
									20.73	24.08	GREY	CLAY		
									24.08	25.60	GREY	SILT		
									25.60	32.92	GREY	CLAY		
									32.92	33.83	BROWN	SAND		
6916979	637514.6	4876973	335.299438	12.8016	6.096	68.19135	Water Supply		0.00	5.49	BROWN	SAND		
									5.49	8.23	BROWN	FINE SAND	CLAY	
									8.23	12.80	BROWN	SAND		
6922280	636792	4877588	334.86264	30.48	7.0104	45.4609	Water Supply	Domestic	0.00	5.18	BROWN	SAND	SILT	
									5.18	7.62	BROWN	CLAY	SOFT	
									7.62	10.06	BROWN	SAND	CLAY	
									10.06	21.34	BROWN	SAND	SILT	
									21.34	27.74	GREY	CLAY	SOFT	
									27.74	30.48	GREY	SAND	FINE SAND	
6922367	636590	4876966	335.838867	-	4.8768	4.54609	Water Supply	Domestic	0.00	3.66	BROWN	SAND	PACKED	
									3.66	4.57	BROWN	GRAVEL	SAND	LOOSE
									4.57	7.01	GREY	CLAY	SOFT	
									7.01	23.47	GREY	SAND	CLAY	SILT
									23.47	29.87	GREY	CLAY	SILT	SOFT
									29.87	35.66	GREY	SAND	CLEAN	FINE SAND
6923350	636724	4877500	336.663696	-	11.2776	45.4609	Water Supply	Domestic	0.00	8.53	BROWN	SAND	CLEAN	
6924655	637455.6	4877609	335.470886	-		-	Water Supply	Domestic	0.00	11.28	BROWN	SAND	PACKED	

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Town of Whitchurch-Stouffville

Well ID	Coordinates		Elevation	Depth	Water Level	Water Yield	Water Use	Water Status	Top	Bottom	Colour	Material 1	Material 2	Material 3
	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
[illegible]	[illegible]	[illegible]	[illegible]	-		-	[illegible]	[illegible]	11.28	19.20	BROWN	SAND	WATER-BEARING	CLEAN
7193230	637452	4876994	-	-		-	Abandoned-Other		-	-	-	-	-	-
7213031	636794	4877246	-	-		-	Abandoned-Other	Not Used	-	-	-	-	-	-
7219787	636675	4877340	-	-		-	Abandoned-Other		-	-	-	-	-	-
7219788	636790	4877278	-	-		-	Abandoned-Other		-	-	-	-	-	-
7219789	636873	4877365	-	-		-	Abandoned-Other		-	-	-	-	-	-
6908106	636489.6	4877072	336.769561	7.31519985	5.7912	22.73	Water Supply	Domestic	0.00	7.32		MEDIUM SAND		
6908111	636457.6	4877323	335.951568	16.7639999	5.4864	13.64	Water Supply	Domestic	0.00	7.62		PREVIOUSLY DUG		
									7.62	8.84		CLAY		
									8.84	10.06		QUICKSAND		
									10.06	10.67		CLAY		
									6.10	16.76		FINE SAND		
6908207	637789.6	4876983	337.210632	8.22959995	6.096	22.73	Water Supply	Domestic	0.00	8.23		MEDIUM SAND		
6908286	637599.6	4876805	333.87973	32.3087997	30.1752	18.18	Water Supply	Livestock / Domestic	0.00	0.61		TOPSOIL		
									0.61	9.75	RED	CLAY		
									9.75	28.96	BLUE	CLAY		
									28.96	30.18		COARSE SAND		
									30.18	32.31		COARSE SAND	GRAVEL	
6908291	638010.6	4877051	336.678649	14.6303997	12.192	18.18	Water Supply	Domestic	0.00	14.63	GREY	MEDIUM SAND		
6908292	638004.6	4877092	338.212463	14.9351997	12.192	22.73	Water Supply	Domestic	0.00	14.94		FINE SAND		
6908295	637691.6	4876805	330.221008	14.6303997	12.192	18.18	Water Supply	Domestic	0.00	14.63		FINE SAND		
6908296	637855.6	4876701	327.324798	9.14400005	6.7056	13.64	Water Supply	Domestic	0.00	1.52		CLAY	STONES	
									1.52	9.14		MEDIUM SAND		
6908298	637748.6	4876849	327.989227	15.2399998	11.2776	22.73	Water Supply	Domestic	0.00	15.24		MEDIUM SAND		
6908312	637765.6	4876633	329.23529	12.1920004	7.62		Water Supply	Domestic	0.00	0.30		TOPSOIL	MEDIUM SAND	
									0.30	3.66		FINE SAND		
									3.66	5.49	BLUE	CLAY		
									5.49	6.71		COARSE SAND		
									6.71	7.62		CLAY		
									7.62	12.19		FINE SAND		
6908315	637723.6	4876933	334.283325	12.49680	9.144	22.73	Water Supply	Domestic	0.00	12.50		MEDIUM SAND		
6908317	637694.6	4876927	334.034606	15.24000	11.5824	13.64	Water Supply	Domestic	0.00	15.24		MEDIUM SAND		
6908323	636534.6	4877435	335.695953	14.32560	10.3632	22.73	Water Supply	Domestic	0.00	10.36		COARSE SAND		
									10.36	14.33		FINE SAND		
6908324	637508.6	4877937	335.000885	13.71600	8.5344	22.73	Water Supply	Domestic	0.00	13.72		MEDIUM SAND	GRAVEL	
6908326	637669.6	4877987	338.294219	17.06880	9.144	113.65	Water Supply	Domestic	0.00	9.14		MEDIUM SAND	STONES	

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	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	9.14	17.07		COARSE SAND	GRAVEL	
6908328	636664.6	4877771	334.816101	14.6303997	10.668	18.18	Water Supply	Domestic	0.00	5.18		MEDIUM SAND		
									5.18	9.14		CLAY		
									9.14	14.63		MEDIUM SAND		
6908329	636487.6	4877613	337.510192	4.87680006	1.8288	4.55	Water Supply	Domestic	0.00	1.83		MEDIUM SAND		
									1.83	4.88		QUICKSAND		
6908332	637485.6	4878026	334.995513	14.3256006	8.5344	31.82	Water Supply	Irrigation	0.00	11.28		COARSE SAND		
									11.28	14.33		FINE SAND		
6908334	637388.6	4878088	331.921722	17.6784	7.62	136.38	Water Supply	Irrigation	0.00	0.30		TOPSOIL		
									0.30	6.10	BROWN	TOPSOIL	MEDIUM SAND	
									6.10	17.07		MEDIUM SAND		
									17.07	17.68		COARSE SAND		
6908336	636502.6	4877563	337.152191	10.9728003	4.2672	18.18	Water Supply	Domestic	0.00	3.66		PREVIOUSLY DUG		
									3.66	9.75		MEDIUM SAND	CLAY	
									9.75	10.97		FINE SAND		
6908337	636534.6	4877569	336.969573	11.2776003	9.144	18.18	Water Supply	Commercial	0.00	6.10		FINE SAND		
									6.10	9.14	BLUE	CLAY		
									9.14	11.28		FINE SAND		

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Town of Whitchurch-Stouffville

Well ID	Coordinates		Elevation	Depth	Water Level	Water Yield	Water Use	Water Status	Top	Bottom	Colour	Material 1	Material 2	Material 3
	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
6910881	636464.6	4877673	337.795654	23.7744007			Abandoned-Supply		0.00	1.52	BROWN	SAND		
									1.52	5.49	BROWN	CLAY	SAND	SILT
									5.49	7.01	BLUE	SAND	CLAY	
									7.01	15.24	BROWN	CLAY	SAND	
									15.24	23.77	BLUE	CLAY	SAND	SILT
6911229	637964.6	4877253	341.362243	21.6408005	19.812	27.28	Water Supply	Domestic	0.00	21.64		SAND		
6911230	638014.6	4877223	340.495971	19.8120003	18.288	22.73	Water Supply	Domestic	0.00	1.52		CLAY		
									1.52	19.81		SAND		
6911732	637889.6	4877273	342.324432	21.3360004	18.288	22.73	Water Supply	Domestic	0.00	1.52		CLAY		
									1.52	21.34		SAND		
6911733	637974.6	4877323	341.662109	21.3360004	18.288	22.73	Water Supply	Domestic	0.00	1.52		CLAY		
									1.52	21.34		SAND		
6911734	637914.6	4877228	341.582031	21.3360004	18.288	22.73	Water Supply	Domestic	0.00	1.52		CLAY		
									1.52	21.34		SAND		
6911823	638019.6	4877048	336.455413	14.3256006	10.0584	18.18	Water Supply	Domestic	0.00	2.44	BROWN	CLAY	SAND	
									2.44	6.10	BROWN	SAND		
									6.10	10.06	BROWN	FINE SAND	CLAY	
									10.06	14.33	BROWN	FINE SAND		
6912068	638004.6	4877200	339.9971	19.5072002	14.6304	18.18	Water Supply	Public	0.00	1.52	BROWN	SAND	CLAY	STONES
									1.52	14.02	BROWN	SAND		
									14.02	19.51	BROWN	SAND		
6912165	638010.6	4877150	339.902191	21.9456005	17.0688	22.73	Water Supply	Public	0.00	1.22	BROWN	CLAY		
									1.22	17.07	BROWN	SAND	CLAY	
									17.07	21.95	BROWN	SAND		
6912662	637492.6	4877924	335.055114	21.3360004	10.9728	45.46	Water Supply	Domestic	0.00	5.18	GREY	SAND		
									5.18	10.97	GREY	SAND	CLAY	
									10.97	21.34		FINE SAND		
6912839	636424.6	4877244	336.987548	17.9832001	7.3152	27.28	Water Supply	Domestic	0.00	1.22		PREVIOUSLY DUG		
									1.22	5.49	BROWN	SAND		
									5.49	10.06	YELLOW	CLAY	SAND	
									10.06	15.85	BROWN	SILT	SAND	CLAY
									15.85	17.98	BROWN	FINE SAND		
6912862	636454.6	4877019	335.906829	38.1000023	10.9728	50.01	Water Supply	Domestic	0.00	1.22	BROWN	SAND	GRAVEL	
									1.22	3.66	BROWN	SAND		
									3.66	10.06	YELLOW	CLAY		
									10.06	20.73	GREY	SILT	CLAY	
									20.73	33.53	GREY	CLAY		
									33.53	38.10	GREY	FINE SAND		
6913618	636464.6	4877173	337.557678	35.052002	12.192	45.46	Water Supply	Commerical	0.00	7.62	BROWN	SAND		
									7.62	12.19	BROWN	CLAY		
									12.19	33.53	BLUE	CLAY	SOFT	

Appendix C - Summary of MOECC Water Well Records within 500 m
5426, 5452 & 5584 Lakeshore Road, Ballantrae, ON
Town of Whitchurch-Stouffville

Well ID	Coordinates		Elevation	Depth	Water Level	Water Yield	Water Use	Water Status	Top	Bottom	Colour	Material 1	Material 2	Material 3
	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
									33.53	35.05	BLUE	FINE SAND		
6913738	637714.6	4876723	325.282379	15.2399998		22.73	Abandoned-Supply		0.00	10.67		SAND	DRY	
									10.67	15.24		SAND		

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5426, 5452 & 5584 Lakeshore Road, Ballantrae, ON
Town of Whitchurch-Stouffville

Well ID	Coordinates		Elevation	Depth	Water Level	Water Yield	Water Use	Water Status	Top	Bottom	Colour	Material 1	Material 2	Material 3
	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
6914058	636414.6	4877573	337.550292	27.4320011	9.144	9.09	Water Supply	Domestic	0.00	3.66	BROWN	SAND	LOOSE	
									3.66	10.06	BROWN	SAND	CLAY	
									10.06	20.12	BROWN	SAND	LOOSE	
									20.12	21.03	BLUE	CLAY	DENSE	
									21.03	23.77	BLUE	CLAY	SANDY	SOFT
									23.77	27.43	BLUE-GREY	QUICKSAND	SILT	SOFT
6915206	636464.6	4877573	337.476959	34.7472	10.9728	68.19	Water Supply	Domestic	0.00	6.40	BROWN	SAND		
									6.40	9.14	YELLOW	CLAY	SAND	
									9.14	20.73	BROWN	SILT	CLAY	
									20.73	32.92	GREY	CLAY	SILT	
									32.92	34.75	BROWN	SAND		
6916040	637314.6	4877873	332.090789	13.7160006	4.8768	68.19	Water Supply	Domestic	0.00	0.30	BROWN	TOPSOIL		
									0.30	4.88	BROWN	SAND	CLAY	
									4.88	11.28	BROWN	SAND		
									11.28	13.72	BLUE	FINE SAND		
6916111	637864.6	4877073	339.267395	17.0688		22.73	Water Supply	Domestic	0.00	3.05	BROWN	CLAY	SANDY	
									3.05	15.54	BROWN	COARSE SAND		
									15.54	17.07	BROWN	MEDIUM SAND		
6916112	637814.6	4877073	340.229309	18.8976002	12.8016	18.18	Water Supply	Domestic	0.00	2.74	BROWN	CLAY	SANDY	
									2.74	16.15	BROWN	MEDIUM SAND		
									16.15	18.90	BROWN	FINE SAND		
6916113	637764.6	4876973	336.926513	34.4424019	13.4112	18.18	Water Supply	Domestic	0.00	5.49	BROWN	CLAY	SANDY	
									5.49	20.42	BROWN	SAND	CLAY	LAYERED
									20.42	29.57	GREY	CLAY	SILTY	
									29.57	32.00	GREY	CLAY	STONES	
									32.00	33.53	GREY	FINE SAND	SILTY	
									33.53	34.44	GREY	FINE SAND		
6916668	637814.6	4877073	340.229309	18.2880001		22.73	Water Supply	Domestic	0.00	2.13		CLAY		
									2.13	13.72		SAND	CLAY	
									13.72	18.29		FINE SAND		
6916753	636464.6	4877323	336.057067	16.1543999	5.4864	13.64	Water Supply	Domestic	0.00	1.83		PREVIOUSLY DUG		
									1.83	9.14	BROWN	SAND	DRY	
									9.14	12.19	BROWN	SAND	CLAY	
									12.19	13.72	GREY	CLAY	LOOSE	
									13.72	15.54	GREY	SAND	CLAY	LIGHT-COLOURED
									15.54	16.15	BROWN	SAND		
6916754	638014.6	4877123	339.487274	17.6784	10.9728	18.18	Water Supply	Domestic	0.00	9.14	BROWN	SAND	DRY	
									9.14	14.63	BROWN	SAND		
									14.63	17.68	BROWN	SAND	CLAY	LOOSE
6917055	638014.6	4877023	335.910461	17.0688	12.192	27.28	Water Supply	Domestic	0.00	3.66	BROWN	CLAY	SANDY	
									3.66	17.07	BROWN	SAND		

Appendix C - Summary of MOECC Water Well Records within 500 m
5426, 5452 & 5584 Lakeshore Road, Ballantrae, ON
Town of Whitchurch-Stouffville

Well ID	Coordinates		Elevation	Depth	Water Level	Water Yield	Water Use	Water Status	Top	Bottom	Colour	Material 1	Material 2	Material 3
	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
6917739	637784.6	4876699	331.481506	12.1920004	6.7056	22.73	Water Supply		0.00	0.61	BLACK	TOPSOIL		
									0.61	6.71		FINE SAND	FINE SAND	
									6.71	12.19	BROWN	SAND		
6917903	637599.6	4876805	333.87973	20.7264004	10.668	45.46	Water Supply	Domestic	0.00	5.18	BROWN	SAND	CLAY	
									5.18	15.85	BROWN	SAND		
									15.85	16.76	BROWN	SAND	CLAY	
									16.76	20.73	BROWN	SAND		
6917906	636947	4877772	332.503387	24.9936008	6.096	31.82	Water Supply	Domestic	0.00	13.72	BROWN	SAND	CLAY	
									13.72	21.03	BLUE	CLAY	SOFT	
									21.03	22.86	BLUE	CLAY	SAND	FINE SAND
									22.86	24.99	BLUE	SAND		
6917907	636947	4877772	332.503387	33.2232018	6.7056	27.28	Water Supply	Domestic	0.00	14.33	BROWN	SAND	CLAY	
									14.33	26.82	BLUE	CLAY	SOFT	
									26.82	28.65	BLUE	CLAY	SAND	
									28.65	30.48	BLUE	CLAY		
									30.48	33.22	BLUE	SAND	FINE SAND	
6918902	637599.6	4876805	333.87973	16.1543999	7.62	27.28	Water Supply	Domestic	0.00	5.49	BROWN	SAND	CLAY	
									5.49	16.15	BROWN	SAND		
6918978	637793	4876710	331.233337	34.7472	4.572	54.55	Water Supply	Domestic	0.00	5.79	BROWN	SAND	SILT	SOFT
									5.79	7.01	BROWN	SAND	CLAY	
									7.01	12.19	BROWN	GRAVEL	HARD	
									12.19	24.69	BLUE	CLAY	SOFT	
									24.69	33.53	BROWN	SAND	COARSE SAND	
									33.53	34.75	BLUE	CLAY		
6918990	637793	4876710	331.233337	21.6408005	6.096	54.55	Water Supply	Domestic	0.00	0.30		TOPSOIL		
									0.30	6.40	BROWN	SAND	CLAY	SOFT
									6.40	18.90	BLUE	CLAY		
									18.90	21.64				
6919467	636440.6	4877323	335.658935	17.6784	7.9248	27.28	Water Supply	Domestic	0.00	4.88	BROWN	SAND		
									4.88	7.62	YELLOW	CLAY		
									7.62	14.02	BROWN	SAND		
									14.02	14.63	GREY	CLAY		
									14.63	15.54	GREY	SILT		
									15.54	17.68	BROWN	SAND		
6908112	636405.6	4877456	335.174194	17.6784	9.144	22.73	Water Supply	Livestock / Domestic	0.00	7.32		PREV. DRILLED		
									7.32	8.53	BLUE	CLAY		
									8.53	17.68		FINE SAND		
6908325	637382.6	4877839	334.059265	13.7160006	8.5344	22.73	Water Supply	Domestic	0.00	13.72		MEDIUM SAND	GRAVEL	
6908333	637668.6	4877985	338.195068	19.2024002	10.3632	63.65	Water Supply	Domestic	0.00	10.36		MEDIUM SAND		
									10.36	19.20		FINE SAND		

Appendix C - Summary of MOECC Water Well Records within 500 m
5426, 5452 & 5584 Lakeshore Road, Ballantrae, ON
Town of Whitchurch-Stouffville

Well ID	Coordinates		Elevation	Depth	Water Level	Water Yield	Water Use	Water Status	Top	Bottom	Colour	Material 1	Material 2	Material 3
	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
6914559	636664.6	4877623	335.564971	29.8703995	12.4968	27.28	Water Supply	Domestic	0.00	4.57	BROWN	SAND		
									4.57	9.75	YELLOW	CLAY		
									9.75	20.73	GREY	SILT	CLAY	
									20.73	23.77	GREY	CLAY		
									23.77	24.99	GREY	SILT		
									24.99	27.74	GREY	CLAY		
									27.74	29.87	GREY	FINE SAND		
6914560	636564.6	4877573	336.838867	29.8703995	12.192	22.73	Water Supply	Domestic	0.00	3.96	BROWN	SAND		
									3.96	9.14	YELLOW	CLAY		
									9.14	20.73	GREY	SILT	CLAY	
									20.73	22.86	GREY	CLAY		
									22.86	24.69	GREY	SILT		
									24.69	28.04	GREY	CLAY		
									28.04	29.87	GREY	FINE SAND		
6914901	638014.6	4877073	337.439208	15.2399998			Observation Wells	Not Used	0.00	2.74	BROWN	SAND	SILT	LOOSE
									2.74	3.96	BROWN	SILT	CLAY	SANDY
									3.96	15.24	BROWN	FINE SAND	MEDIUM SAND	PACKED
6916114	637814.6	4876973	335.489288	15.2399998	8.8392	27.28	Water Supply	Domestic	0.00	0.61	BROWN	CLAY		
									0.61	5.18	BROWN	CLAY	SANDY	
									5.18	11.89	BROWN	MEDIUM SAND	CLAY	LAYERED
									11.89	15.24	BROWN	FINE SAND		
6916115	637714.6	4876973	335.721893	20.7264004	11.8872	18.18	Water Supply	Domestic	0.00	3.66	BROWN	CLAY	SANDY	
									3.66	12.50	BROWN	MEDIUM SAND		
									12.50	18.90	BROWN	FINE SAND		
									18.90	20.73	GREY	FINE SAND		
6916311	637814.6	4877023	339.16571	21.3360004	11.8872	22.73	Water Supply	Domestic	0.00	8.84	BROWN	CLAY	SANDY	
									8.84	18.29	BROWN	SAND	CLAY	LAYERED
									18.29	21.34	BROWN	SAND		
6916313	637714.6	4877023	337.695434	17.3736	7.62	45.46	Water Supply	Domestic	0.00	0.30	BLACK	TOPSOIL		
									0.30	4.57	BROWN	CLAY		
									4.57	9.75	BROWN	COARSE SAND		
									9.75	13.72	BROWN	SAND	CLAY	
									13.72	17.37	BROWN	SAND		
6916314	637864.6	4876973	331.148803	30.4799995	10.668	27.28	Water Supply	Domestic	0.00	0.61	BROWN	TOPSOIL	SANDY	
									0.61	15.54	BROWN	SAND		
									15.54	16.76	BROWN	CLAY	SANDY	
									16.76	28.65	BLUE	CLAY	SANDY	
									28.65	30.48	BLUE	SAND		

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5426, 5452 & 5584 Lakeshore Road, Ballantrae, ON
Town of Whitchurch-Stouffville

Well ID	Coordinates		Elevation	Depth	Water Level	Water Yield	Water Use	Water Status	Top	Bottom	Colour	Material 1	Material 2	Material 3
	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
6916349	636514.6	4877523	336.760253	35.3568001	5.4864	45.46	Water Supply	Domestic	0.00	6.40	YELLOW	SAND	CLAY	
									6.40	17.68	GREY	SAND	CLAY	SOFT
									17.68	27.43	YELLOW	CLAY	SOFT	
									27.43	32.61	GREY	TILL		
									32.61	35.36	GREY	FINE SAND	CLEAN	
6917363	636414.6	4877423	334.993621	17.3736	5.4864	13.64	Water Supply	Domestic	0.00	10.36	BROWN	SAND	DRY	
									10.36	14.02	BROWN	SAND	CLAY	
									14.02	17.37	BROWN	FINE SAND	WATER-BEARING	
6917705	636523	4877495	336.426635	124.968002	35.052	77.28	Water Supply	Domestic / Municipal	0.00	0.61		TOPSOIL		
									0.61	8.23	BROWN	FINE SAND		
									8.23	34.75	BROWN	FINE SAND	CLAY	
									34.75	117.04	GREY	SAND	CLAY	DENSE
									117.04	118.87		MEDIUM SAND	COARSE SAND	
									118.87	122.22		CLAY		
									122.22	122.83		MEDIUM SAND	COARSE SAND	
									122.83	124.97		CLAY	TILL	
6918298	637628.6	4876894	334.848236	13.1064005	7.62	22.73	Water Supply	Public	0.00	7.62	BROWN	SAND		
									7.62	13.11	BROWN	SAND		
6920075	637295	4877793	332.955627	145.694397			Test Hole	Not Used	0.00	8.53		SAND		
									8.53	14.63	BROWN	CLAY	SOFT	
									14.63	25.91		FINE SAND	COARSE SAND	
									25.91	51.21	GREY	CLAY		
									51.21	59.13		CLAY	GRAVEL	HARD
									59.13	116.74		GRAVEL	CLAY	HARD
									116.74	124.36		GRAVEL	CLAY	
									124.36	131.67		CLAY	GRAVEL	
									131.67	134.42		GRAVEL	CLAY	
									134.42	141.43		CLAY	GRAVEL	HARD
									141.43	145.69		SHALE		
6921306	637686	4876817	331.052368	22.5552006	13.1064	22.73	Water Supply		0.00	14.63		UNKNOWN TYPE		
									14.63	22.56	BROWN	FINE SAND		

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Town of Whitchurch-Stouffville

Well ID	Coordinates		Elevation	Depth	Water Level	Water Yield	Water Use	Water Status	Top	Bottom	Colour	Material 1	Material 2	Material 3
	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
6922603	637225	4877785	331.542114	76.2000046	13.716	45.46	Water Supply	Domestic	0.00	4.57	BROWN	SAND	SILT	LOOSE
									4.57	6.10	BROWN	SILT	CLAY	SOFT
									6.10	16.76	BROWN	SAND	SILT	LOOSE
									16.76	18.29	GREY	CLAY	SILT	SOFT
									18.29	22.86	GREY	SILT	SAND	SOFT
									22.86	24.99	GREY	CLAY	SILT	SOFT
									24.99	44.20	GREY	SILT	SAND	SOFT
									44.20	51.82	BROWN	FINE SAND	SILT	LOOSE
									51.82	54.86	GREY	SILT	CLAY	SOFT
									54.86	59.44	GREY	SILT	SAND	CLAY
									59.44	64.01	BROWN	GRAVEL	SAND	SILT
									64.01	68.58	GREY	SILT	GRAVEL	SAND
									68.58	76.20	GREY	CLAY	SILT	
6922821	637279	4877839	331.796813	61.5695992	10.3632	22.73	Water Supply	Domestic	0.00	9.14	BROWN	FINE SAND	SILT	
									9.14	13.72	BROWN	SILT	CLAY	FINE SAND
									13.72	42.67	BROWN	SILT	FINE SAND	
									42.67	45.72	BROWN	SILT	FINE SAND	CLAY
									45.72	48.77	GREY	CLAY	SILT	SOFT
									48.77	54.86	GREY	CLAY	SILT	
									54.86	56.39	BROWN	GRAVEL	SILT	LOOSE
									56.39	59.44	GREY	SILT	CLAY	GRAVEL
									59.44	61.57	GREY	SILT	CLAY	SAND
6922822	637307	4877935	331.628784	9.14400005			Observation Wells		0.00	0.30	BLACK	TOPSOIL		
									0.30	1.83	BROWN	SILT	SAND	CLAY
									1.83	9.14	BROWN	SILT	FINE SAND	
6922823	637225	4877785	331.542114	65.5319977	16.4592	54.55	Water Supply	Domestic	0.00	4.57	BROWN	SAND	SILT	
									4.57	6.10	BROWN	CLAY	SILT	
									6.10	16.76	BROWN	SAND	SILT	
									16.76	18.90	GREY	CLAY	SILT	LAYERED
									18.90	25.91	GREY	SILT	SAND	CLAY
									25.91	51.82	GREY	SILT	SAND	
									51.82	54.86	GREY	SILT	CLAY	
									54.86	59.44	GREY	SILT	SAND	CLAY
									59.44	61.57	GREY	SILT	GRAVEL	
									61.57	64.01	GREY	SAND	GRAVEL	SILT
									64.01	65.53	GREY	CLAY	SILT	SAND
6922824	637279	4877783	332.824249	9.14400005			Observation Wells	Not Used	0.00	0.30	BLACK	TOPSOIL		
									0.30	1.83	BROWN	SILT	SAND	CLAY
									1.83	9.14	BROWN	SILT	FINE SAND	

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5426, 5452 & 5584 Lakeshore Road, Ballantrae, ON
Town of Whitchurch-Stouffville

Well ID	Coordinates		Elevation	Depth	Water Level	Water Yield	Water Use	Water Status	Top	Bottom	Colour	Material 1	Material 2	Material 3
	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
6922825	637279	4877839	331.796813	82.2959976	35.9664	54.55	Water Supply	Domestic	0.00	0.30	BLACK	TOPSOIL		
									0.30	1.83	BROWN	SILT	SAND	CLAY
									1.83	10.67	BROWN	SILT	FINE SAND	
									10.67	16.76	GREY	CLAY	SILT	LAYERED
									16.76	51.82	GREY	SILT	FINE SAND	CLAY
									51.82	57.91	GREY	CLAY	SILT	SANDSTONE
									57.91	60.96	GREY	SILT	GRAVEL	DRY
									60.96	70.10	GREY	CLAY	GRAVEL	SILT
									70.10	71.63	GREY	CLAY	DENSE	
									71.63	76.20	GREY	SILT	SAND	CEMENTED
									76.20	79.25	GREY	CLAY	DENSE	
									79.25	80.47	BLACK	GRAVEL	SAND	SILT
									80.47	82.30	GREY	SILT	SAND	CLAY
6922826	637307	4877935	331.628784	9.14400005			Observation Wells	Not Used	0.00	0.30	BLACK	TOPSOIL		
									0.30	1.83	BROWN	SILT	SAND	CLAY
									1.83	9.14	BROWN	SILT	FINE SAND	
6923838	637406	4877879	335.008636	23.1648006	6.7056	477.34	Test Hole	Irrigation	0.00	0.61	BROWN	CLAY	SAND	
									0.61	9.14	BROWN	SAND	MEDIUM-GRAINED	
									9.14	10.67	BROWN	FINE SAND		
									10.67	19.81	BROWN	COARSE SAND		
									19.81	23.16	GREY	SAND	SILT	LAYERED
6923839	637349	4878067	331.726623	42.6720009	8.8392	363.69	Test Hole	Irrigation	0.00	0.61	BROWN	TOPSOIL	SANDY	
									0.61	4.27	BROWN	SAND		
									4.27	4.57		GRAVEL	MEDIUM-GRAINED	
									4.57	6.10	BROWN	SAND	GRAVEL	COARSE-GRAINED
									6.10	20.42	BROWN	SAND		
									20.42	22.86	GREY	SAND		
									22.86	42.67	GREY	CLAY	SILT	LAYERED
6923840	637350	4877970	332.455413	42.6720009			Observation Wells	Not Used	0.00	0.30	BROWN	TOPSOIL		
									0.30	2.44	BROWN	CLAY	SILT	
									2.44	3.05	BROWN	SAND		
									3.05	7.92	BROWN	CLAY	SILT	
									7.92	19.51	BROWN	CLAY	SAND	LAYERED
									19.51	40.84	GREY	CLAY	SILT	
									40.84	42.67	GREY	CLAY	STICKY	

Appendix C - Summary of MOECC Water Well Records within 500 m
5426, 5452 & 5584 Lakeshore Road, Ballantrae, ON
Town of Whitchurch-Stouffville

Well ID	Coordinates		Elevation	Depth	Water Level	Water Yield	Water Use	Water Status	Top	Bottom	Colour	Material 1	Material 2	Material 3
	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
6923841	637350	4877970	332.455413	42.6720009			Test Hole	Not Used	0.00	0.61		TOPSOIL		
									0.61	3.05	BROWN	CLAY	SANDY	
									3.05	9.45	BROWN	CLAY	SILT	
									9.45	11.89	BROWN	CLAY	SAND	GRAVEL
									11.89	30.48	BROWN	CLAY	SAND	LAYERED
									30.48	37.80	GREY	CLAY	SANDSTONE	LAYERED
									37.80	42.67	GREY	CLAY	SOFT	
6924057	637999	4876951	332.294342				Abandoned-Other	Not Used						
6924192	637917	4876947	327.488281											
6924196	637908	4876982	329.9776				Abandoned-Other	Domestic						
6924197	637969	4876956	330.98236				Abandoned-Supply							
6924337	637666	4876962	335.350891				Abandoned-Other							
6924352	637667	4877005	336.244689				Abandoned-Other							
6924418	637698	4877030	337.475158				Abandoned-Other							
6924421	636438	4877418	335.106567				Abandoned-Other							
6924422	636438	4877418	335.106567				Abandoned-Other							
6924477	636411	4877564	337.39328				Abandoned-Other							
6924590	637643	4876866	333.485839				Abandoned-Other							
6924593	637436	4877810	334.952911				Abandoned-Other							
6924606	637643	4876866	333.485839				Abandoned-Other							
6924724	636524	4877082	337.042053				Abandoned-Other							
6924824	637349	4878067	331.726623	23.1648006	8.8392	500.07	Water Supply	Domestic	0.00	0.61	BROWN	TOPSOIL		
									0.61	4.27	BROWN	SAND		
									4.27	4.57		GRAVEL		
									4.57	6.10	BROWN	SAND	GRAVEL	
									6.10	21.03	BROWN	SAND		
									21.03	22.86	GREY	SAND		
									22.86	23.16	GREY	CLAY	SILTY	SAND

Appendix C - Summary of MOECC Water Well Records within 500 m
5426, 5452 & 5584 Lakeshore Road, Ballantrae, ON
Town of Whitchurch-Stouffville

Well ID	Coordinates		Elevation	Depth	Water Level	Water Yield	Water Use	Water Status	Top	Bottom	Colour	Material 1	Material 2	Material 3
	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
6924825	637377.1	4878021	332.6315	24.6888008		0.00	Water Supply	Domestic	0.00	0.30	BROWN	TOPSOIL		
									0.30	4.88	BROWN	SAND		
									4.88	15.85	BROWN	CLAY		
									15.85	24.08	BROWN	SAND	GRAVEL	MEDIUM GRAVEL
									24.08	24.69	GREY	CLAY		
6924826	637406	4877879	335.008636	21.9456005	1.8288	500.07	Water Supply	Livestock	0.00	0.30	BROWN	TOPSOIL		
									0.30	17.68	BROWN	SAND	SILTY	
									17.68	18.29	BROWN	SAND		
									18.29	19.20	BROWN	SAND	GRAVEL	
									19.20	21.34	BROWN	SAND		
									21.34	21.95	GREY	SAND	SILT	
6924827	637377.1	4878021	332.6315	22.8600006			Water Supply	Not Used	0.00	0.30	BROWN	TOPSOIL		
									0.30	6.10	BROWN	SAND	FINE SAND	
									6.10	12.19	BROWN	SAND	COARSE SAND	
									12.19	14.02		GRAVEL	FINE SAND	
									14.02	18.29	GREY	SAND	MEDIUM SAND	COARSE GRAVEL
									18.29	22.86	GREY	SAND	MEDIUM SAND	
6924828	637377.1	4878021	332.6315	24.3840008			Water Supply	Not Used	0.00	5.49	BROWN	CLAY		
									5.49	7.92	BROWN	CLAY	SAND	
									7.92	23.77	BROWN	SAND		
									23.77	24.38	BROWN	SAND	CLAY	
6924829	637377.1	4878021	332.6315	21.3360004			Observation Wells	Not Used	0.00	3.96	BROWN	CLAY	SANDY	
									3.96	7.01	BROWN	SAND	SILTY	DIRTY
									7.01	14.94	BROWN	CLAY	SANDY	
									14.94	16.15	GREY	CLAY	SOFT	
									16.15	18.59	BROWN	CLAY		
									18.59	20.12	BROWN	SAND	SILTY	
									20.12	21.34	BROWN	CLAY	CLAY	SILTY
6924830	637377.1	4878021	332.6315	23.4696007			Observation Wells	Not Used	0.00	5.18	BROWN	CLAY	STONES	
									5.18	6.10	BROWN	SAND		
									6.10	11.58	BROWN	CLAY	STONES	
									11.58	20.42	BROWN	SAND	CLAY	STONES
									20.42	22.86	BROWN	SAND	FINE SAND	
									22.86	23.47	BROWN	CLAY		
6924831	637377.1	4878021	332.6315	23.7744007			Water Supply	Not Used	0.00	3.05	BROWN	SAND		
									3.05	3.66	BROWN	SAND	GRAVEL	
									3.66	22.86	BROWN	SAND	MEDIUM SAND	
									22.86	23.16	BROWN	SAND	FINE SAND	
									23.16	23.77	GREY	SAND	CLAY	

Appendix C - Summary of MOECC Water Well Records within 500 m
5426, 5452 & 5584 Lakeshore Road, Ballantrae, ON
Town of Whitchurch-Stouffville

Well ID	Coordinates		Elevation	Depth	Water Level	Water Yield	Water Use	Water Status	Top	Bottom	Colour	Material 1	Material 2	Material 3
	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
6924832	637377.1	4878021	332.6315	25.9080009			Water Supply	Not Used	0.00	0.30	BROWN	SAND	TOPSOIL	
									0.30	5.18	BROWN	SAND	MEDIUM SAND	
									5.18	17.07	BROWN	SAND	GRAVEL	
									17.07	25.60	BROWN	SAND	FINE SAND	MEDIUM SAND
									25.60	25.91	BROWN	SAND	CLAY	
6924833	637377.1	4878021	332.6315	23.7744007			Observation Wells	Not Used	0.00	0.30	BROWN	TOPSOIL		
									0.30	1.22	BROWN	CLAY		
									1.22	3.35	GREY	CLAY		
									3.35	7.32	BROWN	CLAY	SAND	
									7.32	8.23	BROWN	CLAY		
									8.23	22.25	BROWN	SAND	FINE SAND	MEDIUM SAND
									22.25	23.77	BROWN	CLAY	SAND	
6924834	637377.1	4878021	332.6315	24.0792007			Water Supply	Not Used	0.00	0.30	BROWN	SAND	TOPSOIL	
									0.30	16.15	BROWN	SAND	FINE SAND	
									16.15	21.95	BROWN	SAND	MEDIUM SAND	
									21.95	22.25	GREY	CLAY	STONES	
									22.25	23.77	GREY	SAND		
									23.77	24.08	GREY	CLAY		
6924835	637377.1	4878021	332.6315	22.8600006		9.09218	Observation Wells	Not Used	0.00	6.71	BROWN	SAND	SILT	
									6.71	8.84	BROWN	SILT	SAND	FINE SAND
									8.84	22.86	BROWN	SAND	SILT	FINE SAND
6924836	637377.1	4878021	332.6315	24.0792007		9.09218	Observation Wells	Not Used	0.00	5.79	BROWN	SAND	SILT	FINE SAND
									5.79	14.63	BROWN	SAND	GRAVEL	SAND
									14.63	17.07	BROWN	SAND	GRAVEL	CLAY
									17.07	18.59	BROWN	CLAY		
									18.59	20.12	BROWN	SAND	GRAVEL	
									20.12	24.08	BROWN	SAND	SILT	
6926030	637597.1	4876805	333.946472				Abandoned-Other							
6930047	636472	4876987	336.05014	8.52999973			Observation Wells	Not Used	0.00	8.53	BROWN	SAND	SILTY	
6930078	636442	4877043	335.819274	6.0999999			Observation Wells	Not Used	0.00	0.20	BLACK	TOPSOIL		
									0.20	6.10	BROWN	SAND	SILTY	
6930461	636471	4876986	336.029174	6.30000019			Observation Wells		0.00	0.60	BROWN	GRAVEL		
									0.60	3.60	BROWN	SAND	SILT	
									3.60	6.00	BROWN	SAND	SILT	WATER-BEARING
									6.00	6.30	BROWN	SILT	CLAY	
6930462	636471	4876986	336.029174				Abandoned-Other							
6930721	636488	4877032	336.44223	4.5			Observation Wells		0.00	3.00	BROWN	FILL	SAND	
									3.00	4.50	BROWN	FILL	SAND	

Appendix C - Summary of MOECC Water Well Records within 500 m
5426, 5452 & 5584 Lakeshore Road, Ballantrae, ON
Town of Whitchurch-Stouffville

Well ID	Coordinates		Elevation	Depth	Water Level	Water Yield	Water Use	Water Status	Top	Bottom	Colour	Material 1	Material 2	Material 3
	X	Y	(m)	(m)	(m)	(Lpm)			(m)	(m)				
7052108	637787	4876645	330.590728				Abandoned-Other							
7193230	637452	4876994					Abandoned-Other							
7228778	636497	4877481												
7240908	636440	4877388		4.57200003			Test Hole	Test Hole / Monitoring	0.00	3.66	BROWN	SAND	GRAVEL	
									3.66	4.57	BROWN	FINE SAND		
7240909	636406	4877363		3.0480001				Test Hole / Monitoring	0.00	1.52	BROWN	SAND	TOPSOIL	
									1.52	3.05	BROWN	FINE SAND	WATER-BEARING	
7240910	636396	4877423		3.0480001				Test Hole / Monitoring	0.00	1.52	BROWN	SAND	TOPSOIL	
									1.52	3.05	BROWN	FINE SAND	WATER-BEARING	
7240911	636419	4877457		6.09600019			Test Hole	Test Hole / Monitoring	0.00	3.96	BROWN	FINE SAND		
									3.96	6.10	BROWN	FINE SAND	WATER-BEARING	
7240912	636405	4877444		6.09600019			Observation Wells	Test Hole / Monitoring	0.00	3.96	BROWN	FINE SAND		
									3.96	6.10	BROWN	FINE SAND	WATER-BEARING	
7240913	636393	4877457		6.09600019			Replacement Well	Test Hole / Monitoring	0.00	3.96	BROWN	FINE SAND		
									3.96	6.10	BROWN	FINE SAND	WATER-BEARING	
7245058	636437	4877412					Abandoned-Other	Test Hole / Monitoring						
7248168	636392	4877478					Abandoned-Other							

APPENDIX

C BOREHOLE AND TEST PIT LOGS

LOG OF BOREHOLE OW1

PROJECT: Hydrogeological Investigation
CLIENT: Far Sight Homes
PROJECT LOCATION: 5426 - 5584 Lakeshore Road, Ballantrae, Ontario
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Geoprobe 782DT
Diameter: 127 mm
Date: May/30/2016

REF. NO.: 161-06960-00
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT / SHEAR STRENGTH (kPa) / WATER CONTENT (%)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
Ground Surface											
0.0	**TOPSOIL:** 360 mm, sandy topsoil, trace silt, trace organics, black, moist to wet, soft										
0.4	**SAND:** Medium to fine sand, trace silt, red to orange changing to brown to grey with depth, wet to saturated, soft, compact		1	GRAB			W. L. 0.7 mBGL May 30, 2016				
1.5	**SAND:** Medium to fine sand, trace silt, grey, wet to saturated, soft, compact/dense		2	GRAB			Bentonite Holeplug				0 87 10 3
			3	GRAB			Sand / Screen				
	Sand becoming fine below 5.5 m		4	GRAB							
6.1	**END OF BOREHOLE**										

Notes:
1) 50 mm diam. monitoring well installed upon completion, screened 3.05 to 6.1 mbgs
2) MW stick up = 0.87 m
3) Water Level Record:

Date	Depth (mbgs)
30/05/2016	0.65

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES: + 3, × 3. Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

LOG OF BOREHOLE OW2

PROJECT: Hydrogeological Investigation
CLIENT: Far Sight Homes
PROJECT LOCATION: 5426 - 5584 Lakeshore Road, Ballantrae, Ontario
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Geoprobe 782DT
Diameter: 127 mm
Date: May/30/2016

REF. NO.: 161-06960-00
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
Ground Surface												
0.0	**TOPSOIL:** 230 mm, sandy topsoil, trace silt, some rootlets and organics, dark brown, dry to damp, loose											
0.2	**SAND:** Medium to fine sand, some silt, trace gravel, light brown, damp, soft		1				Bentonite Holeplug					
2.0	**SAND:** Medium to fine sand, trace silt, grey, wet to saturated, soft		2						○			0 68 29 3
			3				W. L. 3.0 mBGL May 30, 2016					
							Sand					
							Screen					
			4									
6.1	**END OF BOREHOLE**											

Notes:
1) 50 mm diam. monitoring well installed upon completion, screened 3.05 to 6.1 mbgs
2) MW stick up = 0.84 m
3) Water Level Record:

Date	Depth (mbgs)
30/05/2016	3.0

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE OW3

PROJECT: Hydrogeological Investigation
CLIENT: Far Sight Homes
PROJECT LOCATION: 5426 - 5584 Lakeshore Road, Ballantrae, Ontario
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Geoprobe 782DT
Diameter: 127 mm
Date: May/31/2016

REF. NO.: 161-06960-00
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
Ground Surface												
0.0	**SANDY SILT:** With some clay, increased sand at bottom, brown becoming grey with depth, moist, soft, dense		1									
							Bentonite Holeplug					
							W. L. 1.4 mBGL May 31, 2016					
1.5	**SAND:** Medium to fine sand, trace silt, grey, wet tio saturated, soft		2									
	Sand becoming coarser below 3 m		3				Sand					0 94 3 3
							Screen					
	Becoming light brown, increasing hardness, compact		4									
6.1	**END OF BOREHOLE** Notes: 1) 50 mm diam. monitoring well installed upon completion, screened 3.05 to 6.1 mbgs 2) MW stick up = 0.84 m 3) Water Level Record: Date 31/05/2016 Depth (mbgs) 1.42											

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

WSP SOIL LOG 161-06960-00 DRAFT MW LOGS.GPJ SPL.GDT 20/6/16

LOG OF BOREHOLE OW4

PROJECT: Hydrogeological Investigation
CLIENT: Far Sight Homes
PROJECT LOCATION: 5426 - 5584 Lakeshore Road, Ballantrae, Ontario
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Geoprobe 782DT
Diameter: 127 mm
Date: May/30/2016

REF. NO.: 161-06960-00
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT / SHEAR STRENGTH (kPa) / WATER CONTENT (%)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
	Ground Surface										
0.0	**SAND:** Medium to fine sand, trace silt, top 2.5 cm black, bottom light brown to grey, moist, soft		1								
							Bentonite Holeplug				
1.5	**SAND:** Becoming coarser, grey, moist becoming wet below 2.8 m, soft, compact		2								
							W. L. 2.9 mBGL May 30, 2016				
3.0	**SAND and SILT:** Medium sand, grey, wet to saturated, compact		3								0 48 49 3
							Sand				
							Screen				
			4								
6.1	**END OF BOREHOLE** Notes: 1) 50 mm diam. monitoring well installed upon completion, screened 3.05 to 6.1 mbgs 2) MW stick up = 0.85 m 3) Water Level Record: Date 30/05/2016 Depth (mbgs) 2.88										

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100
SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE; 20 40 60 80 100
PLASTIC LIMIT W_P — NATURAL MOISTURE CONTENT W — LIQUID LIMIT W_L
WATER CONTENT (%): 10 20 30

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: + 3, × 3. Numbers refer to Sensitivity ○ ε=3% Strain at Failure

WSP SOIL LOG 161-06960-00 DRAFT MW LOGS.GPJ SPL.GDT 20/6/16

LOG OF BOREHOLE OW5

PROJECT: Hydrogeological Investigation
CLIENT: Far Sight Homes
PROJECT LOCATION: 5426 - 5584 Lakeshore Road, Ballantrae, Ontario
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Geoprobe 782DT
Diameter: 127 mm
Date: May/31/2016

REF. NO.: 161-06960-00
ENCL NO.:

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" BLOWS / 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L / WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 229 mm, sandy topsoil, some roots and organics, dark brown, dry to damp, loose											
0.2	Ground Surface											
	SAND: Medium to fine sand, trace silt, light brown, damp, soft		1				Bentonite Holeplug					
			2				W. L. 2.4 mBGL May 31, 2016					
3.0	**SAND:** Trace silt, light brown, damp, soft Increasing silt below 3.45 m, sand becoming finer, brown, saturated		3				Sand Screen					
4.6	**SILT:** Some sand, trace silt, grey, saturated, very soft		4									
5.2	**SAND:** Trace to some silt, grey, saturated, soft		5						○			0 13 80 7
6.1	**END OF BOREHOLE** Notes: 1) 50 mm diam. monitoring well installed upon completion, screened 2.13 to 5.18 mbgs 2) MW stick up = 0.88 m 3) Water Level Record: Date / Depth (mbgs) 31/05/2016 2.41											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3. Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE OW6

PROJECT: Hydrogeological Investigation
CLIENT: Far Sight Homes
PROJECT LOCATION: 5426 - 5584 Lakeshore Road, Ballantrae, Ontario
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Geoprobe 782DT
Diameter: 127 mm
Date: May/31/2016

REF. NO.: 161-06960-00
ENCL NO.:

ELEV / DEPTH (m)	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION
	Ground Surface						
0.0	**TOPSOIL:**						
0.1	130 mm, sandy topsoil, trace organics and rootlets, dark brown, damp						
	SAND: Medium sand, trace silt, grey, damp to moist, loose		1				
1.6	**SAND:** Medium sand, trace silt, trace gravel, light brown to grey, wet to saturated, dense		2			W. L. 2.0 mBGL May 31, 2016	
3.0	**SAND:** Medium to fine sand, trace gravel below 4.5 m, grey to brown, saturated, dense 2" coarse, wet to saturated sand seam at 3.05 m		3			Bentonite Holeplug Sand Screen	
5.2	**SILT:** Trace clay, trace sand, grey saturated, soft, dense		4 5				
6.1	**END OF BOREHOLE**						

DYNAMIC CONE PENETRATION RESISTANCE PLOT: 20 40 60 80 100

SHEAR STRENGTH (kPa): ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE; 20 40 60 80 100

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L

WATER CONTENT (%): 10 20 30

POCKET PEN. (Cu) (kPa)

NATURAL UNIT WT (kN/m³)

REMARKS AND GRAIN SIZE DISTRIBUTION (%)

GR	SA	SI	CL
0	9	58	3

Notes:
1) 50 mm diam. monitoring well installed upon completion, screened 3.05 to 6.1 mbgs
2) MW stick up = 0.88 m
3) Water Level Record:

Date	Depth (mbgs)
31/05/2016	2.0

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

FAR SIGHT HOMES, BALLANTRAE, ONTARIO

161-06960-00

June 27, 2016

TEST PIT TP16-1

0.0 – 0.15 m	TOP SOIL
0.15 – 0.90 m	BROWN-ORANGE SILTY SAND, MOIST
0.90 – 3.10 m	BROWN FINE TO MEDIUM SAND, TRACE SILT, MOIST

- SAMPLE S1 taken at 0.5 m BGS
- SAMPLE S2 taken at 1 m BGS (submitted for analysis)
- SAMPLE S3 taken at 2 m BGS (submitted for analysis)
- SAMPLE S4 taken at 3 m BGS (submitted for analysis)
- SEEPAGE AT 2.30 - 2.60 m BGS
- CANVING AND WET

TEST PIT TP16-2

0.0 – 0.30 m	TOP SOIL
0.30 – 0.70 m	BROWN, FINE TO MEDIUM SAND, MOIST
0.70 – 1.00 m	BROWN GRAY, GRAVELY COARSE SAND, SOME PEBBLES, SOME COBBLES, TRACE SILT, MOIST
1.00 – 3.05 m	BROWN FINE TO MEDIUM SAND, SOME SILT, TRACE GRAVEL, MOIST

- SAMPLE S1 taken at 0.5 m BGS
- SAMPLE S2 taken at 1 m BGS (submitted for analysis)
- SAMPLE S3 taken at 1.35 m BGS
- SAMPLE S4 taken at 2 m BGS (submitted for analysis)
- SAMPLE S5 taken at 3 m BGS (submitted for analysis)
- OPEN AND DRY

TEST PIT TP16-3

0.0 – 0.25 m TOP SOIL
0.25 – 0.80 m BROWN SAND, SOME SILT, MOIST
0.80 – 1.50 m BROWN SILT, SOME CLAY, TRACE SAND, MOIST
1.50 – 3.00 m BROWN SILT, TRACE TO SOME CLAY, TRACE SAND, MOIST

- SAMPLE S1 taken at 0.5 m BGS
- SAMPLE S2 taken at 1 m BGS (submitted for analysis)
- SAMPLE S3 taken at 2 m BGS (submitted for analysis)
- SAMPLE S4 taken at 3 m BGS (submitted for analysis)
- OPEN AND DRY

TEST PIT TP16-4

0.0 – 0.25 m TOPSOIL, BLACK, BROWN, SILTY SAND, ROOTLETS, MOIST
0.25 – 0.75 m BROWN SILTY SAND, MOIST
0.75 – 2.00 m BROWN CLAYEY SILT, TRACE SAND, MOIST
2.00 – 2.50 m BROWN SILT AND CLAY, SOME SAND, MOIST
2.50 – 3.20 m BROWN SAND, TRACE SILT, TRACE CLAY, MOIST TO WET

- SAMPLE S1 taken at 1 m BGS (submitted for analysis)
- SAMPLE S2 taken at 2 m BGS (submitted for analysis)
- SAMPLE S3 taken at 3 m BGS (submitted for analysis)
- SEEPAGE AT 2.00 -2.50 m BGS
- WET AND CAVING

BOREHOLE LOG EXPLANATION FORM

This explanatory section provides the background to assist in the use of the borehole logs. Each of the headings used on the borehole log, is briefly explained.

DEPTH

This column gives the depth of interpreted geologic contacts in metres below ground surface.

STRATIGRAPHIC DESCRIPTION

This column gives a description of the soil based on a tactile examination of the samples and/or laboratory test results. Each stratum is described according to the following classification and terminology.

Soil Classification*		Terminology	Proportion
Clay	<0.002 mm		
Silt	0.002 to 0.06 mm	"trace" (e.g. trace sand)	<10%
Sand	0.06 to 2 mm	"some" (e.g. some sand)	10% - 20%
Gravel	2 to 60 mm	adjective (e.g. sandy)	20% - 35%
Cobbles	60 to 200 mm	"and" (e.g. and sand)	35% - 50%
Boulders	>200 mm	noun (e.g. sand)	>50%

* Extension of MIT Classification system unless otherwise noted.

The use of the geologic term "till" implies that both disseminated coarser grained (sand, gravel, cobbles or boulders) particles and finer grained (silt and clay) particles may occur within the described matrix.

The compactness of cohesionless soils and the consistency of cohesive soils are defined by the following:

COHESIONLESS SOIL		COHESIVE SOIL	
Compactness	Standard Penetration Resistance "N", Blows / 0.3 m	Consistency	Standard Penetration Resistance "N", Blows / 0.3 m
Very Loose	0 to 4	Very Soft	0 to 2
Loose	4 to 10	Soft	2 to 4
Compact	10 to 30	Firm	4 to 8
Dense	30 to 50	Stiff	8 to 15
Very Dense	Over 50	Very Stiff	15 to 30
		Hard	Over 30

The moisture conditions of cohesionless and cohesive soils are defined as follows.

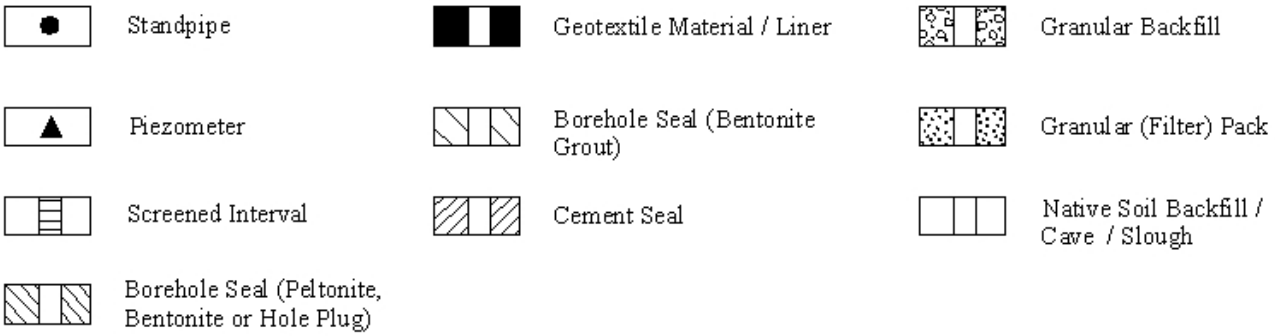
COHESIONLESS SOILS	COHESIVE SOILS		
Dry	DTPL	-	Drier Than Plastic Limit
Moist	APL	-	About Plastic Limit
Wet	WTPL	-	Wetter Than Plastic Limit
Saturated	MWTPL	-	Much Wetter Than Plastic Limit

STRATIGRAPHY

Symbols may be used to pictorially identify the interpreted stratigraphy of the soil and rock strata.

MONITOR DETAILS

This column shows the position and designation of standpipe and/or piezometer ground water monitors installed in the borehole. Also the water level may be shown for the date indicated.



Where monitors are placed in separate boreholes, these are shown individually in the "Monitor Details" column. Otherwise, monitors are in the same borehole. For further data regarding seals, screens, etc., the reader is referred to the summary of monitor details table.

SAMPLE

These columns describe the sample type and number, the "N" value, the water content, the percentage recovery, and Rock Quality Designation (RQD), of each sample obtained from the borehole where applicable. The information is recorded at the approximate depth at which the sample was obtained. The legend for sample type is explained below.

SS	=	Split Spoon	GS	=	Grab Sample
ST	=	Thin Walled Shelby Tube	CS	=	Channel Sample
AS	=	Auger Flight Sample	WS	=	Wash Sample
CC	=	Continuous Core	RC	=	Rock Core

$$\% \text{ Recovery} = \frac{\text{Length of Core Recovered Per Run}}{\text{Total Length of Run}} \times 100$$

Where rock drilling was carried out, the term RQD (Rock Quality Designation) is used. The RQD is an indirect measure of the number of fractures and soundness of the rock mass. It is obtained from the rock cores by summing the length of core recovered, counting only those pieces of sound core that are 100 mm or more in length. The RQD value is expressed as a percentage and is the ratio of the summed core lengths to the total length of core run. The classification based on the RQD value is given below.

RQD Classification	RQD (%)
Very poor quality	< 25
Poor quality	25 - 50
Fair quality	50 - 75
Good quality	75 - 90
Excellent quality	90 - 100

TEST DATA

The central section of the log provides graphs which are used to plot selected field and laboratory test results at the depth at which they were carried out. The plotting scales are shown at the head of the column.

Dynamic Penetration Resistance - The number of blows required to advance a 51 mm diameter, 60º steel cone fitted to the end of 45 mm OD drill rods, 0.3 m into the subsoil. The cone is driven with a 63.5 kg hammer over a fall of 750 mm.

Standard Penetration Resistance - Standard Penetration Test (SPT) "N" Value - The number of blows required to advance a 51 mm diameter standard split-spoon sampler 300 mm into the subsoil, driven by means of a 63.5 kg hammer falling freely a distance of 750 mm. In cases where the split spoon does not penetrate 300 mm, the number of blows over the distance of actual penetration in millimetres is shown as $\frac{xBlows}{mm}$

Water Content - The ratio of the mass of water to the mass of oven-dry solids in the soil expressed as a percentage.

W_P - Plastic Limit of a fine-grained soil expressed as a percentage as determined from the Atterberg Limit Test.

W_L - Liquid Limit of a fine-grained soil expressed as a percentage as determined from the Atterberg Limit Test.

REMARKS

The last column describes pertinent drilling details, field observations and/or provides an indication of other field or laboratory tests that were performed.

BOREHOLE NO. MW15-1

PROJECT NAME: 5452 LAKESHORE ROAD
PROJECT NO.: 141-15539-01 105
CLIENT: ALCORN & ASSOCIATES LTD.
DATE COMPLETED: Sep 14, 2015
BOREHOLE TYPE: 110 mm SOLID STEM AUGER
SUPERVISOR: KSR
GROUND ELEVATION: 334.0 mASL
REVIEWER: TVK

DEPTH (m)	ELEV (mASL)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE RQD (%)	CONE PENETRATION "N" VALUE / SHEAR STRENGTH	WATER CONTENT % (W_P – W_L)	REMARKS
0.0	334.0											**UTM CO-ORDINATES** UTM Zone: 17 NAD: 83 Easting: 637023 Northing: 4877197
0.1	333.9	TOPSOIL: DARK BROWN SILTY SAND TOPSOIL.										
		SAND: BROWN FINE TO MEDIUM SAND, TRACE SILT, MOIST TO SATURATED.			SS1	4		33				
					SS2	4		100				
					SS3	14		100				
					SS4	18		83				WATER LEVEL MEASURED AT 2.89 mBGL ON 09/23/2015
					SS5	19		92				
3.5	330.5	SANDY SILT: BROWN SANDY SILT, TRACE CLAY, MOIST TO WET.										
					SS6	8		100				
4.1	329.9	SAND: BROWN FINE TO MEDIUM SAND, TRACE SILT, MOIST TO SATURATED. - 5 cm SAND AND GRAVEL LAYER AT 4.15 m.										
4.6	329.4	SANDY SILT: BROWN SANDY SILT, TRACE CLAY, MOIST TO WET - 7.5 cm BROWN FINE TO MEDIUM SAND LAYER AT 5.12 m			SS7	22		100				
5.3	328.7	BOREHOLE TERMINATED AT 5.3 m IN SANDY SILT.										

BOREHOLE NO. MW15-2

PROJECT NAME: 5452 LAKESHORE ROAD
PROJECT NO.: 141-15539-01 105
CLIENT: ALCORN & ASSOCIATES LTD.
DATE COMPLETED: Sep 14, 2015
BOREHOLE TYPE: 110 mm SOLID STEM AUGER
SUPERVISOR: KSR
GROUND ELEVATION: 333.5 mASL
REVIEWER: TVK

DEPTH (m)	ELEV (mASL)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE RQD (%)	CONE PENETRATION "N" VALUE / SHEAR STRENGTH	WATER CONTENT % (W_P – W_L)	UTM CO-ORDINATES / REMARKS
0.0	333.5									10 20 30	10 20 30	UTM Zone: 17 NAD: 83 Easting: 637040 Northing: 4877136
0.2	333.3	TOPSOIL: LIGHT TO DARK BROWN SILTY SAND TOPSOIL.										
		SAND: BROWN - GREY FINE TO MEDIUM SAND, TRACE SILT, TRACE GRAVEL, MOIST.			SS1	4		57				
1.5	332.0	SANDY SILT: BROWN - GREY SANDY SILT, TRACE CLAY, TRACE GRAVEL.			SS2	19		80				
2.1	331.4	SAND: GREY MEDIUM SAND, TRACE SILT, MOIST TO WET.		▼	SS3	24		70				WATER LEVEL MEASURED AT 3.46 mBGL ON 09/23/2015
4.6	328.9	SILTY SAND: GREY SILTY FINE SAND, WET TO SATURATED.			SS4	21		70				
5.3	328.2	BOREHOLE TERMINATED AT 5.3 m IN SILTY SAND.										

BOREHOLE NO. MW15-3

PROJECT NAME: 5452 LAKESHORE ROAD
PROJECT NO.: 141-15539-01 105
CLIENT: ALCORN & ASSOCIATES LTD.
DATE COMPLETED: Sep 14, 2015
BOREHOLE TYPE: 110 mm SOLID STEM AUGER
SUPERVISOR: KSR
GROUND ELEVATION: 332.5 mASL
REVIEWER: TVK

UTM CO-ORDINATES
UTM Zone: 17 NAD: 83
Easting: 637104
Northing: 4877164

DEPTH (m)	ELEV (mASL)	STRATIGRAPHIC DESCRIPTION	TYPE	N VALUE	% WATER	% RECOVERY	RQD (%)	REMARKS
0.0	332.5	TOPSOIL: DARK BROWN SILTY SAND TOPSOIL.						
0.3	332.2	SAND: LIGHT BROWN TO GREY FINE TO MEDIUM SAND, TRACE SILT, MOIST.	SS1	3		57		
			SS2	12		60		
1.7	330.8	SAND AND GRAVEL : COARSE SAND AND GRAVEL, TRACE COBBLE, MOIST.	SS3	14		63		
1.9	330.6	SILT: GREY SILT, SOME CLAY, TRACE SAND.						
2.3	330.2	SILTY SAND: GREY SILTY SAND, TRACE CLAY, TRACE GRAVEL, WET TO SATURATED.	SS4	20		83		WATER LEVEL MEASURED AT 2.38 mBGL ON 09/23/2015
			SS5	9		40		
			SS6	19		79		
5.0	327.5	SILT: GREY SILT, SOME SAND, TRACE CLAY, WET TO SATURATED.	SS7	14		83		
5.3	327.2	BOREHOLE TERMINATED AT 5.3 m IN SILT.						

CONE PENETRATION "N" VALUE: 10 20 30 — SHEAR STRENGTH

WATER CONTENT %: 10 20 30 — W_P W_L

WSP GEOLOGIC (METRIC) WITH MASL 141-1553-01 107-0 LOGS.GPJ WSP_ENV_V1.GDT 10/8/15

BOREHOLE NO. MW15-4

PROJECT NAME: 5452 LAKESHORE ROAD
PROJECT NO.: 141-15539-01 105
CLIENT: ALCORN & ASSOCIATES LTD.
DATE COMPLETED: Sep 14, 2015
BOREHOLE TYPE: 110 mm SOLID STEM AUGER
SUPERVISOR: KSR
GROUND ELEVATION: 334.0 mASL
REVIEWER: TVK

DEPTH (m)	ELEV (mASL)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE RQD (%)	CONE PENETRATION "N" VALUE / SHEAR STRENGTH	WATER CONTENT % (W_P – W_L)	REMARKS
0.0	334.0											**UTM CO-ORDINATES** UTM Zone: 17 NAD: 83 Easting: 637158 Northing: 4877130
0.2	333.8	TOPSOIL: BROWN SILTY SAND TOPSOIL.										
		SAND: BROWN FINE SAND, TRACE SILT, MOIST.			SS1	3		63				
					SS2	2		67				
1.6	332.4	SILT AND SAND: BROWN SILT AND SAND, TRACE CLAY.			SS3	15		63				
2.1	331.9	SAND: GREY FINE TO MEDIUM SAND, TRACE SILT, MOIST TO SATURATED - 10.2 cm GREY SILTY SAND LAYER AT 3.3 m, SATURATED.		▼	SS4	9		8				WATER LEVEL MEASURED AT 3.19 mBGL ON 09/23/2015
4.6	329.4	SILTY SAND: GREY SILTY SAND, TRACE CLAY, WET TO SATURATED.			SS5	14		100				
5.3	328.7	BOREHOLE TERMINATED AT 5.3 m IN SILTY SAND.										

WSP GEOLOGIC (METRIC) WITH MASL 141-1553-01 107-0 LOGS.GPJ WSP_ENV_V1.GDT 10/8/15

BOREHOLE NO. MW15-5

PROJECT NAME: 5452 LAKESHORE ROAD
PROJECT NO.: 141-15539-01 105
CLIENT: ALCORN & ASSOCIATES LTD.
DATE COMPLETED: Sep 14, 2015
BOREHOLE TYPE: 110 mm SOLID STEM AUGER
SUPERVISOR: KSR
GROUND ELEVATION: 334.0 mASL
REVIEWER: TVK

DEPTH (m)	ELEV (mASL)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE RQD (%)	CONE PENETRATION "N" VALUE / SHEAR STRENGTH	WATER CONTENT % (W_P – W_L)	REMARKS
0.0	334.0	TOPSOIL: BROWN SILTY SAND TOPSOIL										**UTM CO-ORDINATES** UTM Zone: 17 NAD: 83 Easting: 637148 Northing: 4877105
0.3	333.7	SAND: BROWN MEDIUM TO FINE SAND, TRACE TO SOME SILT, TRACE TO SOME GRAVEL, MOIST TO WET. - GREY BELOW 1.0 m - SATURATED BELOW 3.7 m			SS1	4		67				
					SS2	16		67				
					SS3	15		73				
					SS4	44		73		44		
					SS5	13		60				WATER LEVEL MEASURED AT 3.62 mBGL ON 09/23/2015
4.0	330.0	SILTY SAND: BROWN AND GREY SILTY SAND, TRACE CLAY, SATURATED.			SS6	14		90				
4.6	329.4	SAND: LIGHT BROWN COARSE TO FINE SAND, SOME SILT, TRACE CLAY, SATURATED.			SS7	14		87				
5.3	328.7	BOREHOLE TERMINATED AT 5.3 m IN SAND.										

WSP GEOLOGIC (METRIC) WITH MASL 141-1553-01 107-0 LOGS.GPJ WSP_ENV_V1.GDT 10/8/15

BOREHOLE NO. MW15-6

PROJECT NAME: 5452 LAKESHORE ROAD
PROJECT NO.: 141-15539-01 105
CLIENT: ALCORN & ASSOCIATES LTD.
DATE COMPLETED: Sep 14, 2015
BOREHOLE TYPE: 110 mm SOLID STEM AUGER
SUPERVISOR: KSR
GROUND ELEVATION: 333.5 mASL
REVIEWER: TVK

DEPTH (m)	ELEV (mASL)	STRATIGRAPHIC DESCRIPTION	STRATIGRAPHY	MONITOR DETAILS	SAMPLE TYPE	SAMPLE N VALUE	SAMPLE % WATER	SAMPLE % RECOVERY	SAMPLE RQD (%)	CONE PENETRATION "N" VALUE / SHEAR STRENGTH	WATER CONTENT % (W_P – W_L)	REMARKS
0.0	333.5											**UTM CO-ORDINATES** UTM Zone: 17 NAD: 83 Easting: 637092 Northing: 4877133
0.2	333.3	TOPSOIL: BROWN SILTY SAND TOPSOIL.										
		SAND: BROWN AND GREY FINE TO MEDIUM SAND, TRACE TO SOME SILT, TRACE CLAY MOIST.			SS1	3		40				
					SS2	15		63				
3.0	330.5	SILTY SAND: GREY SILTY SAND, WET TO SATURATED.		▼	SS3	20		70				
3.8	329.7	SILTY SAND TO SANDY SILT: GREY SILTY SAND TO SANDY SILT, TRACE TO SOME CLAY, SATURATED.			SS4	26		60				WATER LEVEL MEASURED AT 3.73 mBGL ON 09/23/2015
5.3	328.2	BOREHOLE TERMINATED AT 5.3 m IN SAND.										

Table 1 – Test Pit Logs
141-15539-00
5452 Lakeshore Road, Ballantrae

Depth	Description
TP14-01	
0.00 – 0.12 m	Brown-black silty sand topsoil, trace rootlets, moist.
0.12 – 0.90 m	Brown fine sand, some silt, moist.
0.90 – 2.30 m	Grey silty sand, trace clay, trace gravel, moist.
2.30 – 3.00 m	Grey coarse sand, some gravel, trace cobble, moist to wet.
3.00 – 3.10 m	Grey clayey silt, trace sand, trace gravel, moist to wet.
	➢ Sample #1 taken at 0.2 – 0.5 m. ➢ Sample #2 taken at 1.0 – 1.2 m (Submitted). ➢ Sample #3 taken at 2.3 – 2.7 m. ➢ Sample #4 taken at 3.0 – 3.1 m. ➢ Groundwater seepage at 2.3 m.
TP14-02	
0.00 – 0.17 m	Brown-black silty sand topsoil, trace rootlets, moist.
0.17 – 1.80 m	Brown fine sand, some silt, trace clay moist.
1.80 – 2.20 m	Grey fine sand, some silt, trace clay moist.
2.20 – 2.50 m	Grey coarse sand, some gravel, some pebble, trace cobble, moist to wet.
2.50 – 3.00 m	Grey clayey silt, trace sand, trace gravel, moist to wet.
	➢ Sample #1 taken at 0.5 – 0.8 m (Submitted). ➢ Sample #2 taken at 2.0 – 2.2 m. ➢ Sample #3 taken at 2.2 – 2.5 m. ➢ Sample #4 taken at 2.8 – 3.0 m. ➢ Groundwater seepage at 2.2 m.
TP14-03	
0.00 – 0.22 m	Brown-black silty sand topsoil, trace rootlets, moist.
0.22 – 0.70 m	Brown fine sand, some silt, trace clay, moist.
0.70 – 2.20 m	Grey silt and sand, trace clay, moist.
2.20 – 3.05 m	Grey coarse sand, some gravel, some pebble, trace cobble, moist to wet.

- Sample #1 taken at 0.5 – 0.7 m.
- Sample #2 taken at 2.0 – 2.2 m (Submitted).
- Sample #3 taken at 2.2 – 2.4 m.
- Sample #4 taken at 2.9 – 3.05 m.
- Groundwater seepage at 2.2 m.

TP14-04

0.00 – 0.10 m	Brown-black silty sand topsoil, trace rootlets, moist.
0.10 – 2.20 m	Brown fine sand, some silt, trace clay, moist.
2.20 – 3.10 m	Grey fine sand, some silt, trace clay, moist.
3.10 – 4.50 m	Grey clayey silt, trace sand, trace gravel, moist to wet.

- Sample #1 taken at 0.5 – 0.8 m (Submitted).
- Sample #2 taken at 2.0 – 2.2 m.
- Sample #3 taken at 2.8 – 3.0 m.
- Sample #4 taken at 4.0 – 4.5 m.
- Groundwater seepage at 2.2 m.

TP14-05

0.00 – 0.18 m	Brown-black silty sand topsoil, trace rootlets, moist.
0.18 – 1.30 m	Brown fine sand, some silt, moist.
1.30 – 2.15 m	Grey medium sand, trace silt, trace clay, moist.
2.15 – 3.00 m	Grey clayey silt, trace sand, trace gravel, moist to wet.

- Sample #1 taken at 0.5 – 0.8 m.
- Sample #2 taken at 1.8 – 2.15 m (Submitted).
- Sample #3 taken at 2.7 – 3.0 m (Submitted).
- No seepage.

TP14-06

0.00 – 0.12 m	Brown-black silty sand topsoil, trace rootlets, moist.
0.18 – 1.70 m	Brown fine sand, some silt, trace clay, moist.
1.70 – 3.30 m	Grey clayey silt, trace sand, trace gravel, moist.
3.30 – 4.40 m	Grey medium sand, moist to wet.

- Sample #1 taken at 0.2 – 1.0 m (Submitted).
- Sample #2 taken at 3.0 – 3.3 m.
- Sample #3 taken at 4.0 – 4.4 m.
- Groundwater seepage at 4.3 m.

APPENDIX

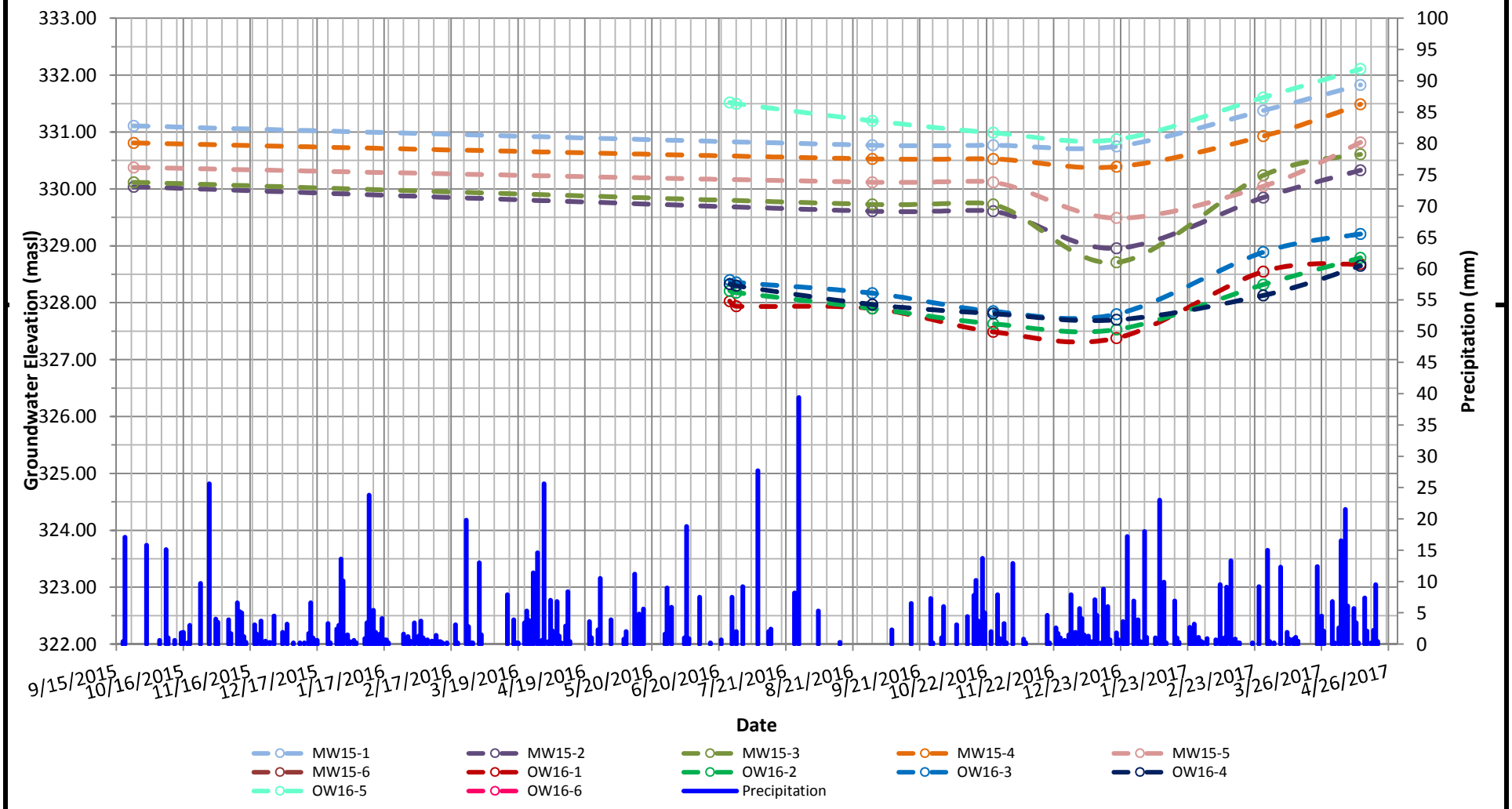
D BI-MONTHLY MONITORING

Table D-1 - Bi-Monthly Monitoring Groundwater Elevations
5426, 5452 5584 Lakeshore Road, Ballantrae, ON
Town of Whitchurch-Stoufffville

Well ID	Easting	Northing	Ground Surface Elevation (masl)	Stick Up (m)	Well Depth (mbgs)	23-Sep-15		25-Jun-16		28-Jun-16		30-Aug-16		25-Oct-16		21-Dec-16		27-Feb-17		13-Apr-17	
						Depth to Water (mbgs)	Water Level Elevation (masl)	Depth to Water (mbgs)	Water Level Elevation (masl)	Depth to Water (mbgs)	Water Level Elevation (masl)	Depth to Water (mbgs)	Water Level Elevation (masl)	Depth to Water (mbgs)	Water Level Elevation (masl)	Depth to Water (mbgs)	Water Level Elevation (masl)	Depth to Water (mbgs)	Water Level Elevation (masl)	Depth to Water (mbgs)	Water Level Elevation (masl)
MW15-1	637023	4877197	334.0	0.75	4.68	2.89	331.11	-	-	-	-	3.23	330.77	3.24	330.76	3.25	330.75	2.62	331.38	2.17	331.83
MW15-2	637040	4877136	333.5	0.71	4.63	3.46	330.04	-	-	-	-	3.89	329.61	4.54	328.96	4.54	328.96	3.65	329.85	3.17	330.33
MW15-3	637104	4877164	332.5	0.67	3.86	2.38	330.12	-	-	-	-	2.77	329.73	3.15	329.35	3.79	328.71	2.26	330.24	1.89	330.61
MW15-4	637158	4877130	334.0	0.76	4.40	3.19	330.81	-	-	-	-	3.47	330.53	3.64	330.36	3.61	330.39	3.07	330.93	2.51	331.49
MW15-5	637148	4877105	334.0	0.73	4.57	3.62	330.38	-	-	-	-	3.88	330.12	4.24	329.76	4.51	329.49	3.95	330.05	3.18	330.82
MW15-6	637092	4877133	333.5	0.84	4.57	3.73	329.77	-	-	-	-	4.14	329.36	4.57	328.93	dry	-	3.03	330.47	2.62	330.88
OW16-1			328.9	0.86	6.01	-	-	0.85	328.03	0.94	327.94	0.98	327.90	1.39	327.49	1.50	327.38	0.33	328.55	0.20	328.68
OW16-2			331.4	0.86	6.00	-	-	3.19	328.21	3.22	328.18	3.50	327.90	3.77	327.63	3.87	327.53	3.08	328.32	2.61	328.79
OW16-3			330.1	0.83	6.02	-	-	1.70	328.40	1.74	328.36	1.93	328.17	2.25	327.85	2.30	327.80	1.21	328.89	0.89	329.21
OW16-4			331.4	0.81	5.89	-	-	3.06	328.33	3.09	328.30	3.42	327.97	3.58	327.81	3.69	327.70	3.26	328.13	2.74	328.65
OW16-5			334.1	0.84	5.00	-	-	2.62	331.52	2.64	331.50	2.94	331.20	3.15	330.99	3.27	330.87	2.53	331.61	2.03	332.11
OW16-6			333.2	0.88	5.96	-	-	2.30	330.89	2.23	330.96	2.43	330.76	2.52	330.67	2.42	330.77	1.73	331.46	1.51	331.68

Water Level Hydrograph

Monitoring Wells and Precipitation



* **Notes:** Climate data obtained from Uxbridge West Climate Station

2016-2017 Water Level Monitoring

Farsight Homes

5426 - 5584 Lakeshore Road, Ballantrae, ON

April 2017

FIGURE D-1

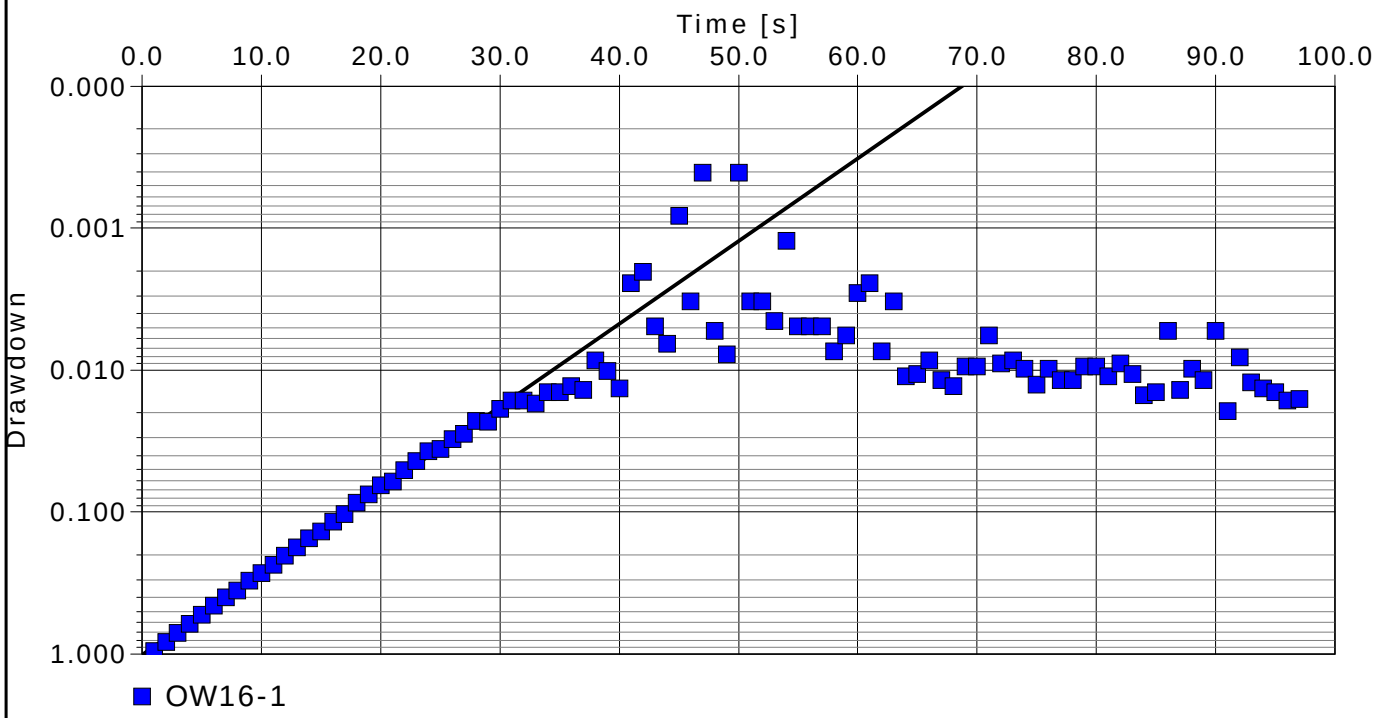
WSP

APPENDIX

E IN-SITU HYDRAULIC CONDUCTIVITY TESTING

WSP	**Slug Test - Analyses Report**	D-1
	Project: 5426, 5452 & 5584 Lakeshore Rd.	
	Number: 161-06960-00	
	Client: Far Sight Homes	

Location: Ballantrae, ON	Slug Test: OW16-1	Test Well: OW16-1
Test Conducted by: SJD		Test Date: 27/06/2016
Analysis Performed by: SJD	OW16-1 Rising Head Test	Analysis Date: 11/08/2016
Aquifer Thickness: 5.16 m		



Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
OW16-1	6.89×10^{-5}	

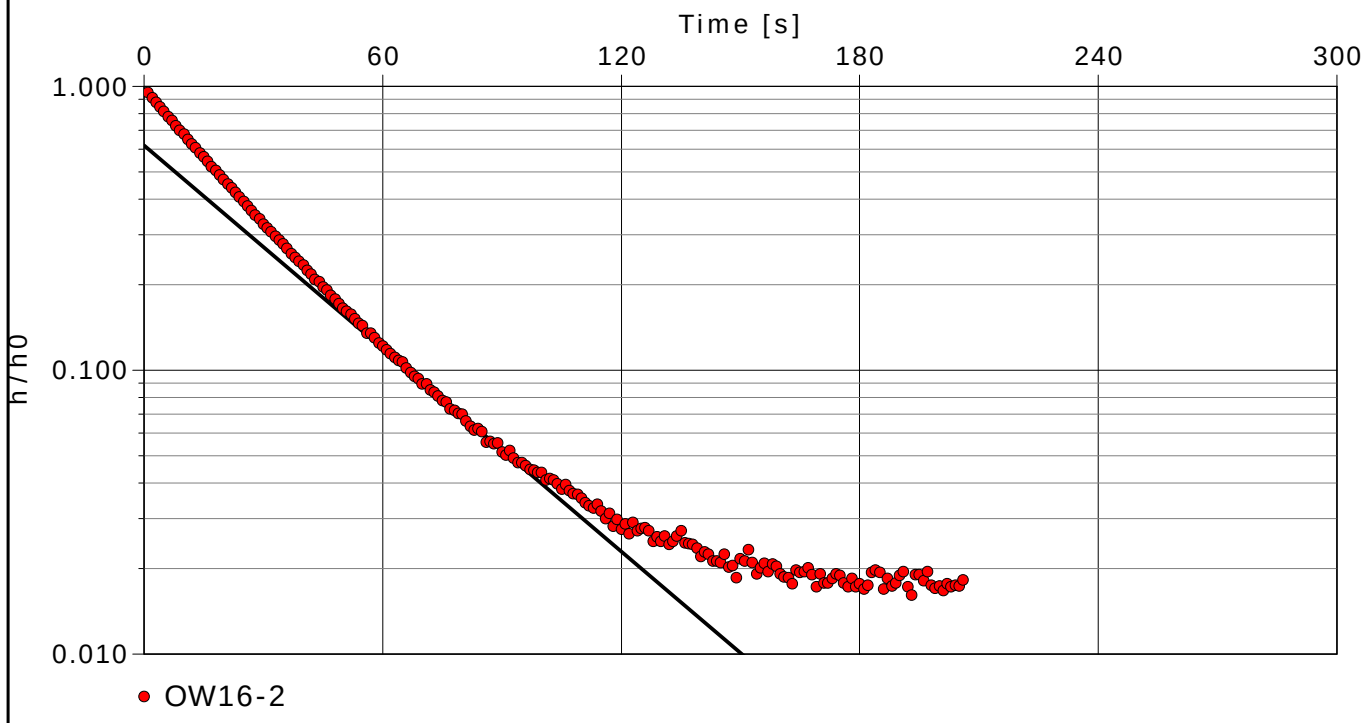
WSP	**Slug Test - Analyses Report**	D-1
	Project: 5426, 5452 & 5584 Lakeshore Rd.	
	Number: 161-06960-00	
	Client: Far Sight Homes	

Location: Ballantrae, ON	Slug Test: OW16-1	Test Well: OW16-1
Test Conducted by: SJD		Test Date: 27/06/2016
Aquifer Thickness: 5.16 m		

	Analysis Name	Analysis Performed b	Analysis Date	Method name	Well	T [m²/s]	K [m/s]	S
1	OW16-1 Rising Hea	SJD	11/08/2016	Hvorslev	OW16-1		6.89×10^{-5}	

WSP	**Slug Test Analysis Report**	D-2
	Project: 5426, 5452 & 5584 Lakeshore Rd.	
	Number: 161-06960-00	
	Client: Far Sight Homes	

Location: Ballantrae, ON	Slug Test: OW16-2	Test Well: OW16-2
Test Conducted by: SJD		Test Date: 30/06/2016
Analysis Performed by:	OW16-2 Rising Head Test	Analysis Date: 11/08/2016
Aquifer Thickness: 2.88 m		



Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
OW16-2	1.47×10^{-5}	

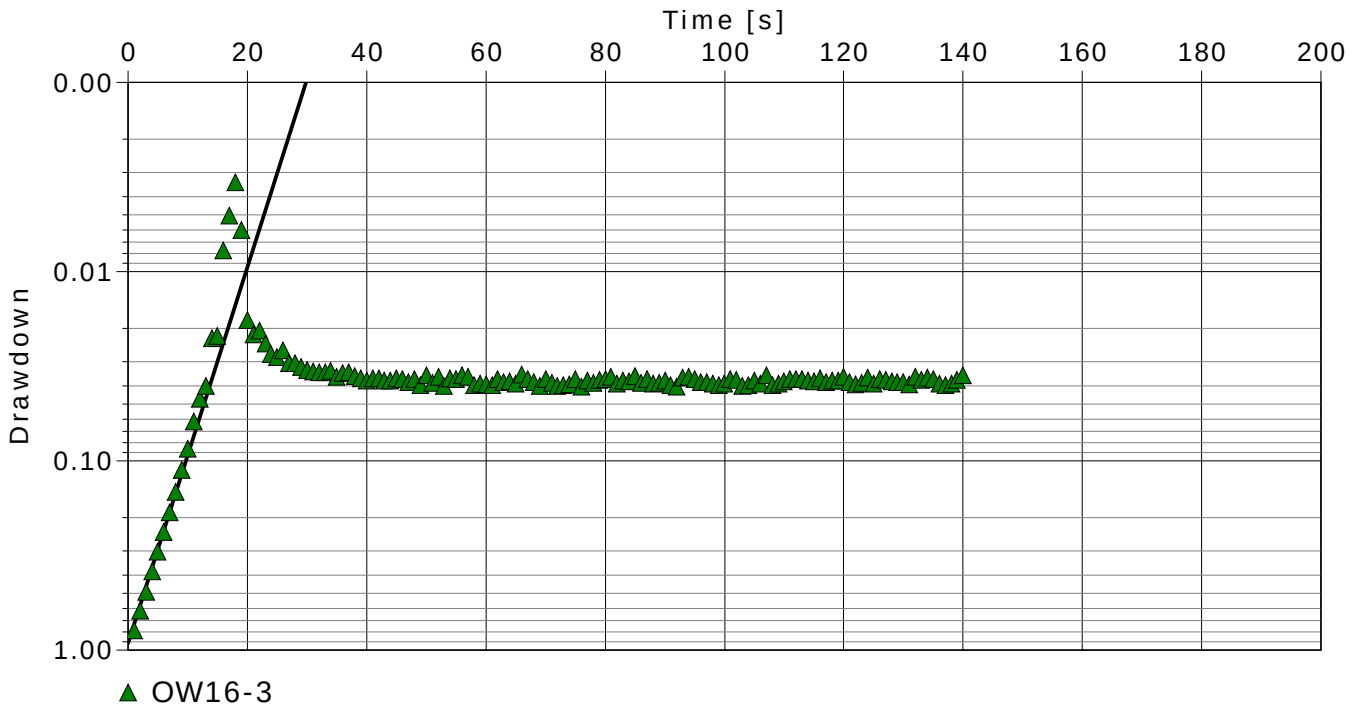
WSP	**Slug Test - Analyses Report**	D-2
	Project: 5426, 5452 & 5584 Lakeshore Rd.	
	Number: 161-06960-00	
	Client: Far Sight Homes	

Location: Ballantrae, ON	Slug Test: OW16-2	Test Well: OW16-2
Test Conducted by: SJD		Test Date: 30/06/2016
Aquifer Thickness: 2.88 m		

	Analysis Name	Analysis Performed b	Analysis Date	Method name	Well	T [m²/s]	K [m/s]	S
1	OW16-2 Rising Head	Test	11/08/2016	Hvorslev	OW16-2		1.47×10^{-5}	

WSP	**Slug Test Analysis Report**	D-3
	Project: 5426, 5452 & 5584 Lakeshore Rd.	
	Number: 161-06960-00	
	Client: Far Sight Homes	

Location: Ballantrae, ON	Slug Test: OW16-3	Test Well: OW16-3
Test Conducted by: SJD		Test Date: 30/06/2016
Analysis Performed by: SJD	OW16-3 Rising Head	Analysis Date: 11/08/2016
Aquifer Thickness: 4.36 m		



Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
OW16-3	1.17×10^{-4}	

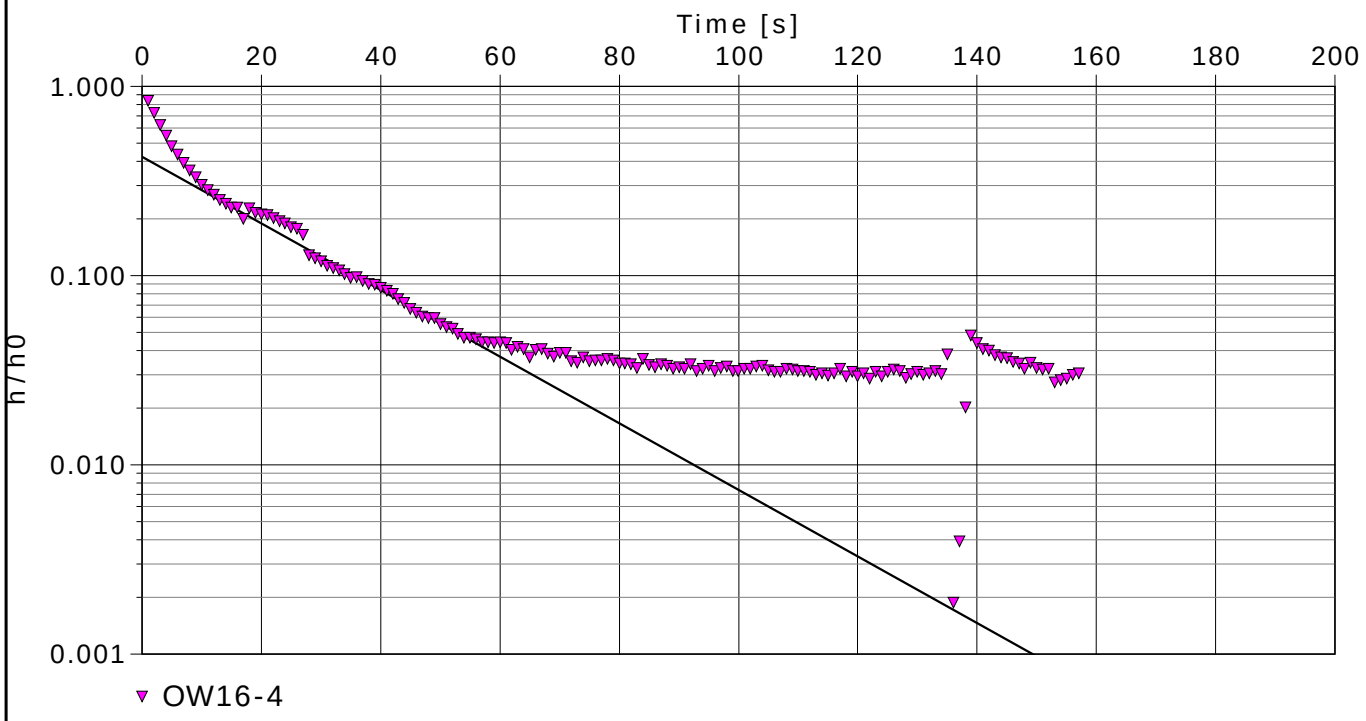
WSP	**Slug Test - Analyses Report**	D-3
	Project: 5426, 5452 & 5584 Lakeshore Rd.	
	Number: 161-06960-00	
	Client: Far Sight Homes	

Location: Ballantrae, ON	Slug Test: OW16-3	Test Well: OW16-3
Test Conducted by: SJD		Test Date: 30/06/2016
Aquifer Thickness: 4.36 m		

	Analysis Name	Analysis Performed b	Analysis Date	Method name	Well	T [m²/s]	K [m/s]	S
1	OW16-3 Rising Head	SJD	11/08/2016	Hvorslev	OW16-3		1.17×10^{-4}	

WSP	**Slug Test Analysis Report**	D-4
	Project: 5426, 5452 & 5584 Lakeshore Rd.	
	Number: 161-06960-00	
	Client: Far Sight Homes	

Location: Ballantrae, ON	Slug Test: OW16-4	Test Well: OW16-4
Test Conducted by: SJD		Test Date: 30/06/2016
Analysis Performed by: SJD	OW16-4 Rising Head	Analysis Date: 11/08/2016
Aquifer Thickness: 3.01 m		

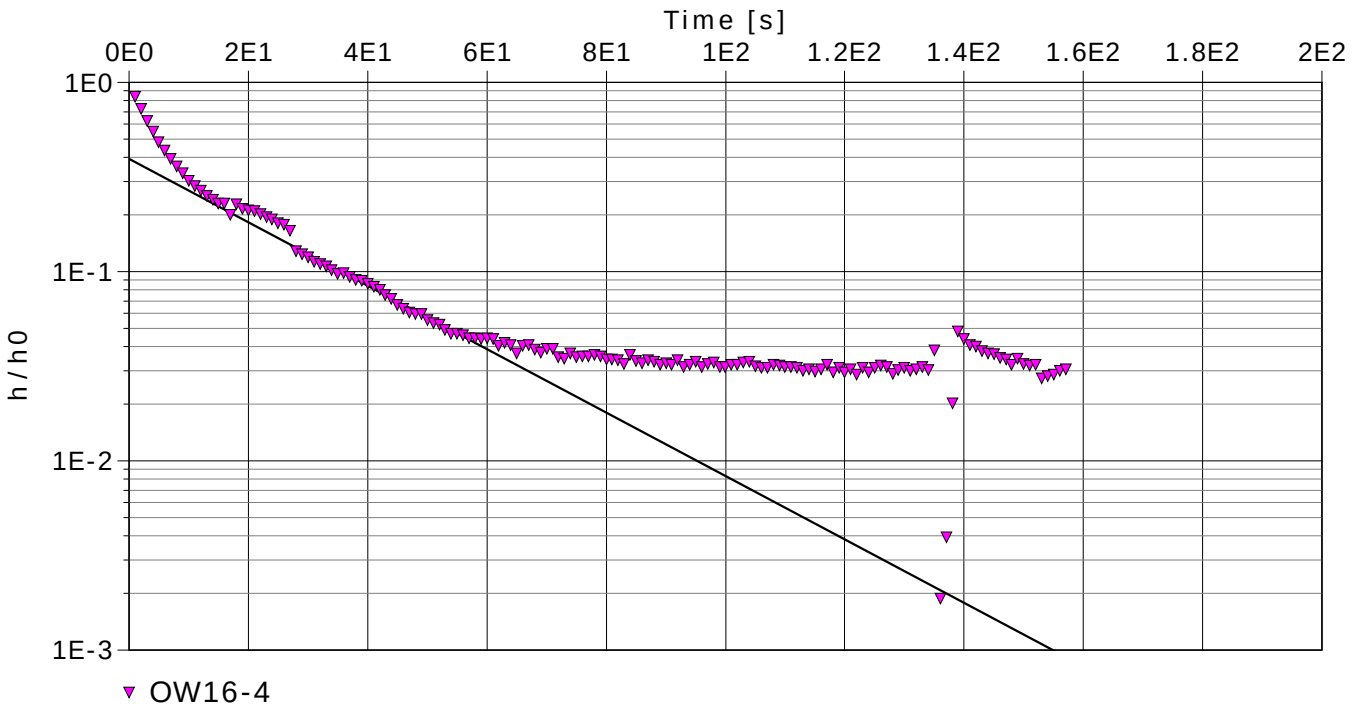


Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
OW16-4	2.10×10^{-5}	

WSP	**Slug Test Analysis Report**	D-4
	Project: 5426, 5452 & 5584 Lakeshore Rd.	
	Number: 161-06960-00	
	Client: Far Sight Homes	

Location: Ballantrae, ON	Slug Test: OW16-4	Test Well: OW16-4
Test Conducted by: SJD		Test Date: 30/06/2016
Analysis Performed by: SJD	OW16-4	Analysis Date: 11/08/2016
Aquifer Thickness: 3.01 m		



Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
OW16-4	2.00×10^{-5}	

Slug Test - Analyses Report D-4

Project: 5426, 5452 & 5584 Lakeshore Rd.

Number: 161-06960-00

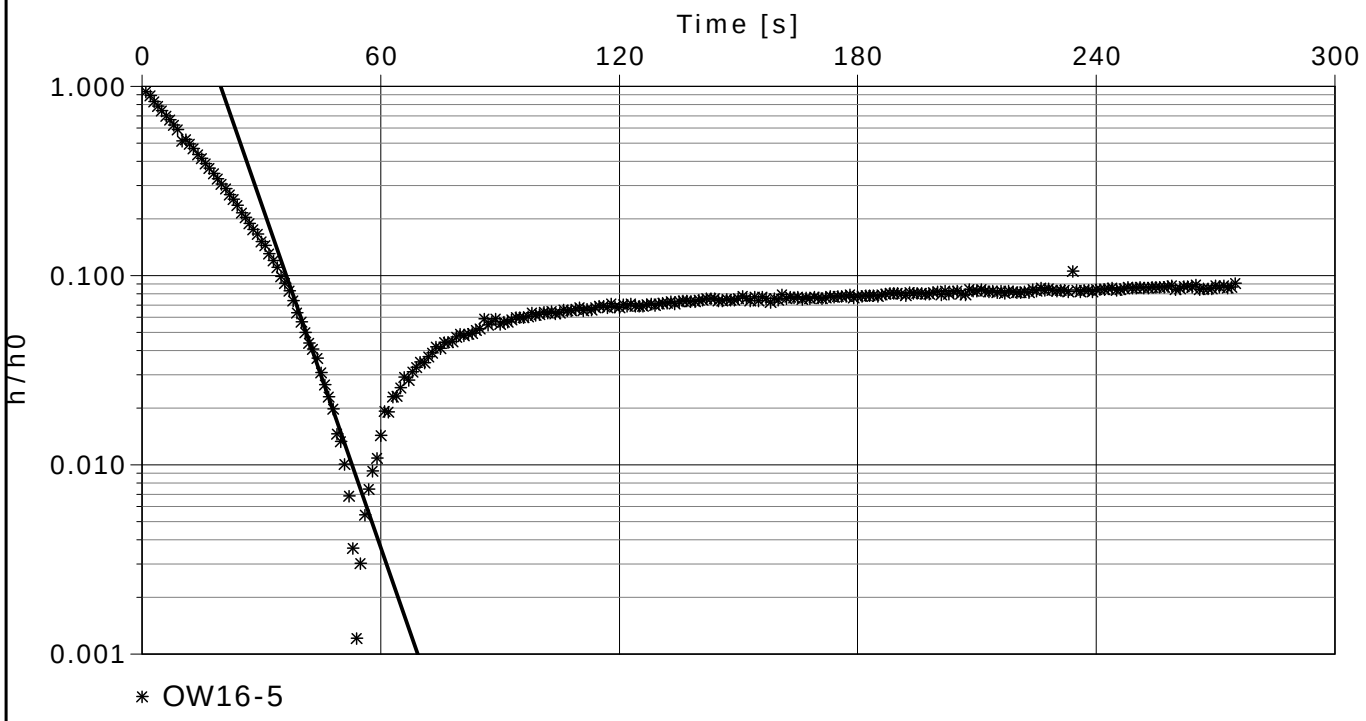
Client: Far Sight Homes

Location: Ballantrae, ON	Slug Test: OW16-4	Test Well: OW16-4
Test Conducted by: SJD		Test Date: 30/06/2016
Aquifer Thickness: 3.01 m		

	Analysis Name	Analysis Performed b	Analysis Date	Method name	Well	T [m²/s]	K [m/s]	S
1	OW16-4 Rising Head	SJD	11/08/2016	Hvorslev	OW16-4		2.10×10^{-5}	
2	OW16-4	SJD	11/08/2016	Hvorslev	OW16-4		2.00×10^{-5}	

WSP	**Slug Test Analysis Report**	D-5
	Project: 5426, 5452 & 5584 Lakeshore Rd.	
	Number: 161-06960-00	
	Client: Far Sight Homes	

Location: Ballantrae, ON	Slug Test: OW16-5	Test Well: OW16-5
Test Conducted by: SJD		Test Date: 30/06/2016
Analysis Performed by: SJD	OW16-5 Rising Head	Analysis Date: 12/08/2016
Aquifer Thickness: 2.56 m		



Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
OW16-5	8.20×10^{-5}	

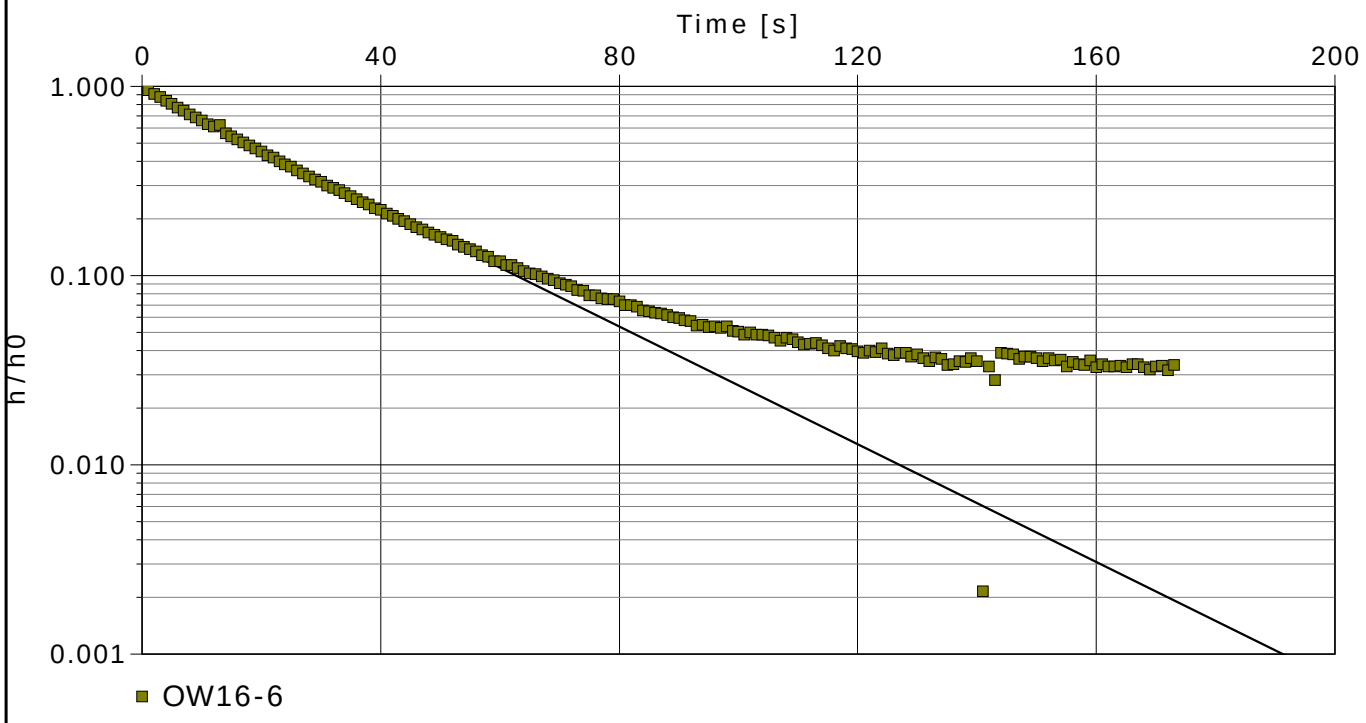
WSP	**Slug Test - Analyses Report**	D-5
	Project: 5426, 5452 & 5584 Lakeshore Rd.	
	Number: 161-06960-00	
	Client: Far Sight Homes	

Location: Ballantrae, ON	Slug Test: OW16-5	Test Well: OW16-5
Test Conducted by: SJD		Test Date: 30/06/2016
Aquifer Thickness: 2.56 m		

	Analysis Name	Analysis Performed b	Analysis Date	Method name	Well	T [m²/s]	K [m/s]	S
1	OW16-5 Rising Head	SJD	12/08/2016	Hvorslev	OW16-5		8.20×10^{-5}	

WSP	**Slug Test Analysis Report**	D-6
	Project: 5426, 5452 & 5584 Lakeshore Rd.	
	Number: 161-06960-00	
	Client: Far Sight Homes	

Location: Ballantrae, ON	Slug Test: OW16-6	Test Well: OW16-6
Test Conducted by: SJD		Test Date: 30/06/2016
Analysis Performed by: SJD	OW16-6 Rising Head	Analysis Date: 12/08/2016
Aquifer Thickness: 3.87 m		



Calculation using Hvorslev

Observation Well	Hydraulic Conductivity [m/s]	
OW16-6	1.84×10^{-5}	

WSP	**Slug Test - Analyses Report**	D-6
	Project: 5426, 5452 & 5584 Lakeshore Rd.	
	Number: 161-06960-00	
	Client: Far Sight Homes	

Location: Ballantrae, ON	Slug Test: OW16-6	Test Well: OW16-6
Test Conducted by: SJD		Test Date: 30/06/2016
Aquifer Thickness: 3.87 m		

	Analysis Name	Analysis Performed b	Analysis Date	Method name	Well	T [m²/s]	K [m/s]	S
1	OW16-6 Rising Head	SJD	12/08/2016	Hvorslev	OW16-6		1.84×10^{-5}	

APPENDIX

F WATER QUALITY

Your Project #: 161-06960-00 /105
Site#: Farsight Development
Your C.O.C. #: 567024-01-01

Attention:Tanya Kizovski

WSP Canada Inc
126 Don Hillock Dr
Unit 2
Aurora, ON
L4G 0G9

Report Date: 2016/07/08
Report #: R4056908
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6D6032
Received: 2016/07/02, 09:10

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Alkalinity	7	N/A	2016/07/04	CAM SOP-00448	SM 22 2320 B m
Carbonate, Bicarbonate and Hydroxide	7	N/A	2016/07/05	CAM SOP-00102	APHA 4500-CO2 D
Chloride by Automated Colourimetry	7	N/A	2016/07/05	CAM SOP-00463	EPA 325.2 m
Conductivity	7	N/A	2016/07/04	CAM SOP-00414	SM 22 2510 m
Dissolved Organic Carbon (DOC) (1)	7	N/A	2016/07/06	CAM SOP-00446	SM 22 5310 B m
Hardness (calculated as CaCO3)	7	N/A	2016/07/07	CAM SOP 00102/00408/00447	SM 2340 B
Dissolved Metals Analysis by ICP	5	2016/07/04	2016/07/06	CAM SOP-00408	EPA 6010C m
Dissolved Metals Analysis by ICP	2	2016/07/08	2016/07/08	CAM SOP-00408	EPA 6010C m
Ion Balance (% Difference)	7	N/A	2016/07/07		
Anion and Cation Sum	7	N/A	2016/07/07		
Total Ammonia-N	7	N/A	2016/07/07	CAM SOP-00441	EPA GS I-2522-90 m
Nitrate (NO3) and Nitrite (NO2) in Water (2)	7	N/A	2016/07/05	CAM SOP-00440	SM 22 4500-NO3I/NO2B
pH	7	N/A	2016/07/04	CAM SOP-00413	SM 4500H+ B m
Orthophosphate	7	N/A	2016/07/05	CAM SOP-00461	EPA 365.1 m
Sat. pH and Langelier Index (@ 20C)	7	N/A	2016/07/07		
Sat. pH and Langelier Index (@ 4C)	7	N/A	2016/07/07		
Sulphate by Automated Colourimetry	7	N/A	2016/07/05	CAM SOP-00464	EPA 375.4 m
Total Dissolved Solids (TDS calc)	7	N/A	2016/07/07		

Remarks:

Maxxam Analytics has performed all analytical testing herein in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act.

Maxxam Analytics is accredited for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Your Project #: 161-06960-00 /105
Site#: Farsight Development
Your C.O.C. #: 567024-01-01

Attention:Tanya Kizovski

WSP Canada Inc
126 Don Hillock Dr
Unit 2
Aurora, ON
L4G 0G9

Report Date: 2016/07/08
Report #: R4056908
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B6D6032
Received: 2016/07/02, 09:10

(1) Dissolved Organic Carbon (DOC) present in the sample should be considered as non-purgeable DOC.
(2) Values for calculated parameters may not appear to add up due to rounding of raw data and significant figures.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ashton Gibson, Project Manager
Email: AGibson@maxxam.ca
Phone# (905) 817-5700

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B6D6032
Report Date: 2016/07/08

WSP Canada Inc
Client Project #: 161-06960-00 /105

RCAP - ROUTINE (WATER)

Maxxam ID		CQE362		CQE363		CQE364		
Sampling Date		2016/06/30		2016/06/30		2016/06/30		
COC Number		567024-01-01		567024-01-01		567024-01-01		
	UNITS	OW1	RDL	OW2	RDL	OW3	RDL	QC Batch
Calculated Parameters								
Anion Sum	me/L	7.88	N/A	5.65	N/A	7.77	N/A	4562949
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	250	1.0	180	1.0	320	1.0	4562947
Calculated TDS	mg/L	440	1.0	350	1.0	430	1.0	4562952
Carb. Alkalinity (calc. as CaCO3)	mg/L	2.0	1.0	1.4	1.0	2.1	1.0	4562947
Cation Sum	me/L	8.50	N/A	6.21	N/A	8.49	N/A	4562949
Hardness (CaCO3)	mg/L	290	1.0	300	1.0	370	1.0	4562897
Ion Balance (% Difference)	%	3.75	N/A	4.73	N/A	4.42	N/A	4562948
Langelier Index (@ 20C)	N/A	0.916		0.817		1.03		4562950
Langelier Index (@ 4C)	N/A	0.668		0.569		0.786		4562951
Saturation pH (@ 20C)	N/A	7.02		7.11		6.81		4562950
Saturation pH (@ 4C)	N/A	7.27		7.36		7.06		4562951
Inorganics								
Total Ammonia-N	mg/L	0.30	0.050	0.097	0.050	0.082	0.050	4564251
Conductivity	umho/cm	780	1.0	570	1.0	750	1.0	4563944
Dissolved Organic Carbon	mg/L	3.3	0.20	3.0	0.20	1.8	0.20	4563558
Orthophosphate (P)	mg/L	<0.010	0.010	<0.010	0.010	<0.010	0.010	4563634
pH	pH	7.94		7.93		7.84		4563946
Dissolved Sulphate (SO4)	mg/L	10	1.0	16	1.0	13	1.0	4563635
Alkalinity (Total as CaCO3)	mg/L	250	1.0	180	1.0	320	1.0	4563947
Dissolved Chloride (Cl)	mg/L	93	1.0	24	1.0	38	1.0	4563631
Nitrite (N)	mg/L	<0.010	0.010	<0.010	0.010	0.141	0.010	4564993
Nitrate (N)	mg/L	<0.10	0.10	15.0	0.50	0.37	0.10	4564993
Metals								
Dissolved Calcium (Ca)	mg/L	110	0.05	120	0.05	140	0.05	4563880
Dissolved Copper (Cu)	mg/L	<0.02	0.02	<0.02	0.02	<0.02	0.02	4563880
Dissolved Iron (Fe)	mg/L	0.16	0.02	<0.02	0.02	0.31	0.02	4563880
Dissolved Magnesium (Mg)	mg/L	4.7	0.05	2.8	0.05	5.5	0.05	4563880
Dissolved Manganese (Mn)	mg/L	0.39	0.01	0.03	0.01	0.65	0.01	4563880
Dissolved Potassium (K)	mg/L	3	1	3	1	4	1	4563880
Dissolved Sodium (Na)	mg/L	61	0.5	2.2	0.5	24	0.5	4563880
Dissolved Zinc (Zn)	mg/L	<0.01	0.01	<0.01	0.01	0.01	0.01	4563880

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B6D6032
Report Date: 2016/07/08

WSP Canada Inc
Client Project #: 161-06960-00 /105

RCAP - ROUTINE (WATER)

Maxxam ID		CQE365	CQE365			CQE366	CQE366		
Sampling Date		2016/06/30	2016/06/30			2016/06/30	2016/06/30		
COC Number		567024-01-01	567024-01-01			567024-01-01	567024-01-01		
	UNITS	OW4	OW4 Lab-Dup	RDL	QC Batch	OW5	OW5 Lab-Dup	RDL	QC Batch
Calculated Parameters									
Anion Sum	me/L	5.02		N/A	4562949	5.06		N/A	4562949
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	160		1.0	4562947	240		1.0	4562947
Calculated TDS	mg/L	320		1.0	4562952	280		1.0	4562952
Carb. Alkalinity (calc. as CaCO3)	mg/L	1.8		1.0	4562947	1.9		1.0	4562947
Cation Sum	me/L	6.16		N/A	4562949	5.72		N/A	4562949
Hardness (CaCO3)	mg/L	290		1.0	4562897	280		1.0	4562897
Ion Balance (% Difference)	%	10.2		N/A	4562948	6.12		N/A	4562948
Langelier Index (@ 20C)	N/A	0.876			4562950	0.913			4562950
Langelier Index (@ 4C)	N/A	0.627			4562951	0.663			4562951
Saturation pH (@ 20C)	N/A	7.18			4562950	7.01			4562950
Saturation pH (@ 4C)	N/A	7.43			4562951	7.26			4562951
Inorganics									
Total Ammonia-N	mg/L	0.49		0.050	4564251	<0.050		0.050	4564251
Conductivity	umho/cm	490		1.0	4563944	470		1.0	4563944
Dissolved Organic Carbon	mg/L	1.7		0.20	4565985	1.9		0.20	4563558
Orthophosphate (P)	mg/L	<0.010	<0.010	0.010	4564031	<0.010		0.010	4563634
pH	pH	8.06			4563946	7.92			4563946
Dissolved Sulphate (SO4)	mg/L	20	20	1.0	4564022	6.1		1.0	4563635
Alkalinity (Total as CaCO3)	mg/L	170		1.0	4563947	240		1.0	4563947
Dissolved Chloride (Cl)	mg/L	7.3	7.3	1.0	4564030	3.8		1.0	4563631
Nitrite (N)	mg/L	0.065		0.010	4563649	<0.010		0.010	4564993
Nitrate (N)	mg/L	14.8		0.50	4563649	0.60		0.10	4564993
Metals									
Dissolved Calcium (Ca)	mg/L	110		0.05	4563880	110	110	0.05	4563880
Dissolved Copper (Cu)	mg/L	<0.02		0.02	4563880	<0.02	<0.02	0.02	4563880
Dissolved Iron (Fe)	mg/L	<0.02		0.02	4563880	<0.02	0.02	0.02	4563880
Dissolved Magnesium (Mg)	mg/L	7.1		0.05	4563880	3.6	3.6	0.05	4563880
Dissolved Manganese (Mn)	mg/L	0.12		0.01	4563880	0.02	0.02	0.01	4563880
Dissolved Potassium (K)	mg/L	4		1	4563880	<1	<1	1	4563880
Dissolved Sodium (Na)	mg/L	3.3		0.5	4563880	2.5	2.5	0.5	4563880
Dissolved Zinc (Zn)	mg/L	<0.01		0.01	4563880	<0.01	<0.01	0.01	4563880

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

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RCAP - ROUTINE (WATER)

Maxxam ID		CQE367	CQE368		
Sampling Date		2016/06/30	2016/06/30		
COC Number		567024-01-01	567024-01-01		
	UNITS	OW6	DUP	RDL	QC Batch
Calculated Parameters					
Anion Sum	me/L	10.4	9.89	N/A	4562949
Bicarb. Alkalinity (calc. as CaCO3)	mg/L	280	270	1.0	4562947
Calculated TDS	mg/L	640	610	1.0	4562952
Carb. Alkalinity (calc. as CaCO3)	mg/L	2.0	2.2	1.0	4562947
Cation Sum	me/L	14.0	13.4	N/A	4562949
Hardness (CaCO3)	mg/L	470	450	1.0	4562897
Ion Balance (% Difference)	%	14.8	15.2	N/A	4562948
Langelier Index (@ 20C)	N/A	1.07	1.11		4562950
Langelier Index (@ 4C)	N/A	0.825	0.858		4562951
Saturation pH (@ 20C)	N/A	6.80	6.82		4562950
Saturation pH (@ 4C)	N/A	7.05	7.07		4562951
Inorganics					
Total Ammonia-N	mg/L	0.088	<0.050	0.050	4564251
Conductivity	umho/cm	1100	1000	1.0	4563944
Dissolved Organic Carbon	mg/L	4.8	4.9	0.20	4563558
Orthophosphate (P)	mg/L	<0.010	<0.010	0.010	4563634
pH	pH	7.87	7.93		4563946
Dissolved Sulphate (SO4)	mg/L	15	14	1.0	4563635
Alkalinity (Total as CaCO3)	mg/L	290	280	1.0	4563947
Dissolved Chloride (Cl)	mg/L	160	140	2.0	4563631
Nitrite (N)	mg/L	<0.010	<0.010	0.010	4564993
Nitrate (N)	mg/L	<0.10	<0.10	0.10	4564993
Metals					
Dissolved Calcium (Ca)	mg/L	170	170	0.05	4569777
Dissolved Copper (Cu)	mg/L	<0.02	<0.02	0.02	4569777
Dissolved Iron (Fe)	mg/L	0.65	0.52	0.02	4569777
Dissolved Magnesium (Mg)	mg/L	7.4	7.1	0.05	4569777
Dissolved Manganese (Mn)	mg/L	0.15	0.14	0.01	4569777
Dissolved Potassium (K)	mg/L	1	1	1	4569777
Dissolved Sodium (Na)	mg/L	110	100	0.5	4569777
Dissolved Zinc (Zn)	mg/L	<0.01	<0.01	0.01	4569777

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
N/A = Not Applicable

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Maxxam Job #: B6D6032
Report Date: 2016/07/08

WSP Canada Inc
Client Project #: 161-06960-00 /105

TEST SUMMARY

Maxxam ID: CQE362
Sample ID: OW1
Matrix: Water

Collected: 2016/06/30
Shipped:
Received: 2016/07/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4563947	N/A	2016/07/04	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4562947	N/A	2016/07/05	Automated Statchk
Chloride by Automated Colourimetry	KONE	4563631	N/A	2016/07/05	Deonarine Ramnarine
Conductivity	AT	4563944	N/A	2016/07/04	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4563558	N/A	2016/07/06	Elsamma Alex
Hardness (calculated as CaCO3)		4562897	N/A	2016/07/07	Automated Statchk
Dissolved Metals Analysis by ICP	ICP	4563880	2016/07/04	2016/07/06	Azita Fazaeli
Ion Balance (% Difference)	CALC	4562948	N/A	2016/07/07	Automated Statchk
Anion and Cation Sum	CALC	4562949	N/A	2016/07/07	Automated Statchk
Total Ammonia-N	LACH/NH4	4564251	N/A	2016/07/07	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4564993	N/A	2016/07/05	Chandra Nandlal
pH	AT	4563946	N/A	2016/07/04	Surinder Rai
Orthophosphate	KONE	4563634	N/A	2016/07/05	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4562950	N/A	2016/07/07	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4562951	N/A	2016/07/07	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4563635	N/A	2016/07/05	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	4562952	N/A	2016/07/07	Automated Statchk

Maxxam ID: CQE363
Sample ID: OW2
Matrix: Water

Collected: 2016/06/30
Shipped:
Received: 2016/07/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4563947	N/A	2016/07/04	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4562947	N/A	2016/07/05	Automated Statchk
Chloride by Automated Colourimetry	KONE	4563631	N/A	2016/07/05	Deonarine Ramnarine
Conductivity	AT	4563944	N/A	2016/07/04	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4563558	N/A	2016/07/06	Elsamma Alex
Hardness (calculated as CaCO3)		4562897	N/A	2016/07/07	Automated Statchk
Dissolved Metals Analysis by ICP	ICP	4563880	2016/07/04	2016/07/06	Azita Fazaeli
Ion Balance (% Difference)	CALC	4562948	N/A	2016/07/07	Automated Statchk
Anion and Cation Sum	CALC	4562949	N/A	2016/07/07	Automated Statchk
Total Ammonia-N	LACH/NH4	4564251	N/A	2016/07/07	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4564993	N/A	2016/07/05	Chandra Nandlal
pH	AT	4563946	N/A	2016/07/04	Surinder Rai
Orthophosphate	KONE	4563634	N/A	2016/07/05	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4562950	N/A	2016/07/07	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4562951	N/A	2016/07/07	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4563635	N/A	2016/07/05	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	4562952	N/A	2016/07/07	Automated Statchk

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Maxxam Job #: B6D6032
Report Date: 2016/07/08

WSP Canada Inc
Client Project #: 161-06960-00 /105

TEST SUMMARY

Maxxam ID: CQE364
Sample ID: OW3
Matrix: Water

Collected: 2016/06/30
Shipped:
Received: 2016/07/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4563947	N/A	2016/07/04	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4562947	N/A	2016/07/05	Automated Statchk
Chloride by Automated Colourimetry	KONE	4563631	N/A	2016/07/05	Deonarine Ramnarine
Conductivity	AT	4563944	N/A	2016/07/04	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4563558	N/A	2016/07/06	Elsamma Alex
Hardness (calculated as CaCO3)		4562897	N/A	2016/07/07	Automated Statchk
Dissolved Metals Analysis by ICP	ICP	4563880	2016/07/04	2016/07/06	Azita Fazaeli
Ion Balance (% Difference)	CALC	4562948	N/A	2016/07/07	Automated Statchk
Anion and Cation Sum	CALC	4562949	N/A	2016/07/07	Automated Statchk
Total Ammonia-N	LACH/NH4	4564251	N/A	2016/07/07	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4564993	N/A	2016/07/05	Chandra Nandlal
pH	AT	4563946	N/A	2016/07/04	Surinder Rai
Orthophosphate	KONE	4563634	N/A	2016/07/05	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4562950	N/A	2016/07/07	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4562951	N/A	2016/07/07	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4563635	N/A	2016/07/05	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	4562952	N/A	2016/07/07	Automated Statchk

Maxxam ID: CQE365
Sample ID: OW4
Matrix: Water

Collected: 2016/06/30
Shipped:
Received: 2016/07/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4563947	N/A	2016/07/04	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4562947	N/A	2016/07/05	Automated Statchk
Chloride by Automated Colourimetry	KONE	4564030	N/A	2016/07/05	Deonarine Ramnarine
Conductivity	AT	4563944	N/A	2016/07/04	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4565985	N/A	2016/07/06	Elsamma Alex
Hardness (calculated as CaCO3)		4562897	N/A	2016/07/07	Automated Statchk
Dissolved Metals Analysis by ICP	ICP	4563880	2016/07/04	2016/07/06	Azita Fazaeli
Ion Balance (% Difference)	CALC	4562948	N/A	2016/07/07	Automated Statchk
Anion and Cation Sum	CALC	4562949	N/A	2016/07/07	Automated Statchk
Total Ammonia-N	LACH/NH4	4564251	N/A	2016/07/07	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4563649	N/A	2016/07/05	Chandra Nandlal
pH	AT	4563946	N/A	2016/07/04	Surinder Rai
Orthophosphate	KONE	4564031	N/A	2016/07/05	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4562950	N/A	2016/07/07	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4562951	N/A	2016/07/07	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4564022	N/A	2016/07/05	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	4562952	N/A	2016/07/07	Automated Statchk

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Maxxam Job #: B6D6032
Report Date: 2016/07/08

WSP Canada Inc
Client Project #: 161-06960-00 /105

TEST SUMMARY

Maxxam ID: CQE365 Dup
Sample ID: OW4
Matrix: Water

Collected: 2016/06/30
Shipped:
Received: 2016/07/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE	4564030	N/A	2016/07/05	Deonarine Ramnarine
Orthophosphate	KONE	4564031	N/A	2016/07/05	Alina Dobreanu
Sulphate by Automated Colourimetry	KONE	4564022	N/A	2016/07/05	Deonarine Ramnarine

Maxxam ID: CQE366
Sample ID: OW5
Matrix: Water

Collected: 2016/06/30
Shipped:
Received: 2016/07/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4563947	N/A	2016/07/04	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4562947	N/A	2016/07/05	Automated Statchk
Chloride by Automated Colourimetry	KONE	4563631	N/A	2016/07/05	Deonarine Ramnarine
Conductivity	AT	4563944	N/A	2016/07/04	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4563558	N/A	2016/07/06	Elsamma Alex
Hardness (calculated as CaCO3)		4562897	N/A	2016/07/07	Automated Statchk
Dissolved Metals Analysis by ICP	ICP	4563880	2016/07/04	2016/07/06	Azita Fazaeli
Ion Balance (% Difference)	CALC	4562948	N/A	2016/07/07	Automated Statchk
Anion and Cation Sum	CALC	4562949	N/A	2016/07/07	Automated Statchk
Total Ammonia-N	LACH/NH4	4564251	N/A	2016/07/07	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4564993	N/A	2016/07/05	Chandra Nandlal
pH	AT	4563946	N/A	2016/07/04	Surinder Rai
Orthophosphate	KONE	4563634	N/A	2016/07/05	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4562950	N/A	2016/07/07	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4562951	N/A	2016/07/07	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4563635	N/A	2016/07/05	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	4562952	N/A	2016/07/07	Automated Statchk

Maxxam ID: CQE366 Dup
Sample ID: OW5
Matrix: Water

Collected: 2016/06/30
Shipped:
Received: 2016/07/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Dissolved Metals Analysis by ICP	ICP	4563880	2016/07/04	2016/07/06	Azita Fazaeli

Maxxam ID: CQE367
Sample ID: OW6
Matrix: Water

Collected: 2016/06/30
Shipped:
Received: 2016/07/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4563947	N/A	2016/07/04	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4562947	N/A	2016/07/05	Automated Statchk
Chloride by Automated Colourimetry	KONE	4563631	N/A	2016/07/05	Deonarine Ramnarine
Conductivity	AT	4563944	N/A	2016/07/04	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4563558	N/A	2016/07/06	Elsamma Alex
Hardness (calculated as CaCO3)		4562897	N/A	2016/07/07	Automated Statchk
Dissolved Metals Analysis by ICP	ICP	4569777	2016/07/08	2016/07/08	Azita Fazaeli

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Maxxam Job #: B6D6032
Report Date: 2016/07/08

WSP Canada Inc
Client Project #: 161-06960-00 /105

TEST SUMMARY

Maxxam ID: CQE367
Sample ID: OW6
Matrix: Water

Collected: 2016/06/30
Shipped:
Received: 2016/07/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ion Balance (% Difference)	CALC	4562948	N/A	2016/07/07	Automated Statchk
Anion and Cation Sum	CALC	4562949	N/A	2016/07/07	Automated Statchk
Total Ammonia-N	LACH/NH4	4564251	N/A	2016/07/07	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4564993	N/A	2016/07/05	Chandra Nandlal
pH	AT	4563946	N/A	2016/07/04	Surinder Rai
Orthophosphate	KONE	4563634	N/A	2016/07/05	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4562950	N/A	2016/07/07	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4562951	N/A	2016/07/07	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4563635	N/A	2016/07/05	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	4562952	N/A	2016/07/07	Automated Statchk

Maxxam ID: CQE368
Sample ID: DUP
Matrix: Water

Collected: 2016/06/30
Shipped:
Received: 2016/07/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity	AT	4563947	N/A	2016/07/04	Surinder Rai
Carbonate, Bicarbonate and Hydroxide	CALC	4562947	N/A	2016/07/05	Automated Statchk
Chloride by Automated Colourimetry	KONE	4563631	N/A	2016/07/05	Deonarine Ramnarine
Conductivity	AT	4563944	N/A	2016/07/04	Surinder Rai
Dissolved Organic Carbon (DOC)	TOCV/NDIR	4563558	N/A	2016/07/06	Elsamma Alex
Hardness (calculated as CaCO3)		4562897	N/A	2016/07/07	Automated Statchk
Dissolved Metals Analysis by ICP	ICP	4569777	2016/07/08	2016/07/08	Azita Fazaeli
Ion Balance (% Difference)	CALC	4562948	N/A	2016/07/07	Automated Statchk
Anion and Cation Sum	CALC	4562949	N/A	2016/07/07	Automated Statchk
Total Ammonia-N	LACH/NH4	4564251	N/A	2016/07/07	Charles Opoku-Ware
Nitrate (NO3) and Nitrite (NO2) in Water	LACH	4564993	N/A	2016/07/05	Chandra Nandlal
pH	AT	4563946	N/A	2016/07/04	Surinder Rai
Orthophosphate	KONE	4563634	N/A	2016/07/05	Alina Dobreanu
Sat. pH and Langelier Index (@ 20C)	CALC	4562950	N/A	2016/07/07	Automated Statchk
Sat. pH and Langelier Index (@ 4C)	CALC	4562951	N/A	2016/07/07	Automated Statchk
Sulphate by Automated Colourimetry	KONE	4563635	N/A	2016/07/05	Deonarine Ramnarine
Total Dissolved Solids (TDS calc)	CALC	4562952	N/A	2016/07/07	Automated Statchk

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	9.3°C

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4563558	EAX	Matrix Spike	Dissolved Organic Carbon	2016/07/06		105	%	80 - 120
4563558	EAX	Spiked Blank	Dissolved Organic Carbon	2016/07/06		100	%	80 - 120
4563558	EAX	Method Blank	Dissolved Organic Carbon	2016/07/06	<0.20		mg/L	
4563558	EAX	RPD	Dissolved Organic Carbon	2016/07/06	0.44		%	20
4563631	DRM	Matrix Spike	Dissolved Chloride (Cl)	2016/07/05		NC	%	80 - 120
4563631	DRM	Spiked Blank	Dissolved Chloride (Cl)	2016/07/05		101	%	80 - 120
4563631	DRM	Method Blank	Dissolved Chloride (Cl)	2016/07/05	<1.0		mg/L	
4563631	DRM	RPD	Dissolved Chloride (Cl)	2016/07/05	2.2		%	20
4563634	ADB	Matrix Spike	Orthophosphate (P)	2016/07/05		98	%	75 - 125
4563634	ADB	Spiked Blank	Orthophosphate (P)	2016/07/05		101	%	80 - 120
4563634	ADB	Method Blank	Orthophosphate (P)	2016/07/05	<0.010		mg/L	
4563634	ADB	RPD	Orthophosphate (P)	2016/07/05	NC		%	25
4563635	DRM	Matrix Spike	Dissolved Sulphate (SO4)	2016/07/05		NC	%	75 - 125
4563635	DRM	Spiked Blank	Dissolved Sulphate (SO4)	2016/07/05		105	%	80 - 120
4563635	DRM	Method Blank	Dissolved Sulphate (SO4)	2016/07/05	<1.0		mg/L	
4563635	DRM	RPD	Dissolved Sulphate (SO4)	2016/07/05	0.29		%	20
4563649	C_N	Matrix Spike	Nitrite (N)	2016/07/05		97	%	80 - 120
			Nitrate (N)	2016/07/05		94	%	80 - 120
4563649	C_N	Spiked Blank	Nitrite (N)	2016/07/05		99	%	80 - 120
			Nitrate (N)	2016/07/05		105	%	80 - 120
4563649	C_N	Method Blank	Nitrite (N)	2016/07/05	<0.010		mg/L	
			Nitrate (N)	2016/07/05	<0.10		mg/L	
4563649	C_N	RPD	Nitrite (N)	2016/07/05	NC		%	25
			Nitrate (N)	2016/07/05	0.46		%	25
4563880	AFZ	Matrix Spike [CQE366-03]	Dissolved Calcium (Ca)	2016/07/06		NC	%	80 - 120
			Dissolved Copper (Cu)	2016/07/06		108	%	80 - 120
			Dissolved Iron (Fe)	2016/07/06		109	%	80 - 120
			Dissolved Magnesium (Mg)	2016/07/06		104	%	80 - 120
			Dissolved Manganese (Mn)	2016/07/06		108	%	80 - 120
			Dissolved Potassium (K)	2016/07/06		108	%	80 - 120
			Dissolved Sodium (Na)	2016/07/06		110	%	80 - 120
			Dissolved Zinc (Zn)	2016/07/06		109	%	80 - 120
4563880	AFZ	Spiked Blank	Dissolved Calcium (Ca)	2016/07/06		106	%	80 - 120
			Dissolved Copper (Cu)	2016/07/06		105	%	80 - 120
			Dissolved Iron (Fe)	2016/07/06		108	%	80 - 120
			Dissolved Magnesium (Mg)	2016/07/06		103	%	80 - 120
			Dissolved Manganese (Mn)	2016/07/06		107	%	80 - 120
			Dissolved Potassium (K)	2016/07/06		105	%	80 - 120
			Dissolved Sodium (Na)	2016/07/06		107	%	80 - 120
			Dissolved Zinc (Zn)	2016/07/06		107	%	80 - 120
4563880	AFZ	Method Blank	Dissolved Calcium (Ca)	2016/07/06	<0.05		mg/L	
			Dissolved Copper (Cu)	2016/07/06	<0.02		mg/L	
			Dissolved Iron (Fe)	2016/07/06	<0.02		mg/L	
			Dissolved Magnesium (Mg)	2016/07/06	<0.05		mg/L	
			Dissolved Manganese (Mn)	2016/07/06	<0.01		mg/L	
			Dissolved Potassium (K)	2016/07/06	<1		mg/L	
			Dissolved Sodium (Na)	2016/07/06	<0.5		mg/L	
			Dissolved Zinc (Zn)	2016/07/06	<0.01		mg/L	
4563880	AFZ	RPD [CQE366-03]	Dissolved Calcium (Ca)	2016/07/06	0.75		%	25
			Dissolved Copper (Cu)	2016/07/06	NC		%	25
			Dissolved Iron (Fe)	2016/07/06	NC		%	25
			Dissolved Magnesium (Mg)	2016/07/06	0.084		%	25
			Dissolved Manganese (Mn)	2016/07/06	NC		%	25
			Dissolved Potassium (K)	2016/07/06	NC		%	25

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Sodium (Na)	2016/07/06	0.12		%	25
			Dissolved Zinc (Zn)	2016/07/06	NC		%	25
4563944	SAU	Spiked Blank	Conductivity	2016/07/04		99	%	85 - 115
4563944	SAU	Method Blank	Conductivity	2016/07/04	<1.0		umho/c	
4563944	SAU	RPD	Conductivity	2016/07/04	0.33		%	25
4563946	SAU	Spiked Blank	pH	2016/07/04		101	%	98 - 103
4563946	SAU	RPD	pH	2016/07/04	0.81		%	N/A
4563947	SAU	Spiked Blank	Alkalinity (Total as CaCO3)	2016/07/04		98	%	85 - 115
4563947	SAU	Method Blank	Alkalinity (Total as CaCO3)	2016/07/04	<1.0		mg/L	
4563947	SAU	RPD	Alkalinity (Total as CaCO3)	2016/07/04	1.3		%	25
4564022	DRM	Matrix Spike [CQE365-01]	Dissolved Sulphate (SO4)	2016/07/05		NC	%	75 - 125
4564022	DRM	Spiked Blank	Dissolved Sulphate (SO4)	2016/07/05		107	%	80 - 120
4564022	DRM	Method Blank	Dissolved Sulphate (SO4)	2016/07/05	<1.0		mg/L	
4564022	DRM	RPD [CQE365-01]	Dissolved Sulphate (SO4)	2016/07/05	0.070		%	20
4564030	DRM	Matrix Spike [CQE365-01]	Dissolved Chloride (Cl)	2016/07/05		103	%	80 - 120
4564030	DRM	Spiked Blank	Dissolved Chloride (Cl)	2016/07/05		101	%	80 - 120
4564030	DRM	Method Blank	Dissolved Chloride (Cl)	2016/07/05	<1.0		mg/L	
4564030	DRM	RPD [CQE365-01]	Dissolved Chloride (Cl)	2016/07/05	0.35		%	20
4564031	ADB	Matrix Spike [CQE365-01]	Orthophosphate (P)	2016/07/05		103	%	75 - 125
4564031	ADB	Spiked Blank	Orthophosphate (P)	2016/07/06		100	%	80 - 120
4564031	ADB	Method Blank	Orthophosphate (P)	2016/07/06	<0.010		mg/L	
4564031	ADB	RPD [CQE365-01]	Orthophosphate (P)	2016/07/05	NC		%	25
4564251	COP	Matrix Spike	Total Ammonia-N	2016/07/07		NC	%	80 - 120
4564251	COP	Spiked Blank	Total Ammonia-N	2016/07/07		100	%	85 - 115
4564251	COP	Method Blank	Total Ammonia-N	2016/07/07	<0.050		mg/L	
4564251	COP	RPD	Total Ammonia-N	2016/07/07	0.30		%	20
4564993	C_N	Matrix Spike	Nitrite (N)	2016/07/05		99	%	80 - 120
			Nitrate (N)	2016/07/05		103	%	80 - 120
4564993	C_N	Spiked Blank	Nitrite (N)	2016/07/05		100	%	80 - 120
			Nitrate (N)	2016/07/05		105	%	80 - 120
4564993	C_N	Method Blank	Nitrite (N)	2016/07/05	<0.010		mg/L	
			Nitrate (N)	2016/07/05	<0.10		mg/L	
4564993	C_N	RPD	Nitrite (N)	2016/07/05	NC		%	25
			Nitrate (N)	2016/07/05	NC		%	25
4565985	EAX	Matrix Spike	Dissolved Organic Carbon	2016/07/06		91	%	80 - 120
4565985	EAX	Spiked Blank	Dissolved Organic Carbon	2016/07/06		103	%	80 - 120
4565985	EAX	Method Blank	Dissolved Organic Carbon	2016/07/06	<0.20		mg/L	
4565985	EAX	RPD	Dissolved Organic Carbon	2016/07/06	NC		%	20
4569777	AFZ	Matrix Spike	Dissolved Calcium (Ca)	2016/07/08		NC	%	80 - 120
			Dissolved Copper (Cu)	2016/07/08		NC	%	80 - 120
			Dissolved Iron (Fe)	2016/07/08		NC	%	80 - 120
			Dissolved Magnesium (Mg)	2016/07/08		NC	%	80 - 120
			Dissolved Manganese (Mn)	2016/07/08		NC	%	80 - 120
			Dissolved Potassium (K)	2016/07/08		NC	%	80 - 120
			Dissolved Sodium (Na)	2016/07/08		NC	%	80 - 120
			Dissolved Zinc (Zn)	2016/07/08		NC	%	80 - 120
4569777	AFZ	Spiked Blank	Dissolved Calcium (Ca)	2016/07/08		96	%	80 - 120
			Dissolved Copper (Cu)	2016/07/08		93	%	80 - 120
			Dissolved Iron (Fe)	2016/07/08		94	%	80 - 120
			Dissolved Magnesium (Mg)	2016/07/08		97	%	80 - 120
			Dissolved Manganese (Mn)	2016/07/08		95	%	80 - 120
			Dissolved Potassium (K)	2016/07/08		97	%	80 - 120
			Dissolved Sodium (Na)	2016/07/08		94	%	80 - 120
			Dissolved Zinc (Zn)	2016/07/08		91	%	80 - 120

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
4569777	AFZ	Method Blank	Dissolved Calcium (Ca)	2016/07/08	<0.05		mg/L	
			Dissolved Copper (Cu)	2016/07/08	<0.02		mg/L	
			Dissolved Iron (Fe)	2016/07/08	<0.02		mg/L	
			Dissolved Magnesium (Mg)	2016/07/08	<0.05		mg/L	
			Dissolved Manganese (Mn)	2016/07/08	<0.01		mg/L	
			Dissolved Potassium (K)	2016/07/08	<1		mg/L	
			Dissolved Sodium (Na)	2016/07/08	<0.5		mg/L	
			Dissolved Zinc (Zn)	2016/07/08	<0.01		mg/L	
4569777	AFZ	RPD	Dissolved Sodium (Na)	2016/07/08	0.99		%	25

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Job #: B6D6032
Report Date: 2016/07/08

WSP Canada Inc
Client Project #: 161-06960-00 /105

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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CHAIN OF CUSTODY RECORD

Page of

INVOICE TO:		REPORT TO:		PROJECT INFORMATION:		Laboratory Use Only:	
Company Name:	#1089 WSP Canada Inc	Company Name:	WSP	Quotation #:	B62738	Maxxam Job #:	Bottle Order #: 567024
Attention:	Accounts Payable	Attention:	Tanya Kizovski	P.O. #:			
Address:	126 Don Hillock Dr Unit 2 Aurora ON L4G 0G9	Address:		Project:	161-06960-00 /105		
Tel:	(905) 750-3080 x Fax: (905) 727-0463 x	Tel:	905-750-3080 x1663 Fax:	Project Name:		COC #: C#567024-01-01	Project Manager: Ashton Gibson
Email:	payables.ontario@wspgroup.com	Email:	tanya.kizovski@wspgroup.com	Site #:	Farsight Development		
				Sampled By:			

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153 (2011)	Other Regulations	Special Instructions
☐ Table 1 ☒ Res/Park ☐ Medium/Fine ☒ Table 2 ☐ Ind/Comm ☒ Coarse ☐ Table 3 ☐ Agri/Other ☐ For RSC ☐ Table ___	☐ CCME ☐ Sanitary Sewer Bylaw ☐ Reg 558 ☐ Storm Sewer Bylaw ☐ MISA Municipality ___ ☒ PWQO ☐ Other ___	

Include Criteria on Certificate of Analysis (Y/N)? Y

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: ☒
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
Date Required: ___ Time Required: ___ ☐
Rush Confirmation Number: ___ *(call lab for #)*

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Field Filtered (please circle): Metals / Hg / Cr VI	RCAp - Routine	RCAP - Surface Water	# of Bottles	Comments
1		OW1	June 30/16	AM	GW	Y	X		4	
2		OW2	↓	↓	GW	↓	↓		↓	
3		OW3			GW					02-Jul-16 09:10 Ashton Gibson B6D6032 ASR ENV-698
4		OW4			GW					
5		OW5			GW					
6		OW6			GW					
7		DUP	↓	↓	GW	↓	↓		↓	
8					SW					
9					SW					
10										

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
	16/06/30	15:00		2016/07/02	09:10	

Laboratory Use Only				
Time Sensitive	Temperature (°C) on Receipt	Custody Seal	Yes	No
	9/9/10	Present		
		Intact		

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS

SAMPLES MUST BE KEPT COOL (< 10° C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

APPENDIX

G CLIMATE BASED WATER BUDGET

TABLE G-1
CLIMATIC WATER BUDGET: CLIMATE NORMAL 1981-2010 (KING SMOKE TREE CLIMATE STATION)
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

	Thornthwaite (1948)							
Month	**Mean Temperature (°C)**	**Heat Index**	**Potential Evapo-transpiration (mm)**	**Daylight Correction Value**	**Adjusted Potential Evapo-transpiration (mm)**	**Total Precipitation (mm)**	**Surplus (mm)**	**Deficit (mm)**
January	-7.4	0.0	0.0	0.7839	0.00	51.7	51.7	0.0
February	-6.1	0.0	0.0	0.8679	0.00	46.0	46.0	0.0
March	-1.5	0.0	0.0	0.9871	0.00	51.2	51.2	0.0
April	6.0	1.3	27.6	1.1200	30.88	64.9	34.0	0.0
May	12.5	4.0	60.4	1.2290	74.29	87.1	12.8	0.0
June	17.7	6.8	87.7	1.2900	113.11	84.8	0.0	28.3
July	20.5	8.5	102.6	1.2581	129.07	86.4	0.0	42.7
August	19.6	7.9	97.8	1.1613	113.55	88.4	0.0	25.2
September	15.3	5.4	75.0	1.0400	78.03	84.2	6.2	0.0
October	8.6	2.3	40.5	0.9194	37.25	72.9	35.6	0.0
November	2.3	0.3	9.7	0.8100	7.82	84.6	76.8	0.0
December	-3.7	0.0	0.0	0.7355	0.00	55.5	55.5	0.0
TOTALS		**36.5**			**584.0**	**857.7**	**369.8**	**96.1**

TOTAL WATER SURPLUS **273.7** **mm**

NOTES:

1) Water budget adjusted for latitude and daylight.

2) (°C) - Represents calculated mean of daily temperatures for the month.

3) Precipitation and Temperature data from the King Smoke Tree Climate Station located at latitude 44°01'00.00" N, longitude 79°31'00.000" W, elevation 352.0 m.

4) Total Water Surplus (Thornthwaite, 1948) is calculated as total precipitation minus adjusted potential evapotranspiration.

5) Total Moisture Surplus (Thornthwaite and Mather, 1957) is calculated as total precipitation minus actual evapotranspiration.

TABLE G-2
CLIMATIC WATER BUDGET: CLIMATE NORMAL 1981-2010 (KING SMOKE TREE CLIMATE STATION)
SILT LOAM, URBAN LAWN (125 mm HOLDING CAPACITY)
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

	Thornthwaite (1948)									Thornthwaite and Mather (1957)					
Month	**Mean Temperature (°C)**	**Heat Index**	**Potential Evapo-transpiration (mm)**	**Daylight Correction Value**	**Adjusted Potential Evapo-transpiration (mm)**	**Total Precipitation (mm)**	**Surplus (mm)**	**Deficit (mm)**	**TP - PET (mm)**	**Accumulated Potential Water Loss (mm)**	**Soil Moisture (mm)**	**Change in Soil Moisture (mm) (delta S)**	**Actual Evapo-transpiration (mm)**	**Moisture Deficit (mm)**	**Unadjusted Moisture Surplus (mm)**
January	-7.4	0.0	0.0	0.7839	0.00	51.7	51.7	0.0	51.7	0.0	125.0	0.0	0.0	0.0	51.7
February	-6.1	0.0	0.0	0.8679	0.00	46.0	46.0	0.0	46.0	0.0	125.0	0.0	0.0	0.0	46.0
March	-1.5	0.0	0.0	0.9871	0.00	51.2	51.2	0.0	51.2	0.0	125.0	0.0	0.0	0.0	51.2
April	6.0	1.3	27.6	1.1200	30.88	64.9	34.0	0.0	34.0	0.0	125.0	0.0	30.9	0.0	34.0
May	12.5	4.0	60.4	1.2290	74.29	87.1	12.8	0.0	12.8	0.0	125.0	0.0	74.3	0.0	12.8
June	17.7	6.8	87.7	1.2900	113.11	84.8	0.0	28.3	-28.3	-28.3	99.0	-26.0	110.8	2.3	0.0
July	20.5	8.5	102.6	1.2581	129.07	86.4	0.0	42.7	-42.7	-71.0	70.0	-29.0	115.4	13.7	0.0
August	19.6	7.9	97.8	1.1613	113.55	88.4	0.0	25.2	-25.2	-96.1	57.0	-13.0	101.4	12.2	0.0
September	15.3	5.4	75.0	1.0400	78.03	84.2	6.2	0.0	6.2	0.0	63.2	6.2	78.0	0.0	0.0
October	8.6	2.3	40.5	0.9194	37.25	72.9	35.6	0.0	35.6	0.0	98.8	35.6	37.3	0.0	0.0
November	2.3	0.3	9.7	0.8100	7.82	84.6	76.8	0.0	76.8	0.0	125.0	26.2	7.8	0.0	50.6
December	-3.7	0.0	0.0	0.7355	0.00	55.5	55.5	0.0	55.5	0.0	125.0	0.0	0.0	0.0	55.5
TOTALS		**36.5**			**584.0**	**857.7**	**369.8**	**96.1**	**273.7**	**-96.1**	**1263.0**	**0.0**	**555.9**	**28.1**	**301.8**

TOTAL WATER SURPLUS **273.7** **mm**

TOTAL MOISTURE SURPLUS **301.8** **mm**

NOTES:

1) Water budget adjusted for latitude and daylight.

2) (°C) - Represents calculated mean of daily temperatures for the month.

3) Precipitation and Temperature data from the King Smoke Tree Climate Station located at latitude 44°01'00.00" N, longitude 79°31'00.000" W, elevation 352.0 m.

4) Total Water Surplus (Thornthwaite, 1948) is calculated as total precipitation minus adjusted potential evapotranspiration.

5) Total Moisture Surplus (Thornthwaite and Mather, 1957) is calculated as total precipitation minus actual evapotranspiration.

TABLE G-3
CLIMATIC WATER BUDGET: CLIMATE NORMAL 1981-2010 (KING SMOKE TREE CLIMATE STATION)
SILT LOAM, CULTIVATED (200 mm HOLDING CAPACITY)
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

	Thornthwaite (1948)									Thornthwaite and Mather (1957)					
Month	Mean Temperature (°C)	Heat Index	Potential Evapo-transpiration (mm)	Daylight Correction Value	Adjusted Potential Evapo-transpiration (mm)	Total Precipitation (mm)	Surplus (mm)	Deficit (mm)	TP - PET (mm)	Accumulated Potential Water Loss (mm)	Soil Moisture (mm)	Change in Soil Moisture (mm) (delta S)	Actual Evapo-transpiration (mm)	Moisture Deficit (mm)	Unadjusted Moisture Surplus (mm)
January	-7.4	0.0	0.0	0.7839	0.00	51.7	51.7	0.0	51.7	0.0	200.0	0.0	0.0	0.0	51.7
February	-6.1	0.0	0.0	0.8679	0.00	46.0	46.0	0.0	46.0	0.0	200.0	0.0	0.0	0.0	46.0
March	-1.5	0.0	0.0	0.9871	0.00	51.2	51.2	0.0	51.2	0.0	200.0	0.0	0.0	0.0	51.2
April	6.0	1.3	27.6	1.1200	30.88	64.9	34.0	0.0	34.0	0.0	200.0	0.0	30.9	0.0	34.0
May	12.5	4.0	60.4	1.2290	74.29	87.1	12.8	0.0	12.8	0.0	200.0	0.0	74.3	0.0	12.8
June	17.7	6.8	87.7	1.2900	113.11	84.8	0.0	28.3	-28.3	-28.3	173.0	-27.0	111.8	1.3	0.0
July	20.5	8.5	102.6	1.2581	129.07	86.4	0.0	42.7	-42.7	-71.0	140.0	-33.0	119.4	9.7	0.0
August	19.6	7.9	97.8	1.1613	113.55	88.4	0.0	25.2	-25.2	-96.1	123.0	-17.0	105.4	8.2	0.0
September	15.3	5.4	75.0	1.0400	78.03	84.2	6.2	0.0	6.2	0.0	129.2	6.2	78.0	0.0	0.0
October	8.6	2.3	40.5	0.9194	37.25	72.9	35.6	0.0	35.6	0.0	164.8	35.6	37.3	0.0	0.0
November	2.3	0.3	9.7	0.8100	7.82	84.6	76.8	0.0	76.8	0.0	200.0	35.2	7.8	0.0	41.6
December	-3.7	0.0	0.0	0.7355	0.00	55.5	55.5	0.0	55.5	0.0	200.0	0.0	0.0	0.0	55.5
TOTALS		**36.5**			**584.0**	**857.7**	**369.8**	**96.1**	**273.7**	**-96.1**	**2130.0**	**0.0**	**564.9**	**19.1**	**292.8**

TOTAL WATER SURPLUS **273.7** **mm**

TOTAL MOISTURE SURPLUS **292.8** **mm**

NOTES:

1) Water budget adjusted for latitude and daylight.

2) (°C) - Represents calculated mean of daily temperatures for the month.

3) Precipitation and Temperature data from the King Smoke Tree Climate Station located at latitude 44°01'00.00" N, longitude 79°31'00.000" W, elevation 352.0 m.

4) Total Water Surplus (Thornthwaite, 1948) is calculated as total precipitation minus adjusted potential evapotranspiration.

5) Total Moisture Surplus (Thornthwaite and Mather, 1957) is calculated as total precipitation minus actual evapotranspiration.

TABLE G-4
CLIMATIC WATER BUDGET: CLIMATE NORMAL 1981-2010 (KING SMOKE TREE CLIMATE STATION)
SILT LOAM, UNCULTIVATED (250 mm HOLDING CAPACITY)
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

	Thornthwaite (1948)									Thornthwaite and Mather (1957)					
Month	**Mean Temperature (°C)**	**Heat Index**	**Potential Evapo-transpiration (mm)**	**Daylight Correction Value**	**Adjusted Potential Evapo-transpiration (mm)**	**Total Precipitation (mm)**	**Surplus (mm)**	**Deficit (mm)**	**TP - PET (mm)**	**Accumulated Potential Water Loss (mm)**	**Soil Moisture (mm)**	**Change in Soil Moisture (mm) (delta S)**	**Actual Evapo-transpiration (mm)**	**Moisture Deficit (mm)**	**Unadjusted Moisture Surplus (mm)**
January	-7.4	0.0	0.0	0.7839	0.00	51.7	51.7	0.0	51.7	0.0	250.0	0.0	0.0	0.0	51.7
February	-6.1	0.0	0.0	0.8679	0.00	46.0	46.0	0.0	46.0	0.0	250.0	0.0	0.0	0.0	46.0
March	-1.5	0.0	0.0	0.9871	0.00	51.2	51.2	0.0	51.2	0.0	250.0	0.0	0.0	0.0	51.2
April	6.0	1.3	27.6	1.1200	30.88	64.9	34.0	0.0	34.0	0.0	250.0	0.0	30.9	0.0	34.0
May	12.5	4.0	60.4	1.2290	74.29	87.1	12.8	0.0	12.8	0.0	250.0	0.0	74.3	0.0	12.8
June	17.7	6.8	87.7	1.2900	113.11	84.8	0.0	28.3	-28.3	-28.3	223.0	-27.0	111.8	1.3	0.0
July	20.5	8.5	102.6	1.2581	129.07	86.4	0.0	42.7	-42.7	-71.0	188.0	-35.0	121.4	7.7	0.0
August	19.6	7.9	97.8	1.1613	113.55	88.4	0.0	25.2	-25.2	-96.1	170.0	-18.0	106.4	7.2	0.0
September	15.3	5.4	75.0	1.0400	78.03	84.2	6.2	0.0	6.2	0.0	176.2	6.2	78.0	0.0	0.0
October	8.6	2.3	40.5	0.9194	37.25	72.9	35.6	0.0	35.6	0.0	211.8	35.6	37.3	0.0	0.0
November	2.3	0.3	9.7	0.8100	7.82	84.6	76.8	0.0	76.8	0.0	250.0	38.2	7.8	0.0	38.6
December	-3.7	0.0	0.0	0.7355	0.00	55.5	55.5	0.0	55.5	0.0	250.0	0.0	0.0	0.0	55.5
TOTALS		**36.5**			**584.0**	**857.7**	**369.8**	**96.1**	**273.7**	**-96.1**	**2719.0**	**0.0**	**567.9**	**16.1**	**289.8**

TOTAL WATER SURPLUS **273.7** **mm**

TOTAL MOISTURE SURPLUS **289.8** **mm**

NOTES:

1) Water budget adjusted for latitude and daylight.

2) (°C) - Represents calculated mean of daily temperatures for the month.

3) Precipitation and Temperature data from the King Smoke Tree Climate Station located at latitude 44°01'00.00" N, longitude 79°31'00.000" W, elevation 352.0 m.

4) Total Water Surplus (Thornthwaite, 1948) is calculated as total precipitation minus adjusted potential evapotranspiration.

5) Total Moisture Surplus (Thornthwaite and Mather, 1957) is calculated as total precipitation minus actual evapotranspiration.

TABLE G-5
CLIMATIC WATER BUDGET: CLIMATE NORMAL 1981-2010 (KING SMOKE TREE CLIMATE STATION)
SAND LOAM, WOODLAND (400 mm HOLDING CAPACITY)
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

	Thornthwaite (1948)									Thornthwaite and Mather (1957)					
Month	**Mean Temperature (°C)**	**Heat Index**	**Potential Evapo-transpiration (mm)**	**Daylight Correction Value**	**Adjusted Potential Evapo-transpiration (mm)**	**Total Precipitation (mm)**	**Surplus (mm)**	**Deficit (mm)**	**TP - PET (mm)**	**Accumulated Potential Water Loss (mm)**	**Soil Moisture (mm)**	**Change in Soil Moisture (mm) (delta S)**	**Actual Evapo-transpiration (mm)**	**Moisture Deficit (mm)**	**Unadjusted Moisture Surplus (mm)**
January	-7.4	0.0	0.0	0.7839	0.00	51.7	51.7	0.0	51.7	0.0	400.0	0.0	0.0	0.0	51.7
February	-6.1	0.0	0.0	0.8679	0.00	46.0	46.0	0.0	46.0	0.0	400.0	0.0	0.0	0.0	46.0
March	-1.5	0.0	0.0	0.9871	0.00	51.2	51.2	0.0	51.2	0.0	400.0	0.0	0.0	0.0	51.2
April	6.0	1.3	27.6	1.1200	30.88	64.9	34.0	0.0	34.0	0.0	400.0	0.0	30.9	0.0	34.0
May	12.5	4.0	60.4	1.2290	74.29	87.1	12.8	0.0	12.8	0.0	400.0	0.0	74.3	0.0	12.8
June	17.7	6.8	87.7	1.2900	113.11	84.8	0.0	28.3	-28.3	-28.3	373.0	-27.0	111.8	1.3	0.0
July	20.5	8.5	102.6	1.2581	129.07	86.4	0.0	42.7	-42.7	-71.0	335.0	-38.0	124.4	4.7	0.0
August	19.6	7.9	97.8	1.1613	113.55	88.4	0.0	25.2	-25.2	-96.1	314.0	-21.0	109.4	4.2	0.0
September	15.3	5.4	75.0	1.0400	78.03	84.2	6.2	0.0	6.2	0.0	320.2	6.2	78.0	0.0	0.0
October	8.6	2.3	40.5	0.9194	37.25	72.9	35.6	0.0	35.6	0.0	355.8	35.6	37.3	0.0	0.0
November	2.3	0.3	9.7	0.8100	7.82	84.6	76.8	0.0	76.8	0.0	400.0	44.2	7.8	0.0	32.6
December	-3.7	0.0	0.0	0.7355	0.00	55.5	55.5	0.0	55.5	0.0	400.0	0.0	0.0	0.0	55.5
TOTALS		**36.5**			**584.0**	**857.7**	**369.8**	**96.1**	**273.7**	**-96.1**	**4498.0**	**0.0**	**573.9**	**10.1**	**283.8**

TOTAL WATER SURPLUS **273.7** **mm**

TOTAL MOISTURE SURPLUS **283.8** **mm**

NOTES:

1) Water budget adjusted for latitude and daylight.

2) (°C) - Represents calculated mean of daily temperatures for the month.

3) Precipitation and Temperature data from the King Smoke Tree Climate Station located at latitude 44°01'00.00" N, longitude 79°31'00.000" W, elevation 352.0 m.

4) Total Water Surplus (Thornthwaite, 1948) is calculated as total precipitation minus adjusted potential evapotranspiration.

5) Total Moisture Surplus (Thornthwaite and Mather, 1957) is calculated as total precipitation minus actual evapotranspiration.

APPENDIX

H WATER BUDGET CALCULATIONS – PRE-DEVELOPMENT

TABLE H-1 PRE-DEVELOPMENT WATER BUDGET (BY CATCHMENT)
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

Subcatchment Designation	On/Off-Site	Outlet	MOE TABLE 2 Components					MOE Infiltration Factor	Adjusted Infiltration Factor	Area	Precipitation	Precipitation Total	Precipitation Surplus	Evapotranspiration	Runon	Net Surplus		Infiltration		Runoff*		Total Infiltration + Runoff
			Topography	Soil		Cover				(m^2)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(mm/a)	(m^3/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)
A-9	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	3512.6	857.7	3012.7	283.8	2015.8	0.0	283.8	996.9	847.4	241.2	149.5	42.6	996.9
A-10	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	1.6	857.7	1.4	283.8	0.9	0.0	283.8	0.5	0.4	241.2	0.1	42.6	0.5
A-24	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Building	0	0.65	0.00	9.8	857.7	8.4	771.9	0.8	0.0	771.9	7.6	0.0	0.0	7.6	771.9	7.6
A-25	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Building	0	0.65	0.00	59.5	857.7	51.1	771.9	5.1	0.0	771.9	46.0	0.0	0.0	46.0	771.9	46.0
A-26	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Building	0	0.65	0.00	31.2	857.7	26.7	771.9	2.7	0.0	771.9	24.1	0.0	0.0	24.1	771.9	24.1
A-27	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Building	0	0.65	0.00	1.4	857.7	1.2	771.9	0.1	0.0	771.9	1.1	0.0	0.0	1.1	771.9	1.1
A-28	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Building	0	0.65	0.00	12.6	857.7	10.8	771.9	1.1	0.0	771.9	9.7	0.0	0.0	9.7	771.9	9.7
A-29	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Building	0	0.65	0.00	109.1	857.7	93.6	771.9	9.4	0.0	771.9	84.2	0.0	0.0	84.2	771.9	84.2
A-30	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Building	0	0.65	0.00	124.0	857.7	106.4	771.9	10.6	0.0	771.9	95.7	0.0	0.0	95.7	771.9	95.7
A-31	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Building	0	0.65	0.00	430.0	857.7	368.8	771.9	36.9	0.0	771.9	332.0	0.0	0.0	332.0	771.9	332.0
A-32	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Building	0	0.55	0.00	228.6	857.7	196.1	771.9	19.6	0.0	771.9	176.5	0.0	0.0	176.5	771.9	176.5
A-33	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Building	0	0.55	0.00	340.3	857.7	291.9	771.9	29.2	0.0	771.9	262.7	0.0	0.0	262.7	771.9	262.7
A-34	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Gravel	0.05	0.60	0.60	189.8	857.7	162.8	301.8	105.5	0.0	301.8	57.3	34.4	181.1	22.9	120.7	57.3
A-35	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Patio	0	0.55	0.00	172.5	857.7	148.0	771.9	14.8	0.0	771.9	133.2	0.0	0.0	133.2	771.9	133.2
A-36	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	2427.6	857.7	2082.1	283.8	1393.1	0.0	283.8	689.0	516.7	212.9	172.2	71.0	689.0
A-38	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	313.8	857.7	269.1	301.8	174.4	0.0	301.8	94.7	66.3	211.3	28.4	90.5	94.7
A-39	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	15.6	857.7	13.4	301.8	8.7	0.0	301.8	4.7	3.3	211.3	1.4	90.5	4.7
A-40	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	210.0	857.7	180.1	301.8	116.7	0.0	301.8	63.4	44.4	211.3	19.0	90.5	63.4
A-41	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	274.9	857.7	235.8	301.8	152.8	0.0	301.8	83.0	58.1	211.3	24.9	90.5	83.0
A-42	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	44.8	857.7	38.4	301.8	24.9	0.0	301.8	13.5	9.5	211.3	4.1	90.5	13.5
A-43	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	36.1	857.7	31.0	301.8	20.1	0.0	301.8	10.9	7.6	211.3	3.3	90.5	10.9
A-44	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	298.4	857.7	256.0	301.8	165.9	0.0	301.8	90.1	63.0	211.3	27.0	90.5	90.1
A-45	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	298.4	857.7	256.0	301.8	165.9	0.0	301.8	90.1	63.0	211.3	27.0	90.5	90.1
A-46	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	298.4	857.7	256.0	301.8	165.9	0.0	301.8	90.1	63.0	211.3	27.0	90.5	90.1
A-47	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	284.2	857.7	243.8	301.8	158.0	0.0	301.8	85.8	60.0	211.3	25.7	90.5	85.8
A-48	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	154.9	857.7	132.9	301.8	86.1	0.0	301.8	46.8	32.7	211.3	14.0	90.5	46.8
A-49	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	4.6	857.7	4.0	301.8	2.6	0.0	301.8	1.4	1.0	211.3	0.4	90.5	1.4
A-50	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	223.3	857.7	191.5	301.8	124.1	0.0	301.8	67.4	47.2	211.3	20.2	90.5	67.4
A-51	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	266.1	857.7	228.2	301.8	147.9	0.0	301.8	80.3	56.2	211.3	24.1	90.5	80.3
A-52	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	10.9	857.7	9.3	301.8	6.0	0.0	301.8	3.3	2.3	211.3	1.0	90.5	3.3
A-53	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	10.9	857.7	9.3	301.8	6.0	0.0	301.8	3.3	2.3	211.3	1.0	90.5	3.3
A-54	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	10.9	857.7	9.3	301.8	6.0	0.0	301.8	3.3	2.3	211.3	1.0	90.5	3.3
A-55	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	1.7	857.7	1.4	301.8	0.9	0.0	301.8	0.5	0.4	211.3	0.2	90.5	0.5
A-56	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	10.9	857.7	9.3	301.8	6.1	0.0	301.8	3.3	2.3	211.3	1.0	90.5	3.3
A-57	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	10.9	857.7	9.3	301.8	6.1	0.0	301.8	3.3	2.3	211.3	1.0	90.5	3.3
A-58	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	10.9	857.7	9.3	301.8	6.1	0.0	301.8	3.3	2.3	211.3	1.0	90.5	3.3
A-59	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	10.9	857.7	9.3	301.8	6.1	0.0	301.8	3.3	2.3	211.3	1.0	90.5	3.3
A-60	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	10.9	857.7	9.3	301.8	6.1	0.0	301.8	3.3	2.3	211.3	1.0	90.5	3.3
A-61	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	10.9	857.7	9.3	301.8	6.1	0.0	301.8	3.3	2.3	211.3	1.0	90.5	3.3
A-62	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	10.9	857.7	9.3	301.8	6.1	0.0	301.8	3.3	2.3	211.3	1.0	90.5	3.3
A-63	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	9.1	857.7	7.8	301.8	5.1	0.0	301.8	2.8	1.9	211.3	0.8	90.5	2.8
A-64	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	55.8	857.7	47.9	301.8	31.0	0.0	301.8	16.9	11.8	211.3	5.1	90.5	16.9
A-65	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	60.0	857.7	51.5	301.8	33.4	0.0	301.8	18.1	12.7	211.3	5.4	90.5	18.1
A-66	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	43.7	857.7	37.5	301.8	24.3	0.0	301.8	13.2	9.2	211.3	4.0	90.5	13.2
A-67	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	44.7	857.7	38.4	301.8	24.9	0.0	301.8	13.5	9.5	211.3	4.1	90.5	13.5
A-68	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	46.7	857.7	40.0	301.8	25.9	0.0	301.8	14.1	9.9	211.3	4.2	90.5	14.1
A-69	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	46.8	857.7	40.2	301.8	26.0	0.0	301.8	14.1	9.9	211.3	4.2	90.5	14.1
A-70	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	48.1	857.7	41.2	301.8	26.7	0.0	301.8	14.5	10.2	211.3	4.4	90.5	14.5
A-71	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	36.7	857.7	31.5	301.8	20.4	0.0	301.8	11.1	7.8	211.3	3.3	90.5	11.1
A-72	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	43.3	857.7	37.2	301.8	24.1	0.0	301.8	13.1	9.2	211.3	3.9	90.5	13.1
A-73	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	5.3	857.7	4.6	301.8	3.0	0.0	301.8	1.6	1.1	211.3	0.5	90.5	1.6
A-74	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	914.9	857.7	784.7	301.8	508.6	0.0	301.8	276.1	193.3	211.3	82.8	90.5	276.1
A-75	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	14.2	857.7	12.2	301.8	7.9	0.0	301.8	4.3	3.0	211.3	1.3	90.5	4.3
A-76	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	147.5	857.7	126.5	301.8	82.0	0.0	301.8	44.5	31.2	211.3	13.4	90.5	44.5
A-77	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	199.9	857.7	171.5	301.8	111.1	0.0	301.8	60.3	42.2	211.3	18.1	90.5	60.3
A-78	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	4.6	857.7	3.9	301.8	2.5	0.0	301.8	1.4	1.0	211.3	0.4	90.5	1.4
A-79	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	28.9	857.7	24.8	301.8	16.1	0.0	301.8	8.7	6.1	211.3	2.6	90.5	8.7
A-80	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	30.3	857.7	26.0	301.8	16.8	0.0	301.8	9.1	6.4	211.3	2.7	90.5	9.1
A-81	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	59.8	857.7	51.3	301.8	33.2	0.0	301.8	18.0	12.6	211.3	5.4	90.5	18.0
A-82	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	74.4	857.7	63.8	301.8	41.4	0.0	301.8	22.5	15.7	211.3	6.7	90.5	22.5
A-83	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	125.0	857.7	107.2	301.8	69.5	0.0	301.8	37.7	26.4	211.3	11.3	90.5	37.7
A-84	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	41.5	857.7	35.6	301.8	23.1	0.0	301.8	12.5	8.8	211.3	3.8	90.5	12.5
A-85	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	331.6	857.7	284.4	301.8	184.3	0.0	301.8	100.1	70.1	211.3	30.0	90.5	100.1
A-86	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	49.9	857.7	42.8	301.8	27.7	0.0	301.8	15.1	10.5	211.3	4.5	90.5	15.1
A-87	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	39.0	857.7	33.5	301.8	21.7	0.0	301.8	11.8	8.2	211.3	3.5	90.5	11.8
A-88	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	88.5	857.7	75.9	301.8	49.2	0.0	301.8	26.7	18.7	211.3	8.0	90.5	26.7
A-89	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	71.5	857.7	61.3	301.8	39.7	0.0	301.8	21.6	15.1	211.3	6.5	90.5	21.6
A-90	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	11.0	857.7	9.4	301.8	6.1	0.0	301.8	3.3	2.3	211.3	1.0	90.5	3.3
A-91	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	19.8	857.7	17.0	301.8	11.0	0.0	301.8	6.0	4.2	211.3	1.8	90.5	6.0

TABLE H-1 PRE-DEVELOPMENT WATER BUDGET (BY CATCHMENT)
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

Subcatchment Designation	On/Off-Site	Outlet	MOE TABLE 2 Components					MOE Infiltration Factor	Adjusted Infiltration Factor	Area	Precipitation	Precipitation Total	Precipitation Surplus	Evapotranspiration	Runon	Net Surplus		Infiltration		Runoff*		Total Infiltration + Runoff
			Topography	Soil		Cover				(m^2)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(mm/a)	(m^3/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)
A-92	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	60.4	857.7	51.8	301.8	33.6	0.0	301.8	18.2	12.8	211.3	5.5	90.5	18.2
A-93	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	251.6	857.7	215.8	301.8	139.9	0.0	301.8	75.9	53.2	211.3	22.8	90.5	75.9
A-94	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	351.3	857.7	301.3	301.8	195.3	0.0	301.8	106.0	74.2	211.3	31.8	90.5	106.0
A-95	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	143.5	857.7	123.1	301.8	79.8	0.0	301.8	43.3	30.3	211.3	13.0	90.5	43.3
A-96	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	75.1	857.7	64.4	301.8	41.8	0.0	301.8	22.7	15.9	211.3	6.8	90.5	22.7
A-97	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	63.5	857.7	54.5	301.8	35.3	0.0	301.8	19.2	13.4	211.3	5.7	90.5	19.2
A-98	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	211.3	857.7	181.3	301.8	117.5	0.0	301.8	63.8	44.7	211.3	19.1	90.5	63.8
A-113	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	2203.3	857.7	1889.8	289.8	1251.2	108.3	398.2	877.3	701.8	318.5	175.5	79.6	877.3
A-114	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	262.3	857.7	225.0	289.8	149.0	0.0	289.8	76.0	60.8	231.9	15.2	58.0	76.0
A-115	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	298.4	857.7	256.0	289.8	169.5	0.0	289.8	86.5	69.2	231.9	17.3	58.0	86.5
A-116	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	298.4	857.7	256.0	289.8	169.5	0.0	289.8	86.5	69.2	231.9	17.3	58.0	86.5
A-117	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	298.4	857.7	256.0	289.8	169.5	0.0	289.8	86.5	69.2	231.9	17.3	58.0	86.5
A-118	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	298.4	857.7	256.0	289.8	169.5	0.0	289.8	86.5	69.2	231.9	17.3	58.0	86.5
A-119	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	298.4	857.7	256.0	289.8	169.5	0.0	289.8	86.5	69.2	231.9	17.3	58.0	86.5
A-120	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	298.4	857.7	256.0	289.8	169.5	0.0	289.8	86.5	69.2	231.9	17.3	58.0	86.5
A-121	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	298.4	857.7	256.0	289.8	169.5	0.0	289.8	86.5	69.2	231.9	17.3	58.0	86.5
A-122	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	298.4	857.7	256.0	289.8	169.5	0.0	289.8	86.5	69.2	231.9	17.3	58.0	86.5
A-123	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	298.4	857.7	256.0	289.8	169.5	0.0	289.8	86.5	69.2	231.9	17.3	58.0	86.5
A-124	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	298.4	857.7	256.0	289.8	169.5	0.0	289.8	86.5	69.2	231.9	17.3	58.0	86.5
A-125	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	298.4	857.7	256.0	289.8	169.5	0.0	289.8	86.5	69.2	231.9	17.3	58.0	86.5
A-126	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	298.4	857.7	256.0	289.8	169.5	0.0	289.8	86.5	69.2	231.9	17.3	58.0	86.5
A-127	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	298.4	857.7	256.0	289.8	169.5	0.0	289.8	86.5	69.2	231.9	17.3	58.0	86.5
A-128	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	237.2	857.7	203.5	289.8	134.7	0.0	289.8	68.8	55.0	231.9	13.8	58.0	68.8
A-129	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	155.1	857.7	133.1	289.8	88.1	0.0	289.8	45.0	36.0	231.9	9.0	58.0	45.0
A-130	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	168.2	857.7	144.3	289.8	95.5	0.0	289.8	48.8	39.0	231.9	9.8	58.0	48.8
A-131	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	32.4	857.7	27.8	289.8	18.4	0.0	289.8	9.4	7.5	231.9	1.9	58.0	9.4
A-132	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	149.3	857.7	128.1	289.8	84.8	0.0	289.8	43.3	34.6	231.9	8.7	58.0	43.3
A-133	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	157.8	857.7	135.4	289.8	89.6	0.0	289.8	45.7	36.6	231.9	9.1	58.0	45.7
A-134	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	153.7	857.7	131.9	289.8	87.3	0.0	289.8	44.6	35.6	231.9	8.9	58.0	44.6
A-135	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	238.2	857.7	204.3	289.8	135.3	0.0	289.8	69.0	55.2	231.9	13.8	58.0	69.0
A-136	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	9.2	857.7	7.9	289.8	5.2	0.0	289.8	2.7	2.1	231.9	0.5	58.0	2.7
A-137	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-138	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-139	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-140	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-141	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-142	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-143	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-144	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-145	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-146	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-147	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-148	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-149	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-150	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-151	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-152	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-153	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-154	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-155	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-156	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-157	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	37.9	857.7	32.5	289.8	21.5	0.0	289.8	11.0	8.8	231.9	2.2	58.0	11.0
A-158	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	45.6	857.7	39.1	289.8	25.9	0.0	289.8	13.2	10.6	231.9	2.6	58.0	13.2
A-159	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	38.5	857.7	33.0	289.8	21.8	0.0	289.8	11.2	8.9	231.9	2.2	58.0	11.2
A-160	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	46.8	857.7	40.1	289.8	26.6	0.0	289.8	13.6	10.8	231.9	2.7	58.0	13.6
A-161	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	47.5	857.7	40.7	289.8	27.0	0.0	289.8	13.8	11.0	231.9	2.8	58.0	13.8
A-162	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	47.5	857.7	40.8	289.8	27.0	0.0	289.8	13.8	11.0	231.9	2.8	58.0	13.8
A-163	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	47.9	857.7	41.1	289.8	27.2	0.0	289.8	13.9	11.1	231.9	2.8	58.0	13.9
A-164	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	48.1	857.7	41.2	289.8	27.3	0.0	289.8	13.9	11.1	231.9	2.8	58.0	13.9
A-165	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	49.6	857.7	42.5	289.8	28.2	0.0	289.8	14.4	11.5	231.9	2.9	58.0	14.4
A-166	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	50.9	857.7	43.6	289.8	28.9	0.0	289.8	14.7	11.8	231.9	2.9	58.0	14.7
A-167	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	55.1	857.7	47.2	289.8	31.3	0.0	289.8	16.0	12.8	231.9	3.2	58.0	16.0
A-168	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	42.4	857.7	36.4	289.8	24.1	0.0	289.8	12.3	9.8	231.9	2.5	58.0	12.3
A-169	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	51.4	857.7	44.1	289.8	29.2	0.0	289.8	14.9	11.9	231.9	3.0	58.0	14.9
A-170	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	39.2	857.7	33.6	289.8	22.2	0.0	289.8	11.4	9.1	231.9	2.3	58.0	11.4
A-171	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	57.8	857.7	49.6	289.8	32.8	0.0	289.8	16.8	13.4	231.9	3.4	58.0	16.8
A-172	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	42.9	857.7	36.8	289.8	24.4	0.0	289.8	12.4	10.0	231.9	2.5	58.0	12.4
A-173	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	42.1	857.7	36.1	289.8	23.9	0.0	289.8	12.2	9.8	231.9	2.4	58.0	12.2
A-174	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	57.8	857.7	49.5	289.8	32.8	0.0	289.8	16.7	13.4	231.9	3.3	58.0	16.7

TABLE H-1 PRE-DEVELOPMENT WATER BUDGET (BY CATCHMENT)
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

Subcatchment Designation	On/Off-Site	Outlet	MOE TABLE 2 Components					MOE Infiltration Factor	Adjusted Infiltration Factor	Area	Precipitation	Precipitation Total	Precipitation Surplus	Evapotranspiration	Runon	Net Surplus		Infiltration		Runoff*		Total Infiltration + Runoff
			Topography	Soil		Cover				(m^2)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(mm/a)	(m^3/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)
A-175	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	41.5	857.7	35.6	289.8	23.6	0.0	289.8	12.0	9.6	231.9	2.4	58.0	12.0
A-176	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	58.4	857.7	50.1	289.8	33.2	0.0	289.8	16.9	13.6	231.9	3.4	58.0	16.9
A-177	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	1365.8	857.7	1171.4	289.8	775.6	0.0	289.8	395.8	316.7	231.9	79.2	58.0	395.8
A-178	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	127.4	857.7	109.3	289.8	72.3	0.0	289.8	36.9	29.5	231.9	7.4	58.0	36.9
A-179	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	50.3	857.7	43.1	289.8	28.6	0.0	289.8	14.6	11.7	231.9	2.9	58.0	14.6
A-180	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	274.9	857.7	235.8	289.8	156.1	0.0	289.8	79.7	63.7	231.9	15.9	58.0	79.7
A-181	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	274.9	857.7	235.8	289.8	156.1	0.0	289.8	79.7	63.7	231.9	15.9	58.0	79.7
A-182	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	268.9	857.7	230.6	289.8	152.7	0.0	289.8	77.9	62.3	231.9	15.6	58.0	77.9
A-183	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	270.3	857.7	231.9	289.8	153.5	0.0	289.8	78.4	62.7	231.9	15.7	58.0	78.4
A-184	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	227.0	857.7	194.7	289.8	128.9	0.0	289.8	65.8	52.6	231.9	13.2	58.0	65.8
A-185	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	274.9	857.7	235.8	289.8	156.1	0.0	289.8	79.7	63.7	231.9	15.9	58.0	79.7
A-186	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	274.9	857.7	235.8	289.8	156.1	0.0	289.8	79.7	63.7	231.9	15.9	58.0	79.7
A-187	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	118.3	857.7	101.5	289.8	67.2	0.0	289.8	34.3	27.4	231.9	6.9	58.0	34.3
A-188	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	208.4	857.7	178.8	289.8	118.4	0.0	289.8	60.4	48.3	231.9	12.1	58.0	60.4
A-189	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	50.8	857.7	43.6	289.8	28.8	0.0	289.8	14.7	11.8	231.9	2.9	58.0	14.7
A-190	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	6.9	857.7	5.9	289.8	3.9	0.0	289.8	2.0	1.6	231.9	0.4	58.0	2.0
A-191	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	14.6	857.7	12.5	289.8	8.3	0.0	289.8	4.2	3.4	231.9	0.8	58.0	4.2
A-192	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	253.4	857.7	217.4	289.8	143.9	0.0	289.8	73.5	58.8	231.9	14.7	58.0	73.5
A-193	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	21.9	857.7	18.8	289.8	12.4	0.0	289.8	6.3	5.1	231.9	1.3	58.0	6.3
A-194	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	124.4	857.7	106.7	289.8	70.7	0.0	289.8	36.1	28.9	231.9	7.2	58.0	36.1
A-195	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	9.9	857.7	8.5	289.8	5.6	0.0	289.8	2.9	2.3	231.9	0.6	58.0	2.9
A-196	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.1	2.5	231.9	0.6	58.0	3.1
A-197	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.1	2.5	231.9	0.6	58.0	3.1
A-198	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.1	2.5	231.9	0.6	58.0	3.1
A-199	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.1	2.5	231.9	0.6	58.0	3.1
A-200	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.1	2.5	231.9	0.6	58.0	3.1
A-201	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.1	2.5	231.9	0.6	58.0	3.1
A-202	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.1	2.5	231.9	0.6	58.0	3.1
A-203	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.1	2.5	231.9	0.6	58.0	3.1
A-204	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.1	2.5	231.9	0.6	58.0	3.1
A-205	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.1	2.5	231.9	0.6	58.0	3.1
A-206	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.1	2.5	231.9	0.6	58.0	3.1
A-207	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-208	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
A-209	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	53.5	857.7	45.9	289.8	30.4	0.0	289.8	15.5	12.4	231.9	3.1	58.0	15.5
A-210	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	77.5	857.7	66.5	289.8	44.0	0.0	289.8	22.5	18.0	231.9	4.5	58.0	22.5
A-211	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	52.0	857.7	44.6	289.8	29.6	0.0	289.8	15.1	12.1	231.9	3.0	58.0	15.1
A-212	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	46.2	857.7	39.6	289.8	26.2	0.0	289.8	13.4	10.7	231.9	2.7	58.0	13.4
A-213	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	53.2	857.7	45.6	289.8	30.2	0.0	289.8	15.4	12.3	231.9	3.1	58.0	15.4
A-214	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	43.5	857.7	37.3	289.8	24.7	0.0	289.8	12.6	10.1	231.9	2.5	58.0	12.6
A-215	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	51.2	857.7	43.9	289.8	29.1	0.0	289.8	14.8	11.9	231.9	3.0	58.0	14.8
A-216	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	37.6	857.7	32.3	289.8	21.4	0.0	289.8	10.9	8.7	231.9	2.2	58.0	10.9
A-217	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	45.5	857.7	39.0	289.8	25.8	0.0	289.8	13.2	10.5	231.9	2.6	58.0	13.2
A-218	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	41.7	857.7	35.8	289.8	23.7	0.0	289.8	12.1	9.7	231.9	2.4	58.0	12.1
A-219	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	48.7	857.7	41.7	289.8	27.6	0.0	289.8	14.1	11.3	231.9	2.8	58.0	14.1
A-220	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	47.5	857.7	40.7	289.8	27.0	0.0	289.8	13.8	11.0	231.9	2.8	58.0	13.8
A-221	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	43.1	857.7	37.0	289.8	24.5	0.0	289.8	12.5	10.0	231.9	2.5	58.0	12.5
A-222	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	25.9	857.7	22.2	289.8	14.7	0.0	289.8	7.5	6.0	231.9	1.5	58.0	7.5
A-223	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	44.8	857.7	38.4	289.8	25.5	0.0	289.8	13.0	10.4	231.9	2.6	58.0	13.0
A-224	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	18.9	857.7	16.2	289.8	10.7	0.0	289.8	5.5	4.4	231.9	1.1	58.0	5.5
A-225	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	128.4	857.7	110.1	289.8	72.9	0.0	289.8	37.2	29.8	231.9	7.4	58.0	37.2
A-226	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	28.6	857.7	24.5	289.8	16.2	0.0	289.8	8.3	6.6	231.9	1.7	58.0	8.3
A-227	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	347.4	857.7	298.0	289.8	197.3	0.0	289.8	100.7	80.6	231.9	20.1	58.0	100.7
A-228	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	85.6	857.7	73.4	289.8	48.6	0.0	289.8	24.8	19.8	231.9	5.0	58.0	24.8
A-229	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	78.9	857.7	67.7	289.8	44.8	0.0	289.8	22.9	18.3	231.9	4.6	58.0	22.9
A-230	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	79.7	857.7	68.4	289.8	45.3	0.0	289.8	23.1	18.5	231.9	4.6	58.0	23.1
A-231	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	73.3	857.7	62.9	289.8	41.6	0.0	289.8	21.3	17.0	231.9	4.3	58.0	21.3
A-232	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	59.0	857.7	50.6	289.8	33.5	0.0	289.8	17.1	13.7	231.9	3.4	58.0	17.1
A-233	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	66.8	857.7	57.3	289.8	37.9	0.0	289.8	19.4	15.5	231.9	3.9	58.0	19.4
A-234	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	66.5	857.7	57.0	289.8	37.7	0.0	289.8	19.3	15.4	231.9	3.9	58.0	19.3
A-235	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	59.5	857.7	51.0	289.8	33.8	0.0	289.8	17.2	13.8	231.9	3.4	58.0	17.2
A-236	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	74.9	857.7	64.2	289.8	42.5	0.0	289.8	21.7	17.4	231.9	4.3	58.0	21.7
A-237	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	60.2	857.7	51.6	289.8	34.2	0.0	289.8	17.4	14.0	231.9	3.5	58.0	17.4
A-238	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	65.9	857.7	56.6	289.8	37.4	0.0	289.8	19.1	15.3	231.9	3.8	58.0	19.1
A-239	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	63.7	857.7	54.6	289.8	36.1	0.0	289.8	18.4	14.8	231.9	3.7	58.0	18.4
A-240	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	31.9	857.7	27.3	289.8	18.1	0.0	289.8	9.2	7.4	231.9	1.8	58.0	9.2
A-241	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	58.6	857.7	50.2	289.8	33.3	0.0	289.8	17.0	13.6	231.9	3.4	58.0	17.0
A-242	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	56.3	857.7	48.3	289.8	32.0	0.0	289.8	16.3	13.1	231.9	3.3	58.0	16.3
A-243	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	49.4	857.7	42.4	289.8	28.1	0.0	289.8	14.3	11.5	231.9	2.9	58.0	14.3

TABLE H-1 PRE-DEVELOPMENT WATER BUDGET (BY CATCHMENT)
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

Subcatchment Designation	On/Off-Site	Outlet	MOE TABLE 2 Components					MOE Infiltration Factor	Adjusted Infiltration Factor	Area	Precipitation	Precipitation Total	Precipitation Surplus	Evapotranspiration	Runon	Net Surplus		Infiltration		Runoff*		Total Infiltration + Runoff
			Topography	Soil		Cover				(m^2)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(mm/a)	(m^3/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)
A-244	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	25.9	857.7	22.3	289.8	14.7	0.0	289.8	7.5	6.0	231.9	1.5	58.0	7.5
A-245	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	1.0	857.7	0.9	289.8	0.6	0.0	289.8	0.3	0.2	231.9	0.1	58.0	0.3
A-246	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	14.7	857.7	12.6	289.8	8.3	0.0	289.8	4.3	3.4	231.9	0.9	58.0	4.3
A-247	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	4.3	857.7	3.7	289.8	2.4	0.0	289.8	1.2	1.0	231.9	0.2	58.0	1.2
A-248	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	74.7	857.7	64.1	289.8	42.4	0.0	289.8	21.6	17.3	231.9	4.3	58.0	21.6
A-249	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	56.7	857.7	48.7	289.8	32.2	0.0	289.8	16.4	13.2	231.9	3.3	58.0	16.4
A-250	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	97.4	857.7	83.6	289.8	55.3	0.0	289.8	28.2	22.6	231.9	5.6	58.0	28.2
A-251	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	59.5	857.7	51.1	289.8	33.8	0.0	289.8	17.3	13.8	231.9	3.5	58.0	17.3
A-252	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	58.4	857.7	50.1	289.8	33.2	0.0	289.8	16.9	13.5	231.9	3.4	58.0	16.9
A-253	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	62.0	857.7	53.2	289.8	35.2	0.0	289.8	18.0	14.4	231.9	3.6	58.0	18.0
A-254	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	138.6	857.7	118.9	289.8	78.7	0.0	289.8	40.2	32.1	231.9	8.0	58.0	40.2
A-255	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	130.2	857.7	111.7	289.8	73.9	0.0	289.8	37.7	30.2	231.9	7.5	58.0	37.7
A-256	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	100.8	857.7	86.5	289.8	57.3	0.0	289.8	29.2	23.4	231.9	5.8	58.0	29.2
A-257	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	60.3	857.7	51.7	289.8	34.2	0.0	289.8	17.5	14.0	231.9	3.5	58.0	17.5
A-258	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	140.6	857.7	120.6	289.8	79.9	0.0	289.8	40.8	32.6	231.9	8.2	58.0	40.8
A-259	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	144.7	857.7	124.1	289.8	82.2	0.0	289.8	41.9	33.5	231.9	8.4	58.0	41.9
A-262	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	1074.5	857.7	921.6	283.8	616.6	0.0	283.8	305.0	259.2	241.2	45.7	42.6	305.0
A-263	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	1329.6	857.7	1140.4	283.8	763.0	0.0	283.8	377.4	320.8	241.2	56.6	42.6	377.4
C-296	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	1005.0	857.7	862.0	289.8	570.7	0.0	289.8	291.3	233.0	231.9	58.3	58.0	291.3
C-297	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	2102.2	857.7	1803.1	289.8	1193.8	0.0	289.8	609.3	487.4	231.9	121.9	58.0	609.3
A-298	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	12.9	857.7	11.1	283.8	7.4	0.0	283.8	3.7	3.1	241.2	0.6	42.6	3.7
A-299	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	217.5	857.7	186.5	283.8	124.8	0.0	283.8	61.7	52.5	241.2	9.3	42.6	61.7
A-300	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	61.2	857.7	52.5	283.8	35.1	0.0	283.8	17.4	14.8	241.2	2.6	42.6	17.4
A-301	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	11.9	857.7	10.2	283.8	6.8	0.0	283.8	3.4	2.9	241.2	0.5	42.6	3.4
A-302	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	52.3	857.7	44.9	283.8	30.0	0.0	283.8	14.8	12.6	241.2	2.2	42.6	14.8
A-303	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	5.6	857.7	4.8	283.8	3.2	0.0	283.8	1.6	1.3	241.2	0.2	42.6	1.6
A-304	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	2.4	857.7	2.1	283.8	1.4	0.0	283.8	0.7	0.6	241.2	0.1	42.6	0.7
A-305	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	47.9	857.7	41.1	283.8	27.5	0.0	283.8	13.6	11.6	241.2	2.0	42.6	13.6
A-306	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	208.0	857.7	178.4	283.8	119.4	0.0	283.8	59.0	50.2	241.2	8.9	42.6	59.0
A-307	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	174.0	857.7	149.2	283.8	99.8	0.0	283.8	49.4	42.0	241.2	7.4	42.6	49.4
A-308	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	11.3	857.7	9.7	283.8	6.5	0.0	283.8	3.2	2.7	241.2	0.5	42.6	3.2
A-309	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	91.1	857.7	78.2	283.8	52.3	0.0	283.8	25.9	22.0	241.2	3.9	42.6	25.9
A-310	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	45.8	857.7	39.3	283.8	26.3	0.0	283.8	13.0	11.1	241.2	2.0	42.6	13.0
A-311	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	46.2	857.7	39.6	283.8	26.5	0.0	283.8	13.1	11.1	241.2	2.0	42.6	13.1
A-312	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	22.8	857.7	19.6	283.8	13.1	0.0	283.8	6.5	5.5	241.2	1.0	42.6	6.5
A-313	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	27.4	857.7	23.5	283.8	15.7	0.0	283.8	7.8	6.6	241.2	1.2	42.6	7.8
A-314	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	24.0	857.7	20.6	283.8	13.8	0.0	283.8	6.8	5.8	241.2	1.0	42.6	6.8
A-315	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	66.2	857.7	56.8	283.8	38.0	0.0	283.8	18.8	16.0	241.2	2.8	42.6	18.8
A-316	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	75.7	857.7	64.9	283.8	43.4	0.0	283.8	21.5	18.3	241.2	3.2	42.6	21.5
A-317	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	5.9	857.7	5.0	283.8	3.4	0.0	283.8	1.7	1.4	241.2	0.3	42.6	1.7
A-318	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	17.6	857.7	15.1	283.8	10.1	0.0	283.8	5.0	4.2	241.2	0.7	42.6	5.0
A-319	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	19.2	857.7	16.5	283.8	11.0	0.0	283.8	5.4	4.6	241.2	0.8	42.6	5.4
A-320	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	4.0	857.7	3.5	283.8	2.3	0.0	283.8	1.1	1.0	241.2	0.2	42.6	1.1
A-321	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	115.3	857.7	98.9	283.8	66.2	0.0	283.8	32.7	27.8	241.2	4.9	42.6	32.7
A-322	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	1342.0	857.7	1151.0	283.8	770.1	0.0	283.8	380.9	323.7	241.2	57.1	42.6	380.9
A-323	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	80.4	857.7	68.9	283.8	46.1	0.0	283.8	22.8	19.4	241.2	3.4	42.6	22.8
A-324	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	55.4	857.7	47.5	283.8	31.8	0.0	283.8	15.7	13.4	241.2	2.4	42.6	15.7
A-325	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	551.5	857.7	473.1	283.8	316.5	0.0	283.8	156.5	133.1	241.2	23.5	42.6	156.5
A-326	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	36.4	857.7	31.2	283.8	20.9	0.0	283.8	10.3	8.8	241.2	1.5	42.6	10.3
A-327	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	278.9	857.7	239.2	283.8	160.1	0.0	283.8	79.2	67.3	241.2	11.9	42.6	79.2
A-329	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	1634.6	857.7	1402.0	292.8	923.4	0.0	292.8	478.7	359.0	219.6	119.7	73.2	478.7
A-330	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	191.6	857.7	164.3	289.8	108.8	0.0	289.8	55.5	44.4	231.9	11.1	58.0	55.5
A-331	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	4758.7	857.7	4081.6	289.8	2702.4	0.0	289.8	1379.2	1103.3	231.9	275.8	58.0	1379.2
A-332	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Lawns	0.05	0.60	0.60	56.0	857.7	48.0	301.8	31.1	0.0	301.8	16.9	10.1	181.1	6.8	120.7	16.9
A-333	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	1200.1	857.7	1029.4	289.8	681.5	0.0	289.8	347.8	278.3	231.9	69.6	58.0	347.8
A-334	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	31.8	857.7	27.3	289.8	18.1	0.0	289.8	9.2	7.4	231.9	1.8	58.0	9.2
A-335	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	37520.5	857.7	32181.3	292.8	21194.6	0.0	292.8	10986.7	8240.1	219.6	2746.7	73.2	10986.7
A-336	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	209.6	857.7	179.8	292.8	118.4	0.0	292.8	61.4	46.0	219.6	15.3	73.2	61.4
A-337	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	352.2	857.7	302.0	292.8	198.9	0.0	292.8	103.1	77.3	219.6	25.8	73.2	103.1
A-338	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	209.9	857.7	180.0	292.8	118.6	0.0	292.8	61.5	46.1	219.6	15.4	73.2	61.5
A-339	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	53.4	857.7	45.8	292.8	30.2	0.0	292.8	15.6	11.7	219.6	3.9	73.2	15.6
A-340	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	62.0	857.7	53.2	292.8	35.0	0.0	292.8	18.1	13.6	219.6	4.5	73.2	18.1
A-341	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	24.8	857.7	21.3	292.8	14.0	0.0	292.8	7.3	5.4	219.6	1.8	73.2	7.3
A-342	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	75.1	857.7	64.4	292.8	42.4	0.0	292.8	22.0	16.5	219.6	5.5	73.2	22.0
A-343	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-344	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-345	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-346	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	292.8	857.7	251.2	292.8	165.4	0.0	292.8	85.8	64.3	219.6	21.4	73.2	85.8
A-347	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	296.0	857.7	253.9	292.8	167.2	0.0	292.8	86.7	65.0	219.6	21.7	73.2	86.7

TABLE H-1 PRE-DEVELOPMENT WATER BUDGET (BY CATCHMENT)
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

Subcatchment Designation	On/Off-Site	Outlet	MOE TABLE 2 Components					MOE Infiltration Factor	Adjusted Infiltration Factor	Area	Precipitation	Precipitation Total	Precipitation Surplus	Evapotranspiration	Runon	Net Surplus		Infiltration		Runoff*		Total Infiltration + Runoff
			Topography	Soil		Cover				(m^2)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(mm/a)	(m^3/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)
A-348	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-349	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-350	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-351	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-352	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-353	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-354	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-355	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-356	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-357	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-358	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-359	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-360	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-361	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-362	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-363	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-364	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-365	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	72.7	857.7	62.4	292.8	41.1	0.0	292.8	21.3	16.0	219.6	5.3	73.2	21.3
A-366	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-367	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-368	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-369	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-370	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-371	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-372	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-373	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-374	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-375	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-376	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-377	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-378	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-379	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-380	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-381	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-382	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-383	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-384	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-385	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-386	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-387	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-388	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-389	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-390	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	42.5	857.7	36.4	292.8	24.0	0.0	292.8	12.4	9.3	219.6	3.1	73.2	12.4
A-391	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	49.5	857.7	42.5	292.8	28.0	0.0	292.8	14.5	10.9	219.6	3.6	73.2	14.5
A-392	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	43.0	857.7	36.9	292.8	24.3	0.0	292.8	12.6	9.5	219.6	3.2	73.2	12.6
A-393	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	43.3	857.7	37.1	292.8	24.5	0.0	292.8	12.7	9.5	219.6	3.2	73.2	12.7
A-394	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	50.7	857.7	43.5	292.8	28.7	0.0	292.8	14.9	11.1	219.6	3.7	73.2	14.9
A-395	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	51.2	857.7	43.9	292.8	28.9	0.0	292.8	15.0	11.2	219.6	3.7	73.2	15.0
A-396	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	43.3	857.7	37.2	292.8	24.5	0.0	292.8	12.7	9.5	219.6	3.2	73.2	12.7
A-397	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	43.2	857.7	37.0	292.8	24.4	0.0	292.8	12.6	9.5	219.6	3.2	73.2	12.6
A-398	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	51.8	857.7	44.4	292.8	29.2	0.0	292.8	15.2	11.4	219.6	3.8	73.2	15.2
A-399	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	42.4	857.7	36.4	292.8	24.0	0.0	292.8	12.4	9.3	219.6	3.1	73.2	12.4
A-400	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	51.0	857.7	43.7	292.8	28.8	0.0	292.8	14.9	11.2	219.6	3.7	73.2	14.9
A-401	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	49.3	857.7	42.3	292.8	27.9	0.0	292.8	14.4	10.8	219.6	3.6	73.2	14.4
A-402	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	44.2	857.7	37.9	292.8	25.0	0.0	292.8	12.9	9.7	219.6	3.2	73.2	12.9
A-403	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	49.9	857.7	42.8	292.8	28.2	0.0	292.8	14.6	11.0	219.6	3.7	73.2	14.6
A-404	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	51.6	857.7	44.3	292.8	29.2	0.0	292.8	15.1	11.3	219.6	3.8	73.2	15.1
A-405	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	25.9	857.7	22.2	292.8	14.6	0.0	292.8	7.6	5.7	219.6	1.9	73.2	7.6
A-406	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	50.7	857.7	43.5	292.8	28.6	0.0	292.8	14.8	11.1	219.6	3.7	73.2	14.8
A-407	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	57.5	857.7	49.3	292.8	32.5	0.0	292.8	16.8	12.6	219.6	4.2	73.2	16.8
A-408	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	1509.5	857.7	1294.7	292.8	852.7	0.0	292.8	442.0	331.5	219.6	110.5	73.2	442.0
A-409	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-410	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-411	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-412	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-413	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-414	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-415	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-416	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4

TABLE H-1 PRE-DEVELOPMENT WATER BUDGET (BY CATCHMENT)
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

Subcatchment Designation	On/Off-Site	Outlet	MOE TABLE 2 Components					MOE Infiltration Factor	Adjusted Infiltration Factor	Area	Precipitation	Precipitation Total	Precipitation Surplus	Evapotranspiration	Runon	Net Surplus		Infiltration		Runoff*		Total Infiltration + Runoff
			Topography	Soil		Cover				(m^2)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(mm/a)	(m^3/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)
A-417	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-418	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-419	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-420	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-421	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-422	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-423	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-424	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-425	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-426	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-427	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-428	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-429	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-430	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-431	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-432	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-433	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-434	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-435	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-436	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-437	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-438	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-439	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-440	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-441	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-442	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-443	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-444	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-445	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-446	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-447	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-448	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-449	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-450	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-451	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-452	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-453	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-454	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-455	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-456	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-457	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-458	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-459	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-460	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-461	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-462	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-463	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-464	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-465	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-466	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-467	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-468	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-469	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-470	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-471	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	4.4	857.7	3.8	292.8	2.5	0.0	292.8	1.3	1.0	219.6	0.3	73.2	1.3
A-472	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-473	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-474	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-475	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-476	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-477	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-478	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-479	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-480	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-481	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-482	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-483	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-484	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-485	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2

TABLE H-1 PRE-DEVELOPMENT WATER BUDGET (BY CATCHMENT)
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

Subcatchment Designation	On/Off-Site	Outlet	MOE TABLE 2 Components					MOE Infiltration Factor	Adjusted Infiltration Factor	Area	Precipitation	Precipitation Total	Precipitation Surplus	Evapotranspiration	Runon	Net Surplus		Infiltration		Runoff*		Total Infiltration + Runoff
			Topography	Soil		Cover				(m^2)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(mm/a)	(m^3/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)
A-486	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-487	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-488	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-489	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-490	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-491	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-492	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-493	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.4	219.6	0.8	73.2	3.2
A-494	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	48.7	857.7	41.8	292.8	27.5	0.0	292.8	14.3	10.7	219.6	3.6	73.2	14.3
A-495	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	48.3	857.7	41.4	292.8	27.3	0.0	292.8	14.1	10.6	219.6	3.5	73.2	14.1
A-496	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	49.7	857.7	42.7	292.8	28.1	0.0	292.8	14.6	10.9	219.6	3.6	73.2	14.6
A-497	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	49.3	857.7	42.3	292.8	27.9	0.0	292.8	14.4	10.8	219.6	3.6	73.2	14.4
A-498	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	47.9	857.7	41.1	292.8	27.1	0.0	292.8	14.0	10.5	219.6	3.5	73.2	14.0
A-499	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	45.3	857.7	38.8	292.8	25.6	0.0	292.8	13.3	9.9	219.6	3.3	73.2	13.3
A-500	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	49.5	857.7	42.4	292.8	27.9	0.0	292.8	14.5	10.9	219.6	3.6	73.2	14.5
A-501	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	51.2	857.7	43.9	292.8	28.9	0.0	292.8	15.0	11.2	219.6	3.7	73.2	15.0
A-502	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	44.0	857.7	37.7	292.8	24.8	0.0	292.8	12.9	9.7	219.6	3.2	73.2	12.9
A-503	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	49.8	857.7	42.7	292.8	28.1	0.0	292.8	14.6	10.9	219.6	3.6	73.2	14.6
A-504	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	49.0	857.7	42.0	292.8	27.7	0.0	292.8	14.4	10.8	219.6	3.6	73.2	14.4
A-505	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	41.5	857.7	35.6	292.8	23.4	0.0	292.8	12.1	9.1	219.6	3.0	73.2	12.1
A-506	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	42.5	857.7	36.5	292.8	24.0	0.0	292.8	12.5	9.3	219.6	3.1	73.2	12.5
A-507	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	49.6	857.7	42.6	292.8	28.0	0.0	292.8	14.5	10.9	219.6	3.6	73.2	14.5
A-508	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	7.0	857.7	6.0	292.8	3.9	0.0	292.8	2.0	1.5	219.6	0.5	73.2	2.0
A-509	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	53.4	857.7	45.8	292.8	30.1	0.0	292.8	15.6	11.7	219.6	3.9	73.2	15.6
A-510	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	47.9	857.7	41.1	292.8	27.1	0.0	292.8	14.0	10.5	219.6	3.5	73.2	14.0
A-511	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	45.1	857.7	38.7	292.8	25.5	0.0	292.8	13.2	9.9	219.6	3.3	73.2	13.2
A-512	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	44.2	857.7	37.9	292.8	25.0	0.0	292.8	12.9	9.7	219.6	3.2	73.2	12.9
A-513	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	50.3	857.7	43.1	292.8	28.4	0.0	292.8	14.7	11.0	219.6	3.7	73.2	14.7
A-514	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	50.7	857.7	43.5	292.8	28.6	0.0	292.8	14.8	11.1	219.6	3.7	73.2	14.8
A-515	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	44.6	857.7	38.3	292.8	25.2	0.0	292.8	13.1	9.8	219.6	3.3	73.2	13.1
A-516	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	43.6	857.7	37.4	292.8	24.7	0.0	292.8	12.8	9.6	219.6	3.2	73.2	12.8
A-517	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	50.0	857.7	42.9	292.8	28.3	0.0	292.8	14.6	11.0	219.6	3.7	73.2	14.6
A-518	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	50.9	857.7	43.7	292.8	28.8	0.0	292.8	14.9	11.2	219.6	3.7	73.2	14.9
A-519	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	51.5	857.7	44.2	292.8	29.1	0.0	292.8	15.1	11.3	219.6	3.8	73.2	15.1
A-520	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	51.4	857.7	44.1	292.8	29.0	0.0	292.8	15.1	11.3	219.6	3.8	73.2	15.1
A-521	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	50.7	857.7	43.5	292.8	28.6	0.0	292.8	14.8	11.1	219.6	3.7	73.2	14.8
A-522	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	53.4	857.7	45.8	292.8	30.2	0.0	292.8	15.6	11.7	219.6	3.9	73.2	15.6
A-523	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	55.4	857.7	47.5	292.8	31.3	0.0	292.8	16.2	12.2	219.6	4.1	73.2	16.2
A-524	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	47.7	857.7	41.0	292.8	27.0	0.0	292.8	14.0	10.5	219.6	3.5	73.2	14.0
A-525	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	49.8	857.7	42.7	292.8	28.1	0.0	292.8	14.6	10.9	219.6	3.6	73.2	14.6
A-526	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	47.8	857.7	41.0	292.8	27.0	0.0	292.8	14.0	10.5	219.6	3.5	73.2	14.0
A-527	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	53.0	857.7	45.4	292.8	29.9	0.0	292.8	15.5	11.6	219.6	3.9	73.2	15.5
A-528	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	52.9	857.7	45.4	292.8	29.9	0.0	292.8	15.5	11.6	219.6	3.9	73.2	15.5
A-529	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	55.2	857.7	47.4	292.8	31.2	0.0	292.8	16.2	12.1	219.6	4.0	73.2	16.2
A-530	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	52.3	857.7	44.9	292.8	29.6	0.0	292.8	15.3	11.5	219.6	3.8	73.2	15.3
A-531	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	47.4	857.7	40.6	292.8	26.8	0.0	292.8	13.9	10.4	219.6	3.5	73.2	13.9
A-532	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	47.8	857.7	41.0	292.8	27.0	0.0	292.8	14.0	10.5	219.6	3.5	73.2	14.0
A-533	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	49.8	857.7	42.7	292.8	28.1	0.0	292.8	14.6	10.9	219.6	3.6	73.2	14.6
A-534	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	48.4	857.7	41.5	292.8	27.3	0.0	292.8	14.2	10.6	219.6	3.5	73.2	14.2
A-535	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	50.5	857.7	43.3	292.8	28.5	0.0	292.8	14.8	11.1	219.6	3.7	73.2	14.8
A-536	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	52.0	857.7	44.6	292.8	29.4	0.0	292.8	15.2	11.4	219.6	3.8	73.2	15.2
A-537	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	54.1	857.7	46.4	292.8	30.6	0.0	292.8	15.8	11.9	219.6	4.0	73.2	15.8
A-538	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	55.0	857.7	47.1	292.8	31.0	0.0	292.8	16.1	12.1	219.6	4.0	73.2	16.1
A-539	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	54.3	857.7	46.6	292.8	30.7	0.0	292.8	15.9	11.9	219.6	4.0	73.2	15.9
A-540	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	50.2	857.7	43.0	292.8	28.3	0.0	292.8	14.7	11.0	219.6	3.7	73.2	14.7
A-541	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	39.8	857.7	34.1	292.8	22.5	0.0	292.8	11.6	8.7	219.6	2.9	73.2	11.6
A-542	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	38.8	857.7	33.3	292.8	21.9	0.0	292.8	11.4	8.5	219.6	2.8	73.2	11.4
A-543	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	51.5	857.7	44.2	292.8	29.1	0.0	292.8	15.1	11.3	219.6	3.8	73.2	15.1
A-544	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	45.1	857.7	38.7	292.8	25.5	0.0	292.8	13.2	9.9	219.6	3.3	73.2	13.2
A-545	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	63.1	857.7	54.1	292.8	35.7	0.0	292.8	18.5	13.9	219.6	4.6	73.2	18.5
A-546	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	98.8	857.7	84.8	292.8	55.8	0.0	292.8	28.9	21.7	219.6	7.2	73.2	28.9
A-547	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	54.2	857.7	46.5	292.8	30.6	0.0	292.8	15.9	11.9	219.6	4.0	73.2	15.9
A-548	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	52.9	857.7	45.3	292.8	29.9	0.0	292.8	15.5	11.6	219.6	3.9	73.2	15.5
A-549	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	50.3	857.7	43.2	292.8	28.4	0.0	292.8	14.7	11.1	219.6	3.7	73.2	14.7
A-550	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	52.3	857.7	44.8	292.8	29.5	0.0	292.8	15.3	11.5	219.6	3.8	73.2	15.3
A-551	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	51.5	857.7	44.2	292.8	29.1	0.0	292.8	15.1	11.3	219.6	3.8	73.2	15.1
A-552	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	4432.4	857.7	3801.7	292.8	2503.8	0.0	292.8	1297.9	973.4	219.6	324.5	73.2	1297.9
A-553	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	135.4	857.7	116.1	292.8	76.5	0.0	292.8	39.6	29.7	219.6	9.9	73.2	39.6
A-554	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4

TABLE H-1 PRE-DEVELOPMENT WATER BUDGET (BY CATCHMENT)
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

Subcatchment Designation	On/Off-Site	Outlet	MOE TABLE 2 Components					MOE Infiltration Factor	Adjusted Infiltration Factor	Area	Precipitation	Precipitation Total	Precipitation Surplus	Evapotranspiration	Runon	Net Surplus		Infiltration		Runoff*		Total Infiltration + Runoff
			Topography	Soil		Cover				(m^2)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(mm/a)	(m^3/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)
A-555	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-556	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-557	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-558	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-559	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-560	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-561	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-562	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-563	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-564	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-565	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-566	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-567	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-568	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-569	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-570	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-571	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-572	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	65.5	219.6	21.8	73.2	87.4
A-573	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	6.5	857.7	5.5	292.8	3.6	0.0	292.8	1.9	1.4	219.6	0.5	73.2	1.9
A-574	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	3.6	857.7	3.1	292.8	2.0	0.0	292.8	1.0	0.8	219.6	0.3	73.2	1.0
A-575	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	4.5	857.7	3.8	292.8	2.5	0.0	292.8	1.3	1.0	219.6	0.3	73.2	1.3
A-576	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	6.7	857.7	5.8	292.8	3.8	0.0	292.8	2.0	1.5	219.6	0.5	73.2	2.0
A-577	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	1.2	857.7	1.1	292.8	0.7	0.0	292.8	0.4	0.3	219.6	0.1	73.2	0.4
A-578	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	7.9	857.7	6.8	292.8	4.4	0.0	292.8	2.3	1.7	219.6	0.6	73.2	2.3
A-579	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	10.3	857.7	8.8	292.8	5.8	0.0	292.8	3.0	2.3	219.6	0.8	73.2	3.0
A-580	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	27.8	857.7	23.8	292.8	15.7	0.0	292.8	8.1	6.1	219.6	2.0	73.2	8.1
A-581	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	161.5	857.7	138.5	292.8	91.2	0.0	292.8	47.3	35.5	219.6	11.8	73.2	47.3
A-582	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	99.3	857.7	85.1	292.8	56.1	0.0	292.8	29.1	21.8	219.6	7.3	73.2	29.1
A-583	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	114.1	857.7	97.9	292.8	64.5	0.0	292.8	33.4	25.1	219.6	8.4	73.2	33.4
A-584	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	68.6	857.7	58.8	292.8	38.7	0.0	292.8	20.1	15.1	219.6	5.0	73.2	20.1
A-585	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	13.4	857.7	11.5	292.8	7.6	0.0	292.8	3.9	3.0	219.6	1.0	73.2	3.9
A-586	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	72.6	857.7	62.3	292.8	41.0	0.0	292.8	21.3	15.9	219.6	5.3	73.2	21.3
A-587	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	81.1	857.7	69.6	292.8	45.8	0.0	292.8	23.8	17.8	219.6	5.9	73.2	23.8
A-588	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	107.0	857.7	91.8	292.8	60.4	0.0	292.8	31.3	23.5	219.6	7.8	73.2	31.3
A-589	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	105.9	857.7	90.8	292.8	59.8	0.0	292.8	31.0	23.3	219.6	7.8	73.2	31.0
A-590	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	79.3	857.7	68.0	292.8	44.8	0.0	292.8	23.2	17.4	219.6	5.8	73.2	23.2
A-591	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	68.2	857.7	58.5	292.8	38.5	0.0	292.8	20.0	15.0	219.6	5.0	73.2	20.0
A-592	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	266.3	857.7	228.4	292.8	150.4	0.0	292.8	78.0	58.5	219.6	19.5	73.2	78.0
A-593	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	49.4	857.7	42.4	292.8	27.9	0.0	292.8	14.5	10.9	219.6	3.6	73.2	14.5
A-594	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	48.5	857.7	41.6	292.8	27.4	0.0	292.8	14.2	10.6	219.6	3.5	73.2	14.2
A-595	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	56.0	857.7	48.0	292.8	31.6	0.0	292.8	16.4	12.3	219.6	4.1	73.2	16.4
A-596	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	59.4	857.7	51.0	292.8	33.6	0.0	292.8	17.4	13.0	219.6	4.3	73.2	17.4
A-597	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	63.9	857.7	54.8	292.8	36.1	0.0	292.8	18.7	14.0	219.6	4.7	73.2	18.7
A-598	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	71.0	857.7	60.9	292.8	40.1	0.0	292.8	20.8	15.6	219.6	5.2	73.2	20.8
A-599	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	66.9	857.7	57.4	292.8	37.8	0.0	292.8	19.6	14.7	219.6	4.9	73.2	19.6
A-600	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	69.4	857.7	59.5	292.8	39.2	0.0	292.8	20.3	15.2	219.6	5.1	73.2	20.3
A-601	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	53.8	857.7	46.1	292.8	30.4	0.0	292.8	15.7	11.8	219.6	3.9	73.2	15.7
A-602	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	73.2	857.7	62.8	292.8	41.4	0.0	292.8	21.4	16.1	219.6	5.4	73.2	21.4
A-603	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	53.3	857.7	45.8	292.8	30.1	0.0	292.8	15.6	11.7	219.6	3.9	73.2	15.6
A-604	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	64.1	857.7	55.0	292.8	36.2	0.0	292.8	18.8	14.1	219.6	4.7	73.2	18.8
A-605	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	58.0	857.7	49.7	292.8	32.8	0.0	292.8	17.0	12.7	219.6	4.2	73.2	17.0
A-606	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	64.4	857.7	55.3	292.8	36.4	0.0	292.8	18.9	14.2	219.6	4.7	73.2	18.9
A-607	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	63.5	857.7	54.5	292.8	35.9	0.0	292.8	18.6	13.9	219.6	4.6	73.2	18.6
A-608	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	17.2	857.7	14.7	292.8	9.7	0.0	292.8	5.0	3.8	219.6	1.3	73.2	5.0
A-609	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	68.9	857.7	59.1	292.8	38.9	0.0	292.8	20.2	15.1	219.6	5.0	73.2	20.2
A-610	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	60.1	857.7	51.5	292.8	33.9	0.0	292.8	17.6	13.2	219.6	4.4	73.2	17.6
A-611	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	72.4	857.7	62.1	292.8	40.9	0.0	292.8	21.2	15.9	219.6	5.3	73.2	21.2
A-612	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	64.8	857.7	55.6	292.8	36.6	0.0	292.8	19.0	14.2	219.6	4.7	73.2	19.0
A-613	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	60.7	857.7	52.0	292.8	34.3	0.0	292.8	17.8	13.3	219.6	4.4	73.2	17.8
A-614	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	67.6	857.7	58.0	292.8	38.2	0.0	292.8	19.8	14.8	219.6	4.9	73.2	19.8
A-615	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	74.6	857.7	64.0	292.8	42.2	0.0	292.8	21.9	16.4	219.6	5.5	73.2	21.9
A-616	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	57.2	857.7	49.0	292.8	32.3	0.0	292.8	16.7	12.6	219.6	4.2	73.2	16.7
A-617	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	68.6	857.7	58.8	292.8	38.7	0.0	292.8	20.1	15.1	219.6	5.0	73.2	20.1
A-618	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	63.6	857.7	54.5	292.8	35.9	0.0	292.8	18.6	14.0	219.6	4.7	73.2	18.6
A-619	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	74.3	857.7	63.7	292.8	42.0	0.0	292.8	21.7	16.3	219.6	5.4	73.2	21.7
A-620	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	68.6	857.7	58.8	292.8	38.8	0.0	292.8	20.1	15.1	219.6	5.0	73.2	20.1
A-621	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	218.7	857.7	187.5	292.8	123.5	0.0	292.8	64.0	48.0	219.6	16.0	73.2	64.0
A-622	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	71.3	857.7	61.2	292.8	40.3	0.0	292.8	20.9	15.7	219.6	5.2	73.2	20.9
A-623	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	2256.5	857.7	1935.4	292.8	1274.7	0.0	292.8	660.8	495.6	219.6	165.2	73.2	660.8

TABLE H-1 PRE-DEVELOPMENT WATER BUDGET (BY CATCHMENT)
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

Subcatchment Designation	On/Off-Site	Outlet	MOE TABLE 2 Components					MOE Infiltration Factor	Adjusted Infiltration Factor	Area	Precipitation	Precipitation Total	Precipitation Surplus	Evapotranspiration	Runon	Net Surplus		Infiltration		Runoff*		Total Infiltration + Runoff
			Topography	Soil		Cover				(m^2)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(mm/a)	(m^3/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)
A-624	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	68.8	857.7	59.1	292.8	38.9	0.0	292.8	20.2	15.1	219.6	5.0	73.2	20.2
A-625	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	68.4	857.7	58.7	292.8	38.6	0.0	292.8	20.0	15.0	219.6	5.0	73.2	20.0
A-626	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	67.1	857.7	57.5	292.8	37.9	0.0	292.8	19.6	14.7	219.6	4.9	73.2	19.6
A-627	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	81.6	857.7	69.9	292.8	46.1	0.0	292.8	23.9	17.9	219.6	6.0	73.2	23.9
A-628	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	66.2	857.7	56.7	292.8	37.4	0.0	292.8	19.4	14.5	219.6	4.8	73.2	19.4
A-629	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	53.0	857.7	45.4	292.8	29.9	0.0	292.8	15.5	11.6	219.6	3.9	73.2	15.5
A-630	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	56.9	857.7	48.8	292.8	32.2	0.0	292.8	16.7	12.5	219.6	4.2	73.2	16.7
A-631	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	1559.9	857.7	1337.9	292.8	881.2	0.0	292.8	456.8	342.6	219.6	114.2	73.2	456.8
A-632	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	66.6	857.7	57.2	292.8	37.6	0.0	292.8	19.5	14.6	219.6	4.9	73.2	19.5
A-633	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	1643.3	857.7	1409.5	292.8	928.3	0.0	292.8	481.2	360.9	219.6	120.3	73.2	481.2
A-634	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	70.5	857.7	60.5	292.8	39.8	0.0	292.8	20.7	15.5	219.6	5.2	73.2	20.7
A-635	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	51.7	857.7	44.4	292.8	29.2	0.0	292.8	15.1	11.4	219.6	3.8	73.2	15.1
A-636	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	2458.3	857.7	2108.5	292.8	1388.6	0.0	292.8	719.8	539.9	219.6	180.0	73.2	719.8
A-637	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	13.3	857.7	11.4	292.8	7.5	0.0	292.8	3.9	2.9	219.6	1.0	73.2	3.9
A-638	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	1111.5	857.7	953.3	292.8	627.8	0.0	292.8	325.5	244.1	219.6	81.4	73.2	325.5
A-639	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	151.7	857.7	130.1	292.8	85.7	0.0	292.8	44.4	33.3	219.6	11.1	73.2	44.4
A-640	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	705.9	857.7	605.5	292.8	398.8	0.0	292.8	206.7	155.0	219.6	51.7	73.2	206.7
A-641	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	95.8	857.7	82.2	292.8	54.1	0.0	292.8	28.1	21.0	219.6	7.0	73.2	28.1
A-642	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	40.3	857.7	34.6	292.8	22.8	0.0	292.8	11.8	8.9	219.6	3.0	73.2	11.8
A-643	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	632.1	857.7	542.2	292.8	357.1	0.0	292.8	185.1	138.8	219.6	46.3	73.2	185.1
A-644	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	77.7	857.7	66.7	292.8	43.9	0.0	292.8	22.8	17.1	219.6	5.7	73.2	22.8
A-645	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	48.6	857.7	41.7	292.8	27.5	0.0	292.8	14.2	10.7	219.6	3.6	73.2	14.2
A-646	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	49.9	857.7	42.8	292.8	28.2	0.0	292.8	14.6	11.0	219.6	3.7	73.2	14.6
A-647	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	250.4	857.7	214.8	292.8	141.4	0.0	292.8	73.3	55.0	219.6	18.3	73.2	73.3
A-648	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	20.0	857.7	17.2	292.8	11.3	0.0	292.8	5.9	4.4	219.6	1.5	73.2	5.9
A-649	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	240.0	857.7	205.8	292.8	135.6	0.0	292.8	70.3	52.7	219.6	17.6	73.2	70.3
A-650	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	1128.3	857.7	967.7	292.8	637.3	0.0	292.8	330.4	247.8	219.6	82.6	73.2	330.4
A-651	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	91.9	857.7	78.8	292.8	51.9	0.0	292.8	26.9	20.2	219.6	6.7	73.2	26.9
A-652	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Ponds	1	1.65	1.00	1776.6	857.7	1523.8	211.7	1147.7	0.0	211.7	376.1	376.1	211.7	0.0	0.0	376.1
A-653	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	1808.8	857.7	1551.4	283.8	1038.0	0.0	283.8	513.4	436.4	241.2	77.0	42.6	513.4
A-654	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	17.9	857.7	15.3	289.8	10.1	0.0	289.8	5.2	4.1	231.9	1.0	58.0	5.2
A-655	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	31.4	857.7	27.0	289.8	17.9	0.0	289.8	9.1	7.3	231.9	1.8	58.0	9.1
A-656	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	22.3	857.7	19.1	289.8	12.7	0.0	289.8	6.5	5.2	231.9	1.3	58.0	6.5
A-657	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	16.4	857.7	14.0	289.8	9.3	0.0	289.8	4.7	3.8	231.9	0.9	58.0	4.7
A-658	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	373.8	857.7	320.6	289.8	212.3	0.0	289.8	108.3	86.7	231.9	21.7	58.0	108.3
A-659	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	277.9	857.7	238.4	289.8	157.8	0.0	289.8	80.6	64.4	231.9	16.1	58.0	80.6
A-660	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	68.5	857.7	58.8	283.8	39.3	0.0	283.8	19.4	14.6	212.9	4.9	71.0	19.4
A-661	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	287.1	857.7	246.3	283.8	164.8	0.0	283.8	81.5	61.1	212.9	20.4	71.0	81.5
A-662	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	298.4	857.7	256.0	283.8	171.3	0.0	283.8	84.7	63.5	212.9	21.2	71.0	84.7
A-663	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	207.3	857.7	177.8	283.8	119.0	0.0	283.8	58.8	44.1	212.9	14.7	71.0	58.8
A-664	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	10.9	857.7	9.3	283.8	6.3	0.0	283.8	3.1	2.3	212.9	0.8	71.0	3.1
A-665	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	10.9	857.7	9.3	283.8	6.3	0.0	283.8	3.1	2.3	212.9	0.8	71.0	3.1
A-666	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	10.9	857.7	9.3	283.8	6.3	0.0	283.8	3.1	2.3	212.9	0.8	71.0	3.1
A-667	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	40.0	857.7	34.3	283.8	22.9	0.0	283.8	11.3	8.5	212.9	2.8	71.0	11.3
A-668	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	57.3	857.7	49.1	283.8	32.9	0.0	283.8	16.3	12.2	212.9	4.1	71.0	16.3
A-669	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	52.4	857.7	45.0	283.8	30.1	0.0	283.8	14.9	11.2	212.9	3.7	71.0	14.9
A-670	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	34.5	857.7	29.6	283.8	19.8	0.0	283.8	9.8	7.3	212.9	2.4	71.0	9.8
A-671	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	249.1	857.7	213.6	283.8	143.0	0.0	283.8	70.7	53.0	212.9	17.7	71.0	70.7
A-672	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	86.3	857.7	74.0	283.8	49.5	0.0	283.8	24.5	18.4	212.9	6.1	71.0	24.5
A-673	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	88.4	857.7	75.8	283.8	50.7	0.0	283.8	25.1	18.8	212.9	6.3	71.0	25.1
A-674	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	72.8	857.7	62.4	283.8	41.8	0.0	283.8	20.7	15.5	212.9	5.2	71.0	20.7
A-675	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	150.5	857.7	129.1	283.8	86.4	0.0	283.8	42.7	32.0	212.9	10.7	71.0	42.7
A-676	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	94.7	857.7	81.2	283.8	54.3	0.0	283.8	26.9	20.2	212.9	6.7	71.0	26.9
A-677	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	35.2	857.7	30.2	283.8	20.2	0.0	283.8	10.0	7.5	212.9	2.5	71.0	10.0
A-678	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	15.8	857.7	13.5	283.8	9.0	0.0	283.8	4.5	3.4	212.9	1.1	71.0	4.5
A-679	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	378.6	857.7	324.7	283.8	217.3	0.0	283.8	107.5	80.6	212.9	26.9	71.0	107.5
A-680	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	1010.3	857.7	866.5	283.8	579.8	0.0	283.8	286.7	215.1	212.9	71.7	71.0	286.7
A-681	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	43.1	857.7	36.9	292.8	24.3	0.0	292.8	12.6	8.2	190.3	4.4	102.5	12.6
A-682	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	116.2	857.7	99.7	292.8	65.6	0.0	292.8	34.0	22.1	190.3	11.9	102.5	34.0
A-683	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	56.8	190.3	30.6	102.5	87.4
A-684	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	56.8	190.3	30.6	102.5	87.4
A-685	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	56.8	190.3	30.6	102.5	87.4
A-686	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	298.4	857.7	256.0	292.8	168.6	0.0	292.8	87.4	56.8	190.3	30.6	102.5	87.4
A-687	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	180.8	857.7	155.1	292.8	102.2	0.0	292.8	53.0	34.4	190.3	18.5	102.5	53.0
A-688	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	10.9	857.7	9.3	292.8	6.1	0.0	292.8	3.2	2.1	190.3	1.1	102.5	3.2
A-689	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	10.9	857.7	9.3	292.8	6.1	0.0	292.8	3.2	2.1	190.3	1.1	102.5	3.2
A-690	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.1	190.3	1.1	102.5	3.2
A-691	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.1	190.3	1.1	102.5	3.2
A-692	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.1	190.3	1.1	102.5	3.2

TABLE H-1 PRE-DEVELOPMENT WATER BUDGET (BY CATCHMENT)
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

Subcatchment Designation	On/Off-Site	Outlet	MOE TABLE 2 Components					MOE Infiltration Factor	Adjusted Infiltration Factor	Area	Precipitation	Precipitation Total	Precipitation Surplus	Evapotranspiration	Runon	Net Surplus		Infiltration		Runoff*		Total Infiltration + Runoff
			Topography	Soil		Cover				(m^2)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(mm/a)	(m^3/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)
A-693	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.1	190.3	1.1	102.5	3.2
A-694	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	10.9	857.7	9.3	292.8	6.2	0.0	292.8	3.2	2.1	190.3	1.1	102.5	3.2
A-695	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	53.0	857.7	45.4	292.8	29.9	0.0	292.8	15.5	10.1	190.3	5.4	102.5	15.5
A-696	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	50.7	857.7	43.4	292.8	28.6	0.0	292.8	14.8	9.6	190.3	5.2	102.5	14.8
A-697	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	4.5	857.7	3.9	292.8	2.5	0.0	292.8	1.3	0.9	190.3	0.5	102.5	1.3
A-698	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	34.9	857.7	29.9	292.8	19.7	0.0	292.8	10.2	6.6	190.3	3.6	102.5	10.2
A-699	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	53.2	857.7	45.6	292.8	30.0	0.0	292.8	15.6	10.1	190.3	5.4	102.5	15.6
A-700	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	48.5	857.7	41.6	292.8	27.4	0.0	292.8	14.2	9.2	190.3	5.0	102.5	14.2
A-701	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	45.9	857.7	39.4	292.8	25.9	0.0	292.8	13.4	8.7	190.3	4.7	102.5	13.4
A-702	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	44.0	857.7	37.8	292.8	24.9	0.0	292.8	12.9	8.4	190.3	4.5	102.5	12.9
A-703	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	44.4	857.7	38.1	292.8	25.1	0.0	292.8	13.0	8.4	190.3	4.5	102.5	13.0
A-704	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	70.7	857.7	60.6	292.8	39.9	0.0	292.8	20.7	13.4	190.3	7.2	102.5	20.7
A-705	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	114.8	857.7	98.5	292.8	64.8	0.0	292.8	33.6	21.8	190.3	11.8	102.5	33.6
A-706	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	57.4	857.7	49.2	292.8	32.4	0.0	292.8	16.8	10.9	190.3	5.9	102.5	16.8
A-707	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	1826.2	857.7	1566.3	292.8	1031.6	0.0	292.8	534.7	347.6	190.3	187.2	102.5	534.7
A-708	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	954.2	857.7	818.4	292.8	539.0	0.0	292.8	279.4	181.6	190.3	97.8	102.5	279.4
A-709	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	231.9	857.7	198.9	289.8	131.7	0.0	289.8	67.2	47.0	202.9	20.2	86.9	67.2
A-710	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	158.7	857.7	136.1	289.8	90.1	0.0	289.8	46.0	32.2	202.9	13.8	86.9	46.0
A-711	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	66.5	857.7	57.0	289.8	37.8	0.0	289.8	19.3	13.5	202.9	5.8	86.9	19.3
A-712	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	224.1	857.7	192.2	289.8	127.3	0.0	289.8	65.0	45.5	202.9	19.5	86.9	65.0
A-713	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	274.9	857.7	235.8	289.8	156.1	0.0	289.8	79.7	55.8	202.9	23.9	86.9	79.7
A-714	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	238.9	857.7	204.9	289.8	135.6	0.0	289.8	69.2	48.5	202.9	20.8	86.9	69.2
A-715	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	298.4	857.7	256.0	289.8	169.5	0.0	289.8	86.5	60.5	202.9	25.9	86.9	86.5
A-716	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	117.6	857.7	100.8	289.8	66.8	0.0	289.8	34.1	23.9	202.9	10.2	86.9	34.1
A-717	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	9.9	857.7	8.5	289.8	5.6	0.0	289.8	2.9	2.0	202.9	0.9	86.9	2.9
A-718	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.1	2.2	202.9	0.9	86.9	3.1
A-719	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.2	202.9	0.9	86.9	3.2
A-720	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	52.8	857.7	45.3	289.8	30.0	0.0	289.8	15.3	10.7	202.9	4.6	86.9	15.3
A-721	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	11.4	857.7	9.8	289.8	6.5	0.0	289.8	3.3	2.3	202.9	1.0	86.9	3.3
A-722	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	5.1	857.7	4.4	289.8	2.9	0.0	289.8	1.5	1.0	202.9	0.4	86.9	1.5
A-723	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	46.9	857.7	40.2	289.8	26.6	0.0	289.8	13.6	9.5	202.9	4.1	86.9	13.6
A-724	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	11.6	857.7	10.0	289.8	6.6	0.0	289.8	3.4	2.4	202.9	1.0	86.9	3.4
A-725	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	4.1	857.7	3.5	289.8	2.3	0.0	289.8	1.2	0.8	202.9	0.4	86.9	1.2
A-726	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	13.7	857.7	11.7	289.8	7.8	0.0	289.8	4.0	2.8	202.9	1.2	86.9	4.0
A-727	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	168.0	857.7	144.1	289.8	95.4	0.0	289.8	48.7	34.1	202.9	14.6	86.9	48.7
A-728	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	95.9	857.7	82.3	289.8	54.5	0.0	289.8	27.8	19.5	202.9	8.3	86.9	27.8
A-736	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	113.7	857.7	97.6	289.8	64.6	0.0	289.8	33.0	26.4	231.9	6.6	58.0	33.0
A-737	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	54.8	857.7	47.0	289.8	31.1	0.0	289.8	15.9	12.7	231.9	3.2	58.0	15.9
A-738	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	144.5	857.7	124.0	289.8	82.1	0.0	289.8	41.9	33.5	231.9	8.4	58.0	41.9
A-739	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	69.4	857.7	59.5	289.8	39.4	0.0	289.8	20.1	16.1	231.9	4.0	58.0	20.1
A-740	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	214.0	857.7	183.5	289.8	121.5	0.0	289.8	62.0	49.6	231.9	12.4	58.0	62.0
A-741	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	193.0	857.7	165.5	289.8	109.6	0.0	289.8	55.9	44.7	231.9	11.2	58.0	55.9
A-742	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	1176.1	857.7	1008.8	289.8	667.9	0.0	289.8	340.9	272.7	231.9	68.2	58.0	340.9
A-743	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	24.9	857.7	21.4	289.8	14.1	0.0	289.8	7.2	5.8	231.9	1.4	58.0	7.2
A-744	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	88.5	857.7	75.9	289.8	50.2	0.0	289.8	25.6	20.5	231.9	5.1	58.0	25.6
A-745	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	15.6	857.7	13.4	289.8	8.9	0.0	289.8	4.5	3.6	231.9	0.9	58.0	4.5
A-746	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	16.3	857.7	13.9	289.8	9.2	0.0	289.8	4.7	3.8	231.9	0.9	58.0	4.7
A-747	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	68.1	857.7	58.4	289.8	38.7	0.0	289.8	19.7	15.8	231.9	3.9	58.0	19.7
A-748	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	927.8	857.7	795.7	289.8	526.9	0.0	289.8	268.9	215.1	231.9	53.8	58.0	268.9
A-749	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	790.8	857.7	678.3	289.8	449.1	0.0	289.8	229.2	183.4	231.9	45.8	58.0	229.2
A-750	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	527.9	857.7	452.8	289.8	299.8	0.0	289.8	153.0	122.4	231.9	30.6	58.0	153.0
A-751	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	217.3	857.7	186.4	289.8	123.4	0.0	289.8	63.0	50.4	231.9	12.6	58.0	63.0
A-752	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	1982.4	857.7	1700.3	289.8	1125.8	0.0	289.8	574.5	459.6	231.9	114.9	58.0	574.5
A-753	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Gravel	0.05	0.60	0.60	611.5	857.7	524.5	301.8	339.9	0.0	301.8	184.6	110.7	181.1	73.8	120.7	184.6
A-757	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	266.3	857.7	228.4	283.8	152.8	0.0	283.8	75.6	64.2	241.2	11.3	42.6	75.6
A-758	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	197.0	857.7	169.0	283.8	113.1	0.0	283.8	55.9	47.5	241.2	8.4	42.6	55.9
A-759	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	52.4	857.7	45.0	283.8	30.1	0.0	283.8	14.9	12.6	241.2	2.2	42.6	14.9
A-760	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	48.1	857.7	41.2	283.8	27.6	0.0	283.8	13.6	11.6	241.2	2.0	42.6	13.6
A-761	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	46.2	857.7	39.7	283.8	26.5	0.0	283.8	13.1	11.2	241.2	2.0	42.6	13.1
A-762	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	4.5	857.7	3.9	283.8	2.6	0.0	283.8	1.3	1.1	241.2	0.2	42.6	1.3
A-763	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	2.5	857.7	2.1	283.8	1.4	0.0	283.8	0.7	0.6	241.2	0.1	42.6	0.7
A-764	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	59.5	857.7	51.1	283.8	34.2	0.0	283.8	16.9	14.4	241.2	2.5	42.6	16.9
A-765	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	42.9	857.7	36.8	283.8	24.6	0.0	283.8	12.2	10.3	241.2	1.8	42.6	12.2
A-766	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	710.6	857.7	609.5	283.8	407.8	0.0	283.8	201.7	171.4	241.2	30.3	42.6	201.7
A-767	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	13952.0	857.7	11966.7	283.8	8006.8	0.0	283.8	3959.9	3365.9	241.2	594.0	42.6	3959.9
A-768	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	5739.1	857.7	4922.4	301.8	3190.3	0.0	301.8	1732.2	1212.5	211.3	519.7	90.5	1732.2
A-769	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	2900.3	857.7	2487.6	292.8	1638.3	0.0	292.8	849.3	637.0	219.6	212.3	73.2	849.3
A-770	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	881.7	857.7	756.2	292.8	498.0	0.0	292.8	258.2	193.6	219.6	64.5	73.2	258.2
A-771	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	841.0	857.7	721.3	292.8	475.1	0.0	292.8	246.3	184.7	219.6	61.6	73.2	246.3

TABLE H-1 PRE-DEVELOPMENT WATER BUDGET (BY CATCHMENT)
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

Subcatchment Designation	On/Off-Site	Outlet	MOE TABLE 2 Components					MOE Infiltration Factor	Adjusted Infiltration Factor	Area	Precipitation	Precipitation Total	Precipitation Surplus	Evapotranspiration	Runon	Net Surplus		Infiltration		Runoff*		Total Infiltration + Runoff
			Topography	Soil		Cover				(m^2)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(mm/a)	(m^3/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)
A-772	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	100.9	857.7	86.5	292.8	57.0	0.0	292.8	29.5	22.1	219.6	7.4	73.2	29.5
A-773	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	359.3	857.7	308.2	292.8	203.0	0.0	292.8	105.2	78.9	219.6	26.3	73.2	105.2
A-774	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	22827.8	857.7	19579.4	292.8	12895.0	75.4	368.3	8406.6	6304.9	276.2	2101.6	92.1	8406.6
A-775	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	3797.4	857.7	3257.0	283.8	2179.2	0.0	283.8	1077.8	916.1	241.2	161.7	42.6	1077.8
A-776	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Lawns	0.05	0.60	0.60	5712.0	857.7	4899.2	301.8	3175.2	0.0	301.8	1724.0	1034.4	181.1	689.6	120.7	1724.0
A-777	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	37.5	857.7	32.1	289.8	21.3	0.0	289.8	10.9	8.7	231.9	2.2	58.0	10.9
A-778	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	33.0	857.7	28.3	289.8	18.7	0.0	289.8	9.6	7.6	231.9	1.9	58.0	9.6
A-779	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	50.1	857.7	43.0	283.8	28.8	0.0	283.8	14.2	10.7	212.9	3.6	71.0	14.2
A-780	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	23.1	857.7	19.8	283.8	13.3	0.0	283.8	6.6	4.9	212.9	1.6	71.0	6.6
A-781	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Wooded Area	0.2	0.75	0.75	9.9	857.7	8.5	283.8	5.7	0.0	283.8	2.8	2.1	212.9	0.7	71.0	2.8
A-782	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	15.8	857.7	13.6	292.8	8.9	0.0	292.8	4.6	3.0	190.3	1.6	102.5	4.6
A-783	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	81.6	857.7	70.0	292.8	46.1	0.0	292.8	23.9	15.5	190.3	8.4	102.5	23.9
A-784	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	116.4	857.7	99.9	292.8	65.8	0.0	292.8	34.1	22.2	190.3	11.9	102.5	34.1
A-785	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	107.2	857.7	91.9	292.8	60.5	0.0	292.8	31.4	20.4	190.3	11.0	102.5	31.4
A-786	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	48.9	857.7	41.9	292.8	27.6	0.0	292.8	14.3	9.3	190.3	5.0	102.5	14.3
A-787	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	10.6	857.7	9.1	292.8	6.0	0.0	292.8	3.1	2.0	190.3	1.1	102.5	3.1
A-788	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	31.1	857.7	26.7	292.8	17.6	0.0	292.8	9.1	5.9	190.3	3.2	102.5	9.1
A-789	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	390.3	857.7	334.7	292.8	220.5	0.0	292.8	114.3	74.3	190.3	40.0	102.5	114.3
A-790	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	13.7	857.7	11.8	292.8	7.8	0.0	292.8	4.0	2.6	190.3	1.4	102.5	4.0
A-791	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	727.0	857.7	623.6	292.8	410.7	0.0	292.8	212.9	138.4	190.3	74.5	102.5	212.9
A-792	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	26.9	857.7	23.0	292.8	15.2	0.0	292.8	7.9	5.1	190.3	2.8	102.5	7.9
A-793	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Cultivated	0.1	0.65	0.65	195.2	857.7	167.4	292.8	110.2	0.0	292.8	57.1	37.1	190.3	20.0	102.5	57.1
A-794	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	1184.2	857.7	1015.7	289.8	672.5	0.0	289.8	343.2	240.2	202.9	103.0	86.9	343.2
A-795	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	388.6	857.7	333.3	289.8	220.7	0.0	289.8	112.6	78.8	202.9	33.8	86.9	112.6
A-796	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	372.1	857.7	319.1	289.8	211.3	0.0	289.8	107.8	75.5	202.9	32.3	86.9	107.8
A-797	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	72.2	857.7	62.0	289.8	41.0	0.0	289.8	20.9	14.7	202.9	6.3	86.9	20.9
A-798	On Site	Off-Site to SE Corner - Via Creek	0.15	Silt Loam	0.4	Uncultivated	0.15	0.70	0.70	8.4	857.7	7.2	289.8	4.8	0.0	289.8	2.4	1.7	202.9	0.7	86.9	2.4
A-799	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	12124.5	857.7	10399.2	292.8	6848.9	0.0	292.8	3550.3	2662.7	219.6	887.6	73.2	3550.3
A-800	On Site	Off-Site to SE Corner - Via Creek	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	29805.7	857.7	25564.3	292.8	16836.6	17.5	310.3	9248.7	6936.5	232.7	2312.2	77.6	9248.7
Catchment A Subtotal										**262,459**	**858**	**225,112**	**294**	**147,943**	**#REF!**	**303**	**79,650**	**59,574**	**227**	**20,077**	**76**	**79,650**
B-11	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Building	0	0.65	0.00	11.0	857.7	9.4	771.9	0.9	0.0	771.9	8.5	0.0	0.0	8.5	771.9	8.5
B-12	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Building	0	0.65	0.00	61.1	857.7	52.4	771.9	5.2	0.0	771.9	47.1	0.0	0.0	47.1	771.9	47.1
B-13	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Building	0	0.65	0.00	15.5	857.7	13.3	771.9	1.3	0.0	771.9	11.9	0.0	0.0	11.9	771.9	11.9
B-14	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Gravel	0.05	0.70	0.70	22.7	857.7	19.5	301.8	12.6	0.0	301.8	6.9	4.8	211.3	2.1	90.5	6.9
B-15	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Gravel	0.05	0.70	0.70	2.6	857.7	2.2	301.8	1.4	0.0	301.8	0.8	0.5	211.3	0.2	90.5	0.8
B-16	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Gravel	0.05	0.70	0.70	9.7	857.7	8.3	301.8	5.4	0.0	301.8	2.9	2.0	211.3	0.9	90.5	2.9
B-17	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Gravel	0.05	0.70	0.70	16.9	857.7	14.5	301.8	9.4	0.0	301.8	5.1	3.6	211.3	1.5	90.5	5.1
B-18	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Gravel	0.05	0.70	0.70	21.5	857.7	18.5	301.8	12.0	0.0	301.8	6.5	4.5	211.3	1.9	90.5	6.5
B-19	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Gravel	0.05	0.70	0.70	22.9	857.7	19.6	301.8	12.7	0.0	301.8	6.9	4.8	211.3	2.1	90.5	6.9
B-20	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Gravel	0.05	0.70	0.70	5.6	857.7	4.8	301.8	3.1	0.0	301.8	1.7	1.2	211.3	0.5	90.5	1.7
B-21	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Gravel	0.05	0.70	0.70	14.5	857.7	12.4	301.8	8.1	0.0	301.8	4.4	3.1	211.3	1.3	90.5	4.4
B-22	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Gravel	0.05	0.70	0.70	1.8	857.7	1.5	301.8	1.0	0.0	301.8	0.5	0.4	211.3	0.2	90.5	0.5
B-23	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Gravel	0.05	0.70	0.70	10.1	857.7	8.7	301.8	5.6	0.0	301.8	3.1	2.1	211.3	0.9	90.5	3.1
B-99	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	6.1	857.7	5.2	289.8	3.4	0.0	289.8	1.8	1.4	231.9	0.4	58.0	1.8
B-100	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	156.6	857.7	134.3	289.8	88.9	0.0	289.8	45.4	36.3	231.9	9.1	58.0	45.4
B-101	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	246.6	857.7	211.5	289.8	140.0	0.0	289.8	71.5	57.2	231.9	14.3	58.0	71.5
B-102	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	298.4	857.7	256.0	289.8	169.5	0.0	289.8	86.5	69.2	231.9	17.3	58.0	86.5
B-103	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	9.9	857.7	8.5	289.8	5.6	0.0	289.8	2.9	2.3	231.9	0.6	58.0	2.9
B-104	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.1	2.5	231.9	0.6	58.0	3.1
B-105	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	10.9	857.7	9.3	289.8	6.2	0.0	289.8	3.2	2.5	231.9	0.6	58.0	3.2
B-106	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	4.5	857.7	3.9	289.8	2.6	0.0	289.8	1.3	1.0	231.9	0.3	58.0	1.3
B-107	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	4.0	857.7	3.4	289.8	2.3	0.0	289.8	1.2	0.9	231.9	0.2	58.0	1.2
B-108	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	19.9	857.7	17.1	289.8	11.3	0.0	289.8	5.8	4.6	231.9	1.2	58.0	5.8
B-109	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	40.6	857.7	34.8	289.8	23.1	0.0	289.8	11.8	9.4	231.9	2.4	58.0	11.8
B-110	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	69.0	857.7	59.2	289.8	39.2	0.0	289.8	20.0	16.0	231.9	4.0	58.0	20.0
B-111	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	47.8	857.7	41.0	289.8	27.1	0.0	289.8	13.9	11.1	231.9	2.8	58.0	13.9
B-112	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	1161.2	857.7	995.9	289.8	659.4	0.0	289.8	336.5	269.2	231.9	67.3	58.0	336.5
B-264	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	143.4	857.7	123.0	301.8	79.7	0.0	301.8	43.3	30.3	211.3	13.0	90.5	43.3
B-265	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	1.2	857.7	1.0	301.8	0.7	0.0	301.8	0.4	0.3	211.3	0.1	90.5	0.4
B-266	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	9.9	857.7	8.5	301.8	5.5	0.0	301.8	3.0	2.1	211.3	0.9	90.5	3.0
B-267	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	29.9	857.7	25.6	301.8	16.6	0.0	301.8	9.0	6.3	211.3	2.7	90.5	9.0
B-268	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	54.5	857.7	46.7	301.8	30.3	0.0	301.8	16.4	11.5	211.3	4.9	90.5	16.4
B-269	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	16.0	857.7	13.7	301.8	8.9	0.0	301.8	4.8	3.4	211.3	1.4	90.5	4.8
B-270	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	126.4	857.7	108.4	301.8	70.3	0.0	301.8	38.1	26.7	211.3	11.4	90.5	38.1
B-271	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	24.7	857.7	21.2	301.8	13.7	0.0	301.8	7.5	5.2	211.3	2.2	90.5	7.5
B-272	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	253.4	857.7	217.4	301.8	140.9	0.0	301.8	76.5	53.5	211.3	22.9	90.5	76.5
B-273	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	253.4	857.7	217.4	301.8	140.9	0.0	301.8	76.5	53.5	211.3	22.9	90.5	76.5
B-274	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	9.9	857.7	8.5	301.8	5.5	0.0	301.8	3.0	2.1	211.3	0.9	90.5	3.0

TABLE H-1 PRE-DEVELOPMENT WATER BUDGET (BY CATCHMENT)
HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

Subcatchment Designation	On/Off-Site	Outlet	MOE TABLE 2 Components					MOE Infiltration Factor	Adjusted Infiltration Factor	Area	Precipitation	Precipitation Total	Precipitation Surplus	Evapotranspiration	Runon	Net Surplus		Infiltration		Runoff*		Total Infiltration + Runoff
			Topography	Soil		Cover				(m^2)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(mm/a)	(m^3/a)	(m^3/a)	(mm/a)	(m^3/a)	(mm/a)	(m^3/a)
B-275	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	9.9	857.7	8.5	301.8	5.5	0.0	301.8	3.0	2.1	211.3	0.9	90.5	3.0
B-276	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	5.3	857.7	4.5	301.8	2.9	0.0	301.8	1.6	1.1	211.3	0.5	90.5	1.6
B-277	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	13.5	857.7	11.6	301.8	7.5	0.0	301.8	4.1	2.9	211.3	1.2	90.5	4.1
B-278	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	4.8	857.7	4.1	301.8	2.7	0.0	301.8	1.5	1.0	211.3	0.4	90.5	1.5
B-279	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	37.0	857.7	31.7	301.8	20.5	0.0	301.8	11.2	7.8	211.3	3.3	90.5	11.2
B-280	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	36.0	857.7	30.8	301.8	20.0	0.0	301.8	10.9	7.6	211.3	3.3	90.5	10.9
B-281	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	2.1	857.7	1.8	301.8	1.2	0.0	301.8	0.6	0.4	211.3	0.2	90.5	0.6
B-282	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	52.8	857.7	45.3	301.8	29.4	0.0	301.8	15.9	11.2	211.3	4.8	90.5	15.9
B-283	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	34.9	857.7	30.0	301.8	19.4	0.0	301.8	10.5	7.4	211.3	3.2	90.5	10.5
B-284	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	502.5	857.7	431.0	301.8	279.3	0.0	301.8	151.7	106.2	211.3	45.5	90.5	151.7
B-285	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	14.9	857.7	12.8	301.8	8.3	0.0	301.8	4.5	3.2	211.3	1.4	90.5	4.5
B-286	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	65.2	857.7	56.0	301.8	36.3	0.0	301.8	19.7	13.8	211.3	5.9	90.5	19.7
B-287	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	551.9	857.7	473.3	301.8	306.8	0.0	301.8	166.6	116.6	211.3	50.0	90.5	166.6
B-288	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	253.8	857.7	217.7	301.8	141.1	0.0	301.8	76.6	53.6	211.3	23.0	90.5	76.6
B-289	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	252.2	857.7	216.3	301.8	140.2	0.0	301.8	76.1	53.3	211.3	22.8	90.5	76.1
B-290	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	136.2	857.7	116.8	301.8	75.7	0.0	301.8	41.1	28.8	211.3	12.3	90.5	41.1
B-291	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	18.3	857.7	15.7	301.8	10.2	0.0	301.8	5.5	3.9	211.3	1.7	90.5	5.5
B-292	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	252.1	857.7	216.2	301.8	140.1	0.0	301.8	76.1	53.3	211.3	22.8	90.5	76.1
B-293	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	3.4	857.7	2.9	301.8	1.9	0.0	301.8	1.0	0.7	211.3	0.3	90.5	1.0
B-294	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	10.4	857.7	8.9	301.8	5.8	0.0	301.8	3.1	2.2	211.3	0.9	90.5	3.1
B-295	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	210.3	857.7	180.4	301.8	116.9	0.0	301.8	63.5	44.4	211.3	19.0	90.5	63.5
B-730	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Gravel	0.05	0.70	0.70	3.2	857.7	2.7	301.8	1.8	0.0	301.8	1.0	0.7	211.3	0.3	90.5	1.0
B-731	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Gravel	0.05	0.70	0.70	33.6	857.7	28.8	301.8	18.7	0.0	301.8	10.1	7.1	211.3	3.0	90.5	10.1
B-732	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	13.7	857.7	11.7	289.8	7.8	0.0	289.8	4.0	3.2	231.9	0.8	58.0	4.0
B-733	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	22.0	857.7	18.9	289.8	12.5	0.0	289.8	6.4	5.1	231.9	1.3	58.0	6.4
B-734	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	160.1	857.7	137.4	289.8	90.9	0.0	289.8	46.4	37.1	231.9	9.3	58.0	46.4
B-735	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Uncultivated	0.15	0.80	0.80	118.3	857.7	101.4	289.8	67.2	0.0	289.8	34.3	27.4	231.9	6.9	58.0	34.3
B-754	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	39.2	857.7	33.7	301.8	21.8	0.0	301.8	11.8	8.3	211.3	3.6	90.5	11.8
B-755	On Site	Offsite SW Corner - Overland Flow	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	597.5	857.7	512.5	301.8	332.2	0.0	301.8	180.4	126.2	211.3	54.1	90.5	180.4
Catchment B Subtotal										**6,680**	**857.7**	**5,729**	**303.7**	**3,701**	**0.0**	**303.7**	**2,028**	**1,442**	**215.9**	**586**	**87.8**	**2,028**
TOTAL SITE										**269,139**	**857.7**	**230,841**	**294.3**	**151,644**	**9.2**	**303.5**	**81,679**	**61,016**	**226.7**	**20,663**	**76.8**	**81,679**
																					25.30%	
Off-Site Portion (Run-On to the Site)																						
C-7	Off Site	On site to Catchment A-774	0.25	Silt Loam	0.4	Wooded Area	0.2	0.85	0.85	1496.6	857.7	1283.6	283.8	858.9	0.0	283.8	424.8	361.1	241.2	63.7	42.6	424.8
C-260	Off Site	On site to Catchment A-774	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	22654.9	857.7	19431.1	292.8	12797.3	0.0	292.8	6633.8	4975.4	219.6	1658.5	73.2	6633.8
Catchment E Total										**24,152**	**858**	**20,715**	**292**	**13,656**	**#REF!**	**292**	**7,059**	**5,336**	**221**	**1,722**	**71**	**7,059**
D-729	Off Site	On site to Catchment A-113	0.25	Silt Loam	0.4	Lawns	0.05	0.70	0.70	2636.5	857.7	2261.3	301.8	1465.6	0.0	301.8	795.8	557.0	211.3	238.7	90.5	795.8
Catchment D Total										**2,637**	**858**	**2,261**	**302**	**1,466**	**0**	**302**	**796**	**557**	**211**	**239**	**91**	**796**
E-1	Off Site	Onsite to Catchment A-800	0.25	Silt Loam	0.4	Cultivated	0.1	0.75	0.75	7116.8	857.7	6104.1	292.8	4020.2	0.0	292.8	2083.9	1563.0	219.6	521.0	73.2	2083.9
Catchment G Total										**7,117**	**858**	**6,104**	**293**	**4,020**	**0**	**293**	**2,084**	**1,563**	**220**	**521**	**73**	**2,084**
External Areas Total										**33,905**	**858**	**29,080**	**293**	**19,142**	**0**	**293**	**9,938**	**7,456**	**220**	**2,482**	**73**	**9,938**

Total of On-Site Infiltration* **61,016** **(m^3/a)**
Total of On-Site Runoff **20,663** **(m^3/a)**

NOTES: 1) Subcatchment areas were delineated using the development plans provided by WSP.
2) "*" Infiltration factors components are based on land use information provided by Ontario Base Mapping.

APPENDIX

I

WATER BUDGET CALCULATIONS – POST DEVELOPMENT

TABLE I-1 POST-DEVELOPMENT WATER BUDGET

HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

ANNUAL PRECIPITATION	EVAPORATION AND EVAPOTRANSPIRATION FACTORS			
	Impervious Areas		Ponds	
mm	%	mm	%	mm
858	10%	86	75%	646

On-site Subcatchments	Area (m^2)	Outlet	Total Impervious (m^2)	Total Pervious (m^2)	Infiltration Factor Components*						MOE Infiltration Factor	Adjusted Infiltration Factor	Inputs						Outputs														Total Outputs	
					Topography	Soil		Cover					Precipitation				Run-on		Total Inputs		Evapotranspiration				Infiltration				Runoff					
													Annual Average		Surplus						Pervious		Impervious		Total Evapotranspiration		Pervious Areas		Total Infiltration		Pervious		Total Impervious		Total Runoff			
													(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)
201a-11	11.0	Off-Site South East via RLCB/Storm Sewers and Sand Filter Plunge Pool	0	11	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	9.4	301.8	3.3	0.0	0	857.7	9.4	555.9	6.1	0.0	0.0	555.9	6.1	211.3	2.3	211.3	2.3	90.5	1.0	0.0	0.0	90.5	1.0	857.7	9.4
201a-113	2203.3	Off-Site South East via RLCB/Storm Sewers and Sand Filter Plunge Pool	0	2,203	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	1889.8	301.8	665.0	108.3	239	966.0	2128.5	555.9	1224.8	0.0	0.0	555.9	1224.8	287.1	632.6	287.1	632.6	123.1	271.1	0.0	0.0	123.1	271.1	966.0	2128.5
201a-24	9.8	Off-Site South East via RLCB/Storm Sewers and Sand Filter Plunge Pool	0	10	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	8.4	301.8	3.0	0.0	0	857.7	8.4	555.9	5.5	0.0	0.0	555.9	5.5	211.3	2.1	211.3	2.1	90.5	0.9	0.0	0.0	90.5	0.9	857.7	8.4
201a-288	253.8	Off-Site South East via RLCB/Storm Sewers and Sand Filter Plunge Pool	0	254	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	217.7	301.8	76.6	0.0	0	857.7	217.7	555.9	141.1	0.0	0.0	555.9	141.1	211.3	53.6	211.3	53.6	90.5	23.0	0.0	0.0	90.5	23.0	857.7	217.7
201a-299	217.5	Off-Site South East via RLCB/Storm Sewers and Sand Filter Plunge Pool	0	217	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	186.5	301.8	65.6	0.0	0	857.7	186.5	555.9	120.9	0.0	0.0	555.9	120.9	211.3	45.9	211.3	45.9	90.5	19.7	0.0	0.0	90.5	19.7	857.7	186.5
201a-38	313.8	Off-Site South East via RLCB/Storm Sewers and Sand Filter Plunge Pool	0	314	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	269.1	301.8	94.7	0.0	0	857.7	269.1	555.9	174.4	0.0	0.0	555.9	174.4	211.3	66.3	211.3	66.3	90.5	28.4	0.0	0.0	90.5	28.4	857.7	269.1
Catchment 201A Total	**3,009**		**0**	**3,009**									**858**	**2,581**	**301.8**	**908**	**79**	**239**	**937**	**2,820**	**556**	**1,673**	**0**	**0**	**556**	**1,673**	**267**	**803**	**267**	**803**	**114**	**344**	**0**	**0**	**114**	**344**	**937**	**2,820**
201b-114	262.3	Sand Filter Plunge Pool via RLCB/Storm Sewers	262	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	225.0	771.9	202.5	0.0	0	857.7	225.0	0.0	0.0	85.8	22.5	85.8	22.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	202.5	771.9	202.5	857.7	225.0
201b-115	298.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
201b-116	298.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
201b-117	298.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
201b-118	298.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
201b-119	298.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
201b-12	61.1	Sand Filter Plunge Pool via RLCB/Storm Sewers	61	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	52.4	771.9	47.1	0.0	0	857.7	52.4	0.0	0.0	85.8	5.2	85.8	5.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	47.1	771.9	47.1	857.7	52.4
201b-120	298.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
201b-121	298.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
201b-122	298.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
201b-123	298.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
201b-124	298.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
201b-125	298.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
201b-126	298.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
201b-127	298.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
201b-128	237.2	Sand Filter Plunge Pool via RLCB/Storm Sewers	237	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	203.5	771.9	183.1	0.0	0	857.7	203.5	0.0	0.0	85.8	20.3	85.8	20.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	183.1	771.9	183.1	857.7	203.5
201b-129	155.1	Sand Filter Plunge Pool via RLCB/Storm Sewers	155	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	133.1	771.9	119.8	0.0	0	857.7	133.1	0.0	0.0	85.8	13.3	85.8	13.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	119.8	771.9	119.8	857.7	133.1
201b-13	15.5	Sand Filter Plunge Pool via RLCB/Storm Sewers	15	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	13.3	771.9	11.9	0.0	0	857.7	13.3	0.0	0.0	85.8	1.3	85.8	1.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	11.9	771.9	11.9	857.7	13.3
201b-130	168.2	Sand Filter Plunge Pool via RLCB/Storm Sewers	168	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	144.3	771.9	129.9	0.0	0	857.7	144.3	0.0	0.0	85.8	14.4	85.8	14.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	129.9	771.9	129.9	857.7	144.3
201b-131	32.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	32	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	27.8	771.9	25.0	0.0	0	857.7	27.8	0.0	0.0	85.8	2.8	85.8	2.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	25.0	771.9	25.0	857.7	27.8
201b-132	149.3	Sand Filter Plunge Pool via RLCB/Storm Sewers	149	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	128.1	771.9	115.3	0.0	0	857.7	128.1	0.0	0.0	85.8	12.8	85.8	12.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	115.3	771.9	115.3	857.7	128.1
201b-133	157.8	Sand Filter Plunge Pool via RLCB/Storm Sewers	158	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	135.4	771.9	121.8	0.0	0	857.7	135.4	0.0	0.0	85.8	13.5	85.8	13.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	121.8	771.9	121.8	857.7	135.4
201b-134	153.7	Sand Filter Plunge Pool via RLCB/Storm Sewers	154	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	131.9	771.9	118.7	0.0	0	857.7	131.9	0.0	0.0	85.8	13.2	85.8	13.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	118.7	771.9	118.7	857.7	131.9
201b-135	238.2	Sand Filter Plunge Pool via RLCB/Storm Sewers	238	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	204.3	771.9	183.9	0.0	0	857.7	204.3	0.0	0.0	85.8	20.4	85.8	20.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	183.9	771.9	183.9	857.7	204.3
201b-136	9.2	Sand Filter Plunge Pool via RLCB/Storm Sewers	9	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	7.9	771.9	7.1	0.0	0	857.7	7.9	0.0	0.0	85.8	0.8	85.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	7.1	771.9	7.1	857.7	7.9
201b-137	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-138	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-139	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-14	22.7	Sand Filter Plunge Pool via RLCB/Storm Sewers	23	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	19.5	771.9	17.6	0.0	0	857.7	19.5	0.0	0.0	85.8	2.0	85.8	2.0	0.0	0.0	0.0	0.0	0.0	0.0	771.9	17.6	771.9	17.6	857.7	19.5
201b-140	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-141	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-142	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-143	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-144	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-145	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-146	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-147	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-148	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-149	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-15	2.6	Sand Filter Plunge Pool via RLCB/Storm Sewers	3	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	2.2	771.9	2.0	0.0	0	857.7	2.2	0.0	0.0	85.8	0.2	85.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	2.0	771.9	2.0	857.7	2.2
201b-150	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-151	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-152	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-153	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-154	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-155	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-156	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-157	37.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	38	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	32.5	771.9	29.2	0.0	0	857.7	32.5	0.0	0.0	85.8	3.2	85.8	3.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	29.2	771.9	29.2	857.7	32.5
201b-158	45.6	Sand Filter Plunge Pool via RLCB/Storm Sewers	46	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	39.1	771.9	35.2	0.0	0	857.7	39.1	0.0	0.0	85.8	3.9	85.8	3.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	35.2	771.9	35.2	857.7	39.1
201b-159	38.5	Sand Filter Plunge Pool via RLCB/Storm Sewers	38	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	33.0	771.9	29.7	0.0	0	857.7	33.0	0.0	0.0	85.8	3.3	85.8	3.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	29.7	771.9	29.7	857.7	33.0
201b-16	9.7	Sand Filter Plunge Pool via RLCB/Storm Sewers	10	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	8.3	771.9	7.5	0.0	0	857.7	8.3	0.0	0.0	85.8	0.8	85.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	7.5	771.9	7.5	857.7	8.3
201b-160	46.8	Sand Filter Plunge Pool via RLCB/Storm Sewers	47	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	40.1	771.9	36.1	0.0	0	857.7	40.1	0.0	0.0	85.8	4.0	85.8	4.0	0.0	0.0	0.0	0.0	0.0	0.0	771.9	36.1	771.9	36.1	857.7	40.1
201b-161	47.5	Sand Filter Plunge Pool via RLCB/Storm Sewers	48	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	40.7	771.9	36.7	0.0	0	857.7	40.7	0.0	0.0	85.8	4.1	85.8	4.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	36.7	771.9	36.7	857.7	40.7
201b-162	47.5	Sand Filter Plunge Pool via RLCB/Storm Sewers	48	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	40.8	771.9	36.7	0.0	0	857.7	40.8	0.0	0.0	85.8	4.1	85.8	4.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	36.7	771.9	36.7	857.7	40.8
201b-163	47.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	48	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	41.1	771.9	37.0	0.0	0	857.7	41.1	0.0	0.0	85.8	4.1	85.8	4.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	37.0	771.9	37.0	857.7	41.1
201b-164	48.1	Sand Filter Plunge Pool via RLCB/Storm Sewers	48	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	41.2	771.9	37.1	0.0	0	857.7	41.2	0

TABLE I-1 POST-DEVELOPMENT WATER BUDGET

HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

ANNUAL PRECIPITATION	EVAPORATION AND EVAPOTRANSPIRATION FACTORS			
	Impervious Areas		Ponds	
mm	%	mm	%	mm
858	10%	86	75%	646

On-site Subcatchments	Area (m^2)	Outlet	Total Impervious (m^2)	Total Pervious (m^2)	Infiltration Factor Components*						MOE Infiltration Factor	Adjusted Infiltration Factor	Inputs								Outputs													
													Precipitation				Run-on		Total Inputs		Evapotranspiration						Infiltration				Runoff				Total Outputs	
													Annual Average		Surplus						Pervious		Impervious		Total Evapotranspiration		Pervious Areas		Total Infiltration		Pervious		Total Impervious		Total Runoff			
					Topography		Soil		Cover				(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)
201b-286	65.2	Sand Filter Plunge Pool via RLCB/Storm Sewers	65	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	56.0	771.9	50.4	0.0	0	857.7	56.0	0.0	0.0	85.8	5.6	85.8	5.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	50.4	771.9	50.4	857.7	56.0
201b-289	252.2	Sand Filter Plunge Pool via RLCB/Storm Sewers	252	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	216.3	771.9	194.7	0.0	0	857.7	216.3	0.0	0.0	85.8	21.6	85.8	21.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	194.7	771.9	194.7	857.7	216.3
201b-290	136.2	Sand Filter Plunge Pool via RLCB/Storm Sewers	136	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	116.8	771.9	105.1	0.0	0	857.7	116.8	0.0	0.0	85.8	11.7	85.8	11.7	0.0	0.0	0.0	0.0	0.0	0.0	771.9	105.1	771.9	105.1	857.7	116.8
201b-291	18.3	Sand Filter Plunge Pool via RLCB/Storm Sewers	18	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	15.7	771.9	14.1	0.0	0	857.7	15.7	0.0	0.0	85.8	1.6	85.8	1.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	14.1	771.9	14.1	857.7	15.7
201b-293	3.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	3	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	2.9	301.8	1.0	0.0	0	857.7	2.9	555.9	1.9	0.0	0.0	555.9	1.9	211.3	0.7	211.3	0.7	90.5	0.3	0.0	0.0	90.5	0.3	857.7	2.9
201b-294	10.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	10	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	8.9	301.8	3.1	0.0	0	857.7	8.9	555.9	5.8	0.0	0.0	555.9	5.8	211.3	2.2	211.3	2.2	90.5	0.9	0.0	0.0	90.5	0.9	857.7	8.9
201b-300	61.2	Sand Filter Plunge Pool via RLCB/Storm Sewers	61	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	52.5	771.9	47.2	0.0	0	857.7	52.5	0.0	0.0	85.8	5.2	85.8	5.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	47.2	771.9	47.2	857.7	52.5
201b-301	11.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	12	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	10.2	771.9	9.2	0.0	0	857.7	10.2	0.0	0.0	85.8	1.0	85.8	1.0	0.0	0.0	0.0	0.0	0.0	0.0	771.9	9.2	771.9	9.2	857.7	10.2
201b-302	52.3	Sand Filter Plunge Pool via RLCB/Storm Sewers	52	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	44.9	771.9	40.4	0.0	0	857.7	44.9	0.0	0.0	85.8	4.5	85.8	4.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	40.4	771.9	40.4	857.7	44.9
201b-315	66.2	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	66	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	56.8	301.8	20.0	0.0	0	857.7	56.8	555.9	36.8	0.0	0.0	555.9	36.8	211.3	14.0	211.3	14.0	90.5	6.0	0.0	0.0	90.5	6.0	857.7	56.8
201b-316	75.7	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	76	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	64.9	301.8	22.8	0.0	0	857.7	64.9	555.9	42.1	0.0	0.0	555.9	42.1	211.3	16.0	211.3	16.0	90.5	6.9	0.0	0.0	90.5	6.9	857.7	64.9
201b-317	5.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	6	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	5.0	301.8	1.8	0.0	0	857.7	5.0	555.9	3.3	0.0	0.0	555.9	3.3	211.3	1.2	211.3	1.2	90.5	0.5	0.0	0.0	90.5	0.5	857.7	5.0
201b-318	17.6	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	18	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	15.1	301.8	5.3	0.0	0	857.7	15.1	555.9	9.8	0.0	0.0	555.9	9.8	211.3	3.7	211.3	3.7	90.5	1.6	0.0	0.0	90.5	1.6	857.7	15.1
201b-321	115.3	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	115	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	98.9	301.8	34.8	0.0	0	857.7	98.9	555.9	64.1	0.0	0.0	555.9	64.1	211.3	24.4	211.3	24.4	90.5	10.4	0.0	0.0	90.5	10.4	857.7	98.9
201b-342	75.1	Sand Filter Plunge Pool via RLCB/Storm Sewers	75	0	0.25	Silt Loam	0.40	Road	0	0.65	0	857.7	64.4	771.9	57.9	0.0	0	857.7	64.4	0.0	0.0	85.8	6.4	85.8	6.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	57.9	771.9	57.9	857.7	64.4
201b-39	15.6	Sand Filter Plunge Pool via RLCB/Storm Sewers	16	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	13.4	771.9	12.0	0.0	0	857.7	13.4	0.0	0.0	85.8	1.3	85.8	1.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	12.0	771.9	12.0	857.7	13.4
201b-40	210.0	Sand Filter Plunge Pool via RLCB/Storm Sewers	210	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	180.1	771.9	162.1	0.0	0	857.7	180.1	0.0	0.0	85.8	18.0	85.8	18.0	0.0	0.0	0.0	0.0	0.0	0.0	771.9	162.1	771.9	162.1	857.7	180.1
201b-41	274.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	275	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	235.8	771.9	212.2	0.0	0	857.7	235.8	0.0	0.0	85.8	23.6	85.8	23.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	212.2	771.9	212.2	857.7	235.8
201b-43	36.1	Sand Filter Plunge Pool via RLCB/Storm Sewers	36	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	31.0	771.9	27.9	0.0	0	857.7	31.0	0.0	0.0	85.8	3.1	85.8	3.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	27.9	771.9	27.9	857.7	31.0
201b-44	298.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
201b-45	298.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
201b-46	298.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
201b-47	284.2	Sand Filter Plunge Pool via RLCB/Storm Sewers	284	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	243.8	771.9	219.4	0.0	0	857.7	243.8	0.0	0.0	85.8	24.4	85.8	24.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	219.4	771.9	219.4	857.7	243.8
201b-48	154.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	155	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	132.9	771.9	119.6	0.0	0	857.7	132.9	0.0	0.0	85.8	13.3	85.8	13.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	119.6	771.9	119.6	857.7	132.9
201b-49	4.6	Sand Filter Plunge Pool via RLCB/Storm Sewers	5	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	4.0	771.9	3.6	0.0	0	857.7	4.0	0.0	0.0	85.8	0.4	85.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	3.6	771.9	3.6	857.7	4.0
201b-51	266.1	Sand Filter Plunge Pool via RLCB/Storm Sewers	266	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	228.2	771.9	205.4	0.0	0	857.7	228.2	0.0	0.0	85.8	22.8	85.8	22.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	205.4	771.9	205.4	857.7	228.2
201b-52	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0	857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-53	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0	857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-54	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0	857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-55	1.7	Sand Filter Plunge Pool via RLCB/Storm Sewers	2	0	0.25	Silt Loam	0.40	Porch	0	0.65	0	857.7	1.4	771.9	1.3	0.0	0	857.7	1.4	0.0	0.0	85.8	0.1	85.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	1.3	771.9	1.3	857.7	1.4
201b-56	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0	857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-57	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0	857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-58	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0	857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-59	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0	857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-60	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0	857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-61	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0	857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-62	10.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0	857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
201b-63	9.1	Sand Filter Plunge Pool via RLCB/Storm Sewers	9	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	7.8	771.9	7.0	0.0	0	857.7	7.8	0.0	0.0	85.8	0.8	85.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	7.0	771.9	7.0	857.7	7.8
201b-64	55.8	Sand Filter Plunge Pool via RLCB/Storm Sewers	56	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	47.9	771.9	43.1	0.0	0	857.7	47.9	0.0	0.0	85.8	4.8	85.8	4.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	43.1	771.9	43.1	857.7	47.9
201b-65	60.0	Sand Filter Plunge Pool via RLCB/Storm Sewers	60	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	51.5	771.9	46.4	0.0	0	857.7	51.5	0.0	0.0	85.8	5.2	85.8	5.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	46.4	771.9	46.4	857.7	51.5
201b-66	43.7	Sand Filter Plunge Pool via RLCB/Storm Sewers	44	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	37.5	771.9	33.7	0.0	0	857.7	37.5	0.0	0.0	85.8	3.7	85.8	3.7	0.0	0.0	0.0	0.0	0.0	0.0	771.9	33.7	771.9	33.7	857.7	37.5
201b-67	44.7	Sand Filter Plunge Pool via RLCB/Storm Sewers	45	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	38.4	771.9	34.5	0.0	0	857.7	38.4	0.0	0.0	85.8	3.8	85.8	3.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	34.5	771.9	34.5	857.7	38.4
201b-68	46.7	Sand Filter Plunge Pool via RLCB/Storm Sewers	47	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	40.0	771.9	36.0	0.0	0	857.7	40.0	0.0	0.0	85.8	4.0	85.8	4.0	0.0	0.0	0.0	0.0	0.0	0.0	771.9	36.0	771.9	36.0	857.7	40.0
201b-69	46.8	Sand Filter Plunge Pool via RLCB/Storm Sewers	47	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	40.2	771.9	36.1	0.0	0	857.7	40.2	0.0	0.0	85.8	4.0	85.8	4.0	0.0	0.0	0.0	0.0	0.0	0.0	771.9	36.1	771.9	36.1	857.7	40.2
201b-70	48.1	Sand Filter Plunge Pool via RLCB/Storm Sewers	48	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	41.2	771.9	37.1	0.0	0	857.7	41.2	0.0	0.0	85.8	4.1	85.8	4.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	37.1	771.9	37.1	857.7	41.2
201b-71	36.7	Sand Filter Plunge Pool via RLCB/Storm Sewers	37	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	31.5	771.9	28.3	0.0	0	857.7	31.5	0.0	0.0	85.8	3.1	85.8	3.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	28.3	771.9	28.3	857.7	31.5
201b-72	43.3	Sand Filter Plunge Pool via RLCB/Storm Sewers	43	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	37.2	771.9	33.5	0.0	0	857.7	37.2	0.0	0.0	85.8	3.7	85.8	3.7	0.0	0.0	0.0	0.0	0.0	0.0	771.9	33.5	771.9	33.5	857.7	37.2
201b-73	5.3	Sand Filter Plunge Pool via RLCB/Storm Sewers	5	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	4.6	771.9	4.1	0.0	0	857.7	4.6	0.0	0.0	85.8	0.5	85.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	4.1	771.9	4.1	857.7	4.6
201b-738	144.5	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	145	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	124.0	301.8	43.6	0.0	0	857.7	124.0	555.9	80.3	0.0	0.0	555.9	80.3	211.3	30.5	211.3	30.5	90.5	13.1	0.0	0.0	90.5	13.1	857.7	124.0
201b-739	69.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	69	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	59.5	301.8	20.9	0.0	0	857.7	59.5	555.9	38.6	0.0	0.0	555.9	38.6	211.3	14.7	211.3	14.7	90.5	6.3	0.0	0.0	90.5	6.3	857.7	59.5
201b-74	914.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	915	0	0.25	Silt Loam	0.40	Road	0	0.65	0	857.7	784.7	771.9	706.3	0.0	0	857.7	784.7	0.0	0.0	85.8	78.5	85.8	78.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	706.3	771.9	706.3	857.7	784.7
201b-757	266.3	Sand Filter Plunge Pool via RLCB/Storm Sewers	266	0	0.25	Silt Loam	0.40	Road	0	0.65	0	857.7	228.4	771.9	205.6	0.0	0	857.7	228.4	0.0	0.0	85.8	22.8	85.8	22.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	205.6	771.9	205.6	857.7	228.4
201b-758	197.0	Sand Filter Plunge Pool via RLCB/Storm Sewers	197	0	0.25	Silt Loam	0.40	Road	0	0.65	0	857.7	169.0	771.9	152.1	0.0	0	857.7	169.0	0.0	0.0	85.8	16.9	85.8	16.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	152.1	771.9	152.1	857.7	169.0
201b-80	30.3	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	30	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	26.0	301.8	9.1	0.0	0	857.7	26.0	555.9	16.8	0.0	0.0	555.9	16.8	211.3	6.4	211.3	6.4	90.5	2.7	0.0	0.0	90.5	2.7	857.7	26.0
201b-81	59.8	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	60	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	51.3	301.8	18.0	0.0	0	857.7	51.3	555.9	33.2	0.0	0.0	555.9	33.2	211.3	12.6	211.3	12.6	90.5	5.4	0.0	0.0	90.5	5.4	857.7	51.3
201b-82	74.4	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	74	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	63.8	301.8	22.5	0.0	0	857.7	63.8	555.9	41.4	0.0	0.0	555.9	41.4	211.3	15.7	211.3	15.7	90.5	6.7	0.0	0.0	90.5	6.7	857.7	63.8
201b-83	125.0	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	125	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	107.2	301.8	37.7	0.0	0	857.7	107.2	555.9	69.5	0.0	0.0	555.9	69.5	211.3	26.4	211.3	26.4	90.5	11.3	0.0	0.0	90.5	11.3	857.7	107.2
201b-84	41.5	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	41	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	35.6	301.8	12.5	0.0	0	857.7	35.6	555.9	23.1	0.0	0.0	555.9	23.1	211.3	8.8	211.3	8.8	90.5	3.8	0.0	0.0	90.5	3.8	857.7	35.6
201b-86	49.9	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	50	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	42.8	301.8	15.1	0.0	0	857.7	42.8	555.9	27.7	0.0	0.0	555.9	27.7	211.3	10.5	211.3	10.5	90.5	4.5	0.0	0.0	90.5	4.5	857.7	42.8
201b-87	39.0	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	39	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	33.5	301.8	11.8	0.0	0	857.7	33.5	555.9	21.7	0.0	0.0	555.9	21.7	211.3	8.2	211.3	8.2	90.5	3.5	0.0	0.0	90.5	3.5	857.7	33.5
201b-88	88.5	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	88	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	75.9	301.8	26.7	0.0	0	857.7	75.9	555.9	49.2	0.0	0.0	555.9	49.2	211.3	18.7	211.3	18.7	90.5	8.0	0.0	0.0	90.5	8.0	857.7	75.9
201b-89	71.5	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	72	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	61.3	301.8	21.6	0.0	0	857.7	61.3	555.9	39.7	0.0	0.0	555.9	39.7	211.3	15.1	211.3	15.1	90.5	6.5	0.0	0.0	90.5	6.5	857.7	61.3
201b-90	11.0	Sand Filter Plunge Pool via RLCB/Storm Sewers	0	11	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7

TABLE I-1 POST-DEVELOPMENT WATER BUDGET

HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

ANNUAL PRECIPITATION	EVAPORATION AND EVAPOTRANSPIRATION FACTORS			
	Impervious Areas		Ponds	
mm	%	mm	%	mm
858	10%	86	75%	646

On-site Subcatchments	Area (m^2)	Outlet	Total Impervious (m^2)	Total Pervious (m^2)	Infiltration Factor Components*						MOE Infiltration Factor	Adjusted Infiltration Factor	Inputs						Outputs													
													Precipitation				Run-on		Total Inputs		Evapotranspiration						Infiltration				Runoff				Total Outputs	
					Topography		Soil		Cover				Annual Average		Surplus						Pervious		Impervious		Total Evapotranspiration		Pervious Areas		Total Infiltration		Pervious		Total Impervious		Total Runoff			
													(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)
202-209	53.5	Stormtech 7 via RLCB/Storm Sewers	54	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	45.9	771.9	41.3	0.0	0	857.7	45.9	0.0	0.0	85.8	4.6	85.8	4.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	41.3	771.9	41.3	857.7	45.9
202-21	14.5	Stormtech 7 via RLCB/Storm Sewers	14	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	12.4	771.9	11.2	0.0	0	857.7	12.4	0.0	0.0	85.8	1.2	85.8	1.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	11.2	771.9	11.2	857.7	12.4
202-210	77.5	Stormtech 7 via RLCB/Storm Sewers	77	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	66.5	771.9	59.8	0.0	0	857.7	66.5	0.0	0.0	85.8	6.6	85.8	6.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	59.8	771.9	59.8	857.7	66.5
202-211	52.0	Stormtech 7 via RLCB/Storm Sewers	52	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	44.6	771.9	40.2	0.0	0	857.7	44.6	0.0	0.0	85.8	4.5	85.8	4.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	40.2	771.9	40.2	857.7	44.6
202-212	46.2	Stormtech 7 via RLCB/Storm Sewers	46	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	39.6	771.9	35.7	0.0	0	857.7	39.6	0.0	0.0	85.8	4.0	85.8	4.0	0.0	0.0	0.0	0.0	0.0	0.0	771.9	35.7	771.9	35.7	857.7	39.6
202-213	53.2	Stormtech 7 via RLCB/Storm Sewers	53	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	45.6	771.9	41.1	0.0	0	857.7	45.6	0.0	0.0	85.8	4.6	85.8	4.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	41.1	771.9	41.1	857.7	45.6
202-214	43.5	Stormtech 7 via RLCB/Storm Sewers	43	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	37.3	771.9	33.6	0.0	0	857.7	37.3	0.0	0.0	85.8	3.7	85.8	3.7	0.0	0.0	0.0	0.0	0.0	0.0	771.9	33.6	771.9	33.6	857.7	37.3
202-215	51.2	Stormtech 7 via RLCB/Storm Sewers	51	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	43.9	771.9	39.5	0.0	0	857.7	43.9	0.0	0.0	85.8	4.4	85.8	4.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	39.5	771.9	39.5	857.7	43.9
202-216	37.6	Stormtech 7 via RLCB/Storm Sewers	38	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	32.3	771.9	29.0	0.0	0	857.7	32.3	0.0	0.0	85.8	3.2	85.8	3.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	29.0	771.9	29.0	857.7	32.3
202-217	45.5	Stormtech 7 via RLCB/Storm Sewers	45	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	39.0	771.9	35.1	0.0	0	857.7	39.0	0.0	0.0	85.8	3.9	85.8	3.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	35.1	771.9	35.1	857.7	39.0
202-218	41.7	Stormtech 7 via RLCB/Storm Sewers	42	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	35.8	771.9	32.2	0.0	0	857.7	35.8	0.0	0.0	85.8	3.6	85.8	3.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	32.2	771.9	32.2	857.7	35.8
202-219	48.7	Stormtech 7 via RLCB/Storm Sewers	49	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	41.7	771.9	37.6	0.0	0	857.7	41.7	0.0	0.0	85.8	4.2	85.8	4.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	37.6	771.9	37.6	857.7	41.7
202-220	47.5	Stormtech 7 via RLCB/Storm Sewers	47	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	40.7	771.9	36.6	0.0	0	857.7	40.7	0.0	0.0	85.8	4.1	85.8	4.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	36.6	771.9	36.6	857.7	40.7
202-221	43.1	Stormtech 7 via RLCB/Storm Sewers	43	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	37.0	771.9	33.3	0.0	0	857.7	37.0	0.0	0.0	85.8	3.7	85.8	3.7	0.0	0.0	0.0	0.0	0.0	0.0	771.9	33.3	771.9	33.3	857.7	37.0
202-222	25.9	Stormtech 7 via RLCB/Storm Sewers	26	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	22.2	771.9	20.0	0.0	0	857.7	22.2	0.0	0.0	85.8	2.2	85.8	2.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	20.0	771.9	20.0	857.7	22.2
202-223	44.8	Stormtech 7 via RLCB/Storm Sewers	45	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	38.4	771.9	34.6	0.0	0	857.7	38.4	0.0	0.0	85.8	3.8	85.8	3.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	34.6	771.9	34.6	857.7	38.4
202-224	18.9	Stormtech 7 via RLCB/Storm Sewers	19	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	16.2	771.9	14.6	0.0	0	857.7	16.2	0.0	0.0	85.8	1.6	85.8	1.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	14.6	771.9	14.6	857.7	16.2
202-225	128.4	Stormtech 7 via RLCB/Storm Sewers	128	0	0.25	Silt Loam	0.40	Concrete	0	0.65	0	857.7	110.1	771.9	99.1	0.0	0	857.7	110.1	0.0	0.0	85.8	11.0	85.8	11.0	0.0	0.0	0.0	0.0	0.0	0.0	771.9	99.1	771.9	99.1	857.7	110.1
202-226	28.6	Stormtech 7 via RLCB/Storm Sewers	29	0	0.25	Silt Loam	0.40	Concrete	0	0.65	0	857.7	24.5	771.9	22.1	0.0	0	857.7	24.5	0.0	0.0	85.8	2.5	85.8	2.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	22.1	771.9	22.1	857.7	24.5
202-246	14.7	Stormtech 7 via RLCB/Storm Sewers	0	15	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	12.6	301.8	4.4	0.0	0	857.7	12.6	555.9	8.2	0.0	0.0	555.9	8.2	211.3	3.1	211.3	3.1	90.5	1.3	0.0	0.0	90.5	1.3	857.7	12.6
202-247	4.3	Stormtech 7 via RLCB/Storm Sewers	0	4	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	3.7	301.8	1.3	0.0	0	857.7	3.7	555.9	2.4	0.0	0.0	555.9	2.4	211.3	0.9	211.3	0.9	90.5	0.4	0.0	0.0	90.5	0.4	857.7	3.7
202-248	74.7	Stormtech 7 via RLCB/Storm Sewers	0	75	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	64.1	301.8	22.5	0.0	0	857.7	64.1	555.9	41.5	0.0	0.0	555.9	41.5	211.3	15.8	211.3	15.8	90.5	6.8	0.0	0.0	90.5	6.8	857.7	64.1
202-249	56.7	Stormtech 7 via RLCB/Storm Sewers	0	57	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	48.7	301.8	17.1	0.0	0	857.7	48.7	555.9	31.5	0.0	0.0	555.9	31.5	211.3	12.0	211.3	12.0	90.5	5.1	0.0	0.0	90.5	5.1	857.7	48.7
202-250	97.4	Stormtech 7 via RLCB/Storm Sewers	0	97	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	83.6	301.8	29.4	0.0	0	857.7	83.6	555.9	54.2	0.0	0.0	555.9	54.2	211.3	20.6	211.3	20.6	90.5	8.8	0.0	0.0	90.5	8.8	857.7	83.6
202-264	143.4	Stormtech 7 via RLCB/Storm Sewers	143	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	123.0	771.9	110.7	0.0	0	857.7	123.0	0.0	0.0	85.8	12.3	85.8	12.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	110.7	771.9	110.7	857.7	123.0
202-271	24.7	Stormtech 7 via RLCB/Storm Sewers	25	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	21.2	771.9	19.1	0.0	0	857.7	21.2	0.0	0.0	85.8	2.1	85.8	2.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	19.1	771.9	19.1	857.7	21.2
202-272	253.4	Stormtech 7 via RLCB/Storm Sewers	253	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	217.4	771.9	195.6	0.0	0	857.7	217.4	0.0	0.0	85.8	21.7	85.8	21.7	0.0	0.0	0.0	0.0	0.0	0.0	771.9	195.6	771.9	195.6	857.7	217.4
202-273	253.4	Stormtech 7 via RLCB/Storm Sewers	253	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	217.4	771.9	195.6	0.0	0	857.7	217.4	0.0	0.0	85.8	21.7	85.8	21.7	0.0	0.0	0.0	0.0	0.0	0.0	771.9	195.6	771.9	195.6	857.7	217.4
202-274	9.9	Stormtech 7 via RLCB/Storm Sewers	10	0	0.25	Silt Loam	0.40	Porch	0	0.65	0	857.7	8.5	771.9	7.6	0.0	0	857.7	8.5	0.0	0.0	85.8	0.8	85.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	7.6	771.9	7.6	857.7	8.5
202-275	9.9	Stormtech 7 via RLCB/Storm Sewers	10	0	0.25	Silt Loam	0.40	Porch	0	0.65	0	857.7	8.5	771.9	7.6	0.0	0	857.7	8.5	0.0	0.0	85.8	0.8	85.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	7.6	771.9	7.6	857.7	8.5
202-276	5.3	Stormtech 7 via RLCB/Storm Sewers	5	0	0.25	Silt Loam	0.40	Porch	0	0.65	0	857.7	4.5	771.9	4.1	0.0	0	857.7	4.5	0.0	0.0	85.8	0.5	85.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	4.1	771.9	4.1	857.7	4.5
202-277	13.5	Stormtech 7 via RLCB/Storm Sewers	14	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	11.6	771.9	10.4	0.0	0	857.7	11.6	0.0	0.0	85.8	1.2	85.8	1.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	10.4	771.9	10.4	857.7	11.6
202-278	4.8	Stormtech 7 via RLCB/Storm Sewers	5	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	4.1	771.9	3.7	0.0	0	857.7	4.1	0.0	0.0	85.8	0.4	85.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	3.7	771.9	3.7	857.7	4.1
202-279	37.0	Stormtech 7 via RLCB/Storm Sewers	37	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	31.7	771.9	28.5	0.0	0	857.7	31.7	0.0	0.0	85.8	3.2	85.8	3.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	28.5	771.9	28.5	857.7	31.7
202-280	36.0	Stormtech 7 via RLCB/Storm Sewers	36	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	30.8	771.9	27.8	0.0	0	857.7	30.8	0.0	0.0	85.8	3.1	85.8	3.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	27.8	771.9	27.8	857.7	30.8
202-284	502.5	Stormtech 7 via RLCB/Storm Sewers	0	503	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	431.0	301.8	151.7	0.0	0	857.7	431.0	555.9	279.3	0.0	0.0	555.9	279.3	211.3	106.2	211.3	106.2	90.5	45.5	0.0	0.0	90.5	45.5	857.7	431.0
202-287	551.9	Stormtech 7 via RLCB/Storm Sewers	552	0	0.25	Silt Loam	0.40	Road	0	0.65	0	857.7	473.3	771.9	426.0	0.0	0	857.7	473.3	0.0	0.0	85.8	47.3	85.8	47.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	426.0	771.9	426.0	857.7	473.3
202-292	252.1	Stormtech 7 via RLCB/Storm Sewers	252	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	216.2	771.9	194.6	0.0	0	857.7	216.2	0.0	0.0	85.8	21.6	85.8	21.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	194.6	771.9	194.6	857.7	216.2
202-295	210.3	Stormtech 7 via RLCB/Storm Sewers	0	210	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	180.4	301.8	63.5	0.0	0	857.7	180.4	555.9	116.9	0.0	0.0	555.9	116.9	211.3	44.4	211.3	44.4	90.5	19.0	0.0	0.0	90.5	19.0	857.7	180.4
202-305	47.9	Stormtech 7 via RLCB/Storm Sewers	48	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	41.1	771.9	37.0	0.0	0	857.7	41.1	0.0	0.0	85.8	4.1	85.8	4.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	37.0	771.9	37.0	857.7	41.1
202-306	208.0	Stormtech 7 via RLCB/Storm Sewers	208	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	178.4	771.9	160.6	0.0	0	857.7	178.4	0.0	0.0	85.8	17.8	85.8	17.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	160.6	771.9	160.6	857.7	178.4
202-307	174.0	Stormtech 7 via RLCB/Storm Sewers	174	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	149.2	771.9	134.3	0.0	0	857.7	149.2	0.0	0.0	85.8	14.9	85.8	14.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	134.3	771.9	134.3	857.7	149.2
202-308	11.3	Stormtech 7 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	9.7	771.9	8.7	0.0	0	857.7	9.7	0.0	0.0	85.8	1.0	85.8	1.0	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.7	771.9	8.7	857.7	9.7
202-309	91.1	Stormtech 7 via RLCB/Storm Sewers	91	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	78.2	771.9	70.4	0.0	0	857.7	78.2	0.0	0.0	85.8	7.8	85.8	7.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	70.4	771.9	70.4	857.7	78.2
202-310	45.8	Stormtech 7 via RLCB/Storm Sewers	46	0	0.25	Silt Loam	0.40	Concrete	0	0.65	0	857.7	39.3	771.9	35.4	0.0	0	857.7	39.3	0.0	0.0	85.8	3.9	85.8	3.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	35.4	771.9	35.4	857.7	39.3
202-312	22.8	Stormtech 7 via RLCB/Storm Sewers	0	23	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	19.6	301.8	6.9	0.0	0	857.7	19.6	555.9	12.7	0.0	0.0	555.9	12.7	211.3	4.8	211.3	4.8	90.5	2.1	0.0	0.0	90.5	2.1	857.7	19.6
202-319	19.2	Stormtech 7 via RLCB/Storm Sewers	0	19	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	16.5	301.8	5.8	0.0	0	857.7	16.5	555.9	10.7	0.0	0.0	555.9	10.7	211.3	4.1	211.3	4.1	90.5	1.7	0.0	0.0	90.5	1.7	857.7	16.5
202-320	4.0	Stormtech 7 via RLCB/Storm Sewers	0	4	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	3.5	301.8	1.2	0.0	0	857.7	3.5	555.9	2.2	0.0	0.0	555.9	2.2	211.3	0.9	211.3	0.9	90.5	0.4	0.0	0.0	90.5	0.4	857.7	3.5
202-323	80.4	Stormtech 7 via RLCB/Storm Sewers	0	80	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	68.9	301.8	24.3	0.0	0	857.7	68.9	555.9	44.7	0.0	0.0	555.9	44.7	211.3	17.0	211.3	17.0	90.5	7.3	0.0	0.0	90.5	7.3	857.7	68.9
202-42	44.8	Stormtech 7 via RLCB/Storm Sewers	45	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	38.4	771.9	34.6	0.0	0	857.7	38.4	0.0	0.0	85.8	3.8	85.8	3.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	34.6	771.9	34.6	857.7	38.4
202-50	223.3	Stormtech 7 via RLCB/Storm Sewers	223	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	191.5	771.9	172.4	0.0	0	857.7	191.5	0.0	0.0	85.8	19.2	85.8	19.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	172.4	771.9	172.4	857.7	191.5
202-594	48.5	Stormtech 7 via RLCB/Storm Sewers	0	48	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	41.6	301.8	14.6	0.0	0	857.7	41.6	555.9	27.0	0.0	0.0	555.9	27.0	211.3	10.2	211.3	10.2	90.5	4.4	0.0	0.0	90.5	4.4	857.7	41.6
202-651	91.9	Stormtech 7 via RLCB/Storm Sewers	92	0	0.25	Silt Loam	0.40	Road	0	0.65	0	857.7	78.8	771.9	70.9	0.0	0	857.7	78.8	0.0	0.0	85.8	7.9	85.8	7.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	70.9	771.9	70.9	857.7	78.8
202-660	68.5	Stormtech 7 via RLCB/Storm Sewers	69	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	58.8	771.9	52.9	0.0	0	857.7	58.8	0.0	0.0	85.8	5.9	85.8	5.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	52.9	771.9	52.9	857.7	58.8
202-661	287.1	Stormtech 7 via RLCB/Storm Sewers	287	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	246.3	771.9	221.6	0.0	0	857.7	246.3	0.0	0.0	85.8	24.6	85.8	24.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	221.6	771.9	221.6	857.7	246.3
202-662	298.4	Stormtech 7 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
202-663	207.3	Stormtech 7 via RLCB/Storm Sewers	207	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	177.8	771.9	160.0	0.0	0	857.7	177.8	0.0	0.0	85.8	17.8	85.8	17.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	160.0	771.9	160.0	857.7	177.8
202-664	10.9	Stormtech 7 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0	857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
202-665	10.9	Stormtech 7 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0	857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
202-666	10.9	Stormtech 7 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0	857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
202-667	40.0	Stormtech 7 via RLCB/Storm Sewers	40	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	34.3	771.9	30.9	0.0	0	857.7	34.3	0.0	0.0	85.8	3.4	85.8	3.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	30.9	771.9	30.9	857.7	34.3
202-668	57.3	Stormtech 7 via RLCB/Storm Sewers	57	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	49.1	771.9	44.2	0.0	0	857.7	49.1	0.0	0.0	85.8	4.9	85.8	4.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	44.2	771.9	44.2	857.7	49.1
202-669	52.4	Stormtech 7 via RLCB/Storm Sewers	52	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	45.0	771.9	40.5	0.0	0	857.7	45.0	0.0	0.0	85.8	4.5	85.8	4.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	40.5	771.9	40.5	857.7	45.0
202-670	34.5	Stormtech 7 via RLCB/Storm Sewers	34	0	0.25	Silt Loam	0.40	Concrete	0	0.65	0	857.7	29.6	771.9	26.6	0.0	0	857.7	29.6	0.0	0.0	85.8	3.0	85.8	3.0	0.0	0.0	0.0	0.0	0.0	0.0	771.9	26.6	771.9	26.6	857.7	29.6
202-671	249.1

TABLE I-1 POST-DEVELOPMENT WATER BUDGET

HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

ANNUAL PRECIPITATION	EVAPORATION AND EVAPOTRANSPIRATION FACTORS			
	Impervious Areas		Ponds	
mm	%	mm	%	mm
858	10%	86	75%	646

On-site Subcatchments	Area (m^2)	Outlet	Total Impervious (m^2)	Total Pervious (m^2)	Infiltration Factor Components*						MOE Infiltration Factor	Adjusted Infiltration Factor	Inputs						Outputs														Total Outputs	
					Topography	Soil		Cover					Precipitation				Run-on		Total Inputs		Evapotranspiration				Infiltration				Runoff					
													Annual Average		Surplus						Pervious		Impervious		Total Evapotranspiration		Pervious Areas		Total Infiltration		Pervious		Total Impervious		Total Runoff		
													(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)
202-725	4.1	Stormtech 7 via RLCB/Storm Sewers	0	4	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	3.5	301.8	1.2	0.0	0	857.7	3.5	555.9	2.3	0.0	0.0	555.9	2.3	211.3	0.9	211.3	0.9	90.5	0.4	0.0	0.0	90.5	0.4	857.7	3.5
202-726	13.7	Stormtech 7 via RLCB/Storm Sewers	0	14	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	11.7	301.8	4.1	0.0	0	857.7	11.7	555.9	7.6	0.0	0.0	555.9	7.6	211.3	2.9	211.3	2.9	90.5	1.2	0.0	0.0	90.5	1.2	857.7	11.7
202-727	168.0	Stormtech 7 via RLCB/Storm Sewers	0	168	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	144.1	301.8	50.7	0.0	0	857.7	144.1	555.9	93.4	0.0	0.0	555.9	93.4	211.3	35.5	211.3	35.5	90.5	15.2	0.0	0.0	90.5	15.2	857.7	144.1
202-730	3.2	Stormtech 7 via RLCB/Storm Sewers	0	3	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	2.7	301.8	1.0	0.0	0	857.7	2.7	555.9	1.8	0.0	0.0	555.9	1.8	211.3	0.7	211.3	0.7	90.5	0.3	0.0	0.0	90.5	0.3	857.7	2.7
202-731	33.6	Stormtech 7 via RLCB/Storm Sewers	0	34	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	28.8	301.8	10.1	0.0	0	857.7	28.8	555.9	18.7	0.0	0.0	555.9	18.7	211.3	7.1	211.3	7.1	90.5	3.0	0.0	0.0	90.5	3.0	857.7	28.8
202-732	13.7	Stormtech 7 via RLCB/Storm Sewers	0	14	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	11.7	301.8	4.1	0.0	0	857.7	11.7	555.9	7.6	0.0	0.0	555.9	7.6	211.3	2.9	211.3	2.9	90.5	1.2	0.0	0.0	90.5	1.2	857.7	11.7
202-733	22.0	Stormtech 7 via RLCB/Storm Sewers	0	22	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	18.9	301.8	6.6	0.0	0	857.7	18.9	555.9	12.2	0.0	0.0	555.9	12.2	211.3	4.6	211.3	4.6	90.5	2.0	0.0	0.0	90.5	2.0	857.7	18.9
202-734	160.1	Stormtech 7 via RLCB/Storm Sewers	160	0	0.25	Silt Loam	0.40	Road	0	0.65	0		857.7	137.4	771.9	123.6	0.0	0	857.7	137.4	0.0	0.0	85.8	13.7	85.8	13.7	0.0	0.0	0.0	0.0	0.0	0.0	771.9	123.6	771.9	123.6	857.7	137.4
202-735	118.3	Stormtech 7 via RLCB/Storm Sewers	118	0	0.25	Silt Loam	0.40	Road	0	0.65	0		857.7	101.4	771.9	91.3	0.0	0	857.7	101.4	0.0	0.0	85.8	10.1	85.8	10.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	91.3	771.9	91.3	857.7	101.4
202-736	113.7	Stormtech 7 via RLCB/Storm Sewers	0	114	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	97.6	301.8	34.3	0.0	0	857.7	97.6	555.9	63.2	0.0	0.0	555.9	63.2	211.3	24.0	211.3	24.0	90.5	10.3	0.0	0.0	90.5	10.3	857.7	97.6
202-737	54.8	Stormtech 7 via RLCB/Storm Sewers	0	55	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	47.0	301.8	16.5	0.0	0	857.7	47.0	555.9	30.4	0.0	0.0	555.9	30.4	211.3	11.6	211.3	11.6	90.5	5.0	0.0	0.0	90.5	5.0	857.7	47.0
202-742	1176.1	Stormtech 7 via RLCB/Storm Sewers	0	1,176	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	1008.8	301.8	355.0	0.0	0	857.7	1008.8	555.9	653.8	0.0	0.0	555.9	653.8	211.3	248.5	211.3	248.5	90.5	106.5	0.0	0.0	90.5	106.5	857.7	1008.8
202-743	24.9	Stormtech 7 via RLCB/Storm Sewers	0	25	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	21.4	301.8	7.5	0.0	0	857.7	21.4	555.9	13.8	0.0	0.0	555.9	13.8	211.3	5.3	211.3	5.3	90.5	2.3	0.0	0.0	90.5	2.3	857.7	21.4
202-744	88.5	Stormtech 7 via RLCB/Storm Sewers	0	88	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	75.9	301.8	26.7	0.0	0	857.7	75.9	555.9	49.2	0.0	0.0	555.9	49.2	211.3	18.7	211.3	18.7	90.5	8.0	0.0	0.0	90.5	8.0	857.7	75.9
202-745	15.6	Stormtech 7 via RLCB/Storm Sewers	0	16	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	13.4	301.8	4.7	0.0	0	857.7	13.4	555.9	8.7	0.0	0.0	555.9	8.7	211.3	3.3	211.3	3.3	90.5	1.4	0.0	0.0	90.5	1.4	857.7	13.4
202-746	16.3	Stormtech 7 via RLCB/Storm Sewers	0	16	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	13.9	301.8	4.9	0.0	0	857.7	13.9	555.9	9.0	0.0	0.0	555.9	9.0	211.3	3.4	211.3	3.4	90.5	1.5	0.0	0.0	90.5	1.5	857.7	13.9
202-747	68.1	Stormtech 7 via RLCB/Storm Sewers	0	68	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	58.4	301.8	20.5	0.0	0	857.7	58.4	555.9	37.8	0.0	0.0	555.9	37.8	211.3	14.4	211.3	14.4	90.5	6.2	0.0	0.0	90.5	6.2	857.7	58.4
202-748	927.8	Stormtech 7 via RLCB/Storm Sewers	0	928	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	795.7	301.8	280.0	0.0	0	857.7	795.7	555.9	515.7	0.0	0.0	555.9	515.7	211.3	196.0	211.3	196.0	90.5	84.0	0.0	0.0	90.5	84.0	857.7	795.7
202-749	790.8	Stormtech 7 via RLCB/Storm Sewers	791	0	0.25	Silt Loam	0.40	Road	0	0.65	0		857.7	678.3	771.9	610.5	0.0	0	857.7	678.3	0.0	0.0	85.8	67.8	85.8	67.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	610.5	771.9	610.5	857.7	678.3
202-750	527.9	Stormtech 7 via RLCB/Storm Sewers	528	0	0.25	Silt Loam	0.40	Road	0	0.65	0		857.7	452.8	771.9	407.5	0.0	0	857.7	452.8	0.0	0.0	85.8	45.3	85.8	45.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	407.5	771.9	407.5	857.7	452.8
202-754	39.2	Stormtech 7 via RLCB/Storm Sewers	0	39	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	33.7	301.8	11.8	0.0	0	857.7	33.7	555.9	21.8	0.0	0.0	555.9	21.8	211.3	8.3	211.3	8.3	90.5	3.6	0.0	0.0	90.5	3.6	857.7	33.7
202-755	597.5	Stormtech 7 via RLCB/Storm Sewers	0	598	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	512.5	301.8	180.4	0.0	0	857.7	512.5	555.9	332.2	0.0	0.0	555.9	332.2	211.3	126.2	211.3	126.2	90.5	54.1	0.0	0.0	90.5	54.1	857.7	512.5
202-76	147.5	Stormtech 7 via RLCB/Storm Sewers	148	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	126.5	771.9	113.9	0.0	0	857.7	126.5	0.0	0.0	85.8	12.7	85.8	12.7	0.0	0.0	0.0	0.0	0.0	0.0	771.9	113.9	771.9	113.9	857.7	126.5
202-764	59.5	Stormtech 7 via RLCB/Storm Sewers	60	0	0.25	Silt Loam	0.40	Road	0	0.65	0		857.7	51.1	771.9	45.9	0.0	0	857.7	51.1	0.0	0.0	85.8	5.1	85.8	5.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	45.9	771.9	45.9	857.7	51.1
202-765	42.9	Stormtech 7 via RLCB/Storm Sewers	43	0	0.25	Silt Loam	0.40	Road	0	0.65	0		857.7	36.8	771.9	33.1	0.0	0	857.7	36.8	0.0	0.0	85.8	3.7	85.8	3.7	0.0	0.0	0.0	0.0	0.0	0.0	771.9	33.1	771.9	33.1	857.7	36.8
202-77	199.9	Stormtech 7 via RLCB/Storm Sewers	200	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	171.5	771.9	154.3	0.0	0	857.7	171.5	0.0	0.0	85.8	17.1	85.8	17.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	154.3	771.9	154.3	857.7	171.5
202-78	4.6	Stormtech 7 via RLCB/Storm Sewers	5	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	3.9	771.9	3.5	0.0	0	857.7	3.9	0.0	0.0	85.8	0.4	85.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	3.5	771.9	3.5	857.7	3.9
202-782	15.8	Stormtech 7 via RLCB/Storm Sewers	0	16	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	13.6	301.8	4.8	0.0	0	857.7	13.6	555.9	8.8	0.0	0.0	555.9	8.8	211.3	3.3	211.3	3.3	90.5	1.4	0.0	0.0	90.5	1.4	857.7	13.6
202-783	81.6	Stormtech 7 via RLCB/Storm Sewers	0	82	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	70.0	301.8	24.6	0.0	0	857.7	70.0	555.9	45.4	0.0	0.0	555.9	45.4	211.3	17.3	211.3	17.3	90.5	7.4	0.0	0.0	90.5	7.4	857.7	70.0
202-784	116.4	Stormtech 7 via RLCB/Storm Sewers	0	116	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	99.9	301.8	35.1	0.0	0	857.7	99.9	555.9	64.7	0.0	0.0	555.9	64.7	211.3	24.6	211.3	24.6	90.5	10.5	0.0	0.0	90.5	10.5	857.7	99.9
202-785	107.2	Stormtech 7 via RLCB/Storm Sewers	0	107	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	91.9	301.8	32.3	0.0	0	857.7	91.9	555.9	59.6	0.0	0.0	555.9	59.6	211.3	22.6	211.3	22.6	90.5	9.7	0.0	0.0	90.5	9.7	857.7	91.9
202-786	48.9	Stormtech 7 via RLCB/Storm Sewers	0	49	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	41.9	301.8	14.7	0.0	0	857.7	41.9	555.9	27.2	0.0	0.0	555.9	27.2	211.3	10.3	211.3	10.3	90.5	4.4	0.0	0.0	90.5	4.4	857.7	41.9
202-787	10.6	Stormtech 7 via RLCB/Storm Sewers	0	11	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	9.1	301.8	3.2	0.0	0	857.7	9.1	555.9	5.9	0.0	0.0	555.9	5.9	211.3	2.2	211.3	2.2	90.5	1.0	0.0	0.0	90.5	1.0	857.7	9.1
202-788	31.1	Stormtech 7 via RLCB/Storm Sewers	0	31	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	26.7	301.8	9.4	0.0	0	857.7	26.7	555.9	17.3	0.0	0.0	555.9	17.3	211.3	6.6	211.3	6.6	90.5	2.8	0.0	0.0	90.5	2.8	857.7	26.7
202-789	390.3	Stormtech 7 via RLCB/Storm Sewers	0	390	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	334.7	301.8	117.8	0.0	0	857.7	334.7	555.9	216.9	0.0	0.0	555.9	216.9	211.3	82.5	211.3	82.5	90.5	35.3	0.0	0.0	90.5	35.3	857.7	334.7
202-79	28.9	Stormtech 7 via RLCB/Storm Sewers	29	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	24.8	771.9	22.3	0.0	0	857.7	24.8	0.0	0.0	85.8	2.5	85.8	2.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	22.3	771.9	22.3	857.7	24.8
202-794	1184.2	Stormtech 7 via RLCB/Storm Sewers	0	1,184	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	1015.7	301.8	357.4	0.0	0	857.7	1015.7	555.9	658.3	0.0	0.0	555.9	658.3	211.3	250.2	211.3	250.2	90.5	107.2	0.0	0.0	90.5	107.2	857.7	1015.7
202-795	388.6	Stormtech 7 via RLCB/Storm Sewers	0	389	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	333.3	301.8	117.3	0.0	0	857.7	333.3	555.9	216.0	0.0	0.0	555.9	216.0	211.3	82.1	211.3	82.1	90.5	35.2	0.0	0.0	90.5	35.2	857.7	333.3
202-796	372.1	Stormtech 7 via RLCB/Storm Sewers	372	0	0.25	Silt Loam	0.40	Road	0	0.65	0		857.7	319.1	771.9	287.2	0.0	0	857.7	319.1	0.0	0.0	85.8	31.9	85.8	31.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	287.2	771.9	287.2	857.7	319.1
202-797	72.2	Stormtech 7 via RLCB/Storm Sewers	72	0	0.25	Silt Loam	0.40	Road	0	0.65	0		857.7	62.0	771.9	55.8	0.0	0	857.7	62.0	0.0	0.0	85.8	6.2	85.8	6.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	55.8	771.9	55.8	857.7	62.0
202-798	8.4	Stormtech 7 via RLCB/Storm Sewers	8	0	0.25	Silt Loam	0.40	Road	0	0.65	0		857.7	7.2	771.9	6.5	0.0	0	857.7	7.2	0.0	0.0	85.8	0.7	85.8	0.7	0.0	0.0	0.0	0.0	0.0	0.0	771.9	6.5	771.9	6.5	857.7	7.2
202-85	331.6	Stormtech 7 via RLCB/Storm Sewers	0	332	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	284.4	301.8	100.1	0.0	0	857.7	284.4	555.9	184.3	0.0	0.0	555.9	184.3	211.3	70.1	211.3	70.1	90.5	30.0	0.0	0.0	90.5	30.0	857.7	284.4
202-91	19.8	Stormtech 7 via RLCB/Storm Sewers	0	20	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	17.0	301.8	6.0	0.0	0	857.7	17.0	555.9	11.0	0.0	0.0	555.9	11.0	211.3	4.2	211.3	4.2	90.5	1.8	0.0	0.0	90.5	1.8	857.7	17.0
202-97	63.5	Stormtech 7 via RLCB/Storm Sewers	63	0	0.25	Silt Loam	0.40	Road	0	0.65	0		857.7	54.5	771.9	49.0	0.0	0	857.7	54.5	0.0	0.0	85.8	5.4	85.8	5.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	49.0	771.9	49.0	857.7	54.5
202-99	6.1	Stormtech 7 via RLCB/Storm Sewers	6	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	5.2	771.9	4.7	0.0	0	857.7	5.2	0.0	0.0	85.8	0.5	85.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	4.7	771.9	4.7	857.7	5.2
CATCHMENT 202 TOTAL	**26,221**		**16,781**	**9,439**		**Silt Loam**							**858**	**22,489**	**602.7**	**15,803**	**0**	**0**	**1,401**	**22,489**	**200**	**5,247**	**55**	**1,439**	**255**	**6,686**	**76**	**1,994**	**76**	**1,994**	**33**	**855**	**494**	**12,954**	**527**	**13,809**	**858**	**22,489**
203-303	5.6	Stormtech 3 via RLCB/Storm Sewers	6	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	4.8	771.9	4.3	0.0	0	857.7	4.8	0.0	0.0	85.8	0.5	85.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	4.3	771.9	4.3	857.7	4.8
203-304	2.4	Stormtech 3 via RLCB/Storm Sewers	2	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	2.1	771.9	1.9	0.0	0	857.7	2.1	0.0	0.0	85.8	0.2	85.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	1.9	771.9	1.9	857.7	2.1
203-343	298.4	Stormtech 3 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
203-344	298.4	Stormtech 3 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
203-345	298.4	Stormtech 3 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
203-347	292.8	Stormtech 3 via RLCB/Storm Sewers	293	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	251.2	771.9	226.1	0.0	0	857.7	251.2	0.0	0.0	85.8	25.1	85.8	25.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	226.1	771.9	226.1	857.7	251.2
203-347	296.0	Stormtech 3 via RLCB/Storm Sewers	296	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	253.9	771.9	228.5	0.0	0	857.7	253.9	0.0	0.0	85.8	25.4	85.8	25.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	228.5	771.9	228.5	857.7	253.9
203-348	298.4	Stormtech 3 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
203-359	298.4	Stormtech 3 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
203-360	298.4	Stormtech 3 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
203-361	298.4	Stormtech 3 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
203-362	298.4	Stormtech 3 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
203-363	298.4	Stormtech 3 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
203-364	298.4	Stormtech 3 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
203-366	298.4	Stormtech 3 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
203-367	298.4	Stormtech 3 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
203-368	298.4	Stormtech 3 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
203-369	298.4	Stormtech 3 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0

TABLE I-1 POST-DEVELOPMENT WATER BUDGET

HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

ANNUAL PRECIPITATION	EVAPORATION AND EVAPOTRANSPIRATION FACTORS			
	Impervious Areas		Ponds	
mm	%	mm	%	mm
858	10%	86	75%	646

On-site Subcatchments	Area (m^2)	Outlet	Total Impervious (m^2)	Total Pervious (m^2)	Infiltration Factor Components*						MOE Infiltration Factor	Adjusted Infiltration Factor	Inputs								Outputs												Total Outputs	
					Topography	Soil		Cover					Precipitation				Run-on		Total Inputs		Evapotranspiration				Infiltration				Runoff					
													Annual Average		Surplus						Pervious		Impervious		Total Evapotranspiration		Pervious Areas		Total Infiltration		Pervious		Total Impervious		Total Runoff			
													(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)
203-593	49.4	Stormtech 3 via RLCB/Storm Sewers	0	49	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	42.4	301.8	14.9	0.0	0	857.7	42.4	555.9	27.5	0.0	0.0	555.9	27.5	211.3	10.4	211.3	10.4	90.5	4.5	0.0	0.0	90.5	4.5	857.7	42.4
203-633	1643.3	Stormtech 3 via RLCB/Storm Sewers	0	1,643	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	1409.5	301.8	496.0	0.0	0	857.7	1409.5	555.9	913.5	0.0	0.0	555.9	913.5	211.3	347.2	211.3	347.2	90.5	148.8	0.0	0.0	90.5	148.8	857.7	1409.5
203-642	40.3	Stormtech 3 via RLCB/Storm Sewers	0	40	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	34.6	301.8	12.2	0.0	0	857.7	34.6	555.9	22.4	0.0	0.0	555.9	22.4	211.3	8.5	211.3	8.5	90.5	3.7	0.0	0.0	90.5	3.7	857.7	34.6
203-644	77.7	Stormtech 3 via RLCB/Storm Sewers	0	78	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	66.7	301.8	23.5	0.0	0	857.7	66.7	555.9	43.2	0.0	0.0	555.9	43.2	211.3	16.4	211.3	16.4	90.5	7.0	0.0	0.0	90.5	7.0	857.7	66.7
203-646	49.9	Stormtech 3 via RLCB/Storm Sewers	0	50	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	42.8	301.8	15.1	0.0	0	857.7	42.8	555.9	27.8	0.0	0.0	555.9	27.8	211.3	10.5	211.3	10.5	90.5	4.5	0.0	0.0	90.5	4.5	857.7	42.8
203-648	20.0	Stormtech 3 via RLCB/Storm Sewers	0	20	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	17.2	301.8	6.0	0.0	0	857.7	17.2	555.9	11.1	0.0	0.0	555.9	11.1	211.3	4.2	211.3	4.2	90.5	1.8	0.0	0.0	90.5	1.8	857.7	17.2
CATCHMENT 203 TOTAL	**11,036**	**On-Site Storm Sewers via RLCB**	**8,024**	**3,012**		**Silt Loam**							**858**	**9,466**	**643.6**	**7,103**	**0**	**0**	**858**	**9,466**	**152**	**1,674**	**62**	**688**	**214**	**2,363**	**58**	**636**	**58**	**636**	**25**	**273**	**561**	**6,194**	**586**	**6,467**	**858**	**9,466**
204a-311	46.2	Stormtech 4 via RLCB/Storm Sewers	46	0	0.25	Silt Loam	0.40	Concrete	0	0.65	0		857.7	39.6	771.9	35.6	0.0	0	857.7	39.6	0.0	0.0	85.8	4.0	85.8	4.0	0.0	0.0	0.0	0.0	0.0	0.0	771.9	35.6	771.9	35.6	857.7	39.6
204a-313	27.4	Stormtech 4 via RLCB/Storm Sewers	0	27	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	23.5	301.8	8.3	0.0	0	857.7	23.5	555.9	15.2	0.0	0.0	555.9	15.2	211.3	5.8	211.3	5.8	90.5	2.5	0.0	0.0	90.5	2.5	857.7	23.5
204a-314	24.0	Stormtech 4 via RLCB/Storm Sewers	0	24	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	20.6	301.8	7.2	0.0	0	857.7	20.6	555.9	13.3	0.0	0.0	555.9	13.3	211.3	5.1	211.3	5.1	90.5	2.2	0.0	0.0	90.5	2.2	857.7	20.6
204a-349	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-350	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-351	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-352	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-353	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-354	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-355	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-356	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-357	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-358	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-409	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-410	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-411	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-412	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-413	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-414	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-415	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-416	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-417	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-418	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-419	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-420	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-421	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-422	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-423	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-424	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-425	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-426	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-427	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-428	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-429	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-430	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-431	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-432	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-433	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-434	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-435	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-436	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0		857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204a-437	10.9	Stormtech 4 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
204a-438	10.9	Stormtech 4 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
204a-439	10.9	Stormtech 4 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
204a-440	10.9	Stormtech 4 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
204a-441	10.9	Stormtech 4 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
204a-442	10.9	Stormtech 4 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
204a-443	10.9	Stormtech 4 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
204a-444	10.9	Stormtech 4 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
204a-445	10.9	Stormtech 4 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
204a-446	10.9	Stormtech 4 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
204a-447	10.9	Stormtech 4 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
204a-448	10.9	Stormtech 4 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
204a-449	10.9	Stormtech 4 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
204a-450	10.9	Stormtech 4 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
204a-451	10.9	Stormtech 4 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7	9.3
204a-452	10.9	Stormtech 4 via RLCB/Storm Sewers	11	0	0.25	Silt Loam	0.40	Porch	0	0.65	0		857.7	9.3	771.9	8.4	0.0	0	857.7	9.3	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	8.4	771.9	8.4	857.7

TABLE I-1 POST-DEVELOPMENT WATER BUDGET

HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

ANNUAL PRECIPITATION	EVAPORATION AND EVAPOTRANSPIRATION FACTORS			
	Impervious Areas		Ponds	
mm	%	mm	%	mm
858	10%	86	75%	646

On-site Subcatchments	Area (m^2)	Outlet	Total Impervious (m^2)	Total Pervious (m^2)	Infiltration Factor Components*						MOE Infiltration Factor	Adjusted Infiltration Factor	Inputs								Outputs											
													Precipitation				Run-on		Total Inputs		Evapotranspiration						Infiltration				Runoff				Total Outputs	
					Topography		Soil		Cover				Annual Average		Surplus						Pervious		Impervious		Total Evapotranspiration		Pervious Areas		Total Infiltration		Pervious		Total Impervious		Total Runoff			
													(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)
204a-504	49.0	Stormtech 4 via RLCB/Storm Sewers	49	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	42.0	771.9	37.8	0.0	0	857.7	42.0	0.0	0.0	85.8	4.2	85.8	4.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	37.8	771.9	37.8	857.7	42.0
204a-505	41.5	Stormtech 4 via RLCB/Storm Sewers	41	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	35.6	771.9	32.0	0.0	0	857.7	35.6	0.0	0.0	85.8	3.6	85.8	3.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	32.0	771.9	32.0	857.7	35.6
204a-506	42.5	Stormtech 4 via RLCB/Storm Sewers	43	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	36.5	771.9	32.8	0.0	0	857.7	36.5	0.0	0.0	85.8	3.6	85.8	3.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	32.8	771.9	32.8	857.7	36.5
204a-507	49.6	Stormtech 4 via RLCB/Storm Sewers	50	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	42.6	771.9	38.3	0.0	0	857.7	42.6	0.0	0.0	85.8	4.3	85.8	4.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	38.3	771.9	38.3	857.7	42.6
204a-508	7.0	Stormtech 4 via RLCB/Storm Sewers	7	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	6.0	771.9	5.4	0.0	0	857.7	6.0	0.0	0.0	85.8	0.6	85.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	5.4	771.9	5.4	857.7	6.0
204a-509	53.4	Stormtech 4 via RLCB/Storm Sewers	53	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	45.8	771.9	41.2	0.0	0	857.7	45.8	0.0	0.0	85.8	4.6	85.8	4.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	41.2	771.9	41.2	857.7	45.8
204a-510	47.9	Stormtech 4 via RLCB/Storm Sewers	48	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	41.1	771.9	37.0	0.0	0	857.7	41.1	0.0	0.0	85.8	4.1	85.8	4.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	37.0	771.9	37.0	857.7	41.1
204a-511	45.1	Stormtech 4 via RLCB/Storm Sewers	45	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	38.7	771.9	34.8	0.0	0	857.7	38.7	0.0	0.0	85.8	3.9	85.8	3.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	34.8	771.9	34.8	857.7	38.7
204a-512	44.2	Stormtech 4 via RLCB/Storm Sewers	44	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	37.9	771.9	34.1	0.0	0	857.7	37.9	0.0	0.0	85.8	3.8	85.8	3.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	34.1	771.9	34.1	857.7	37.9
204a-513	50.3	Stormtech 4 via RLCB/Storm Sewers	50	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	43.1	771.9	38.8	0.0	0	857.7	43.1	0.0	0.0	85.8	4.3	85.8	4.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	38.8	771.9	38.8	857.7	43.1
204a-514	50.7	Stormtech 4 via RLCB/Storm Sewers	51	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	43.5	771.9	39.1	0.0	0	857.7	43.5	0.0	0.0	85.8	4.3	85.8	4.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	39.1	771.9	39.1	857.7	43.5
204a-515	44.6	Stormtech 4 via RLCB/Storm Sewers	45	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	38.3	771.9	34.5	0.0	0	857.7	38.3	0.0	0.0	85.8	3.8	85.8	3.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	34.5	771.9	34.5	857.7	38.3
204a-516	43.6	Stormtech 4 via RLCB/Storm Sewers	44	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	37.4	771.9	33.7	0.0	0	857.7	37.4	0.0	0.0	85.8	3.7	85.8	3.7	0.0	0.0	0.0	0.0	0.0	0.0	771.9	33.7	771.9	33.7	857.7	37.4
204a-517	50.0	Stormtech 4 via RLCB/Storm Sewers	50	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	42.9	771.9	38.6	0.0	0	857.7	42.9	0.0	0.0	85.8	4.3	85.8	4.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	38.6	771.9	38.6	857.7	42.9
204a-518	50.9	Stormtech 4 via RLCB/Storm Sewers	51	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	43.7	771.9	39.3	0.0	0	857.7	43.7	0.0	0.0	85.8	4.4	85.8	4.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	39.3	771.9	39.3	857.7	43.7
204a-519	51.5	Stormtech 4 via RLCB/Storm Sewers	52	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	44.2	771.9	39.8	0.0	0	857.7	44.2	0.0	0.0	85.8	4.4	85.8	4.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	39.8	771.9	39.8	857.7	44.2
204a-520	51.4	Stormtech 4 via RLCB/Storm Sewers	51	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	44.1	771.9	39.7	0.0	0	857.7	44.1	0.0	0.0	85.8	4.4	85.8	4.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	39.7	771.9	39.7	857.7	44.1
204a-521	50.7	Stormtech 4 via RLCB/Storm Sewers	51	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	43.5	771.9	39.1	0.0	0	857.7	43.5	0.0	0.0	85.8	4.3	85.8	4.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	39.1	771.9	39.1	857.7	43.5
204a-522	53.4	Stormtech 4 via RLCB/Storm Sewers	53	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	45.8	771.9	41.2	0.0	0	857.7	45.8	0.0	0.0	85.8	4.6	85.8	4.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	41.2	771.9	41.2	857.7	45.8
204a-523	55.4	Stormtech 4 via RLCB/Storm Sewers	55	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	47.5	771.9	42.8	0.0	0	857.7	47.5	0.0	0.0	85.8	4.8	85.8	4.8	0.0	0.0	0.0	0.0	0.0	0.0	771.9	42.8	771.9	42.8	857.7	47.5
204a-524	47.7	Stormtech 4 via RLCB/Storm Sewers	48	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	41.0	771.9	36.9	0.0	0	857.7	41.0	0.0	0.0	85.8	4.1	85.8	4.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	36.9	771.9	36.9	857.7	41.0
204a-525	49.8	Stormtech 4 via RLCB/Storm Sewers	50	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	42.7	771.9	38.4	0.0	0	857.7	42.7	0.0	0.0	85.8	4.3	85.8	4.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	38.4	771.9	38.4	857.7	42.7
204a-526	47.8	Stormtech 4 via RLCB/Storm Sewers	48	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	41.0	771.9	36.9	0.0	0	857.7	41.0	0.0	0.0	85.8	4.1	85.8	4.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	36.9	771.9	36.9	857.7	41.0
204a-527	53.0	Stormtech 4 via RLCB/Storm Sewers	53	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	45.4	771.9	40.9	0.0	0	857.7	45.4	0.0	0.0	85.8	4.5	85.8	4.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	40.9	771.9	40.9	857.7	45.4
204a-528	52.9	Stormtech 4 via RLCB/Storm Sewers	53	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	45.4	771.9	40.8	0.0	0	857.7	45.4	0.0	0.0	85.8	4.5	85.8	4.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	40.8	771.9	40.8	857.7	45.4
204a-529	55.2	Stormtech 4 via RLCB/Storm Sewers	55	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	47.4	771.9	42.6	0.0	0	857.7	47.4	0.0	0.0	85.8	4.7	85.8	4.7	0.0	0.0	0.0	0.0	0.0	0.0	771.9	42.6	771.9	42.6	857.7	47.4
204a-530	52.3	Stormtech 4 via RLCB/Storm Sewers	52	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	44.9	771.9	40.4	0.0	0	857.7	44.9	0.0	0.0	85.8	4.5	85.8	4.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	40.4	771.9	40.4	857.7	44.9
204a-531	47.4	Stormtech 4 via RLCB/Storm Sewers	47	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	40.6	771.9	36.6	0.0	0	857.7	40.6	0.0	0.0	85.8	4.1	85.8	4.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	36.6	771.9	36.6	857.7	40.6
204a-532	47.8	Stormtech 4 via RLCB/Storm Sewers	48	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	41.0	771.9	36.9	0.0	0	857.7	41.0	0.0	0.0	85.8	4.1	85.8	4.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	36.9	771.9	36.9	857.7	41.0
204a-533	49.8	Stormtech 4 via RLCB/Storm Sewers	50	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	42.7	771.9	38.5	0.0	0	857.7	42.7	0.0	0.0	85.8	4.3	85.8	4.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	38.5	771.9	38.5	857.7	42.7
204a-534	48.4	Stormtech 4 via RLCB/Storm Sewers	48	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	41.5	771.9	37.3	0.0	0	857.7	41.5	0.0	0.0	85.8	4.1	85.8	4.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	37.3	771.9	37.3	857.7	41.5
204a-535	50.5	Stormtech 4 via RLCB/Storm Sewers	50	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	43.3	771.9	39.0	0.0	0	857.7	43.3	0.0	0.0	85.8	4.3	85.8	4.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	39.0	771.9	39.0	857.7	43.3
204a-536	52.0	Stormtech 4 via RLCB/Storm Sewers	52	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	44.6	771.9	40.2	0.0	0	857.7	44.6	0.0	0.0	85.8	4.5	85.8	4.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	40.2	771.9	40.2	857.7	44.6
204a-537	54.1	Stormtech 4 via RLCB/Storm Sewers	54	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	46.4	771.9	41.8	0.0	0	857.7	46.4	0.0	0.0	85.8	4.6	85.8	4.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	41.8	771.9	41.8	857.7	46.4
204a-538	55.0	Stormtech 4 via RLCB/Storm Sewers	55	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	47.1	771.9	42.4	0.0	0	857.7	47.1	0.0	0.0	85.8	4.7	85.8	4.7	0.0	0.0	0.0	0.0	0.0	0.0	771.9	42.4	771.9	42.4	857.7	47.1
204a-539	54.3	Stormtech 4 via RLCB/Storm Sewers	54	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	46.6	771.9	41.9	0.0	0	857.7	46.6	0.0	0.0	85.8	4.7	85.8	4.7	0.0	0.0	0.0	0.0	0.0	0.0	771.9	41.9	771.9	41.9	857.7	46.6
204a-540	50.2	Stormtech 4 via RLCB/Storm Sewers	50	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	43.0	771.9	38.7	0.0	0	857.7	43.0	0.0	0.0	85.8	4.3	85.8	4.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	38.7	771.9	38.7	857.7	43.0
204a-541	39.8	Stormtech 4 via RLCB/Storm Sewers	40	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	34.1	771.9	30.7	0.0	0	857.7	34.1	0.0	0.0	85.8	3.4	85.8	3.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	30.7	771.9	30.7	857.7	34.1
204a-542	38.8	Stormtech 4 via RLCB/Storm Sewers	39	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	33.3	771.9	29.9	0.0	0	857.7	33.3	0.0	0.0	85.8	3.3	85.8	3.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	29.9	771.9	29.9	857.7	33.3
204a-543	51.5	Stormtech 4 via RLCB/Storm Sewers	51	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	44.2	771.9	39.8	0.0	0	857.7	44.2	0.0	0.0	85.8	4.4	85.8	4.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	39.8	771.9	39.8	857.7	44.2
204a-544	45.1	Stormtech 4 via RLCB/Storm Sewers	45	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	38.7	771.9	34.8	0.0	0	857.7	38.7	0.0	0.0	85.8	3.9	85.8	3.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	34.8	771.9	34.8	857.7	38.7
204a-545	63.1	Stormtech 4 via RLCB/Storm Sewers	63	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	54.1	771.9	48.7	0.0	0	857.7	54.1	0.0	0.0	85.8	5.4	85.8	5.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	48.7	771.9	48.7	857.7	54.1
204a-546	98.8	Stormtech 4 via RLCB/Storm Sewers	99	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	84.8	771.9	76.3	0.0	0	857.7	84.8	0.0	0.0	85.8	8.5	85.8	8.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	76.3	771.9	76.3	857.7	84.8
204a-547	54.2	Stormtech 4 via RLCB/Storm Sewers	54	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	46.5	771.9	41.8	0.0	0	857.7	46.5	0.0	0.0	85.8	4.6	85.8	4.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	41.8	771.9	41.8	857.7	46.5
204a-548	52.9	Stormtech 4 via RLCB/Storm Sewers	53	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	45.3	771.9	40.8	0.0	0	857.7	45.3	0.0	0.0	85.8	4.5	85.8	4.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	40.8	771.9	40.8	857.7	45.3
204a-549	50.3	Stormtech 4 via RLCB/Storm Sewers	50	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	43.2	771.9	38.9	0.0	0	857.7	43.2	0.0	0.0	85.8	4.3	85.8	4.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	38.9	771.9	38.9	857.7	43.2
204a-550	52.3	Stormtech 4 via RLCB/Storm Sewers	52	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	44.8	771.9	40.4	0.0	0	857.7	44.8	0.0	0.0	85.8	4.5	85.8	4.5	0.0	0.0	0.0	0.0	0.0	0.0	771.9	40.4	771.9	40.4	857.7	44.8
204a-551	51.5	Stormtech 4 via RLCB/Storm Sewers	52	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	44.2	771.9	39.8	0.0	0	857.7	44.2	0.0	0.0	85.8	4.4	85.8	4.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	39.8	771.9	39.8	857.7	44.2
204a-552	4432.4	Stormtech 4 via RLCB/Storm Sewers	4,432	0	0.25	Silt Loam	0.40	Road	0	0.65	0		857.7	3801.7	771.9	3421.5	0.0	0	857.7	3801.7	0.0	0.0	85.8	380.2	85.8	380.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	3421.5	771.9	3421.5	857.7	3801.7
204a-553	135.4	Stormtech 4 via RLCB/Storm Sewers	135	0	0.25	Silt Loam	0.40	Concrete	0	0.65	0		857.7	116.1	771.9	104.5	0.0	0	857.7	116.1	0.0	0.0	85.8	11.6	85.8	11.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	104.5	771.9	104.5	857.7	116.1
204a-574	3.6	Stormtech 4 via RLCB/Storm Sewers	4	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0		857.7	3.1	771.9	2.8	0.0	0	857.7	3.1	0.0	0.0	85.8	0.3	85.8	0.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	2.8	771.9	2.8	857.7	3.1
204a-595	56.0	Stormtech 4 via RLCB/Storm Sewers	0	56	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	48.0	301.8	16.9	0.0	0	857.7	48.0	555.9	31.1	0.0	0.0	555.9	31.1	211.3	11.8	211.3	11.8	90.5	5.1	0.0	0.0	90.5	5.1	857.7	48.0
204a-596	59.4	Stormtech 4 via RLCB/Storm Sewers	0	59	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	51.0	301.8	17.9	0.0	0	857.7	51.0	555.9	33.0	0.0	0.0	555.9	33.0	211.3	12.6	211.3	12.6	90.5	5.4	0.0	0.0	90.5	5.4	857.7	51.0
204a-597	63.9	Stormtech 4 via RLCB/Storm Sewers	0	64	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	54.8	301.8	19.3	0.0	0	857.7	54.8	555.9	35.5	0.0	0.0	555.9	35.5	211.3	13.5	211.3	13.5	90.5	5.8	0.0	0.0	90.5	5.8	857.7	54.8
204a-598	71.0	Stormtech 4 via RLCB/Storm Sewers	0	71	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	60.9	301.8	21.4	0.0	0	857.7	60.9	555.9	39.5	0.0	0.0	555.9	39.5	211.3	15.0	211.3	15.0	90.5	6.4	0.0	0.0	90.5	6.4	857.7	60.9
204a-599	66.9	Stormtech 4 via RLCB/Storm Sewers	0	67	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	57.4	301.8	20.2	0.0	0	857.7	57.4	555.9	37.2	0.0	0.0	555.9	37.2	211.3	14.1	211.3	14.1	90.5	6.1	0.0	0.0	90.5	6.1	857.7	57.4
204a-600	69.4	Stormtech 4 via RLCB/Storm Sewers	0	69	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	59.5	301.8	20.9	0.0	0	857.7	59.5	555.9	38.6	0.0	0.0	555.9	38.6	211.3	14.7	211.3	14.7	90.5	6.3	0.0	0.0	90.5	6.3	857.7	59.5
204a-601	53.8	Stormtech 4 via RLCB/Storm Sewers	0	54	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	46.1	301.8	16.2	0.0	0	857.7	46.1	555.9	29.9	0.0	0.0	555.9	29.9	211.3	11.4	211.3	11.4	90.5	4.9	0.0	0.0	90.5	4.9	857.7	46.1
204a-602	73.2	Stormtech 4 via RLCB/Storm Sewers	0	73	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	62.8	301.8	22.1	0.0	0	857.7	62.8	555.9	40.7	0.0	0.0	555.9	40.7	211.3	15.5	211.3	15.5	90.5	6.6	0.0	0.0	90.5	6.6	857.7	62.8
204a-603	53.3	Stormtech 4 via RLCB/Storm Sewers	0	53	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	45.8	301.8	16.1	0.0	0	857.7	45.8	555.9	29.7	0.0	0.0	555.9	29.7	211.3	11.3	211.3	11.3	90.5	4.8	0.0	0.0	90.5	4.8	857.7	45.8
204a-604	64.1	Stormtech 4 via RLCB/Storm Sewers	0	64	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	55.0	301.8	19.3	0.0	0	857.7	55.0	555.9	35.6	0.0	0.0	555.9	35.6	211.3	13.5	211.3	13.5	90.5	5.8	0.0	0.0	90.5	5.8	857.7	55.0
204a-605	58.0	Stormtech 4 via RLCB/Storm Sewers	0	58	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	49.7	301.8	17.5	0.0	0	857.7	49.7	555.9	32.2	0.0	0.0	555.9	32.2	211.3	12.3	211.3	12.3	90.5	5.3	0.0	0.0	90.5	5.3	857.7	49.7
204a-606	64.4	Stormtech 4 via RLCB/Storm Sewers	0	64	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7		857.7	55.3	301.8	19.4	0.0	0	857.7	55.3	555.9	35.8	0.0	0.0	555.9	35.8	211.3	13.6	211.3	13.6	90.5	5.8	0.0	0.0	90.5	5.8	857.7	55.3
204a-607	63.5	Stormtech 4 via RLCB/Storm Sewers	0	63	0.25	Silt Loam	0.40	Lawns	0.05	0.

TABLE I-1 POST-DEVELOPMENT WATER BUDGET

HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

ANNUAL PRECIPITATION		EVAPORATION AND EVAPOTRANSPIRATION FACTORS		
		Impervious Areas		Ponds
mm		%	mm	% mm
858		10%	86	75% 646

On-site Subcatchments	Area (m^2)	Outlet	Total Impervious (m^2)	Total Pervious (m^2)	Infiltration Factor Components*						MOE Infiltration Factor	Adjusted Infiltration Factor	Inputs								Outputs											
													Precipitation				Run-on		Total Inputs		Evapotranspiration						Infiltration				Runoff				Total Outputs	
													Annual Average		Surplus						Pervious		Impervious		Total Evapotranspiration		Pervious Areas		Total Infiltration		Pervious		Total Impervious		Total Runoff			
					Topography		Soil		Cover				(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)
204b-569	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204b-570	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204b-571	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204b-572	298.4	Stormtech 4 via RLCB/Storm Sewers	298	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	256.0	771.9	230.4	0.0	0	857.7	256.0	0.0	0.0	85.8	25.6	85.8	25.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	230.4	771.9	230.4	857.7	256.0
204b-573	6.5	Stormtech 4 via RLCB/Storm Sewers	6	0	0.25	Silt Loam	0.40	Porch	0	0.65	0	857.7	5.5	771.9	5.0	0.0	0	857.7	5.5	0.0	0.0	85.8	0.6	85.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	5.0	771.9	5.0	857.7	5.5
204b-575	4.5	Stormtech 4 via RLCB/Storm Sewers	4	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	3.8	771.9	3.5	0.0	0	857.7	3.8	0.0	0.0	85.8	0.4	85.8	0.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	3.5	771.9	3.5	857.7	3.8
204b-576	6.7	Stormtech 4 via RLCB/Storm Sewers	7	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	5.8	771.9	5.2	0.0	0	857.7	5.8	0.0	0.0	85.8	0.6	85.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	5.2	771.9	5.2	857.7	5.8
204b-577	1.2	Stormtech 4 via RLCB/Storm Sewers	1	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	1.1	771.9	0.9	0.0	0	857.7	1.1	0.0	0.0	85.8	0.1	85.8	0.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	0.9	771.9	0.9	857.7	1.1
204b-578	7.9	Stormtech 4 via RLCB/Storm Sewers	8	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	6.8	771.9	6.1	0.0	0	857.7	6.8	0.0	0.0	85.8	0.7	85.8	0.7	0.0	0.0	0.0	0.0	0.0	0.0	771.9	6.1	771.9	6.1	857.7	6.8
204b-579	10.3	Stormtech 4 via RLCB/Storm Sewers	10	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	8.8	771.9	7.9	0.0	0	857.7	8.8	0.0	0.0	85.8	0.9	85.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	7.9	771.9	7.9	857.7	8.8
204b-580	27.8	Stormtech 4 via RLCB/Storm Sewers	28	0	0.25	Silt Loam	0.40	Driveway	0	0.65	0	857.7	23.8	771.9	21.4	0.0	0	857.7	23.8	0.0	0.0	85.8	2.4	85.8	2.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	21.4	771.9	21.4	857.7	23.8
204b-631	1559.9	Stormtech 4 via RLCB/Storm Sewers	0	1,560	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	1337.9	301.8	470.8	0.0	0	857.7	1337.9	555.9	867.1	0.0	0.0	555.9	867.1	211.3	329.6	211.3	329.6	90.5	141.2	0.0	0.0	90.5	141.2	857.7	1337.9
Catchment 204B Total	**7,295**		**5,735**	**1,560**								**858**	**6,257**	**671.4**	**4,898**	**0**	**0**	**858**	**6,257**	**119**	**867**	**67**	**492**	**186**	**1,359**	**45**	**330**	**45**	**330**	**19**	**141**	**607**	**4,427**	**626**	**4,568**	**858**	**6,257**
CATCHMENT 204 TOTAL	**33,237**		**25,392**	**7,845**								**858**	**28,507**	**661**	**21,969**	**0**	**0**	**858**	**28,507**	**131**	**4,361**	**66**	**2,178**	**197**	**6,539**	**50**	**1,657**	**50**	**1,657**	**21**	**710**	**590**	**19,601**	**611**	**20,311**	**858**	**28,507**
205-227	347.4	Offsite - South via Creek	0	347	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	298.0	301.8	104.9	0.0	0	857.7	298.0	555.9	193.1	0.0	0.0	555.9	193.1	211.3	73.4	211.3	73.4	90.5	31.5	0.0	0.0	90.5	31.5	857.7	298.0
205-254	138.6	Offsite - South via Creek	139	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	118.9	771.9	107.0	0.0	0	857.7	118.9	0.0	0.0	85.8	11.9	85.8	11.9	0.0	0.0	0.0	0.0	0.0	0.0	771.9	107.0	771.9	107.0	857.7	118.9
205-255	130.2	Offsite - South via Creek	130	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	111.7	771.9	100.5	0.0	0	857.7	111.7	0.0	0.0	85.8	11.2	85.8	11.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	100.5	771.9	100.5	857.7	111.7
205-256	100.8	Offsite - South via Creek	101	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	86.5	771.9	77.8	0.0	0	857.7	86.5	0.0	0.0	85.8	8.6	85.8	8.6	0.0	0.0	0.0	0.0	0.0	0.0	771.9	77.8	771.9	77.8	857.7	86.5
205-257	60.3	Offsite - South via Creek	60	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	51.7	771.9	46.5	0.0	0	857.7	51.7	0.0	0.0	85.8	5.2	85.8	5.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	46.5	771.9	46.5	857.7	51.7
205-258	140.6	Offsite - South via Creek	141	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	120.6	771.9	108.5	0.0	0	857.7	120.6	0.0	0.0	85.8	12.1	85.8	12.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	108.5	771.9	108.5	857.7	120.6
205-259	144.7	Offsite - South via Creek	145	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	124.1	771.9	111.7	0.0	0	857.7	124.1	0.0	0.0	85.8	12.4	85.8	12.4	0.0	0.0	0.0	0.0	0.0	0.0	771.9	111.7	771.9	111.7	857.7	124.1
205-322	1342.0	Offsite - South via Creek	0	1,342	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	1151.0	301.8	405.0	0.0	0	857.7	1151.0	555.9	746.0	0.0	0.0	555.9	746.0	211.3	283.5	211.3	283.5	90.5	121.5	0.0	0.0	90.5	121.5	857.7	1151.0
205-324	55.4	Offsite - South via Creek	0	55	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	47.5	301.8	16.7	0.0	0	857.7	47.5	555.9	30.8	0.0	0.0	555.9	30.8	211.3	11.7	211.3	11.7	90.5	5.0	0.0	0.0	90.5	5.0	857.7	47.5
205-326	36.4	Offsite - South via Creek	36	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	31.2	771.9	28.1	0.0	0	857.7	31.2	0.0	0.0	85.8	3.1	85.8	3.1	0.0	0.0	0.0	0.0	0.0	0.0	771.9	28.1	771.9	28.1	857.7	31.2
205-365	72.7	Offsite - South via Creek	0	73	0.25	Silt Loam	0.40	Ponds	1	1.65	1	857.7	62.4	211.7	15.4	0.0	0	857.7	62.4	646.0	47.0	0.0	0.0	646.0	47.0	211.7	15.4	211.7	15.4	44.4	0.0	0.0	0.0	0.0	0.0	857.7	62.4
205-640	705.9	Offsite - South via Creek	0	706	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	605.5	301.8	213.1	0.0	0	857.7	605.5	555.9	392.4	0.0	0.0	555.9	392.4	211.3	149.1	211.3	149.1	90.5	63.9	0.0	0.0	90.5	63.9	857.7	605.5
205-641	95.8	Offsite - South via Creek	96	0	0.25	Silt Loam	0.40	Concrete	0	0.65	0	857.7	82.2	771.9	73.9	0.0	0	857.7	82.2	0.0	0.0	85.8	8.2	85.8	8.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	73.9	771.9	73.9	857.7	82.2
205-643	632.1	Offsite - South via Creek	0	632	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	542.2	301.8	190.8	0.0	0	857.7	542.2	555.9	351.4	0.0	0.0	555.9	351.4	211.3	133.5	211.3	133.5	90.5	57.2	0.0	0.0	90.5	57.2	857.7	542.2
205-647	250.4	Offsite - South via Creek	0	250	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	214.8	301.8	75.6	0.0	0	857.7	214.8	555.9	139.2	0.0	0.0	555.9	139.2	211.3	52.9	211.3	52.9	90.5	22.7	0.0	0.0	90.5	22.7	857.7	214.8
205-649	240.0	Offsite - South via Creek	0	240	0.25	Silt Loam	0.40	Lawns - Stormtech	0.05	0.7	0.7	857.7	205.8	301.8	72.4	0.0	0	857.7	205.8	555.9	133.4	0.0	0.0	555.9	133.4	211.3	50.7	211.3	50.7	90.5	21.7	0.0	0.0	90.5	21.7	857.7	205.8
205-659	277.9	Offsite - South via Creek	0	278	0.25	Silt Loam	0.40	Uncultivated	0.15	0.8	0.8	857.7	238.4	289.8	80.6	0.0	0	857.7	238.4	567.9	157.8	0.0	0.0	567.9	157.8	231.9	64.4	231.9	64.4	58.0	16.1	0.0	0.0	58.0	16.1	857.7	238.4
205-740	214.0	Offsite - South via Creek	0	214	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	183.5	301.8	64.6	0.0	0	857.7	183.5	555.9	118.9	0.0	0.0	555.9	118.9	211.3	45.2	211.3	45.2	90.5	19.4	0.0	0.0	90.5	19.4	857.7	183.5
205-741	193.0	Offsite - South via Creek	0	193	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	165.5	301.8	58.2	0.0	0	857.7	165.5	555.9	107.3	0.0	0.0	555.9	107.3	211.3	40.8	211.3	40.8	90.5	17.5	0.0	0.0	90.5	17.5	857.7	165.5
205-75	14.2	Offsite - South via Creek	14	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	12.2	771.9	11.0	0.0	0	857.7	12.2	0.0	0.0	85.8	1.2	85.8	1.2	0.0	0.0	0.0	0.0	0.0	0.0	771.9	11.0	771.9	11.0	857.7	12.2
205-751	217.3	Offsite - South via Creek	0	217	0.25	Silt Loam	0.40	Uncultivated	0.15	0.8	0.8	857.7	186.4	289.8	63.0	0.0	0	857.7	186.4	567.9	123.4	0.0	0.0	567.9	123.4	231.9	50.4	231.9	50.4	58.0	12.6	0.0	0.0	58.0	12.6	857.7	186.4
205-752	1982.4	Offsite - South via Creek	0	1,982	0.25	Silt Loam	0.40	Uncultivated	0.15	0.8	0.8	857.7	1700.3	289.8	574.5	0.0	0	857.7	1700.3	567.9	1125.8	0.0	0.0	567.9	1125.8	231.9	459.6	231.9	459.6	58.0	114.9	0.0	0.0	58.0	114.9	857.7	1700.3
205-761	46.2	Offsite - South via Creek	0	46	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	39.7	301.8	14.0	0.0	0	857.7	39.7	555.9	25.7	0.0	0.0	555.9	25.7	211.3	9.8	211.3	9.8	90.5	4.2	0.0	0.0	90.5	4.2	857.7	39.7
205-762	4.5	Offsite - South via Creek	0	4	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	3.9	301.8	1.4	0.0	0	857.7	3.9	555.9	2.5	0.0	0.0	555.9	2.5	211.3	0.9	211.3	0.9	90.5	0.4	0.0	0.0	90.5	0.4	857.7	3.9
205-763	2.5	Offsite - South via Creek	0	2	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	2.1	301.8	0.7	0.0	0	857.7	2.1	555.9	1.4	0.0	0.0	555.9	1.4	211.3	0.5	211.3	0.5	90.5	0.2	0.0	0.0	90.5	0.2	857.7	2.1
205-766	710.6	Offsite - South via Creek	0	711	0.25	Silt Loam	0.40	Wooded Area	0.2	0.85	0.85	857.7	609.5	283.8	201.7	0.0	0	857.7	609.5	573.9	407.8	0.0	0.0	573.9	407.8	241.2	171.4	241.2	171.4	42.6	30.3	0.0	0.0	42.6	30.3	857.7	609.5
205-767	13952.0	Offsite - South via Creek	0	13,952	0.25	Silt Loam	0.40	Wooded Area	0.2	0.85	0.85	857.7	11966.7	283.8	3959.9	0.0	0	857.7	11966.7	573.9	8006.8	0.0	0.0	573.9	8006.8	241.2	3365.9	241.2	3365.9	42.6	594.0	0.0	0.0	42.6	594.0	857.7	11966.7
205-774	22827.8	Offsite - South via Creek	0	22,828	0.25	Silt Loam	0.40	Uncultivated	0.15	0.8	0.8	857.7	19579.4	289.8	6615.9	75.4	1722	933.1	21301.6	567.9	12963.5	0.0	0.0	567.9	12963.5	292.2	6670.5	292.2	6670.5	73.1	1667.6	0.0	0.0	73.1	1667.6	933.1	21301.6
205-779	50.1	Offsite - South via Creek	0	50	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	43.0	301.8	15.1	0.0	0	857.7	43.0	555.9	27.9	0.0	0.0	555.9	27.9	211.3	10.6	211.3	10.6	90.5	4.5	0.0	0.0	90.5	4.5	857.7	43.0
205-780	23.1	Offsite - South via Creek	0	23	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	19.8	301.8	7.0	0.0	0	857.7	19.8	555.9	12.8	0.0	0.0	555.9	12.8	211.3	4.9	211.3	4.9	90.5	2.1	0.0	0.0	90.5	2.1	857.7	19.8
205-781	9.9	Offsite - South via Creek	0	10	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	8.5	301.8	3.0	0.0	0	857.7	8.5	555.9	5.5	0.0	0.0	555.9	5.5	211.3	2.1	211.3	2.1	90.5	0.9	0.0	0.0	90.5	0.9	857.7	8.5
205-94	351.3	Offsite - South via Creek	0	351	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	301.3	301.8	106.0	0.0	0	857.7	301.3	555.9	195.3	0.0	0.0	555.9	195.3	211.3	74.2	211.3	74.2	90.5	31.8	0.0	0.0	90.5	31.8	857.7	301.3
205-95	143.5	Offsite - South via Creek	144	0	0.25	Silt Loam	0.40	Building	0	0.65	0	857.7	123.1	771.9	110.8	0.0	0	857.7	123.1	0.0	0.0	85.8	12.3	85.8	12.3	0.0	0.0	0.0	0.0	0.0	0.0	771.9	110.8	771.9	110.8	857.7	123.1
205-98	211.3	Offsite - South via Creek	0	211	0.25	Silt Loam	0.40	Uncultivated	0.15	0.8	0.8	857.7	181.3	289.8	61.3	0.0	0	857.7	181.3	567.9	120.0	0.0	0.0	567.9	120.0	231.9	49.0	231.9	49.0	58.0	12.3	0.0	0.0	58.0	12.3	857.7	181.3
CATCHMENT 205 TOTAL	**45,725**		**1,005**	**44,720**								**858**	**39,219**	**299.5**	**13,697**	**38**	**1722**	**895**	**40,941**	**556**	**25,436**	**2**	**86**	**558**	**25,522**	**258**	**11,791**	**258**	**11,791**	**62**	**2,852**	**17**	**776**	**79**	**3,628**	**895**	**40,941**
206-10	1.6	Stormtech 3 via RLCB/Storm Sewers	0	2	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	1.4	301.8	0.5	0.0	0	857.7	1.4	555.9	0.9	0.0	0.0	555.9	0.9	211.3	0.3	211.3	0.3	90.5	0.1	0.0	0.0	90.5	0.1	857.7	1.4
206-262	1074.5	Stormtech 3 via RLCB/Storm Sewers	0	1,074	0.25	Silt Loam	0.40	Wooded Area	0.2	0.85	0.85	857.7	921.6	283.8	305.0	0.0	0	857.7	921.6	573.9	616.6	0.0	0.0	573.9	616.6	241.2	259.2	241.2	259.2	42.6	45.7	0.0	0.0	42.6	45.7	857.7	921.6
206-296	1005.0	Stormtech 3 via RLCB/Storm Sewers	0	1,005	0.25	Silt Loam	0.40	Uncultivated	0.15	0.8	0.8	857.7	862.0	289.8	291.3	0.0	0	857.7	862.0	567.9	570.7	0.0	0.0	567.9	570.7	231.9	233.0	231.9	233.0	58.0	58.3	0.0	0.0	58.0	58.3	857.7	862.0
206-297	2102.2	Stormtech 3 via RLCB/Storm Sewers	0	2,102	0.25	Silt Loam	0.40	Uncultivated	0.15	0.8	0.8	857.7	1803.1	289.8	609.3	0.0	0	857.7	1803.1	567.9	1193.8	0.0	0.0	567.9	1193.8	231.9	487.4	231.9	487.4	58.0	121.9	0.0	0.0	58.0	121.9	857.7	1803.1
206-298	12.9	Stormtech 3 via RLCB/Storm Sewers	13	0	0.25	Silt Loam	0.40	Wooded Area	0.2	0.85	0.85	857.7	11.1	283.8	3.7	0.0	0	857.7	11.1	573.9	7.4	0.0	0.0	573.9	7.4	241.2	3.1	241.2	3.1	42.6	0.6	0.0	0.0	42.6	0.6	857.7	11.1
206-325	551.5	Stormtech 3 via RLCB/Storm Sewers	0	552	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	473.1	301.8	166.5	0.0	0	857.7	473.1	555.9	306.6	0.0	0.0	555.9	306.6	211.3	116.5	211.3	116.5	90.5	49.9	0.0	0.0	90.5	49.9	857.7	473.1
206-333	1200.1	Stormtech 3 via RLCB/Storm Sewers	0	1,200	0.25	Silt Loam	0.40	Uncultivated	0.15	0.8	0.8	857.7	1029.4	289.8	347.8	0.0	0	857.7	1029.4	567.9	681.5	0.0	0.0	567.9	681.5	231.9	278.3	231.9	278.3	58.0	69.6	0.0	0.0	58.0	69.6	857.7	1029.4
206-334	31.8	Stormtech 3 via RLCB/Storm Sewers	0	32	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	27.3	301.8	9.6	0.0	0	857.7	27.3	555.9	17.7	0.0	0.0	555.9	17.7	211.3	6.7	211.3	6.7	90.5	2.9	0.0	0.0	90.5	2.9	857.7	27.3
206-769	2900.3	Stormtech 3 via RLCB/Storm Sewers	0	2,900	0.25	Silt Loam	0.40	Cultivated	0.1	0.75	0.75	857.7	2487.6	292.8	849.3	0.0	0	857.7	2487.6	564.9	1638.3	0.0	0.0	564.9	1638.3	219.6	637.0	219.6	637.0	73.2	212.3	0.0	0.0	73.2	212.3	857.7	2487.6
206-770	881.7	Stormtech 3 via RLCB/Storm Sewers	0	882	0.25	Silt Loam	0.40	Cultivated	0.1	0.75	0.75	857.7	756.2	292.8	258.2	0.0	0	857.7	756.2	564.9	498.0	0.0	0.0	564.9	498.0	219.6	193.6	219.6	193.6	73.2	64.5	0.0	0.0	73.2	64.5	857.7	756.2
206-771	841.0	Stormtech 3 via RLCB/Storm Sewers	0	841	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	721.3	301.8	253.8	0.0	0	857.7	721.3	555.9	467.5	0.0	0.0	555.9	467.5	211.3	177.7	211.3	177.7	90.5	76.2	0.0	0.0	90.5	76.2	857.7	721.3
206-772	100.9	Stormtech 3 via RLCB/Storm Sewers	0	101	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	86.5	301.8	30.4	0.0	0	857.7	86.5	555.9	56.1	0.0	0.0	555.9	56.1	211.3	21.3	211.3	21.3	90.5	9.1	0.0	0.0	90.5	9.1	857.7	86.5
206-773	359.3	Stormtech 3 via RLCB/Storm Sewers	0	359	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	308.2	301.8	108.5	0.0	0	857.7	308.2	555.9	199.7	0.0	0.0	555.9	199.7	211.3	75.9	211.3	75.9	90.5	32.5	0.0	0.0	90.5	32.5	857.7	308.2
206-9	3512.6	Stormtech 3 via RLCB/Storm Sewers	0	3,513	0.25	Silt Loam	0.40	Wooded Area	0.2	0.85	0.85	857.7	3012.7	283.8	996.9	0.0	0	857.7	3012.7	573.9	2015.8	0.0	0.0	573.9	2015.8	241.2	847.4	241.2	847.4	42.6	149.5	0.0	0.0	42.6	149.5	857.7	3012.7
CATCHMENT 206 TOTAL	**14,576**		**0**	**14,576**								**858**	**12,502**	**290.3**	**4,231**	**0**	**0**	**858**	**12,502**	**567**	**8,271**	**0**	**0**	**567**	**8,271**	**229**	**3,338**	**229**	**3,338**	**61**	**893**	**0**	**0**	**61**	**893**	**858**	**12,502**
207-263	1329.6	Stormtech 4 via RLCB/Storm Sewers	0	1,330	0.25	Silt Loam	0.40	Wooded Area	0.2	0.85	0.85	857.7	1140.4	283.8	377.4	0.0	0	857.7	1140.4	573.9	763.0	0.0	0.0	573.9	763.0	241.2	320.8	241.2	320.8	42.6	56.6	0.0	0.0	42.6	56.6	857.7	1140.4
207-335	37520.5	Stormtech 4 via RLCB/Storm Sewers	0	37,521	0.25	Silt Loam	0.40	Cultivated	0.1	0.75	0.75	857.7	32181.3	292.8	10986.7	0.0	0	857.7	32181.3	564.9	21194.6	0.0	0.0	564.9

TABLE I-1 POST-DEVELOPMENT WATER BUDGET

HYDROGEOLOGICAL ASSESSMENT AND WATER BALANCE STUDY
5426, 5452, 5584 Lakeshore Road, Ballantrae
Town of Whitchurch-Stouffville, Ontario

ANNUAL PRECIPITATION	EVAPORATION AND EVAPOTRANSPIRATION FACTORS			
	Impervious Areas		Ponds	
mm	%	mm	%	mm
858	10%	86	75%	646

On-site Subcatchments	Area (m^2)	Outlet	Total Impervious (m^2)	Total Pervious (m^2)	Infiltration Factor Components*			MOE Infiltration Factor	Adjusted Infiltration Factor	Inputs						Outputs															
										Precipitation				Run-on		Total Inputs		Evapotranspiration						Infiltration				Runoff				Total Outputs	
										Annual Average		Surplus						Pervious		Impervious		Total Evapotranspiration		Pervious Areas		Total Infiltration		Pervious		Total Impervious		Total Runoff			
					Topography	Soil	Cover			(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)
Total Buildings	**42,570**		**42,570**	**0**						**858**	**36,512**	**771.9**	**32,861**	**0.0**	**0**	**857.7**	**36,512**	**0.0**	**0**	**85.8**	**3,651**	**85.8**	**3,651**	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**	**771.9**	**32,861**	**771.9**	**32,861**	**857.7**	**36,512**
Paved Areas	**23,311**		**23,311**	**0**						**858**	**19,994**	**771.9**	**17,995**	**0.0**	**0**	**857.7**	**19,994**	**0.0**	**0**	**85.8**	**1,999**	**85.8**	**1,999**	**0.0**	**0**	**0.0**	**0**	**0.0**	**0**	**771.9**	**17,995**	**771.9**	**17,995**	**857.7**	**19,994**
Pervious Areas	**203,258**		**0**	**203,258**						**858**	**174,335**	**292.0**	**59,350**	**12.2**	**2,482**	**869.9**	**176,816**	**565.7**	**114,984**	**0.0**	**0**	**565.7**	**114,984**	**231.6**	**47,067**	**231.6**	**47,067**	**72.6**	**14,766**	**0.0**	**0**	**72.6**	**14,766**	**869.9**	**176,816**

Off-site Subcatchments	Area (m^2)	Outlet	Total Impervious (m^2)	Total Pervious (m^2)	Infiltration Factor Components*					MOE Infiltration Factor	Adjusted Infiltration Factor	Inputs						Outputs															
												Precipitation				Run-on		Total Inputs		Evapotranspiration						Infiltration				Runoff				Total Outputs	
												Annual Average		Surplus						Pervious		Impervious		Total		Pervious Areas		Total Infiltration		Pervious		Total Impervious		Total Runoff			
					Topography	Soil		Cover				(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)	(mm/yr)	(m^3/yr)
210-729	2636.5	On site Catchment 113	0	2,637	0.25	Silt Loam	0.40	Lawns	0.05	0.7	0.7	857.7	2261.3	301.8	795.8	0.0	0.0	857.7	2261.3	555.9	1465.6	0.0	0.0	555.9	1465.6	211.3	557.0	211.3	557.0	90.5	238.7	0.0	0.0	90.5	238.7	857.7	2261.3
CATCHMENT 210 TOTAL	**2,637**		**0**	**2,637**								**858**	**2,261**	**301.8**	**796**	**0**	**0**	**858**	**2,261**	**556**	**1,466**	**0**	**0**	**556**	**1,466**	**211**	**557**	**211**	**557**	**91**	**239**	**0**	**0**	**91**	**239**	**858**	**2,261**
211-260	22654.9	On-site to Catchment 774	0	22,655	0.25	Silt Loam	0.40	Cultivated	0.1	0.75	0.75	857.7	19431.1	292.8	6633.8	0.0	0.0	857.7	19431.1	564.9	12797.3	0.0	0.0	564.9	12797.3	219.6	4975.4	219.6	4975.4	73.2	1658.5	0.0	0.0	73.2	1658.5	857.7	19431.1
211-7	1496.6	On-site to Catchment 774	0	1,497	0.25	Silt Loam	0.40	Wooded Area	0.2	0.85	0.85	857.7	1283.6	283.8	424.8	0.0	0.0	857.7	1283.6	573.9	858.9	0.0	0.0	573.9	858.9	241.2	361.1	241.2	361.1	42.6	63.7	0.0	0.0	42.6	63.7	857.7	1283.6
CATCHMENT 211 TOTAL	**24,152**		**0**	**24,152**								**858**	**20,715**	**292**	**7,059**	**0**	**0**	**858**	**20,715**	**565**	**13,656**	**0**	**0**	**565**	**13,656**	**221**	**5,336**	**221**	**5,336**	**71**	**1,722**	**0**	**0**	**71**	**1,722**	**858**	**20,715**
214-1	7116.8	On site Catchment 800	0	7,117	0.25	Silt Loam	0.40	Cultivated	0.1	0.75	0.75	857.7	6104.1	292.8	2083.9	0.0	0.0	857.7	6104.1	564.9	4020.2	0.0	0.0	564.9	4020.2	219.6	1563.0	219.6	1563.0	73.2	521.0	0.0	0.0	73.2	521.0	857.7	6104.1
CATCHMENT 214 TOTAL	**7,117**		**0**	**7,117**								**858**	**6,104**	**293**	**2,084**	**0**	**0**	**858**	**6,104**	**565**	**4,020**	**0**	**0**	**565**	**4,020**	**220**	**1,563**	**220**	**1,563**	**73**	**521**	**0**	**0**	**73**	**521**	**858**	**6,104**
External Areas Total	**33,905**		**0**	**33,905**								**858**	**29,080**	**293**	**9,938**	**0**	**0**	**858**	**29,080**	**565**	**19,142**	**0**	**0**	**565**	**19,142**	**220**	**7,456**	**220**	**7,456**	**73**	**2,482**	**0**	**0**	**73**	**2,482**	**858**	**29,080**

NOTES:
1) Subcatchment areas were delineated using the development plans provided by WSP.
2) *** Infiltration factors components are based land use information provided through Ontario Base Mapping.

APPENDIX B

MUNICIPAL DESIGN SHEETS

PROJECT TITLE:	Ballantrae Lands
PROJECT No.:	13:286
CLIENT:	Farsight Developments Ltd.
ISSUED FOR:	Functional Servicing Report (Dec 2018)

SANITARY SEWER DESIGN SHEET
TOWN OF WHITCHURCH-STOUFFVILLE - REGION OF YORK

ENGINEER'S SEAL

PREPARED BY:

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

NOTES, STANDARDS AND DESIGN INPUT PARAMETERS

Densities (persons/unit):

Single Family, Semi-Detached Residential	3.7
Townhouse, Multi-Family Residential	3.4
High Density Residential	3.0
Other	3.0

Harmon Peaking Factor:
Maximum: 4
Minimum: 1.5
Formula: $K_H = 1 + \frac{14}{4 + P^{1/2}}$
where; K_H = Harmon Peaking Factor
P = Population in Thousands

Design Flows:

Residential Flow	450 L/person/day
Infiltration Flow	19.872 m^3/ha/day (0.23L/s/ha)
Commercial Flow	22.464 m^3/ha/day (0.26L/s/ha)
Floor Space Index	1 of gross lot area
Institutional Flow	22.464 m^3/ha/day (0.26L/s/ha)

Note: PVC pipe is manufactured in metric dimensions, therefore, the pipe diameter stated is used to calculate capacity and velocity. However, since concrete pipe is manufactured in imperial dimensions, standard imperial equivalent sizes for the diameter stated have been used to calculate capacity and velocity.

Infiltration Flow Applied to: Total Area

				RESIDENTIAL											COMMERCIAL				INSTITUTIONAL			INDUSTRIAL			EXTERNAL FLOWS		TOTAL AREA		INFILTRATION			PIPE DESIGN								
PROPERTY	**STREET**	**Upstream Manhole**	**Downstream Manhole**	**Section Area (ha)**	**Cummulative Area (ha)**	**Single Family, Semi-Detached Units**	**Townhouse Units**	**High Density Units**	**Other (specified above) Units**	**Unplanned Land (ha)**	**Section Population**	**Cummulative Population (thousands)**	**Harmon Peaking Factor**	**Residential Flow (L/s)**	**Section Area (ha)**	**Gross Floor Area (ha)**	**Cummulative Gross Floor Area (ha)**	**Commercial Flow (L/s)**	**Section Area (ha)**	**Cummulative Area (ha)**	**Institutional Flow (L/s)**	**Section Area (ha)**	**Cummulative Area (ha)**	**Industrial Flow (L/s)**	**Total External Flow (L/s)**	**Cummulative External Flow (L/s)**	**Total Section Area (ha)**	**Total Cummulative Area (ha)**	**Applicable Area (ha) (see above)**	**Infiltration Flow (L/s)**	**Total Design Flow (L/s)**	**Type**	**Pipe (mm)**	**Grade (%)**	**Capacity (l/s)**	**Length (m)**	**Velocity (m/s)**	**Down-stream Velocity (m/s)**	**Change in Velocity (m/s)**	**Capacity (%)**
Farsight Homes	Street C	100A	101A	**0.72**	0.72	**10**					37	0.037	4.00	**0.77**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.72	0.72	0.72	**0.17**	**0.94**	PVC	**200**	**1.00**	32.80	**71.5**	1.04	0.74	0.31	3%
Farsight Homes	Street C	101A	102A	**0.33**	1.05	**5**					19	0.056	4.00	**1.17**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.33	1.05	1.05	**0.24**	**1.41**	PVC	**200**	**0.50**	23.19	**70.6**	0.74	0.74	0.00	6%
Farsight Homes	Street C	102A	103A	**0.36**	1.41	**6**					23	0.079	4.00	**1.65**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.36	1.41	1.41	**0.32**	**1.97**	PVC	**200**	**0.50**	23.19	**61.1**	0.74	0.74	0.00	8%
Farsight Homes	Street C	103A	104A	**0.17**	1.58	**3**					12	0.091	4.00	**1.90**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.17	1.58	1.58	**0.36**	**2.26**	PVC	**200**	**0.50**	23.19	**29.2**	0.74	0.74	0.00	10%
Farsight Homes	Street C	104A	106A	**0.12**	1.70	**2**					8	0.099	4.00	**2.06**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.12	1.70	1.70	**0.39**	**2.45**	PVC	**200**	**0.50**	23.19	**23.1**	0.74	0.74	0.00	11%
Farsight Homes	Street C	105A	106A	**0.33**	0.33	**6**					23	0.023	4.00	**0.48**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.33	0.33	0.33	**0.08**	**0.56**	PVC	**200**	**1.00**	32.80	**46.7**	1.04	0.74	0.31	2%
Farsight Homes	Street B	106A	107A	**0.14**	2.17	**2**					8	0.130	4.00	**2.71**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.14	2.17	2.17	**0.50**	**3.21**	PVC	**200**	**0.50**	23.19	**23.7**	0.74	0.74	0.00	14%
Farsight Homes	Street B	107A	108A	**0.21**	2.38	**3**					12	0.142	4.00	**2.96**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.21	2.38	2.38	**0.55**	**3.51**	PVC	**200**	**0.50**	23.19	**55.9**	0.74	0.74	0.00	15%
Farsight Homes	Street C	109A	108A	**0.43**	0.43	**7**					26	0.026	4.00	**0.54**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.43	0.43	0.43	**0.10**	**0.64**	PVC	**200**	**1.00**	32.80	**47.7**	1.04	0.74	0.31	2%
Farsight Homes	Street B	108A	110A	**0.07**	2.88	**1**					4	0.172	4.00	**3.58**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.07	2.88	2.88	**0.66**	**4.25**	PVC	**200**	**0.50**	23.19	**10.30**	0.74	0.74	0.00	18%
Farsight Homes	Street B	110A	111A	**0.18**	3.06	**2**					8	0.180	4.00	**3.75**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.18	3.06	3.06	**0.70**	**4.45**	PVC	**200**	**0.50**	23.19	**39.60**	0.74	0.74	0.00	19%
Farsight Homes	Street B	111A	113A	**0.21**	3.27	**2**					8	0.188	4.00	**3.92**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.21	3.27	3.27	**0.75**	**4.67**	PVC	**200**	**0.50**	23.19	**30.40**	0.74	0.74	0.00	20%
Farsight Homes	Street A	112A	113A	**0.61**	0.61	**8**					30	0.030	4.00	**0.63**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.61	0.61	0.61	**0.14**	**0.77**	PVC	**200**	**1.00**	32.80	**78.0**	1.04	0.74	0.31	2%
Farsight Homes	Street B	113A	114A	**0.06**	3.94	**0**					0	0.218	4.00	**4.54**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.06	3.94	3.94	**0.91**	**5.45**	PVC	**200**	**0.50**	23.19	**61.1**	0.74	0.74	0.00	23%
Farsight Homes	Street B	114A	115A	**0.02**	3.96	**0**					0	0.218	4.00	**4.54**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.02	3.96	3.96	**0.91**	**5.45**	PVC	**200**	**0.50**	23.19	**14.1**	0.74	0.74	0.00	24%
Farsight Homes	Street B	115A	118A	**0.08**	4.04	**1**					4	0.222	4.00	**4.63**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.08	4.04	4.04	**0.93**	**5.55**	PVC	**200**	**0.50**	23.19	**13.9**	0.74	0.74	0.00	24%
Farsight Homes	Street B	116A	117A	**0.16**	0.16	**2**					8	0.008	4.00	**0.17**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.16	0.16	0.16	**0.04**	**0.20**	PVC	**200**	**1.00**	32.80	**10.0**	1.04	0.74	0.31	1%
Farsight Homes	Street B	117A	118A	**0.36**	0.52	**6**					23	0.031	4.00	**0.65**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.36	0.52	0.52	**0.12**	**0.77**	PVC	**200**	**0.50**	23.19	**44.8**	0.74	0.74	0.00	3%
Farsight Homes	Block 146	118A	119A	**0.02**	4.58	**0**					0	0.253	4.00	**5.27**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.02	4.58	4.58	**1.05**	**6.32**	PVC	**200**	**0.50**	23.19	**39.9**	0.74	0.74	0.00	27%
Farsight Homes	Street D	1A	2A	**0.51**	0.51	**6**					23	0.023	4.00	**0.48**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.51	0.51	0.51	**0.12**	**0.60**	PVC	**200**	**1.00**	32.80	**59.3**	1.04	0.74	0.31	2%
Farsight Homes	Street D	2A	3A	**0.10**	0.61	**1**					4	0.027	4.00	**0.56**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.10	0.61	0.61	**0.14**	**0.70**	PVC	**200**	**0.50**	23.19	**12.0**	0.74	0.00	0.74	3%
Farsight Homes	Street D	3A	4A	**0.09**	0.70	**1**					4	0.031	4.00	**0.65**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.09	0.70	0.70	**0.16**	**0.81**	PVC	**200**	**0.50**	23.19	**12.1**	0.74	0.74	0.00	3%
Farsight Homes	Street D	4A	5A	**0.77**	1.47	**13**					49	0.080	4.00	**1.67**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.77	1.47	1.47	**0.34**	**2.00**	PVC	**200**	**0.50**	23.19	**100.2**	0.74	0.74	0.00	9%
Farsight Homes	Street D	5A	7A	**0.71**	2.18	**12**					45	0.125	4.00	**2.60**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.71	2.18	2.18	**0.50**	**3.11**	PVC	**200**	**0.50**	23.19	**97.0**	0.74	0.74	0.00	13%
Farsight Homes	Street A	6A	7A	**0.13**	0.13	**2**					8	0.008	4.00	**0.17**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.13	0.13	0.13	**0.03**	**0.20**	PVC	**200**	**1.00**	32.80	**29.6**	1.04	0.74	0.31	1%
Farsight Homes	Street A	7A	9A	**0.27**	2.58	**4**					15	0.148	4.00	**3.08**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.27	2.58	2.58	**0.59**	**3.68**	PVC	**200**	**0.50**	23.19	**75.0**	0.74	0.74	0.00	16%
Farsight Homes	Street E	1A	8A	**0.75**	0.75	**13**					49	0.049	4.00	**1.02**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.75	0.75	0.75	**0.17**	**1.19**	PVC	**200**	**1.00**	32.80	**105.0**	1.04	0.74	0.31	4%
Farsight Homes	Street E	8A	9A	**0.80**	1.55	**14**					52	0.101	4.00	**2.10**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.80	1.55	1.55	**0.36**	**2.46**	PVC	**200**	**0.50**	23.19	**108.0**	0.74	0.74	0.00	11%
Farsight Homes	Street E	9A	10A	**0.48**	4.61	**8**					30	0.279	4.00	**5.81**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.48	4.61	4.61	**1.06**	**6.87**	PVC	**200**	**0.50**	23.19	**82.0**	0.74	0.74	0.00	30%
Farsight Homes	Street E	10A	11A	**0.16**	4.77	**2**					8	0.287	4.00	**5.98**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.16	4.77	4.77	**1.10**	**7.08**	PVC	**200**	**0.50**	23.19	**21.0**	0.74	0.74	0.00	31%
Farsight Homes	Block 146	11A	119A	**0.04**	4.81	**0**					0	0.287	4.00	**5.98**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.04	4.81	4.81	**1.11**	**7.09**	PVC	**200**	**0.50**	23.19	**85.0**	0.74	0.74	0.00	31%
Farsight Homes	Block 146	119A	PSMH 120A	**0.02**	9.41	0					0	0.540	3.96	**11.13**		0.00	0.00	**0.00**		0.00	**0.00**		0.00	**0.00**		**0.00**	0.02	9.41	9.41	**2.16**	**13.29**	PVC	**200**	**0.50**	23.19	**15.0**	0.74	N/A		57%

PROJECT TITLE:	Ballantrae Lands
PROJECT No.:	13:286
CLIENT:	Farsight Developments Ltd.
ISSUED FOR:	Functional Servcing Report (Dec 2018)

STORM WATER DESIGN SHEET
5 - YEAR STORM
TOWN OF WHITCHURCH-STOUFFVILLE - REGION OF YORK

ENGINEER'S SEAL

PREPARED BY:

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

NOTES, STANDARDS AND DESIGN INPUT PARAMETERS

Captured Overland Flow = Q(100yr) - Q(5yr)
Inlet Time (mins): 10.00
Run-off Coefficients:

Park/Open Space	0.25
Single Family	0.70
Townhousing	0.70
Institutional	0.75
Commercial/Asphalt	0.90
Other (if applicable)	

IDF Parameters:

Storm:	A	B	C
5 - Year	30.40	0	0.744
25 - Year	42.30	0	0.757
100 - Year	52.00	0	0.763

Formula: $I_{YR} = \frac{A}{(t + B)^C}$

where; I= Intensity (mm/hr)
t= Time of Concentration (hours)

Note: PVC pipe is manufactured in metric dimensions, therefore, the pipe diameter stated is used to calculate capacity and velocity. However, since concrete pipe is manufactured in imperial dimensions, standard imperial equivalent sizes for the diameter stated have been used to calculate capacity and velocity.

PROPERTY	STREET	Upstream Manhole	Downstream Manhole	A Park/ Open Space (ha)	A Single Family Res. (ha)	A Multi-Family Res. (ha)	A Institutional (ha)	A Commercial / Asphalt (ha)	A Other - Specified Above (ha)	A x R This Section (ha)	Acc. AR (ha)	t (min)	I (5yr) (mm/hr)	Q (5yr) (l/s)	I (25yr) (mm/hr)	Q (25yr) (l/s)	I (100yr) (mm/hr)	Q (100yr) (l/s)	Q(design) (l/s)	Type	Pipe (mm)	Grade (%)	Capacity (l/s)	Length (m)	Velocity (m/s)	Down-stream Velocity (m/s)	Change in Velocity (m/s)	Time (min)	Total Time (min)	Downstream Invert	Upstream Invert	Capacity (%)
EAST OF BRIDGE																															
North Facility																															
Ballantrae	Street D	4	9		0.13					0.091	0.091	**10.00**	115.30	29.14	164.21	41.51	204.05	51.58	29.14	PVC	**300**	**1.00**	96.70	**58.1**	1.37	1.12	0.25	0.71	10.71	331.45	332.03	30%
Ballantrae	Street D	9	10		0.02					0.014	0.105	10.71	109.58	31.96	155.93	45.48	193.67	56.49	31.96	PVC	**375**	**0.50**	123.98	**12.9**	1.12	1.28	0.16	0.19	10.90	331.31	331.37	26%
Ballantrae	Street D	10	11		0.02					0.014	0.119	10.90	108.14	35.75	153.85	50.86	191.07	63.16	35.75	CONC	**450**	**0.50**	210.32	**13.0**	1.28	1.28	0.00	0.17	11.07	331.16	331.23	17%
Ballantrae	Street D	11	12		0.55					0.385	0.504	11.07	106.91	149.67	152.06	212.89	188.84	264.38	149.67	CONC	**450**	**0.50**	210.32	**55.5**	1.28	1.27	0.01	0.72	11.79	330.83	331.11	71%
Ballantrae	Street D	1	12		0.20					0.140	0.140	**10.00**	115.30	44.84	164.21	63.86	204.05	79.35	44.84	PVC	**300**	**1.00**	96.70	**35.6**	1.37	1.27	0.10	0.43	10.43	330.98	331.34	46%
Ballantrae	StreetD	12	Stormtech 3		0.00					0.000	0.644	11.79	102.00	182.47	144.96	259.32	179.95	321.91	182.47	CONC	**525**	**0.40**	283.76	**4.5**	1.27	N/A		0.06	11.85	330.73	330.75	64%
South Facility																															
Ballantrae	Street E	1	2		0.66					0.462	0.462	**10.00**	115.30	147.97	164.21	210.74	204.05	261.86	147.97	CONC	**450**	**0.70**	248.85	**105.0**	1.52	1.42	0.10	1.15	11.15	330.79	331.53	59%
Ballantrae	Street E	3	2					0.13		0.117	0.117	**10.00**	115.30	37.47	164.21	53.37	204.05	66.32	37.47	PVC	**300**	**1.00**	96.70	**28.2**	1.37	1.42	0.05	0.34	10.34	330.94	331.22	39%
Ballantrae	Street E	4	5		0.13					0.091	0.091	**10.00**	115.30	29.14	164.21	41.51	204.05	51.58	29.14	PVC	**300**	**1.00**	96.70	**43.0**	1.37	1.15	0.22	0.52	10.52	331.25	331.68	30%
West External		Ext	6	0.03						0.008	0.008																				
Ballantrae	Street E	5	6		0.34					0.238	0.329	10.52	111.00	101.44	157.98	144.38	196.25	179.35	101.44	CONC	**450**	**0.40**	188.11	**74.0**	1.15	1.50	0.36	1.08	11.60	330.85	331.15	54%
West External		Ext	7	1.16						0.290	0.290																				
Ballantrae	Street E	6	7		0.48					0.336	0.673	**11.60**	103.24	192.87	146.76	274.16	182.20	340.36	192.87	CONC	**675**	**0.40**	554.62	**96.0**	1.50	1.61	0.11	1.07	12.67	330.24	330.62	35%
Ballantrae	Street E	2	7		0.17					0.119	0.698	11.15	106.30	206.10	151.18	293.11	187.73	363.99	206.10	CONC	**525**	**0.50**	317.25	**75.0**	1.42	1.61	0.19	0.88	12.03	330.39	330.77	65%
West External		Ext	8	0.30						0.075	0.075																				
Ballantrae	Street E	7	8		0.47					0.329	1.990	**12.67**	96.68	534.31	137.28	758.65	170.34	941.37	534.31	CONC	**750**	**0.40**	734.54	**80.5**	1.61	1.61	0.00	0.83	13.50	329.84	330.16	73%
Ballantrae	Easement	8	Stormtech 4		0.17					0.119	2.184	**13.50**	92.23	559.38	130.84	793.58	162.29	984.33	559.38	CONC	**750**	**0.40**	734.54	**5.9**	1.61	N/A		0.06	13.56	329.73	329.75	76%

PROJECT TITLE:	Ballantrae Lands
PROJECT No.:	13:286
CLIENT:	Farsight Developments Ltd.
ISSUED FOR:	Functional Servcing Report (Dec 2018)

STORM WATER DESIGN SHEET
5 - YEAR STORM
TOWN OF WHITCHURCH-STOUFFVILLE - REGION OF YORK

ENGINEER'S SEAL

PREPARED BY:

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

NOTES, STANDARDS AND DESIGN INPUT PARAMETERS

Captured Overland Flow = Q(100yr) - Q(5yr)
Inlet Time (mins): 10.00

Run-off Coefficients:

Park/Open Space	0.25
Single Family	0.70
Townhousing	0.70
Institutional	0.75
Commercial/Asphalt	0.90
Other (if applicable)	

IDF Parameters:

Storm:	A	B	C
5 - Year	30.40	0	0.744
25 - Year	42.30	0	0.757
100 - Year	52.00	0	0.763

Formula: $I_{YR} = \frac{A}{(t + B)^C}$

where; I= Intensity (mm/hr)
t= Time of Concentration (hours)

Note: PVC pipe is manufactured in metric dimensions, therefore, the pipe diameter stated is used to calculate capacity and velocity. However, since concrete pipe is manufactured in imperial dimensions, standard imperial equivalent sizes for the diameter stated have been used to calculate capacity and velocity.

PROPERTY	STREET	Upstream Manhole	Downstream Manhole	A Park/ Open Space (ha)	A Single Family Res. (ha)	A Multi-Family Res. (ha)	A Institutional (ha)	A Commercial / Asphalt (ha)	A Other - Specified Above (ha)	A x R This Section (ha)	Acc. AR (ha)	t (min)	I (5yr) (mm/hr)	Q (5yr) (l/s)	I (25yr) (mm/hr)	Q (25yr) (l/s)	I (100yr) (mm/hr)	Q (100yr) (l/s)	Q(design) (l/s)	Type	Pipe (mm)	Grade (%)	Capacity (l/s)	Length (m)	Velocity (m/s)	Down-stream Velocity (m/s)	Change in Velocity (m/s)	Time (min)	Total Time (min)	Downstream Invert	Upstream Invert	Capacity (%)
WEST OF BRIDGE																															
South Facility																															
Ballantrae	Street B	101	102		0.11					0.077	0.077	**10.00**	115.30	24.66	164.21	35.12	204.05	43.64	24.66	PVC	**300**	**1.00**	96.70	**36.5**	1.37	1.15	0.22	0.44	10.44	331.30	331.67	26%
Ballantrae	Street C	102	103		0.42					0.294	0.371	10.44	111.62	115.04	158.89	163.75	197.39	203.42	115.04	CONC	**450**	**0.40**	188.11	**66.7**	1.15	1.20	0.06	0.97	11.41	330.88	331.15	61%
Sewer between MH 103 & MH 107 is sized for 100-year conveyance																															
Ballantrae	Block 148	103	107		0.10					0.070	0.441	11.41	104.49	128.00	148.56	181.98	184.45	225.96	**225.96**	CONC	**600**	**0.30**	350.85	**77.9**	1.20	1.49	0.28	1.08	12.49	330.43	330.66	64%
Ballantrae	Street B	104	105		0.10					0.070	0.070	**10.00**	115.30	22.42	164.21	31.93	204.05	39.68	22.42	PVC	**300**	**1.00**	96.70	**32.5**	1.37	1.12	0.25	0.40	10.40	331.24	331.57	23%
Ballantrae	Street B	105	106		0.19					0.133	0.203	10.40	112.01	63.16	159.45	89.91	198.09	111.70	63.16	PVC	**375**	**0.50**	123.98	**31.5**	1.12	1.27	0.15	0.47	10.86	331.00	331.16	51%
Ballantrae	Street A	106	107		0.80					0.560	0.763	10.86	108.41	229.76	154.23	326.88	191.55	405.98	229.76	CONC	**525**	**0.40**	283.76	**88.1**	1.27	1.49	0.22	1.16	12.02	330.50	330.85	81%
Sewer between MH 107 & MH 110 is sized for 100-year conveyance																															
Ballantrae	Block 149	107	110		0.08					0.056	1.260	12.49	97.69	341.92	138.73	485.56	172.16	602.55	**602.55**	CONC	**825**	**0.30**	820.22	**75.8**	1.49	1.49	0.00	0.85	13.34	329.97	330.20	73%
Ballantrae	Street B	108	109		0.30					0.210	0.210	**10.00**	115.30	67.26	164.21	95.79	204.05	119.03	67.26	PVC	**300**	**1.50**	118.43	**55.5**	1.68	1.12	0.55	0.55	10.55	330.60	331.43	57%
Ballantrae	Street B	109	110		0.09					0.063	0.273	10.55	110.78	84.01	157.66	119.56	195.85	148.52	84.01	PVC	**375**	**0.50**	123.98	**23.3**	1.12	1.49	0.36	0.35	10.90	330.40	330.52	68%
Sewer from MH 110 to Stormtech 7 is sized for 100-year conveyance																															
Ballantrae	Block 149	110	111		0.00					0.000	1.533	13.34	93.02	396.12	131.99	562.06	163.73	697.21	**697.21**	CONC	**825**	**0.30**	820.22	**65.0**	1.49	1.49	0.00	0.73	14.07	329.75	329.95	85%
Ballantrae	Block 146	111	Stormtech 7		0.00					0.000	1.533	14.07	89.41	380.76	126.78	539.88	157.22	669.49	**669.49**	CONC	**825**	**0.30**	820.22	**8.3**	1.49	N/A		0.09	14.17	329.65	329.67	82%
North Facility																															
Ballantrae	Street B	113	114		0.09					0.063	0.063	**10.00**	115.30	20.18	164.21	28.74	204.05	35.71	20.18	PVC	**300**	**1.00**	96.70	**18.6**	1.37	4.04	2.67	0.23	10.23	332.26	332.45	21%
Sewers between MH 112 to MH 118 are 1800x900 Box Pipes for 100-*yr* storage (See Appendix D for Box Pipe Design Calculations)																															
Ballantrae	Street A	112	114		0.23					0.161	0.161	**10.00**	115.30	51.56	164.21	73.44	204.05	91.26	91.26	CONC	**900**	**0.80**	*6545.23*	**44.0**	4.04	4.04	0.00	0.18	10.18	331.36	331.71	1%
Ballantrae	Street A	114	118		0.39					0.273	0.497	10.23	113.39	156.54	161.45	222.89	200.59	276.93	276.93	CONC	**900**	**0.80**	*6545.23*	**70.0**	4.04	1.28	2.76	0.29	10.52	330.80	331.36	4%
NW External		Ext	116	0.27						0.068	0.068																					
Ballantrae	Street C	115	116		0.60					0.420	0.420	**10.00**	115.30	134.51	164.21	191.58	204.05	238.06	134.51	CONC	**450**	**1.00**	297.43	**71.0**	1.81	2.02	0.21	0.65	10.65	331.93	332.64	45%
Ballantrae	Street C	116	118		0.53					0.371	0.859	**10.65**	110.02	262.37	156.57	373.37	194.48	463.77	463.77	CONC	**900**	**0.20**	*3272.62*	**113.3**	2.02	1.28	0.74	0.93	11.58	330.80	331.03	14%
Note: Pipe between MH 118 to the OGS is designed for control release rate for storage. Please refer to Stormwater Management Calculations for details.																															
Ballantrae	Street C	118	OGS		0.00					0.000	1.356	10.52	111.07	418.20	158.08	595.22	196.37	739.40	**0.631**	CONC	**450**	**0.50**	210.32	**5.5**	1.28	N/A		0.07	10.59	330.72	330.75	

APPENDIX C

STORMWATER MANAGEMENT DESIGN CALCULATIONS

13:286
FarSight Homes Lakeshore Road
Infiltration Gallery Sizing

LID Contributing Area

Lot Type	75%	100% + ROW	25% + ROW	Surface Drain	Impervious Lot	Road	Impervious Area
Area (m^2)	214	332	118	388	m^2	m^2	m^2
LID 1	13				2785		2785
LID 2	24				5141		5141
LID 3		13	6		5025	1516	6541
LID 4		11	43	2	9500	4819	14319
LID 5	8				1714		1714
LID 6	4				857		857
LID 7		7	21	4	6354	5268	11622
LID 8	6				1285		1285
LID 9	8				1714		1714
LID 10	5				1071		1071
LID 11	6				1285		1285

Impervious lot area is calculated as the product of the number of each lot type draining to the LID and the area of the roof and driveway contributing to the LID
Only LIDs 3, 4, and 7 will treat road runoff.

LID Storage Calculation

	Percolation Rate	Impervious Area	25mm Volume	Trench Depth	Drawdown Time	Width	Length	Contact Area Designed	Rainfall Depth	Storage Volume
	mm/hr	m^2	m^3	m	hr	m	m	m^2	mm	m^3
LID 1	40	2785	70	1.25	31	1	226	226	41	113
LID 2	40	5141	129	1.25	31	2	182	364	35	182
LID 3	40	6541	164	0.96	24	18	30	544	32	209
LID 4	40	14319	358	0.33	13	20	100	1992	18	263
LID 5	40	1714	43	0.96	24	1	115	115	26	44
LID 6	16	857	21	0.38	24	1	65	65	12	10
LID 7	16	11622	291	0.38	24	50	38	1920	25	292
LID 8	16	1285	32	0.77	48	2	55	110	26	34
LID 9	16	1714	43	0.77	48	2	70	140	25	43
LID 10	16	1071	27	0.55	34	2	85	170	35	37
LID 11	16	1285	32	0.45	28	1	110	110	15	20
									Total	**1528**

From equation 4.2 and 4.3 in MOE 2003 SWM Design Manual:

25mm Volume = Impervious Area (m^2) * 25mm

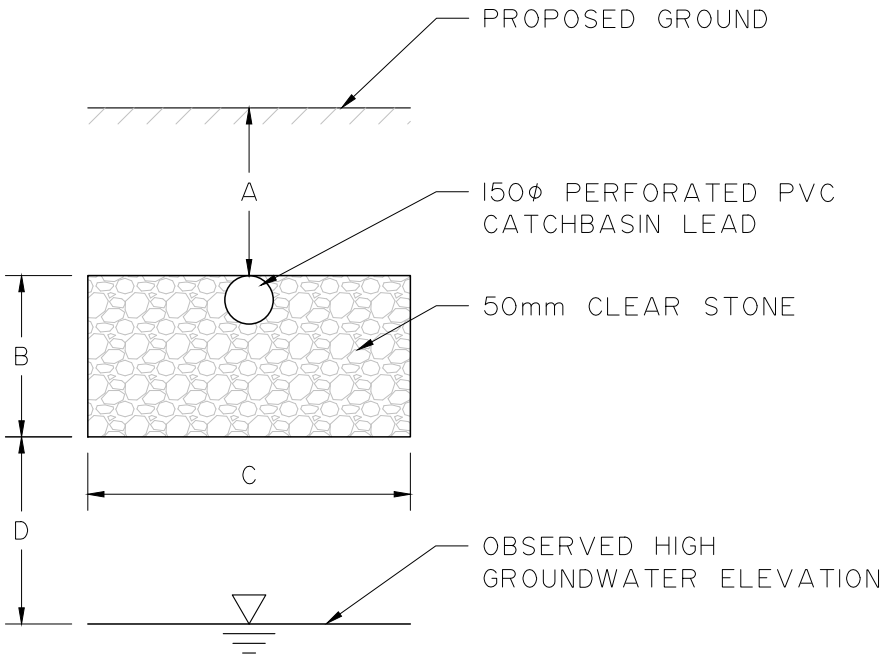
$$T = \frac{1000*d}{P}$$ Drawdown time (hr)

Where d = Trench Depth (m)
P = Percolation Rate (mm/hr)

$$\text{Rainfall Depth} = \frac{1000*V}{A}$$ Depth treated over impervious contributing area (mm)

$$V = \frac{APnT}{1000}$$ Storage Volume (m^3)

Where A = Contact Area Designed (m^2)
n = Average stone porosity (0.4)



REAR YARD INFILTRATION GALLERY

SCALE: NTS

	MINIMUM COVER	DEPTH	WIDTH	MINIMUM GROUNDWATER CLEARANCE
	A	B	C	D
LID 1	1.2	1.25	1	0.40
LID 2	1.5	1.25	2	2.02
LID 5	1.2	0.96	1	0.78
LID 6	1.5	0.38	1	1.42
LID 8	1.5	0.77	2	1.08
LID 9	1.5	0.77	2	1.20
LID 10	1.5	0.55	2	2.73
LID 11	1.5	0.45	1	0.44
LID 3	1.3	0.96	-	0.62
LID 4	2.4	0.33	-	0.60
LID 7	2.4	0.38	-	0.59

DIMENSIONS IN METRES

13:286

FarSight Homes Lakeshore Road

Hydrogeologic Investigation Summary

Test Pit Results

Test Pit	Depth	Infiltration Rates	Conservative Infiltration Rates by Unit	Rate with 2.5x Factor of Safety
		mm/hr	mm/hr	mm/hr
TP16-1	(1m)	118	100	40
TP16-1	(2m)	100		
TP16-2	(1m)	124		
TP16-2	(2m)	128		
TP16-3	(1m)	48	40	16
TP16-3	(2m)	58		
TP16-4	(1m)	40		
TP16-4	(2m)	40		

Groundwater Observation Wells - April 2017

	Grade	Depth	GW Elevation
	m	m	m
OW-1	328.88	0.20	328.68
OW-2	331.40	2.61	328.79
OW-3	330.10	0.89	329.21
OW-4	331.39	2.74	328.65
OW-5	334.14	2.03	332.11
OW-6	333.19	1.51	331.68

13 286
Far Sight Lands
Storage Discharge Curve Delineation 201

Elevation (masl)	Head on Orifice 1 (m)	Head on Orifice 2 (m)	Head on Overflow (m)	Storage Pipe Volume (m^3)	Total Storage (ham)	Q Orifice 1 (m^3/s)	Q Orifice 2 (m^3/s)	Q Overflow (m^3/s)	Q Total (m^3/s)
330.75	0.00	0.00	0.00	0.00	0.0000	0.000	0.000	0.000	0.000
330.80	0.05	0.00	0.00	0.00	0.0000	0.002	0.000	0.000	0.002
330.85	0.10	0.00	0.00	1.39	0.0001	0.004	0.000	0.000	0.004
330.90	0.15	0.00	0.00	5.56	0.0006	0.006	0.000	0.000	0.006
330.95	0.20	0.00	0.00	12.51	0.0013	0.007	0.000	0.000	0.007
331.00	0.25	0.00	0.00	22.23	0.0022	0.008	0.000	0.000	0.008
331.05	0.30	0.00	0.00	34.56	0.0035	0.009	0.000	0.000	0.009
331.10	0.35	0.00	0.00	47.85	0.0048	0.010	0.000	0.000	0.010
331.15	0.40	0.00	0.00	61.70	0.0062	0.011	0.000	0.000	0.011
331.20	0.45	0.00	0.00	76.11	0.0076	0.012	0.000	0.000	0.012
331.25	0.50	0.00	0.00	91.09	0.0091	0.012	0.000	0.000	0.012
331.30	0.55	0.00	0.00	106.63	0.0107	0.013	0.000	0.000	0.013
331.35	0.60	0.00	0.00	122.73	0.0123	0.014	0.000	0.000	0.014
331.40	0.65	0.00	0.00	139.39	0.0139	0.014	0.000	0.000	0.014
331.45	0.70	0.00	0.00	156.62	0.0157	0.015	0.000	0.000	0.015
331.50	0.75	0.00	0.00	174.41	0.0174	0.015	0.000	0.000	0.015
331.55	0.80	0.00	0.00	192.76	0.0193	0.016	0.000	0.000	0.016
331.60	0.85	0.00	0.00	211.67	0.0212	0.016	0.000	0.000	0.016
331.65	0.90	0.00	0.00	231.14	0.0231	0.017	0.000	0.000	0.017
331.70	0.95	0.00	0.00	251.18	0.0251	0.017	0.000	0.000	0.017
331.75	1.00	0.00	0.00	261.38	0.0261	0.018	0.000	0.000	0.018
331.80	1.05	0.00	0.00	271.60	0.0272	0.018	0.000	0.000	0.018
331.85	1.10	0.00	0.00	281.81	0.0282	0.019	0.000	0.000	0.019
331.88	1.13	0.00	0.00	287.94	0.0288	0.019	0.000	0.000	0.019
331.90	1.15	0.02	0.00	292.03	0.0292	0.019	0.006	0.000	0.025
331.93	1.18	0.05	0.00	298.16	0.0298	0.019	0.014	0.000	0.033
331.95	1.20	0.07	0.02	300.20	0.0300	0.020	0.020	0.009	0.048
332.00	1.25	0.12	0.07	305.32	0.0305	0.020	0.034	0.031	0.085
332.05	1.30	0.17	0.12	310.44	0.0310	0.020	0.048	0.053	0.121
332.10	1.35	0.22	0.17	315.55	0.0316	0.021	0.062	0.076	0.158
332.15	1.40	0.27	0.22	320.67	0.0321	0.021	0.076	0.098	0.195
332.20	1.45	0.32	0.27	325.78	0.0326	0.022	0.090	0.120	0.231
332.25	1.50	0.37	0.32	330.90	0.0331	0.022	0.106	0.143	0.271
332.30	1.55	0.42	0.37	336.02	0.0336	0.022	0.119	0.165	0.306
332.35	1.60	0.47	0.42	341.13	0.0341	0.023	0.130	0.187	0.340
332.40	1.65	0.52	0.47	346.25	0.0346	0.023	0.140	0.279	0.442
332.45	1.70	0.57	0.52	351.37	0.0351	0.023	0.149	0.306	0.479
332.50	1.75	0.62	0.57	356.48	0.0356	0.024	0.158	0.331	0.513
332.55	1.80	0.67	0.62	361.60	0.0362	0.024	0.167	0.354	0.545
332.60	1.85	0.72	0.67	366.72	0.0367	0.025	0.175	0.376	0.575
332.65	1.90	0.77	0.72	367.74	0.0368	0.025	0.183	0.397	0.604
332.70	1.95	0.82	0.77	367.74	0.0368	0.025	0.190	0.416	0.631

$$Q = CA\sqrt{2gh}$$

C=0.62	
Diameter of Orifice 1 = 92mm	Elevation of Orifice 1 = 330.75masl
Diameter of Orifice 2 = 330mm	Elevation of Orifice 2 = 331.88masl
C=0.80	
Diameter of Overflow Pipe = 450mm	Elevation of Overflow Pipe = 331.93masl

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Far Sight Lands
Box Pipe Storage

Ponding Elevation = 332.70 m

MH ID	Rise	Rise (m)	DS Inv	Raw Depth	Depth	US Inv	Raw Depth	Depth	Slope	Avg Depth	Span (m)	Area at Depth	Pipe Length	Partially Full	Equivalent Length	Volume
112-119	900	0.900	330.80	0.900	0.900	331.71	0.900	0.900	0.80%	0.900	1.800	1.620	113.7	FALSE	113.7	184.19
116-119	900	0.900	330.80	0.900	0.900	331.03	0.900	0.900	0.20%	0.900	1.800	1.620	113.3	FALSE	113.3	183.55

Pipe Volume Available = 368 m^3

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Far Sight Lands
Storage Discharge Curve Delineation 202

Elevation (masl)	Head on Orifice 1 (m)	Head on Orifice 2 (m)	Stormtech Storage (m^3)	Total Storage (ham)	Q Orifice 1 (m^3/s)	Q Orifice 2 (m^3/s)	Q Total (m^3/s)
329.65	0.00	0.00	0.00	0.0000	0.000	0.000	0.000
329.68	0.03	0.00	12.27	0.0012	0.001	0.000	0.001
329.70	0.05	0.00	24.50	0.0025	0.002	0.000	0.002
329.73	0.08	0.00	36.71	0.0037	0.002	0.000	0.002
329.75	0.10	0.00	48.90	0.0049	0.003	0.000	0.003
329.78	0.13	0.00	61.06	0.0061	0.004	0.000	0.004
329.80	0.15	0.00	73.19	0.0073	0.004	0.000	0.004
329.83	0.18	0.00	85.29	0.0085	0.005	0.000	0.005
329.85	0.20	0.00	97.36	0.0097	0.005	0.000	0.005
329.88	0.23	0.00	109.40	0.0109	0.005	0.000	0.005
329.91	0.25	0.00	121.40	0.0121	0.006	0.000	0.006
329.93	0.28	0.00	133.37	0.0133	0.006	0.000	0.006
329.96	0.30	0.00	145.30	0.0145	0.006	0.000	0.006
329.98	0.33	0.03	157.19	0.0157	0.007	0.003	0.010
330.01	0.36	0.05	169.04	0.0169	0.007	0.007	0.014
330.03	0.38	0.08	180.84	0.0181	0.007	0.010	0.017
330.06	0.41	0.10	192.60	0.0193	0.007	0.013	0.021
330.08	0.43	0.13	204.31	0.0204	0.008	0.017	0.024
330.11	0.46	0.15	215.97	0.0216	0.008	0.020	0.028
330.13	0.48	0.18	227.58	0.0228	0.008	0.023	0.032
330.16	0.51	0.20	239.14	0.0239	0.008	0.028	0.036
330.18	0.53	0.23	250.63	0.0251	0.009	0.031	0.039
330.21	0.56	0.25	262.08	0.0262	0.009	0.034	0.043
330.24	0.58	0.28	273.46	0.0273	0.009	0.037	0.046
330.26	0.61	0.30	284.78	0.0285	0.009	0.039	0.048
330.29	0.64	0.33	296.03	0.0296	0.009	0.041	0.051
330.31	0.66	0.36	307.22	0.0307	0.010	0.044	0.053
330.34	0.69	0.38	318.34	0.0318	0.010	0.046	0.056
330.36	0.71	0.41	329.38	0.0329	0.010	0.048	0.058
330.39	0.74	0.43	340.35	0.0340	0.010	0.050	0.060
330.41	0.76	0.46	351.25	0.0351	0.010	0.052	0.062
330.44	0.79	0.48	362.06	0.0362	0.011	0.053	0.064
330.46	0.81	0.51	372.79	0.0373	0.011	0.055	0.066
330.49	0.84	0.53	383.44	0.0383	0.011	0.057	0.068
330.51	0.86	0.56	393.99	0.0394	0.011	0.058	0.069

Elevation (masl)	Head on Orifice 1 (m)	Head on Orifice 2 (m)	StormChamber Storage (m^3)	Total Storage (ham)	Q Orifice 1 (m^3/s)	Q Orifice 2 (m^3/s)	Q Total (m^3/s)
330.54	0.89	0.58	404.46	0.0404	0.011	0.060	0.071
330.57	0.91	0.61	414.82	0.0415	0.011	0.062	0.073
330.59	0.94	0.64	425.09	0.0425	0.012	0.063	0.075
330.62	0.97	0.66	435.25	0.0435	0.012	0.065	0.076
330.64	0.99	0.69	445.30	0.0445	0.012	0.066	0.078
330.67	1.02	0.71	455.24	0.0455	0.012	0.067	0.079
330.69	1.04	0.74	465.06	0.0465	0.012	0.069	0.081
330.72	1.07	0.76	474.76	0.0475	0.012	0.070	0.083
330.74	1.09	0.79	484.32	0.0484	0.012	0.072	0.084
330.77	1.12	0.81	493.75	0.0494	0.013	0.073	0.085
330.79	1.14	0.84	503.04	0.0503	0.013	0.074	0.087
330.82	1.17	0.86	512.17	0.0512	0.013	0.075	0.088
330.84	1.19	0.89	521.14	0.0521	0.013	0.077	0.090
330.87	1.22	0.91	529.95	0.0530	0.013	0.078	0.091
330.90	1.24	0.94	538.56	0.0539	0.013	0.079	0.092
330.92	1.27	0.97	546.98	0.0547	0.013	0.080	0.094
330.95	1.30	0.99	555.18	0.0555	0.014	0.081	0.095
330.97	1.32	1.02	563.14	0.0563	0.014	0.083	0.096
331.00	1.35	1.04	570.82	0.0571	0.014	0.084	0.098
331.02	1.37	1.07	578.16	0.0578	0.014	0.085	0.099
331.05	1.40	1.09	584.96	0.0585	0.014	0.086	0.100
331.07	1.42	1.12	591.29	0.0591	0.014	0.087	0.101
331.10	1.45	1.14	597.48	0.0597	0.014	0.088	0.103
331.12	1.47	1.17	603.54	0.0604	0.015	0.089	0.104
331.15	1.50	1.19	609.48	0.0609	0.015	0.090	0.105
331.18	1.52	1.22	615.23	0.0615	0.015	0.091	0.106
331.20	1.55	1.24	620.88	0.0621	0.015	0.092	0.107
331.23	1.57	1.27	626.53	0.0627	0.015	0.093	0.108
331.25	1.60	1.30	632.18	0.0632	0.015	0.094	0.109
331.28	1.63	1.32	637.82	0.0638	0.015	0.095	0.111
331.30	1.65	1.35	643.47	0.0643	0.015	0.096	0.112
331.33	1.68	1.37	649.12	0.0649	0.016	0.097	0.113
331.35	1.70	1.40	654.77	0.0655	0.016	0.098	0.114
331.38	1.73	1.42	660.42	0.0660	0.016	0.099	0.115
331.40	1.75	1.45	666.07	0.0666	0.016	0.100	0.116
331.43	1.78	1.47	671.71	0.0672	0.016	0.101	0.117
331.45	1.80	1.50	677.36	0.0677	0.016	0.102	0.118
331.48	1.83	1.52	683.01	0.0683	0.016	0.103	0.119

$$Q = CA\sqrt{2gh}$$

C=0.62	
Diameter of Orifice 1 = 75mm	Elevation of Orifice 1 = 329.65 masl
Diameter of Orifice 2 = 200mm	Elevation of Orifice 2 = 329.96 masl

Project:

Chamber Model -	MC-4500	
Units -	**Metric**	Click Here for Imperial
Number of Chambers -	146	
Number of chambers -	20	
Voids in the stone (porosity) -	40	%
Base of Stone Elevation -	329.27	m
Amount of Stone Above Chambers -	305	mm
Amount of Stone Below Chambers -	380	mm

☐ Include Perimeter Stone in Calculations

Height of System *(mm)*	Incremental Single Chamber *(cubic meters)*	Incremental Single End Cap *(cubic meters)*	Incremental Chambers *(cubic meters)*	Incremental End Cap *(cubic meters)*	Incremental Stone *(cubic meters)*	Incremental Chamber, End Cap and Stone *(cubic meters)*	Cumulative System *(cubic meters)*	Elevation *(meters)*
2210	0.00	0.00	0.00	0.00	5.648	5.65	767.74	331.48
2184	0.00	0.00	0.00	0.00	5.648	5.65	762.09	331.45
2159	0.00	0.00	0.00	0.00	5.648	5.65	756.44	331.43
2134	0.00	0.00	0.00	0.00	5.648	5.65	750.79	331.40
2108	0.00	0.00	0.00	0.00	5.648	5.65	745.14	331.38
2083	0.00	0.00	0.00	0.00	5.648	5.65	739.49	331.35
2057	0.00	0.00	0.00	0.00	5.648	5.65	733.85	331.33
2032	0.00	0.00	0.00	0.00	5.648	5.65	728.20	331.30
2007	0.00	0.00	0.00	0.00	5.648	5.65	722.55	331.28
1981	0.00	0.00	0.00	0.00	5.648	5.65	716.90	331.25
1956	0.00	0.00	0.00	0.00	5.648	5.65	711.25	331.23
1930	0.00	0.00	0.00	0.00	5.648	5.65	705.60	331.20
1905	0.00	0.00	0.17	0.00	5.581	5.75	699.96	331.18
1880	0.00	0.00	0.48	0.01	5.454	5.94	694.21	331.15
1854	0.00	0.00	0.68	0.01	5.370	6.07	688.27	331.12
1829	0.01	0.00	0.86	0.03	5.292	6.18	682.20	331.10
1803	0.01	0.00	1.11	0.04	5.189	6.34	676.02	331.07
1778	0.01	0.00	1.87	0.05	4.880	6.80	669.68	331.05
1753	0.02	0.00	2.75	0.06	4.523	7.34	662.88	331.02
1727	0.02	0.00	3.30	0.08	4.295	7.68	655.54	331.00
1702	0.03	0.00	3.75	0.09	4.109	7.96	647.87	330.97
1676	0.03	0.01	4.15	0.11	3.946	8.20	639.91	330.95
1651	0.03	0.01	4.50	0.12	3.801	8.42	631.71	330.92
1626	0.03	0.01	4.81	0.14	3.670	8.62	623.29	330.90
1600	0.03	0.01	5.10	0.15	3.546	8.80	614.67	330.87
1575	0.04	0.01	5.37	0.17	3.432	8.97	605.87	330.84
1549	0.04	0.01	5.63	0.18	3.324	9.13	596.90	330.82
1524	0.04	0.01	5.87	0.20	3.223	9.29	587.76	330.79
1499	0.04	0.01	6.09	0.21	3.128	9.43	578.48	330.77
1473	0.04	0.01	6.31	0.22	3.037	9.57	569.05	330.74
1448	0.04	0.01	6.51	0.24	2.950	9.70	559.48	330.72
1422	0.05	0.01	6.70	0.25	2.867	9.82	549.79	330.69
1397	0.05	0.01	6.89	0.26	2.788	9.94	539.97	330.67
1372	0.05	0.01	7.07	0.27	2.712	10.05	530.03	330.64
1346	0.05	0.01	7.24	0.29	2.640	10.16	519.97	330.62
1321	0.05	0.01	7.40	0.30	2.570	10.27	509.81	330.59
1295	0.05	0.02	7.55	0.31	2.503	10.37	499.55	330.57
1270	0.05	0.02	7.70	0.32	2.439	10.46	489.18	330.54
1245	0.05	0.02	7.85	0.33	2.377	10.56	478.72	330.51
1219	0.05	0.02	7.99	0.34	2.317	10.64	468.16	330.49
1194	0.06	0.02	8.12	0.35	2.260	10.73	457.52	330.46
1168	0.06	0.02	8.25	0.36	2.204	10.81	446.79	330.44
1143	0.06	0.02	8.37	0.37	2.151	10.89	435.97	330.41
1118	0.06	0.02	8.49	0.38	2.099	10.97	425.08	330.39
1092	0.06	0.02	8.61	0.39	2.050	11.05	414.11	330.36
1067	0.06	0.02	8.72	0.40	2.002	11.12	403.06	330.34
1041	0.06	0.02	8.82	0.41	1.956	11.19	391.94	330.31
1016	0.06	0.02	8.92	0.42	1.911	11.25	380.76	330.29
991	0.06	0.02	9.02	0.43	1.868	11.32	369.50	330.26
965	0.06	0.02	9.12	0.44	1.826	11.38	358.18	330.24
940	0.06	0.02	9.21	0.45	1.786	11.44	346.80	330.21
914	0.06	0.02	9.30	0.45	1.748	11.50	335.36	330.18
889	0.06	0.02	9.38	0.46	1.710	11.56	323.86	330.16
864	0.06	0.02	9.46	0.48	1.673	11.61	312.30	330.13
838	0.07	0.02	9.54	0.48	1.640	11.66	300.69	330.11
813	0.07	0.02	9.62	0.49	1.607	11.71	289.03	330.08
787	0.07	0.02	9.69	0.49	1.576	11.76	277.32	330.06
762	0.07	0.03	9.76	0.50	1.545	11.80	265.56	330.03
737	0.07	0.03	9.82	0.51	1.516	11.85	253.76	330.01
711	0.07	0.03	9.89	0.52	1.488	11.89	241.91	329.98
686	0.07	0.03	9.94	0.52	1.461	11.93	230.03	329.96
660	0.07	0.03	10.00	0.53	1.436	11.97	218.10	329.93
635	0.07	0.03	10.06	0.54	1.412	12.00	206.13	329.91
610	0.07	0.03	10.11	0.54	1.389	12.04	194.13	329.88
584	0.07	0.03	10.16	0.55	1.367	12.07	182.09	329.85
559	0.07	0.03	10.20	0.55	1.346	12.10	170.02	329.83
533	0.07	0.03	10.25	0.56	1.326	12.13	157.92	329.80
508	0.07	0.03	10.29	0.56	1.307	12.16	145.78	329.78
483	0.07	0.03	10.33	0.57	1.290	12.19	133.62	329.75
457	0.07	0.03	10.36	0.58	1.273	12.21	121.44	329.73
432	0.07	0.03	10.40	0.58	1.258	12.23	109.23	329.70
406	0.07	0.03	10.45	0.58	1.236	12.27	96.99	329.68
381	0.00	0.00	0.00	0.00	5.648	5.65	84.72	329.65
356	0.00	0.00	0.00	0.00	5.648	5.65	79.08	329.63
330	0.00	0.00	0.00	0.00	5.648	5.65	73.43	329.60
305	0.00	0.00	0.00	0.00	5.648	5.65	67.78	329.57
279	0.00	0.00	0.00	0.00	5.648	5.65	62.13	329.55
254	0.00	0.00	0.00	0.00	5.648	5.65	56.48	329.52
229	0.00	0.00	0.00	0.00	5.648	5.65	50.83	329.50

13 286
Far Sight Lands
Storage Discharge Curve Delineation 203

Elevation (masl)	Head on Orifice 1 (m)	Head on Orifice 2 (m)	Stormtech Storage (m^3)	Total Storage (ham)	Q Orifice 1 (m^3/s)	Q Orifice 2 (m^3/s)	Q Total (m^3/s)
330.73	0.00	0.00	0.00	0.0000	0.000	0.000	0.000
330.76	0.03	0.00	4.74	0.0005	0.001	0.000	0.001
330.78	0.05	0.00	9.47	0.0009	0.002	0.000	0.002
330.81	0.08	0.00	14.18	0.0014	0.002	0.000	0.002
330.83	0.10	0.00	18.89	0.0019	0.003	0.000	0.003
330.86	0.13	0.00	23.59	0.0024	0.004	0.000	0.004
330.88	0.15	0.00	28.28	0.0028	0.004	0.000	0.004
330.91	0.18	0.00	32.95	0.0033	0.005	0.000	0.005
330.93	0.20	0.00	37.62	0.0038	0.005	0.000	0.005
330.96	0.23	0.00	42.27	0.0042	0.005	0.000	0.005
330.98	0.25	0.00	46.90	0.0047	0.006	0.000	0.006
331.01	0.28	0.00	51.52	0.0052	0.006	0.000	0.006
331.04	0.30	0.00	56.13	0.0056	0.006	0.000	0.006
331.06	0.33	0.03	60.72	0.0061	0.007	0.003	0.010
331.09	0.36	0.05	65.30	0.0065	0.007	0.007	0.014
331.11	0.38	0.08	69.86	0.0070	0.007	0.010	0.017
331.14	0.41	0.10	74.40	0.0074	0.007	0.013	0.021
331.16	0.43	0.13	78.92	0.0079	0.008	0.017	0.024
331.19	0.46	0.15	83.43	0.0083	0.008	0.020	0.028
331.21	0.48	0.18	87.91	0.0088	0.008	0.023	0.032
331.24	0.51	0.20	92.37	0.0092	0.008	0.028	0.036
331.26	0.53	0.23	96.81	0.0097	0.009	0.031	0.039
331.29	0.56	0.25	101.23	0.0101	0.009	0.034	0.043
331.31	0.58	0.28	105.63	0.0106	0.009	0.037	0.046
331.34	0.61	0.30	110.00	0.0110	0.009	0.039	0.048
331.37	0.63	0.33	114.34	0.0114	0.009	0.041	0.051
331.39	0.66	0.36	118.66	0.0119	0.010	0.044	0.053
331.42	0.69	0.38	122.96	0.0123	0.010	0.046	0.056
331.44	0.71	0.41	127.22	0.0127	0.010	0.048	0.058
331.47	0.74	0.43	131.46	0.0131	0.010	0.050	0.060
331.49	0.76	0.46	135.67	0.0136	0.010	0.052	0.062
331.52	0.79	0.48	139.84	0.0140	0.011	0.053	0.064
331.54	0.81	0.51	143.99	0.0144	0.011	0.055	0.066
331.57	0.84	0.53	148.10	0.0148	0.011	0.057	0.068
331.59	0.86	0.56	152.17	0.0152	0.011	0.058	0.069

Elevation (masl)	Head on Orifice 1 (m)	Head on Orifice 2 (m)	StormChamber Storage (m^3)	Total Storage (ham)	Q Orifice 1 (m^3/s)	Q Orifice 2 (m^3/s)	Q Total (m^3/s)
331.62	0.89	0.58	156.21	0.0156	0.011	0.060	0.071
331.64	0.91	0.61	160.22	0.0160	0.011	0.062	0.073
331.67	0.94	0.63	164.18	0.0164	0.012	0.063	0.075
331.70	0.97	0.66	168.10	0.0168	0.012	0.065	0.076
331.72	0.99	0.69	171.99	0.0172	0.012	0.066	0.078
331.75	1.02	0.71	175.82	0.0176	0.012	0.067	0.079
331.77	1.04	0.74	179.62	0.0180	0.012	0.069	0.081
331.80	1.07	0.76	183.36	0.0183	0.012	0.070	0.083
331.82	1.09	0.79	187.06	0.0187	0.012	0.072	0.084
331.85	1.12	0.81	190.70	0.0191	0.013	0.073	0.085
331.87	1.14	0.84	194.29	0.0194	0.013	0.074	0.087
331.90	1.17	0.86	197.82	0.0198	0.013	0.075	0.088
331.92	1.19	0.89	201.29	0.0201	0.013	0.077	0.090
331.95	1.22	0.91	204.69	0.0205	0.013	0.078	0.091
331.97	1.24	0.94	208.02	0.0208	0.013	0.079	0.092
332.00	1.27	0.97	211.28	0.0211	0.013	0.080	0.094
332.03	1.30	0.99	214.45	0.0214	0.014	0.081	0.095
332.05	1.32	1.02	217.53	0.0218	0.014	0.083	0.096
332.08	1.35	1.04	220.50	0.0221	0.014	0.084	0.098
332.10	1.37	1.07	223.35	0.0223	0.014	0.085	0.099
332.13	1.40	1.09	225.99	0.0226	0.014	0.086	0.100
332.15	1.42	1.12	228.45	0.0228	0.014	0.087	0.101
332.18	1.45	1.14	230.86	0.0231	0.014	0.088	0.103
332.20	1.47	1.17	233.22	0.0233	0.015	0.089	0.104
332.23	1.50	1.19	235.53	0.0236	0.015	0.090	0.105
332.25	1.52	1.22	237.77	0.0238	0.015	0.091	0.106
332.28	1.55	1.24	239.98	0.0240	0.015	0.092	0.107
332.31	1.57	1.27	242.18	0.0242	0.015	0.093	0.108
332.33	1.60	1.30	244.38	0.0244	0.015	0.094	0.109
332.36	1.63	1.32	246.59	0.0247	0.015	0.095	0.111
332.38	1.65	1.35	248.79	0.0249	0.015	0.096	0.112
332.41	1.68	1.37	250.99	0.0251	0.016	0.097	0.113
332.43	1.70	1.40	253.20	0.0253	0.016	0.098	0.114
332.46	1.73	1.42	255.40	0.0255	0.016	0.099	0.115
332.48	1.75	1.45	257.60	0.0258	0.016	0.100	0.116
332.51	1.78	1.47	259.80	0.0260	0.016	0.101	0.117
332.53	1.80	1.50	262.01	0.0262	0.016	0.102	0.118
332.56	1.83	1.52	264.21	0.0264	0.016	0.103	0.119

$$Q = CA\sqrt{2gh}$$

C=0.62	
Diameter of Orifice 1 = 75mm	Elevation of Orifice 1 = 330.73 masl
Diameter of Orifice 2 = 200mm	Elevation of Orifice 2 = 331.04masl

Project:

Chamber Model -	MC-4500	
Units -	**Metric**	Click Here for Imperial
Number of Chambers -	55	
Number of chambers -	10	
Voids in the stone (porosity) -	40	%
Base of Stone Elevation -	329.77	m
Amount of Stone Above Chambers -	305	mm
Amount of Stone Below Chambers -	960	mm

☐ Include Perimeter Stone in Calculations

Height of System *(mm)*	Incremental Single Chamber *(cubic meters)*	Incremental Single End Cap *(cubic meters)*	Incremental Chambers *(cubic meters)*	Incremental End Cap *(cubic meters)*	Incremental Stone *(cubic meters)*	Incremental Chamber, End Cap and Stone *(cubic meters)*	Cumulative System *(cubic meters)*	Elevation *(meters)*
2794	0.00	0.00	0.00	0.00	2.203	2.20	347.93	332.56
2769	0.00	0.00	0.00	0.00	2.203	2.20	345.72	332.54
2743	0.00	0.00	0.00	0.00	2.203	2.20	343.52	332.51
2718	0.00	0.00	0.00	0.00	2.203	2.20	341.32	332.49
2692	0.00	0.00	0.00	0.00	2.203	2.20	339.11	332.46
2667	0.00	0.00	0.00	0.00	2.203	2.20	336.91	332.44
2642	0.00	0.00	0.00	0.00	2.203	2.20	334.71	332.41
2616	0.00	0.00	0.00	0.00	2.203	2.20	332.50	332.39
2591	0.00	0.00	0.00	0.00	2.203	2.20	330.30	332.36
2565	0.00	0.00	0.00	0.00	2.203	2.20	328.10	332.34
2540	0.00	0.00	0.00	0.00	2.203	2.20	325.90	332.31
2515	0.00	0.00	0.00	0.00	2.203	2.20	323.69	332.28
2489	0.00	0.00	0.06	0.00	2.177	2.24	321.49	332.26
2464	0.00	0.00	0.18	0.00	2.130	2.31	319.25	332.23
2438	0.00	0.00	0.26	0.01	2.097	2.36	316.93	332.21
2413	0.01	0.00	0.33	0.01	2.068	2.41	314.57	332.18
2388	0.01	0.00	0.42	0.02	2.028	2.47	312.17	332.16
2362	0.01	0.00	0.71	0.02	1.911	2.64	309.70	332.13
2337	0.02	0.00	1.04	0.03	1.776	2.84	307.06	332.11
2311	0.02	0.00	1.24	0.04	1.689	2.97	304.22	332.08
2286	0.03	0.00	1.41	0.05	1.618	3.08	301.24	332.06
2261	0.03	0.01	1.56	0.05	1.557	3.17	298.16	332.03
2235	0.03	0.01	1.69	0.06	1.501	3.26	294.99	332.01
2210	0.03	0.01	1.81	0.07	1.451	3.33	291.73	331.98
2184	0.03	0.01	1.92	0.08	1.404	3.40	288.40	331.95
2159	0.04	0.01	2.02	0.08	1.360	3.47	285.00	331.93
2134	0.04	0.01	2.12	0.09	1.318	3.53	281.53	331.90
2108	0.04	0.01	2.21	0.10	1.280	3.59	278.00	331.88
2083	0.04	0.01	2.29	0.11	1.243	3.64	274.42	331.85
2057	0.04	0.01	2.38	0.11	1.208	3.70	270.77	331.83
2032	0.04	0.01	2.45	0.12	1.175	3.75	267.08	331.80
2007	0.05	0.01	2.53	0.12	1.143	3.79	263.33	331.78
1981	0.05	0.01	2.60	0.13	1.113	3.84	259.54	331.75
1956	0.05	0.01	2.66	0.14	1.083	3.88	255.70	331.73
1930	0.05	0.01	2.73	0.14	1.056	3.92	251.82	331.70
1905	0.05	0.01	2.79	0.15	1.029	3.96	247.89	331.68
1880	0.05	0.02	2.85	0.15	1.003	4.00	243.93	331.65
1854	0.05	0.02	2.90	0.16	0.978	4.04	239.93	331.62
1829	0.05	0.02	2.96	0.17	0.954	4.08	235.89	331.60
1803	0.05	0.02	3.01	0.17	0.931	4.11	231.81	331.57
1778	0.06	0.02	3.06	0.18	0.909	4.14	227.70	331.55
1753	0.06	0.02	3.11	0.18	0.888	4.18	223.56	331.52
1727	0.06	0.02	3.15	0.19	0.867	4.21	219.38	331.50
1702	0.06	0.02	3.20	0.19	0.847	4.24	215.17	331.47
1676	0.06	0.02	3.24	0.20	0.828	4.27	210.94	331.45
1651	0.06	0.02	3.28	0.20	0.810	4.29	206.67	331.42
1626	0.06	0.02	3.32	0.20	0.792	4.32	202.38	331.40
1600	0.06	0.02	3.36	0.21	0.774	4.35	198.06	331.37
1575	0.06	0.02	3.40	0.21	0.758	4.37	193.71	331.34
1549	0.06	0.02	3.43	0.22	0.742	4.40	189.34	331.32
1524	0.06	0.02	3.47	0.22	0.726	4.42	184.95	331.29
1499	0.06	0.02	3.50	0.23	0.711	4.44	180.53	331.27
1473	0.06	0.02	3.53	0.23	0.696	4.46	176.09	331.24
1448	0.06	0.02	3.56	0.24	0.682	4.48	171.62	331.22
1422	0.07	0.02	3.59	0.24	0.669	4.50	167.14	331.19
1397	0.07	0.02	3.62	0.24	0.657	4.52	162.64	331.17
1372	0.07	0.02	3.65	0.25	0.644	4.54	158.11	331.14
1346	0.07	0.03	3.68	0.25	0.633	4.56	153.57	331.12
1321	0.07	0.03	3.70	0.25	0.621	4.58	149.01	331.09
1295	0.07	0.03	3.72	0.26	0.610	4.59	144.44	331.07
1270	0.07	0.03	3.75	0.26	0.600	4.61	139.85	331.04
1245	0.07	0.03	3.77	0.26	0.590	4.62	135.24	331.01
1219	0.07	0.03	3.79	0.27	0.581	4.64	130.62	330.99
1194	0.07	0.03	3.81	0.27	0.572	4.65	125.98	330.96
1168	0.07	0.03	3.83	0.27	0.563	4.66	121.33	330.94
1143	0.07	0.03	3.84	0.28	0.555	4.68	116.67	330.91
1118	0.07	0.03	3.86	0.28	0.547	4.69	111.99	330.89
1092	0.07	0.03	3.88	0.28	0.540	4.70	107.31	330.86
1067	0.07	0.03	3.89	0.29	0.533	4.71	102.61	330.84
1041	0.07	0.03	3.90	0.29	0.526	4.72	97.90	330.81
1016	0.07	0.03	3.92	0.29	0.520	4.73	93.18	330.79
991	0.07	0.03	3.94	0.29	0.512	4.74	88.45	330.76
965	0.00	0.00	0.00	0.00	2.203	2.20	83.71	330.74
940	0.00	0.00	0.00	0.00	2.203	2.20	81.51	330.71
914	0.00	0.00	0.00	0.00	2.203	2.20	79.31	330.68
889	0.00	0.00	0.00	0.00	2.203	2.20	77.11	330.66
864	0.00	0.00	0.00	0.00	2.203	2.20	74.90	330.63
838	0.00	0.00	0.00	0.00	2.203	2.20	72.70	330.61
813	0.00	0.00	0.00	0.00	2.203	2.20	70.50	330.58

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Far Sight Lands
Storage Discharge Curve Delineation 204

Elevation (masl)	Head on Orifice 1 (m)	Head on Orifice 2 (m)	Stormtech Storage (m^3)	Total Storage (ham)	Q Orifice 1 (m^3/s)	Q Orifice 2 (m^3/s)	Q Total (m^3/s)
329.73	0.00	0.00	0.00	0.0000	0.000	0.000	0.000
329.76	0.00	0.00	40.41	0.0040	0.000	0.000	0.000
329.78	0.00	0.00	80.71	0.0081	0.000	0.000	0.000
329.81	0.00	0.00	120.94	0.0121	0.000	0.000	0.000
329.83	0.00	0.00	161.08	0.0161	0.000	0.000	0.000
329.86	0.00	0.00	201.14	0.0201	0.000	0.000	0.000
329.88	0.00	0.00	241.11	0.0241	0.000	0.000	0.000
329.91	0.00	0.00	280.99	0.0281	0.000	0.000	0.000
329.93	0.03	0.00	320.76	0.0321	0.001	0.000	0.001
329.96	0.05	0.00	360.43	0.0360	0.002	0.000	0.002
329.98	0.08	0.00	399.98	0.0400	0.002	0.000	0.002
330.01	0.10	0.00	439.41	0.0439	0.003	0.000	0.003
330.04	0.13	0.00	478.72	0.0479	0.004	0.000	0.004
330.06	0.15	0.03	517.90	0.0518	0.004	0.003	0.007
330.09	0.18	0.05	556.94	0.0557	0.005	0.007	0.011
330.11	0.20	0.08	595.84	0.0596	0.005	0.010	0.015
330.14	0.23	0.10	634.60	0.0635	0.005	0.013	0.019
330.16	0.25	0.13	673.19	0.0673	0.006	0.017	0.022
330.19	0.28	0.15	711.62	0.0712	0.006	0.020	0.026
330.21	0.30	0.18	749.89	0.0750	0.006	0.023	0.030
330.24	0.33	0.20	787.99	0.0788	0.007	0.028	0.034
330.26	0.36	0.23	825.89	0.0826	0.007	0.031	0.038
330.29	0.38	0.25	863.61	0.0864	0.007	0.034	0.041
330.31	0.41	0.28	901.13	0.0901	0.007	0.037	0.044
330.34	0.43	0.30	938.44	0.0938	0.008	0.039	0.047
330.37	0.46	0.33	975.54	0.0976	0.008	0.041	0.049
330.39	0.48	0.36	1012.42	0.1012	0.008	0.044	0.052
330.42	0.51	0.38	1049.08	0.1049	0.008	0.046	0.054
330.44	0.53	0.41	1085.49	0.1085	0.009	0.048	0.056
330.47	0.56	0.43	1121.66	0.1122	0.009	0.050	0.058
330.49	0.58	0.46	1157.58	0.1158	0.009	0.052	0.061
330.52	0.61	0.48	1193.23	0.1193	0.009	0.053	0.063
330.54	0.63	0.51	1228.61	0.1229	0.009	0.055	0.064
330.57	0.66	0.53	1263.70	0.1264	0.010	0.057	0.066
330.59	0.69	0.56	1298.50	0.1298	0.010	0.058	0.068
330.62	0.71	0.58	1332.99	0.1333	0.010	0.060	0.070
330.64	0.74	0.61	1367.16	0.1367	0.010	0.062	0.072
330.67	0.76	0.63	1401.00	0.1401	0.010	0.063	0.073
330.70	0.79	0.66	1434.49	0.1434	0.011	0.065	0.075
330.72	0.81	0.69	1467.62	0.1468	0.011	0.066	0.077

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Far Sight Lands

Storage Discharge Curve Delineation 204

Elevation (masl)	Head on Orifice 1 (m)	Head on Orifice 2 (m)	StormChamber Storage (m^3)	Total Storage (ham)	Q Orifice 1 (m^3/s)	Q Orifice 2 (m^3/s)	Q Total (m^3/s)
330.75	0.84	0.71	1500.37	0.1500	0.011	0.067	0.078
330.77	0.86	0.74	1532.74	0.1533	0.011	0.069	0.080
330.80	0.89	0.76	1564.69	0.1565	0.011	0.070	0.081
330.82	0.91	0.79	1596.20	0.1596	0.011	0.072	0.083
330.85	0.94	0.81	1627.27	0.1627	0.012	0.073	0.084
330.87	0.97	0.84	1657.85	0.1658	0.012	0.074	0.086
330.90	0.99	0.86	1687.94	0.1688	0.012	0.075	0.087
330.92	1.02	0.89	1717.48	0.1717	0.012	0.077	0.089
330.95	1.04	0.91	1746.46	0.1746	0.012	0.078	0.090
330.97	1.07	0.94	1774.82	0.1775	0.012	0.079	0.091
331.00	1.09	0.97	1802.52	0.1803	0.012	0.080	0.093
331.03	1.12	0.99	1829.49	0.1829	0.013	0.081	0.094
331.05	1.14	1.02	1855.64	0.1856	0.013	0.083	0.095
331.08	1.17	1.04	1880.85	0.1881	0.013	0.084	0.097
331.10	1.19	1.07	1904.92	0.1905	0.013	0.085	0.098
331.13	1.22	1.09	1927.17	0.1927	0.013	0.086	0.099
331.15	1.24	1.12	1947.86	0.1948	0.013	0.087	0.100
331.18	1.27	1.14	1968.02	0.1968	0.013	0.088	0.102
331.20	1.30	1.17	1987.80	0.1988	0.014	0.089	0.103
331.23	1.32	1.19	2007.16	0.2007	0.014	0.090	0.104
331.25	1.35	1.22	2025.88	0.2026	0.014	0.091	0.105
331.28	1.37	1.24	2044.25	0.2044	0.014	0.092	0.106
331.31	1.40	1.27	2062.62	0.2063	0.014	0.093	0.107
331.33	1.42	1.30	2080.99	0.2081	0.014	0.094	0.109
331.36	1.45	1.32	2099.36	0.2099	0.014	0.095	0.110
331.38	1.47	1.35	2117.73	0.2118	0.015	0.096	0.111
331.41	1.50	1.37	2136.10	0.2136	0.015	0.097	0.112
331.43	1.52	1.40	2154.47	0.2154	0.015	0.098	0.113
331.46	1.55	1.42	2172.84	0.2173	0.015	0.099	0.114
331.48	1.57	1.45	2191.21	0.2191	0.015	0.100	0.115
331.51	1.60	1.47	2209.58	0.2210	0.015	0.101	0.116
331.53	1.63	1.50	2227.96	0.2228	0.015	0.102	0.117
331.56	1.65	1.52	2246.33	0.2246	0.015	0.103	0.118

$$Q = CA\sqrt{2gh}$$

C=0.62	
Diameter of Orifice 1 = 75mm	Elevation of Orifice 1 = 329.91masl
Diameter of Orifice 2 = 200mm	Elevation of Orifice 2 =330.04masl

Project:

Chamber Model -	MC-4500	
Units -	**Metric**	Click Here for Imperial
Number of Chambers -	497	
Number of chambers -	40	
Voids in the stone (porosity) -	40	%
Base of Stone Elevation -	329.40	m
Amount of Stone Above Chambers -	305	mm
Amount of Stone Below Chambers -	330	mm

☐ Include Perimeter Stone in Calculations

Height of System *(mm)*	Incremental Single Chamber *(cubic meters)*	Incremental Single End Cap *(cubic meters)*	Incremental Chambers *(cubic meters)*	Incremental End Cap *(cubic meters)*	Incremental Stone *(cubic meters)*	Incremental Chamber, End Cap and Stone *(cubic meters)*	Cumulative System *(cubic meters)*	Elevation *(meters)*
2159	0.00	0.00	0.00	0.00	18.371	18.37	2485.15	331.56
2134	0.00	0.00	0.00	0.00	18.371	18.37	2466.78	331.53
2108	0.00	0.00	0.00	0.00	18.371	18.37	2448.41	331.51
2083	0.00	0.00	0.00	0.00	18.371	18.37	2430.03	331.48
2057	0.00	0.00	0.00	0.00	18.371	18.37	2411.66	331.46
2032	0.00	0.00	0.00	0.00	18.371	18.37	2393.29	331.43
2007	0.00	0.00	0.00	0.00	18.371	18.37	2374.92	331.41
1981	0.00	0.00	0.00	0.00	18.371	18.37	2356.55	331.38
1956	0.00	0.00	0.00	0.00	18.371	18.37	2338.18	331.36
1930	0.00	0.00	0.00	0.00	18.371	18.37	2319.81	331.33
1905	0.00	0.00	0.00	0.00	18.371	18.37	2301.44	331.31
1880	0.00	0.00	0.00	0.00	18.371	18.37	2283.07	331.28
1854	0.00	0.00	0.58	0.00	18.140	18.72	2264.70	331.25
1829	0.00	0.00	1.63	0.01	17.713	19.36	2245.98	331.23
1803	0.00	0.00	2.32	0.03	17.432	19.78	2226.62	331.20
1778	0.01	0.00	2.94	0.05	17.174	20.17	2206.84	331.18
1753	0.01	0.00	3.78	0.08	16.830	20.68	2186.68	331.15
1727	0.01	0.00	6.37	0.10	15.782	22.25	2165.99	331.13
1702	0.02	0.00	9.36	0.13	14.575	24.07	2143.74	331.10
1676	0.02	0.00	11.25	0.16	13.809	25.21	2119.67	331.08
1651	0.03	0.00	12.78	0.19	13.183	26.15	2094.46	331.05
1626	0.03	0.01	14.11	0.22	12.638	26.97	2068.31	331.03
1600	0.03	0.01	15.30	0.24	12.152	27.70	2041.34	331.00
1575	0.03	0.01	16.37	0.27	11.712	28.36	2013.64	330.97
1549	0.03	0.01	17.37	0.31	11.302	28.97	1985.28	330.95
1524	0.04	0.01	18.29	0.34	10.920	29.55	1956.31	330.92
1499	0.04	0.01	19.15	0.37	10.562	30.08	1926.76	330.90
1473	0.04	0.01	19.97	0.39	10.227	30.59	1896.67	330.87
1448	0.04	0.01	20.74	0.42	9.909	31.06	1866.09	330.85
1422	0.04	0.01	21.46	0.45	9.606	31.52	1835.02	330.82
1397	0.04	0.01	22.16	0.47	9.318	31.95	1803.51	330.80
1372	0.05	0.01	22.82	0.50	9.044	32.36	1771.56	330.77
1346	0.05	0.01	23.45	0.52	8.781	32.76	1739.19	330.75
1321	0.05	0.01	24.05	0.55	8.530	33.13	1706.44	330.72
1295	0.05	0.01	24.63	0.57	8.290	33.49	1673.31	330.70
1270	0.05	0.01	25.18	0.59	8.060	33.84	1639.82	330.67
1245	0.05	0.02	25.72	0.62	7.838	34.17	1605.98	330.64
1219	0.05	0.02	26.23	0.64	7.625	34.49	1571.81	330.62
1194	0.05	0.02	26.72	0.66	7.420	34.80	1537.32	330.59
1168	0.05	0.02	27.19	0.68	7.223	35.09	1502.52	330.57
1143	0.06	0.02	27.64	0.70	7.033	35.38	1467.43	330.54
1118	0.06	0.02	28.08	0.72	6.850	35.65	1432.05	330.52
1092	0.06	0.02	28.50	0.74	6.674	35.92	1396.40	330.49
1067	0.06	0.02	28.90	0.76	6.504	36.17	1360.48	330.47
1041	0.06	0.02	29.29	0.78	6.340	36.42	1324.31	330.44
1016	0.06	0.02	29.67	0.80	6.183	36.65	1287.90	330.42
991	0.06	0.02	30.03	0.82	6.031	36.88	1251.25	330.39
965	0.06	0.02	30.38	0.84	5.883	37.10	1214.36	330.37
940	0.06	0.02	30.72	0.86	5.742	37.31	1177.26	330.34
914	0.06	0.02	31.04	0.87	5.605	37.52	1139.95	330.31
889	0.06	0.02	31.35	0.89	5.474	37.72	1102.43	330.29
864	0.06	0.02	31.65	0.91	5.348	37.91	1064.71	330.26
838	0.06	0.02	31.94	0.93	5.224	38.09	1026.81	330.24
813	0.06	0.02	32.21	0.95	5.104	38.27	988.72	330.21
787	0.07	0.02	32.48	0.96	4.996	38.43	950.44	330.19
762	0.07	0.02	32.73	0.97	4.888	38.60	912.01	330.16
737	0.07	0.02	32.98	0.99	4.784	38.75	873.42	330.14
711	0.07	0.03	33.21	1.00	4.685	38.90	834.67	330.11
686	0.07	0.03	33.44	1.02	4.590	39.04	795.77	330.09
660	0.07	0.03	33.65	1.03	4.499	39.18	756.72	330.06
635	0.07	0.03	33.85	1.04	4.411	39.31	717.54	330.04
610	0.07	0.03	34.05	1.06	4.328	39.43	678.23	330.01
584	0.07	0.03	34.23	1.07	4.249	39.55	638.80	329.98
559	0.07	0.03	34.41	1.08	4.174	39.67	599.25	329.96
533	0.07	0.03	34.57	1.10	4.103	39.77	559.58	329.93
508	0.07	0.03	34.73	1.11	4.036	39.87	519.81	329.91
483	0.07	0.03	34.88	1.12	3.972	39.97	479.93	329.88
457	0.07	0.03	35.02	1.13	3.911	40.06	439.97	329.86
432	0.07	0.03	35.15	1.14	3.854	40.15	399.91	329.83
406	0.07	0.03	35.28	1.15	3.800	40.23	359.76	329.81
381	0.07	0.03	35.39	1.16	3.750	40.30	319.53	329.78
356	0.07	0.03	35.56	1.17	3.678	40.41	279.23	329.76
330	0.00	0.00	0.00	0.00	18.371	18.37	238.82	329.73
305	0.00	0.00	0.00	0.00	18.371	18.37	220.45	329.70
279	0.00	0.00	0.00	0.00	18.371	18.37	202.08	329.68
254	0.00	0.00	0.00	0.00	18.371	18.37	183.71	329.65
229	0.00	0.00	0.00	0.00	18.371	18.37	165.34	329.63
203	0.00	0.00	0.00	0.00	18.371	18.37	146.97	329.60
178	0.00	0.00	0.00	0.00	18.371	18.37	128.60	329.58

Ontario

MINISTRY OF THE ENVIRONMENT

Database Version: **V 2.0 Release Update**
Update Date: **30-Mar-12**

Project DEVELOPMENT Summary

DEVELOPMENT: **FARSIGHT**
Subwatershed: **East Holland**

Total Pre-Development Area (ha):	**27.120**	Total Pre-Development Phosphorus Load (kg/yr):	**7.25**

Pre-Development Land Use	Area (ha)	P coeff. (kg/ha)	P Load (kg/yr)
Cropland	16.79	0.36	6.04
Forest	3.44	0.10	0.34
Hay-Pasture	3.6	0.12	0.43
Low Intensity Development	3.29	0.13	0.43

DEVELOPMENT: FARSIGHT
Subwatershed: East Holland

POST-DEVELOPMENT LOAD

Post-Development Land Use	Area (ha)	P coeff. (kg/ha)	Best Management Practice applied with P Removal Efficiency		P Load (kg/yr)
Cropland	6.16	0.36	NONE	0%	2.22
Cropland	1.48	0.36	Perforated Pipe Infiltration/Exfiltration Systems	87%	0.07
Forest	2.34	0.10	NONE	0%	0.23
Hay-Pasture	3.41	0.12	NONE	0%	0.41
Hay-Pasture	0.27	0.12	Sand or Media Filters	45%	0.02
High Intensity - Residential	1.8	1.32	Sand or Media Filters	45%	1.31
High Intensity - Residential	6.34	1.32	Perforated Pipe Infiltration/Exfiltration Systems	87%	1.09
Low Intensity Development	5.32	0.13	NONE	0%	0.69

Post-Development Area Altered: **27.12**

Total Pre-Development Area: **27.12**

Unaffected Area: **0**

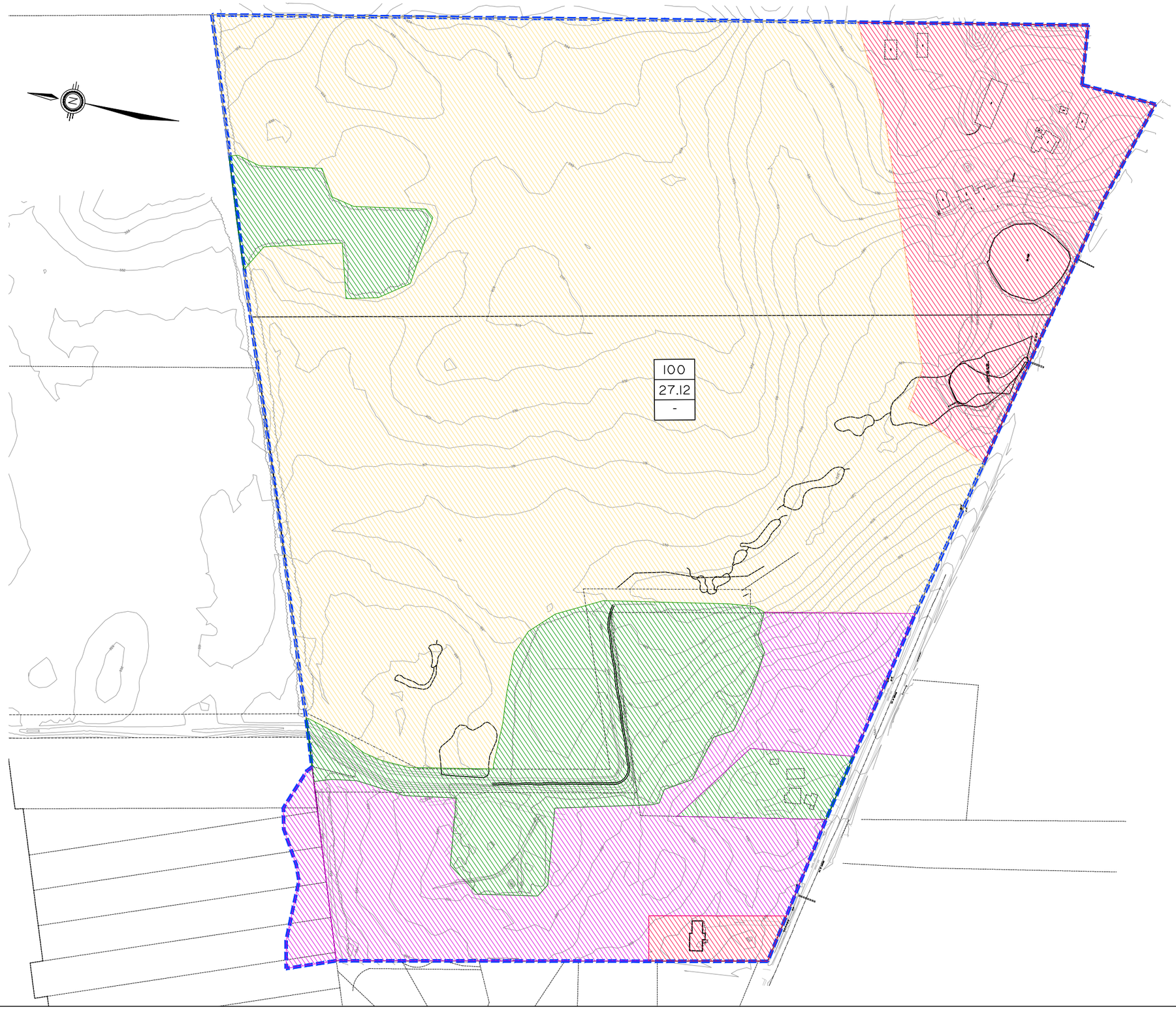
	P Load (kg/yr)
Pre-Development:	**7.25**
Post-Development:	**14.86**
Change (Pre - Post):	**-7.61**
105% Net Increase in Load	
Post-Development (with BMPs):	**6.03**
Change (Pre - Post):	**1.21**
17% Net Reduction in Load	

DEVELOPMENT: FARSIGHT
Subwatershed: East Holland

CONSTRUCTION PHASE LOAD

SUMMARY WITH IMPLEMENTATION OF BMPs	**P Load (kg/yr)**
Pre-Development:	**7.25**
Construction Phase Amortized Over 8 Years :	to be determined
Post-Development:	**6.03**
Post-Development + Amortized Construction:	**to be determined**
Pre-Development Load - Post-Development Load:	**1.21**
Conclusion:	**17% Reduction in Load**
Pre-Development Load - (Post-Development + Amortized Construction Load):	**to be determined**
Conclusion:	**to be determined**

Based on a comparison of Pre-Development and Post-Development loads, and in consideration of Construction Phase loads, the Ministry would encourage the Municipality to:



LEGEND:

- PRE-DEVELOPMENT DRAINAGE BOUNDARY
- 201 / 1.89 / 0.45 — SUBCATCHMENT ID / SUBCATCHMENT AREA (HA) / PERCENT IMPERVIOUS
- EXISTING REGIONAL FLOODLINE
- CROPLAND/CORN FIELD
- HAY PASTURE/POOR GRASS
- FOREST/WOODLOT
- LOW INTENSITY DEVELOPMENT/ MIXED RESIDENTIAL

1:2500

PRE DEVELOPMENT LAND USE

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CONSULTING ENGINEERS

PROJECT NUMBER	FIGURE NO.
13:286	PRE

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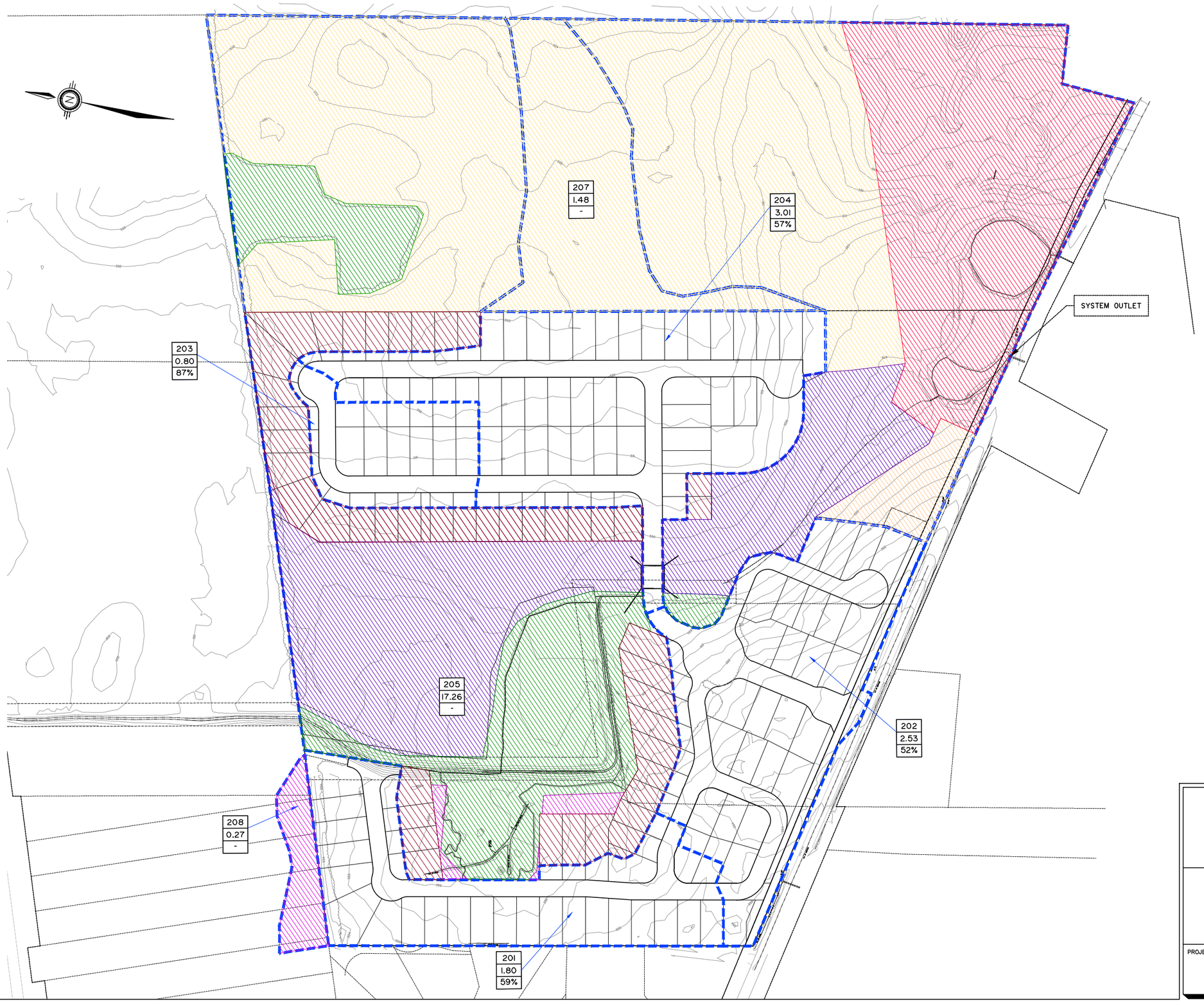

LEGEND:

- POST DEVELOPMENT DRAINAGE BOUNDARY
- 201 / 1.89 / 0.45 — SUBCATCHMENT ID, SUBCATCHMENT AREA (HA), PERCENT IMPERVIOUS
- PROPOSED REGIONAL FLOODLINE
- CROPLAND/CORN FIELD
- HAY PASTURE/POOR GRASS
- FOREST/WOODLOT
- LOW INTENSITY DEVELOPMENT/ MIXED RESIDENTIAL
- HAY PASTURE/MEADOW
- LOW INTENSITY DEVELOPMENT/ OPEN SPACE
- LOW INTENSITY DEVELOPMENT/ REAR LOTS DISCONNECTED

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POST DEVELOPMENT LAND USE

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

PROJECT NUMBER	FIGURE NO.
13:286	POST

CAD FILE: P:\06\132\Drawing Files\Phase 1\Figures\132 Study Area.dwg

13 286
FarSight Lands
Sand Filter Sizing

Design Volume Calculation
Basic Protection Level - 55% Impervious Level
Catchment 201 is 2.16 ha
Storage requirement for Subcatchment 201 is 20m ^{3}/ha as per Table 3.2 in the MOE SWM Guidelines

Design Volume*	43.2	m^3
Depth of Filter Media	0.5	m
Coefficient of Permeability	45.0	mm/hr
Operating head	0.2	m
Drawdown Time	24.0	hr
Contact Area	28.6	m^2

APPENDIX D

HYDROLOGIC MODEL

13:286
Far Sight Lands
Upland's Method Time to Peak Calculation

Pre Development (100)

Segment	Crop Type	Grade	Velocity	Length	Time
No.		%	m/s	m	s
1	Countour/Strip Crop	1.40%	0.16	70	438
2	Countour/Strip Crop	0.86%	0.14	58	414
3	Countour/Strip Crop	0.97%	0.15	155	1033
4	Countour/Strip Crop	0.95%	0.15	105	700
5	Straight Row Crop	0.49%	0.20	77	385
6	Straight Row Crop	0.25%	0.14	102	729
7	Straight Row Crop	0.75%	0.23	135	587
8	Grassed Waterway	0.43%	0.30	174	580
9	Grassed Waterway	0.78%	0.40	64	160
				Total	5026

Tc	84	min
	1.40	hr
Tp	0.93	hours

Post Development (205)

Segment	Crop Type	Grade	Velocity	Length	Time
No.		%	m/s	m	s
1	Countour/Strip Crop	1.09%	0.15	230	1533
2	Grassed Waterway	0.70%	0.36	226	628
3	Pasture	0.25%	0.11	125	1138
4	Grassed Waterway	0.36%	0.24	444	1850
				Total	5149

Tc	86	minutes
	1.43	hours
Tp	0.95	hours

Post Development (207)

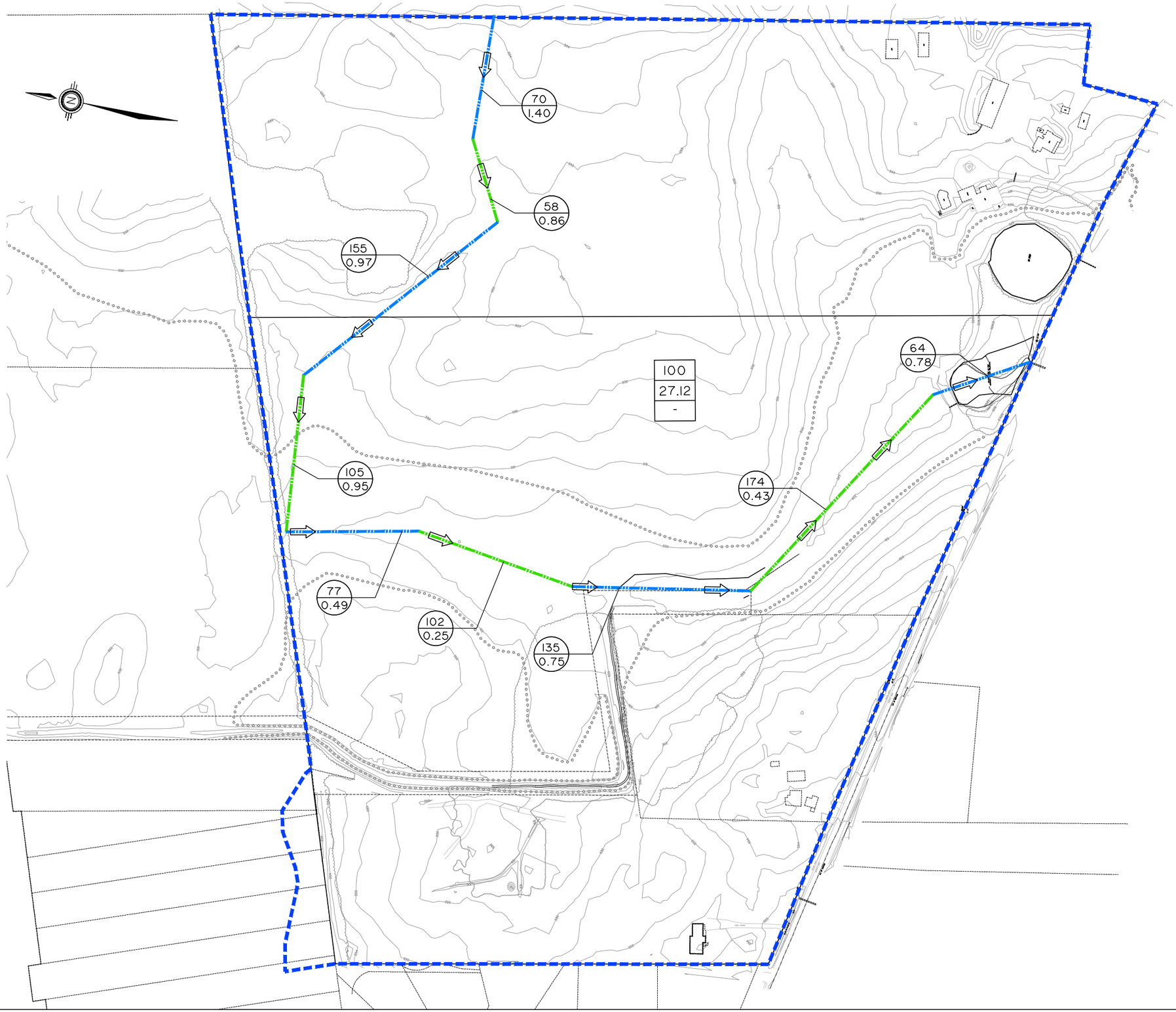
Segment	Crop Type	Grade	Velocity	Length	Time
No.		%	m/s	m	s
1	Contour/Strip Crop	1.68%	0.18	134	744
2	Contour/Strip Crop	0.29%	0.08	86	1079
				Total	1823

Tc	30	min
	0.51	hr
Tp	0.34	hours

Post Development (208)

Segment	Crop Type	Grade	Velocity	Length	Time
No.		%	m/s	m	s
1	Nearly Bare Soil	1.00%	0.30	37	123
				Total	123

Tc	2	min
	0.03	hr
Tp	0.02	hours



LEGEND:

- PRE-DEVELOPMENT DRAINAGE BOUNDARY
- 201 / 1.89 / 0.45 — SUBCATCHMENT ID, SUBCATCHMENT AREA (HA), PERCENT IMPERVIOUS
- EXISTING REGIONAL FLOODLINE
- FLOWPATH
- 64 / 0.78 — FLOW LENGTH, SLOPE (%)

1:2500

PRE DEVELOPMENT TIME TO PEAK

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

PROJECT NUMBER	FIGURE NO.
13:286	TP 1

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LEGEND:

- POST DEVELOPMENT DRAINAGE BOUNDARY
- OVERLAND FLOW ROUTE
- 201 / 1.89 / 0.45 — SUBCATCHMENT ID, SUBCATCHMENT AREA (HA), PERCENT IMPERVIOUS
- FLOW PATH
- PROPOSED REGIONAL FLOODLINE
- 197 / 1.40 — FLOW LENGTH (m), SLOPE (%)

1:2500

POST DEVELOPMENT TIME TO PEAK

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

PROJECT NUMBER	FIGURE NO.
13:286	TP 2

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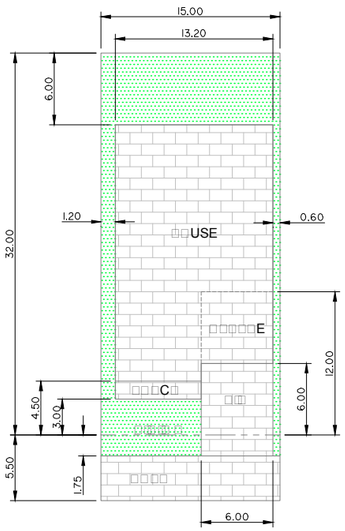

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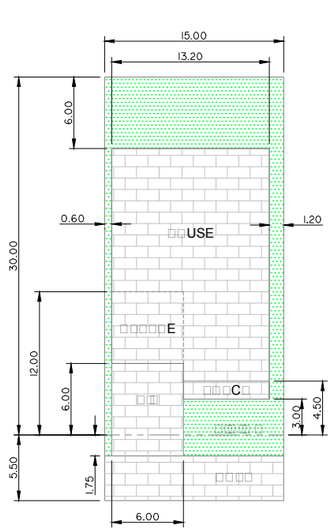

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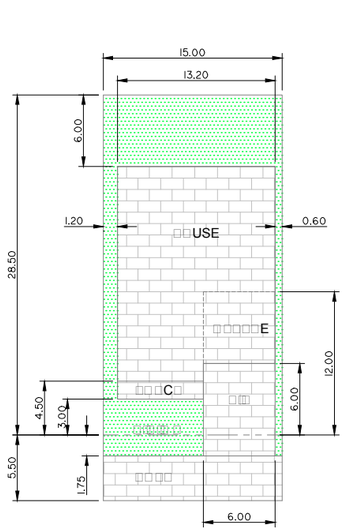

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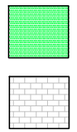

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□□□	34, 35, 44, 45, 46, 47, 48, 51, 52, 53, 54, 55, 56, 60, 61
□□□□□	41, 42, 43, 50, 57, 58

NOTE: ALL LOTS HAVE 15m FRONTAGE AND 32m DEPTH, UNLESS SPECIFIED IN THE ABOVE TABLE

TYPICAL LOT IMPERVIOUS COVERAGE

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13:286
FarSight Lands
Lot Coverage Calculation

Lot Level Evaluation - Refer to Figure 7 - Typical Lots

Lot Type	Number of Lots	Frontage	Depth	Lot	Roof	Driveway	Road	Lot plus half R.O.W.	Impervious	Pervious	Total Pervious	Total Lot Impervious	Total Impervious	TIMP
		m	m	m^2	m^2	m^2	m^2	m^2	m^2	m^2	m^2	m^2	m^2	
A	115	15	32.0	480.0	285.6	46.5	56.3	563	388	174	20027	38192	44660	69%
B	20	15	30.0	450.0	259.2	46.5	56.3	533	362	171	3411	6114	7239	68%
C	6	15	28.5	427.5	239.4	46.5	56.3	510	342	168	1007	1715	2053	67%
										Total	**24445**	**46021**	**53952**	**69%**

Roof Capture Impervious Breakdown

	XIMP Type (roof connection)			TIMP Type	
	100%	25%	50%	50% Exterior	50% Interior
XIMP (m^2)	332	118	189		
TIMP (m^2)	332	189		189	332

When surface draining roofs back onto open space (exterior) the back half of the roof is separate from the storm sewer catchment area.
When surface draining roofs are interior to the development, the entire roof area is assumed to contribute to the storm sewer.

Detailed Subcatchment Evaluation - Refer to Figure 6 - Stormwater Management Concept

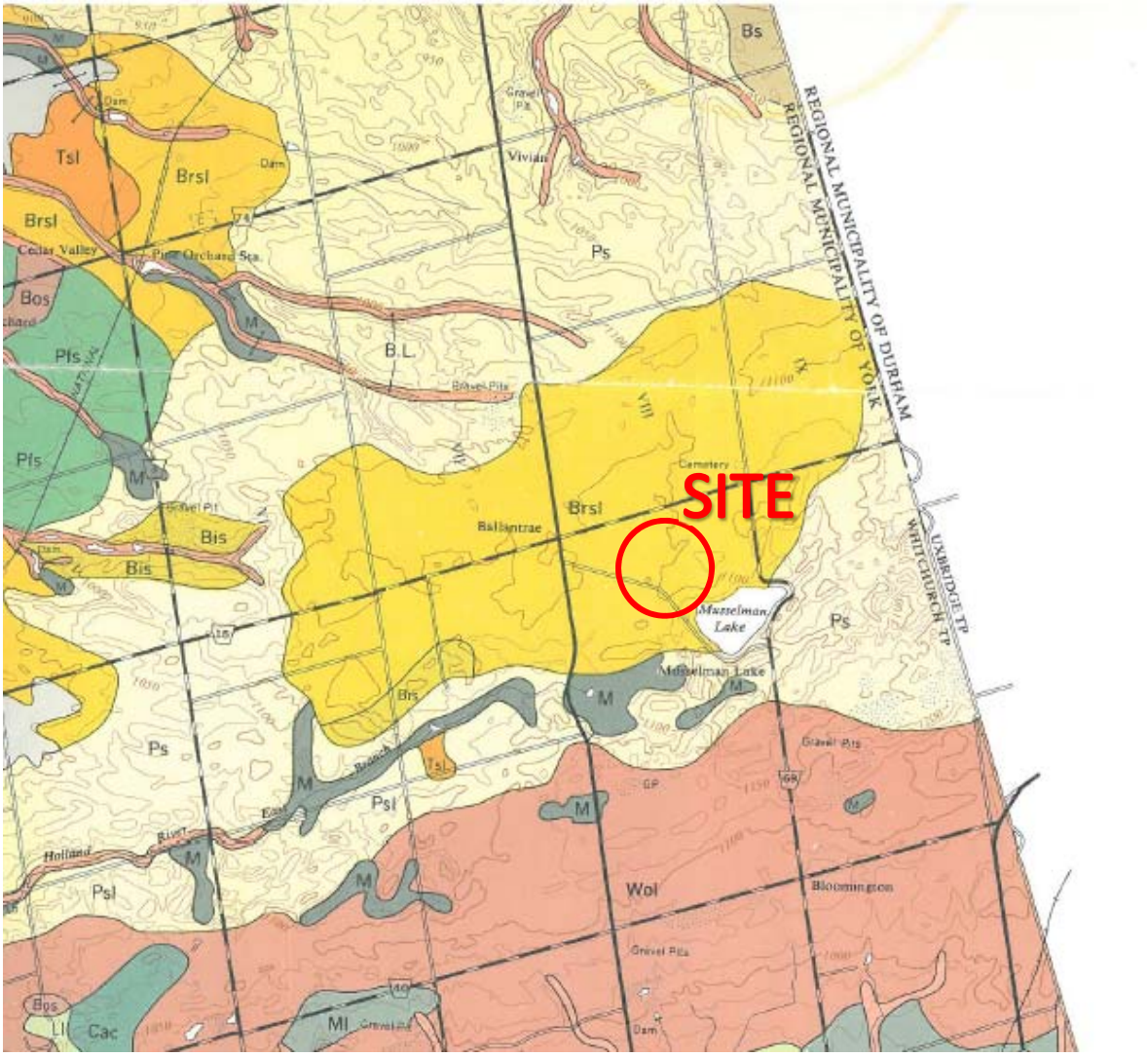
Catchment	XIMP Type (roof connection)			TIMP Type***		XIMP Lot	TIMP Lot	Road	XIMP total	TIMP total	Catchment Area	XIMP %	TIMP %
	100%	25%	50%	50% Exterior	50% Interior	m^2	m^2	m^2	m^2	m^2	m^2		
201		8	25	15	10	5676	7674	2943	8619	10617	18000	48%	59%
202	8	21	4		4	5890	7960	5268	11158	13228	25300	44%	52%
203	13	6				5025	5453	1516	6541	6969	8000	82%	87%
204	11	43	2		2	9101	12457	4819	13920	17276	30100	46%	57%
							Totals	**14546**	**40238**	**48090**			

***Assumes half of the roof area on exterior lots draining to open space will not be contributing to the storm sewer
Catchment 202, 203, and 204, drain to LID 7, LID 3, and LID 4, respectively

Road	14546	m^2
Lots	46021	m^2
Total	**60567**	m^2

Storage Volume (25mm) **1514** m^3

13: 286
FarSight Lands
Hydrologic Soil Map



Bsl	BRADY	sandy loam	Grey-Brown Podzolic	Imperfect
Bis	BRIDGMAN	sand	Dry sands	Excessive
Brsl	BRIGHTON	sandy loam	Grey-Brown Podzolic	Good
Brsl/g	BRIGHTON	sandy loam over gravel		
Bg	BURFORD	loam	Grey-Brown Podzolic	Good
Cac	CASHEL	clay	Grey-Brown Podzolic	Good

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FarSight Lands
Hydrologic Soil Conditions

DESIGN FLOODS FOR SMALL WATERSHEDS HYDROLOGIC SOIL CLASSIFICATION

CHART BA-I

CHART BA-1 -HYDROLOGIC SOIL GROUPS FOR AGRICULTURAL SOIL TYPES (1) (TENTATIVE)

Soil Series	Soil Type	Hyd. Soil Grp.	Soil Series	Soil Type	Hyd. Soil Grp.	Soil Series	Soil Type	Hyd. Soil Grp.
Alberton	si l	BC	Blackwell	c	C	Buzwah	c l	D
Allendale	s l	B	Blanche	si l	BC	Caledon	s l	A
Alliston	s l	AB	Blue	c l	C	Caistor	c l	C
Almonte	si c l	C	Bolingbr.	s	A	"	c	C
Ameliasbg	c l	C	Bondhead	s l	AB	Camilla	s l	AB
"	l	B	"	l	B	"	si l	BC
Ancaster	si l & s	B	Bookton	s l	AB	Campbell	si c	C
"	si l	BC	Boomer	l	B	Cane	si l	BC
Anstruther	s	A	Brady	s l	AB	"	si c l	C
Appleton	si l & s	B	Brant	s &si l	B	Carp	c &c l	C
Atherley	c	C	Brantford	si l	BC	Casey	si l	BC
"	si c l	C	"	si c l	C	Cashel	c	D
Athol	s l	A	"	c l	D	Castor	s l	AB
Atwood	c	C	Brentha	s l	A	"	si l	BC
Ayr	s l	B	"	l	B	Chesley	si l	BC
Bainsville	s	B	Brethour	si l	BC	"	si c l	C
"	si l	B	Breypen	limest.	B	"	c l	C
Balderson	s l	B	Bridgman	s	A	Chinguac.	l	BC
Bamford	s	AB	Brighton	s	A	"	si l	BC
Bancroft	s	A	"	s l	AB	"	c l	C
"	s l	B	[illegible]	s g	AB	"	c	D
Bass	c	D	Brockport	c	D	Christy	s l	B
Bastard	s	A	Brooke	l	B	Clyde	l	BC
Battersea	si l	BC	Brookston	s l	B	"	si l	BC
"	s l	AB	"	l	C	"	c l	C
Bearbrook	s l	B	"	si l	C	"	c	C
"	si c l	C	"	si c l	C	Colborne	s	A
"	c	C	"	c l	C	Colwood	s l	B
Belmeade	m & c	B	"	c	C	"	si l	B
Bennington	s l	B	Bucke	s	AB	Codrington	si l	BC
"	si l	A	"	s l	AB	Conestogo	l	BC
Berrien	s	AB	Burford	s l	A	Conover	c l	C
"	s l	AB	"	l	AB	"	l	BC
Berriedale	s & si	AB	Burnbrae	l	B	Cooksville	c	D
Beverly	l	BC	Burnstown	l	B	Coutts	s l	AB
"	si l	C	Burpee	s	A	"	l	BC
"	si c l	C	Burris	c l	C	Craigleith	c	C
Binbrook	si l	C	Buzwah	si c l	C	Cramahe	s g	A

Notes: 1. See footnotes to Chart B2-1

Sandy loam A B
sandy gravel A

2. For later additions see supplementary list at end.

3. Key to abbreviations: c - clay; f - fine; g - gravel; l - loam; ma - marl; m - muck; p - peat; r - rock; s - sand; si - silt.

13 286
FarSight Lands
CN and CN* Calculation

Pre Development
Subcatchment 100 (27.12 ha)

Land Use	Area (m^2)	% of Total	CN	Weighted CN	IA	Weighted IA	USDA Land Use Description
Cornfield	167928	62%	69.0	42.7	5.0	3.1	C+CR crop residue and countoured.
Woodlot	34358	13%	48.0	6.1	10.0	1.3	Fair condition woods AB
Mixed Residential	25507	9%	57.1	5.4	2.5	0.2	Mowed grass in good condition ~85% cover
Trees and Pond	10134	4%	55.6	2.1	5.0	0.2	Woods in good condition, forest litter not removed, 23% pond cover
Poor Grass	33273	12%	73.5	9.0	3.0	0.4	Poor condition, exposed soil and low cover grass, unkempt, tire tracks
Total	**271200**	**Weighted Average**		**65.3**		**5.2**	

Post Development
Subcatchment 205 (17.26 ha)

Land Use	Area (m^2)	% of Total	CN	Weighted CN	IA	Weighted IA	USDA Land Use Description
Cornfield	61669	36%	69.0	24.7	5.0	1.8	C+CR crop residue and countoured.
Meadow	33176	19%	44.0	8.5	8.0	1.5	Continuous grass protected from grazing and generally mowed for hay
Woodlot	23414	14%	48.0	6.5	10.0	1.4	Fair condition woods AB
Rear Lots Disconnected	19627	11%	93.0	10.6	2.3	0.3	75% of roof to rear yard at CN=98 and grass at CN=50
Mixed Residential	20110	12%	57.1	6.7	2.5	0.3	Mowed grass in good condition ~85% cover
Trees and Pond	10134	6%	55.6	3.3	5.0	0.3	Woods in good condition, forest litter not removed, 23% pond cover
Open Space	3411	2%	50.0	1.0	5.0	0.1	Good condition (grass cover > 75%)
Poor Grass	1072	1%	73.5	0.5	3.0	0.0	Poor condition, exposed soil and low cover grass, unkempt, tire tracks
Total	**172613**	**Weighted Average**		**61.6**		**5.6**	

Subcatchment 207 (1.48 ha)

Land Use	Area (m^2)	% of Total	CN	Weighted CN	IA	Weighted IA	USDA Land Use Description
Cornfield	14755	100%	69.0	69.0	5.0	5.0	C+CR crop residue and countoured.
Total	**14755**	**Weighted Average**		**69.0**		**5.0**	

Subcatchment 208 (0.27 ha)

Land Use	Area (m^2)	% of Total	CN	Weighted CN	IA	Weighted IA	USDA Land Use Description
Poor Grass	2662	100%	73.5	73.5	3.0	3.0	Poor condition, exposed soil and low cover grass, unkempt, tire tracks
Total	**2662**	**Weighted Average**		**73.5**		**3.0**	

Modified Curve Number Calculation

Subcatchment ID	CN2	IA	CN3	P	S	IA*	Q	S*	CN3*	CN2*
100	65.4	5.2	81.30	95.97	58.43	8.76	52.22	67.01	79.13	62
205	61.6	5.6	78.64	95.97	68.97	6.90	50.20	72.20	77.87	60
207	69.0	5.0	83.66	95.97	49.62	7.44	56.73	54.90	82.23	67
208	73.5	3.0	86.45	95.97	39.82	5.97	62.39	45.56	84.79	71

13 286
FarSight Lands
Visual OTTHYMO Input and Output Summary

Pre Development Input

Input Parameter	100
DT (min)	5
Area (ha)	27.12
CN	62
IA	5
TP (hr)	0.94
TIMP	-
XIMP	-
SLPP (%)	-
LGP (m)	-
MNP	-
SLPI (%)	-
LGI (m)	-
MNI	-

Pre Development Peak Flow at Catchment Outlet

	Peak Flow (m^3/s)	
Storm	12 Hour SCS	4 Hour Chicago
2 Year	0.20	0.14
5 Year	0.35	0.26
10 Year	0.48	0.35
25 Year	0.64	0.45
50 Year	0.76	0.59
100 Year	0.89	0.73

Post Development Input

Input Parameter	205	207	208	201	202	203	204
DT (min)	1						
Area (ha)	17.26	1.48	0.27	1.80	2.53	0.80	3.01
CN*	60	67	71	57			
IA	5.6	5.0	3.0	5			
TP (hr)	0.95	0.34	0.02	-			
TIMP	-			0.59	0.52	0.87	0.57
XIMP	-			0.48	0.44	0.82	0.46
SLPP (%)	-			2			
LGP (m)	-			40			
MNP	-			0.25			
SLPI (%)	-			1			
LGI (m)	-			109.54	129.87	73.03	141.66
MNI	-			0.013			

Post Development Peak Flow at Catchment Outlet

	Peak Flow (m^3/s)	
Storm	12 Hour SCS	4 Hour Chicago
2 Year	0.20	0.14
5 Year	0.34	0.26
10 Year	0.48	0.35
25 Year	0.61	0.44
50 Year	0.70	0.55
100 Year	0.79	0.67

13: 286
FarSight Lands
Pre Development VO Schematic

```
       V    V   I    SSSSS  U   U    A    L             (v 5.0.2027)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

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DATE: 07/10/2018 TIME: 03:43:33

USER:

COMMENTS: _____

** SIMULATION : Run 01 **

2 YEAR 4 HOUR CHICAGO

| CHICAGO STORM |
| Ptotal= 34.80 mm |

IDF curve parameters: A= 647.700
B= 4.000
C= 0.784
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.27	1.17	17.17	2.17	5.25	3.17	2.69
0.33	2.59	1.33	81.81	2.33	4.49	3.33	2.50
0.50	3.04	1.50	22.50	2.50	3.93	3.50	2.34
0.67	3.72	1.67	11.86	2.67	3.51	3.67	2.20
0.83	4.86	1.83	8.23	2.83	3.18	3.83	2.08
1.00	7.29	2.00	6.38	3.00	2.91	4.00	1.98

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

Area (ha)= 27.12 Curve Number (CN)= 62.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.94

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.27	1.083	17.17	2.083	5.25	3.08	2.69
0.167	2.27	1.167	17.17	2.167	5.25	3.17	2.69
0.250	2.59	1.250	81.81	2.250	4.49	3.25	2.50
0.333	2.59	1.333	81.81	2.333	4.49	3.33	2.50
0.417	3.04	1.417	22.50	2.417	3.93	3.42	2.34
0.500	3.04	1.500	22.50	2.500	3.93	3.50	2.34
0.583	3.72	1.583	11.86	2.583	3.51	3.58	2.20
0.667	3.72	1.667	11.86	2.667	3.51	3.67	2.20
0.750	4.86	1.750	8.23	2.750	3.18	3.75	2.08
0.833	4.86	1.833	8.23	2.833	3.18	3.83	2.08
0.917	7.29	1.917	6.38	2.917	2.91	3.92	1.98
1.000	7.29	2.000	6.38	3.000	2.91	4.00	1.98

Unit Hyd Qpeak (cms)= 1.102

```
     PEAK FLOW       (cms)=   0.137 (i)
     TIME TO PEAK    (hrs)=   2.583
     RUNOFF VOLUME    (mm)=   4.788
     TOTAL RAINFALL   (mm)=  34.800
     RUNOFF COEFFICIENT   =   0.138

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

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

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

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


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68
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68


DATE: 07/10/2018                          TIME: 03:43:33

USER:


COMMENTS: _____________________________________________________________


--------------------------------------------------------------------------------------------------------------------
  ********************************************
  ** SIMULATION : Run 02                     **
  ********************************************
  5 YEAR 4 HOUR CHICAGO
--------------------
| CHICAGO STORM    |    IDF curve parameters: A= 929.800
| Ptotal= 46.26 mm |                          B=   4.000
--------------------                          C=   0.798
                       used in:   INTENSITY =  A / (t + B)^C

                       Duration of storm  =  4.00 hrs
                       Storm time step    = 10.00 min
                       Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    2.85 |  1.17   22.78 |  2.17    6.71 |  3.17    3.38
                0.33    3.26 |  1.33  113.18 |  2.33    5.71 |  3.33    3.14
                0.50    3.84 |  1.50   30.05 |  2.50    4.99 |  3.50    2.94
                0.67    4.71 |  1.67   15.53 |  2.67    4.45 |  3.67    2.76
                0.83    6.21 |  1.83   10.66 |  2.83    4.02 |  3.83    2.60
                1.00    9.42 |  2.00    8.20 |  3.00    3.67 |  4.00    2.47


--------------------------------------------------------------------------------
--------------------
| CALIB            |
| NASHYD   (  0002)|   Area    (ha)=  27.12   Curve Number   (CN)= 62.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.94

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


                          ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    2.85 | 1.083   22.78 | 2.083    6.71 |  3.08    3.38
               0.167    2.85 | 1.167   22.78 | 2.167    6.71 |  3.17    3.38
               0.250    3.26 | 1.250  113.18 | 2.250    5.71 |  3.25    3.14
               0.333    3.26 | 1.333  113.18 | 2.333    5.71 |  3.33    3.14
```

0.417	3.84	1.417	30.05	2.417	4.99	3.42	2.94
0.500	3.84	1.500	30.05	2.500	4.99	3.50	2.94
0.583	4.71	1.583	15.53	2.583	4.45	3.58	2.76
0.667	4.71	1.667	15.53	2.667	4.45	3.67	2.76
0.750	6.21	1.750	10.66	2.750	4.02	3.75	2.60
0.833	6.21	1.833	10.66	2.833	4.02	3.83	2.60
0.917	9.42	1.917	8.20	2.917	3.67	3.92	2.47
1.000	9.42	2.000	8.20	3.000	3.67	4.00	2.47

Unit Hyd Qpeak (cms)= 1.102

PEAK FLOW (cms)= 0.255 (i)
TIME TO PEAK (hrs)= 2.500
RUNOFF VOLUME (mm)= 8.643
TOTAL RAINFALL (mm)= 46.257
RUNOFF COEFFICIENT = 0.187

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

```
       V    V   I    SSSSS  U   U    A    L             (v 5.0.2027)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
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DATE: 07/10/2018 TIME: 03:43:33

USER:

COMMENTS: _____

```
  ********************************************
  ** SIMULATION : Run 03                     **
  ********************************************
  10 YEAR 4 HOUR CHICAGO
--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1021.000
| Ptotal= 54.13 mm |                          B=   3.000
--------------------                          C=   0.787
                       used in:   INTENSITY =  A / (t + B)^C

                       Duration of storm  =  4.00 hrs
                       Storm time step    = 10.00 min
                       Time to peak ratio =  0.33
```

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.17	25.32	2.17	7.85	3.17	4.06
0.33	3.92	1.33	135.63	2.33	6.73	3.33	3.78
0.50	4.59	1.50	33.17	2.50	5.91	3.50	3.54
0.67	5.59	1.67	17.50	2.67	5.29	3.67	3.33
0.83	7.28	1.83	12.21	2.83	4.79	3.83	3.15
1.00	10.84	2.00	9.50	3.00	4.39	4.00	2.99

```
--------------------
| CALIB            |
| NASHYD   (  0002)|   Area    (ha)=  27.12   Curve Number   (CN)= 62.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.94
```

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	3.43	1.083	25.32	2.083	7.85	3.08	4.06
0.167	3.43	1.167	25.32	2.167	7.85	3.17	4.06
0.250	3.92	1.250	135.63	2.250	6.73	3.25	3.78
0.333	3.92	1.333	135.63	2.333	6.73	3.33	3.78
0.417	4.59	1.417	33.17	2.417	5.91	3.42	3.54
0.500	4.59	1.500	33.17	2.500	5.91	3.50	3.54
0.583	5.59	1.583	17.50	2.583	5.29	3.58	3.33
0.667	5.59	1.667	17.50	2.667	5.29	3.67	3.33
0.750	7.28	1.750	12.21	2.750	4.79	3.75	3.15
0.833	7.28	1.833	12.21	2.833	4.79	3.83	3.15
0.917	10.84	1.917	9.50	2.917	4.39	3.92	2.99
1.000	10.84	2.000	9.50	3.000	4.39	4.00	2.99

Unit Hyd Qpeak (cms)= 1.102

PEAK FLOW (cms)= 0.349 (i)
TIME TO PEAK (hrs)= 2.500
RUNOFF VOLUME (mm)= 11.787
TOTAL RAINFALL (mm)= 54.135
RUNOFF COEFFICIENT = 0.218

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

```
       V    V   I    SSSSS  U   U    A    L              (v 5.0.2027)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
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DATE: 07/10/2018 TIME: 03:43:33

USER:

COMMENTS: _____

```
  ********************************************
  ** SIMULATION : Run 04                     **
  ********************************************
```

25 YEAR 4 HOUR CHICAGO

```
--------------------
| CHICAGO STORM    |
| Ptotal= 62.15 mm |
--------------------
```

IDF curve parameters: A=1100.000
B= 2.000
C= 0.776
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.06	1.17	27.34	2.17	9.00	3.17	4.78
0.33	4.62	1.33	159.94	2.33	7.77	3.33	4.46
0.50	5.38	1.50	35.45	2.50	6.86	3.50	4.19
0.67	6.51	1.67	19.27	2.67	6.16	3.67	3.95
0.83	8.38	1.83	13.70	2.83	5.61	3.83	3.74

1.00	12.24	2.00	10.80	3.00	5.16	4.00	3.55

CALIB			
NASHYD (0002)	Area (ha)=	27.12	Curve Number (CN)= 62.0
ID= 1 DT= 5.0 min	Ia (mm)=	5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.94	

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.06	1.083	27.34	2.083	9.00	3.08	4.78
0.167	4.06	1.167	27.34	2.167	9.00	3.17	4.78
0.250	4.62	1.250	159.94	2.250	7.77	3.25	4.46
0.333	4.62	1.333	159.94	2.333	7.77	3.33	4.46
0.417	5.38	1.417	35.45	2.417	6.86	3.42	4.19
0.500	5.38	1.500	35.45	2.500	6.86	3.50	4.19
0.583	6.51	1.583	19.27	2.583	6.16	3.58	3.95
0.667	6.51	1.667	19.27	2.667	6.16	3.67	3.95
0.750	8.38	1.750	13.70	2.750	5.61	3.75	3.74
0.833	8.38	1.833	13.70	2.833	5.61	3.83	3.74
0.917	12.24	1.917	10.80	2.917	5.16	3.92	3.55
1.000	12.24	2.000	10.80	3.000	5.16	4.00	3.55

Unit Hyd Qpeak (cms)= 1.102

PEAK FLOW (cms)= 0.454 (i)
TIME TO PEAK (hrs)= 2.500
RUNOFF VOLUME (mm)= 15.348
TOTAL RAINFALL (mm)= 62.155
RUNOFF COEFFICIENT = 0.247

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

```
       V    V   I    SSSSS  U   U    A    L              (v 5.0.2027)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\c3ac8e36-aa5e-43f8-957e-64e5adb20

Summary filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\c3ac8e36-aa5e-43f8-957e-64e5adb20

DATE: 07/10/2018 TIME: 03:43:33

USER:

COMMENTS: _____

```
  ********************************************
  ** SIMULATION : Run 05                     **
  ********************************************
```

50 YEAR 4 HOUR CHICAGO

CHICAGO STORM	IDF curve parameters:	A=1448.000
Ptotal= 70.32 mm		B= 3.000
		C= 0.803

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

Duration of storm = 4.00 hrs

Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.16	1.17	32.64	2.17	9.72	3.17	4.94
0.33	4.76	1.33	184.62	2.33	8.29	3.33	4.59
0.50	5.60	1.50	43.10	2.50	7.26	3.50	4.29
0.67	6.86	1.67	22.23	2.67	6.47	3.67	4.03
0.83	9.00	1.83	15.32	2.83	5.85	3.83	3.81
1.00	13.56	2.00	11.84	3.00	5.35	4.00	3.61

CALIB			
NASHYD (0002)	Area (ha)= 27.12	Curve Number (CN)= 62.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.94		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.16	1.083	32.64	2.083	9.72	3.08	4.94
0.167	4.16	1.167	32.64	2.167	9.72	3.17	4.94
0.250	4.76	1.250	184.62	2.250	8.29	3.25	4.59
0.333	4.76	1.333	184.62	2.333	8.29	3.33	4.59
0.417	5.60	1.417	43.10	2.417	7.26	3.42	4.29
0.500	5.60	1.500	43.10	2.500	7.26	3.50	4.29
0.583	6.86	1.583	22.23	2.583	6.47	3.58	4.03
0.667	6.86	1.667	22.23	2.667	6.47	3.67	4.03
0.750	9.00	1.750	15.32	2.750	5.85	3.75	3.81
0.833	9.00	1.833	15.32	2.833	5.85	3.83	3.81
0.917	13.56	1.917	11.84	2.917	5.35	3.92	3.61
1.000	13.56	2.000	11.84	3.000	5.35	4.00	3.61

Unit Hyd Qpeak (cms)= 1.102

PEAK FLOW (cms)= 0.590 (i)
TIME TO PEAK (hrs)= 2.500
RUNOFF VOLUME (mm)= 19.304
TOTAL RAINFALL (mm)= 70.316
RUNOFF COEFFICIENT = 0.275

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

```
       V    V   I    SSSSS  U   U    A    L              (v 5.0.2027)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\ae2d5749-9ddc-4ac3-9eb2-e8b647a5d

Summary filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\ae2d5749-9ddc-4ac3-9eb2-e8b647a5d

DATE: 07/10/2018 TIME: 03:43:33

USER:

COMMENTS: _____

****

** SIMULATION : Run 06 **
****

100 YEAR 4 HOUR CHICAGO

| CHICAGO STORM | Ptotal= 78.03 mm |

IDF curve parameters: A=1770.000
B= 4.000
C= 0.820
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.34	1.17	38.21	2.17	10.60	3.17	5.19
0.33	5.00	1.33	203.31	2.33	8.96	3.33	4.81
0.50	5.92	1.50	50.96	2.50	7.78	3.50	4.48
0.67	7.33	1.67	25.51	2.67	6.90	3.67	4.20
0.83	9.77	1.83	17.18	2.83	6.21	3.83	3.96
1.00	15.10	2.00	13.06	3.00	5.65	4.00	3.74

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

Area (ha)= 27.12 Curve Number (CN)= 62.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.94

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.250	5.00	1.250	203.30	2.250	8.96	3.25	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Unit Hyd Qpeak (cms)= 1.102

PEAK FLOW (cms)= 0.727 (i)
TIME TO PEAK (hrs)= 2.417
RUNOFF VOLUME (mm)= 23.318
TOTAL RAINFALL (mm)= 78.027
RUNOFF COEFFICIENT = 0.299

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

V V I SSSSS U U A L (v 5.0.2027)
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L
VV I SSSSS UUUUU A A LLLLL

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

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Output filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\e8471c79-2ba6-4f3d-a74c-a2a1cf834

Summary filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\e8471c79-2ba6-4f3d-a74c-a2a1cf834

USER:

COMMENTS: _____

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

READ STORM	Ptotal= 44.51 mm

Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\6d855ddb-cc48-438b-b3f9-a531d90d953e\41490e84

Comments: 2-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.11	3.25	1.78	6.25	8.01	9.25	1.56
0.50	1.11	3.50	1.78	6.50	8.01	9.50	1.56
0.75	1.11	3.75	1.78	6.75	3.56	9.75	1.56
1.00	1.11	4.00	1.78	7.00	3.56	10.00	1.56
1.25	1.11	4.25	2.67	7.25	2.67	10.25	0.89
1.50	1.11	4.50	2.67	7.50	2.67	10.50	0.89
1.75	1.11	4.75	3.56	7.75	2.67	10.75	0.89
2.00	1.11	5.00	3.56	8.00	2.67	11.00	0.89
2.25	1.34	5.25	5.34	8.25	1.56	11.25	0.89
2.50	1.34	5.50	5.34	8.50	1.56	11.50	0.89
2.75	1.34	5.75	21.36	8.75	1.56	11.75	0.89
3.00	1.34	6.00	58.75	9.00	1.56	12.00	0.89

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

Area (ha)= 27.12 Curve Number (CN)= 62.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.94

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.11	3.083	1.78	6.083	8.01	9.08	1.56
0.167	1.11	3.167	1.78	6.167	8.01	9.17	1.56
0.250	1.11	3.250	1.78	6.250	8.01	9.25	1.56
0.333	1.11	3.333	1.78	6.333	8.01	9.33	1.56
0.417	1.11	3.417	1.78	6.417	8.01	9.42	1.56
0.500	1.11	3.500	1.78	6.500	8.01	9.50	1.56
0.583	1.11	3.583	1.78	6.583	3.56	9.58	1.56
0.667	1.11	3.667	1.78	6.667	3.56	9.67	1.56
0.750	1.11	3.750	1.78	6.750	3.56	9.75	1.56
0.833	1.11	3.833	1.78	6.833	3.56	9.83	1.56
0.917	1.11	3.917	1.78	6.917	3.56	9.92	1.56
1.000	1.11	4.000	1.78	7.000	3.56	10.00	1.56
1.083	1.11	4.083	2.67	7.083	2.67	10.08	0.89
1.167	1.11	4.167	2.67	7.167	2.67	10.17	0.89
1.250	1.11	4.250	2.67	7.250	2.67	10.25	0.89
1.333	1.11	4.333	2.67	7.333	2.67	10.33	0.89
1.417	1.11	4.417	2.67	7.417	2.67	10.42	0.89
1.500	1.11	4.500	2.67	7.500	2.67	10.50	0.89
1.583	1.11	4.583	3.56	7.583	2.67	10.58	0.89
1.667	1.11	4.667	3.56	7.667	2.67	10.67	0.89
1.750	1.11	4.750	3.56	7.750	2.67	10.75	0.89
1.833	1.11	4.833	3.56	7.833	2.67	10.83	0.89
1.917	1.11	4.917	3.56	7.917	2.67	10.92	0.89
2.000	1.11	5.000	3.56	8.000	2.67	11.00	0.89
2.083	1.34	5.083	5.34	8.083	1.56	11.08	0.89
2.167	1.34	5.167	5.34	8.167	1.56	11.17	0.89
2.250	1.34	5.250	5.34	8.250	1.56	11.25	0.89
2.333	1.34	5.333	5.34	8.333	1.56	11.33	0.89
2.417	1.34	5.417	5.34	8.417	1.56	11.42	0.89
2.500	1.34	5.500	5.34	8.500	1.56	11.50	0.89
2.583	1.34	5.583	21.36	8.583	1.56	11.58	0.89
2.667	1.34	5.667	21.36	8.667	1.56	11.67	0.89
2.750	1.34	5.750	21.37	8.750	1.56	11.75	0.89
2.833	1.34	5.833	58.75	8.833	1.56	11.83	0.89
2.917	1.34	5.917	58.75	8.917	1.56	11.92	0.89
3.000	1.34	6.000	58.75	9.000	1.56	12.00	0.89

Unit Hyd Qpeak (cms)= 1.102

PEAK FLOW (cms)= 0.203 (i)
TIME TO PEAK (hrs)= 7.000
RUNOFF VOLUME (mm)= 7.998

TOTAL RAINFALL (mm)= 44.510
RUNOFF COEFFICIENT = 0.180

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

```
       V    V   I    SSSSS  U   U    A    L             (v 5.0.2027)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\44ccb6ef-2809-4662-a757-910002fea
Summary filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\44ccb6ef-2809-4662-a757-910002fea

DATE: 07/10/2018 TIME: 03:43:33

USER:

COMMENTS: _____

****
** SIMULATION : Run 08 **
****

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\6d855ddb-cc48-438b-b3f9-a531d90d953e\751c12f9
Ptotal= 58.27 mm	Comments: 5-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.46	3.25	2.33	6.25	10.49	9.25	2.04
0.50	1.46	3.50	2.33	6.50	10.49	9.50	2.04
0.75	1.46	3.75	2.33	6.75	4.66	9.75	2.04
1.00	1.46	4.00	2.33	7.00	4.66	10.00	2.04
1.25	1.46	4.25	3.50	7.25	3.50	10.25	1.17
1.50	1.46	4.50	3.50	7.50	3.50	10.50	1.17
1.75	1.46	4.75	4.66	7.75	3.50	10.75	1.17
2.00	1.46	5.00	4.66	8.00	3.50	11.00	1.17
2.25	1.75	5.25	6.99	8.25	2.04	11.25	1.17
2.50	1.75	5.50	6.99	8.50	2.04	11.50	1.17
2.75	1.75	5.75	27.97	8.75	2.04	11.75	1.17
3.00	1.75	6.00	76.92	9.00	2.04	12.00	1.17

CALIB	
NASHYD (0002)	Area (ha)= 27.12 Curve Number (CN)= 62.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.94

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.46	3.083	2.33	6.083	10.49	9.08	2.04
0.167	1.46	3.167	2.33	6.167	10.49	9.17	2.04
0.250	1.46	3.250	2.33	6.250	10.49	9.25	2.04
0.333	1.46	3.333	2.33	6.333	10.49	9.33	2.04
0.417	1.46	3.417	2.33	6.417	10.49	9.42	2.04

0.500	1.46	3.500	2.33	6.500	10.49	9.50	2.04
0.583	1.46	3.583	2.33	6.583	4.66	9.58	2.04
0.667	1.46	3.667	2.33	6.667	4.66	9.67	2.04
0.750	1.46	3.750	2.33	6.750	4.66	9.75	2.04
0.833	1.46	3.833	2.33	6.833	4.66	9.83	2.04
0.917	1.46	3.917	2.33	6.917	4.66	9.92	2.04
1.000	1.46	4.000	2.33	7.000	4.66	10.00	2.04
1.083	1.46	4.083	3.50	7.083	3.50	10.08	1.17
1.167	1.46	4.167	3.50	7.167	3.50	10.17	1.17
1.250	1.46	4.250	3.50	7.250	3.50	10.25	1.17
1.333	1.46	4.333	3.50	7.333	3.50	10.33	1.17
1.417	1.46	4.417	3.50	7.417	3.50	10.42	1.17
1.500	1.46	4.500	3.50	7.500	3.50	10.50	1.17
1.583	1.46	4.583	4.66	7.583	3.50	10.58	1.17
1.667	1.46	4.667	4.66	7.667	3.50	10.67	1.17
1.750	1.46	4.750	4.66	7.750	3.50	10.75	1.17
1.833	1.46	4.833	4.66	7.833	3.50	10.83	1.17
1.917	1.46	4.917	4.66	7.917	3.50	10.92	1.17
2.000	1.46	5.000	4.66	8.000	3.50	11.00	1.17
2.083	1.75	5.083	6.99	8.083	2.04	11.08	1.17
2.167	1.75	5.167	6.99	8.167	2.04	11.17	1.17
2.250	1.75	5.250	6.99	8.250	2.04	11.25	1.17
2.333	1.75	5.333	6.99	8.333	2.04	11.33	1.17
2.417	1.75	5.417	6.99	8.417	2.04	11.42	1.17
2.500	1.75	5.500	6.99	8.500	2.04	11.50	1.17
2.583	1.75	5.583	27.97	8.583	2.04	11.58	1.17
2.667	1.75	5.667	27.97	8.667	2.04	11.67	1.17
2.750	1.75	5.750	27.97	8.750	2.04	11.75	1.17
2.833	1.75	5.833	76.92	8.833	2.04	11.83	1.17
2.917	1.75	5.917	76.92	8.917	2.04	11.92	1.17
3.000	1.75	6.000	76.92	9.000	2.04	12.00	1.17

Unit Hyd Qpeak (cms)= 1.102

PEAK FLOW (cms)= 0.351 (i)
TIME TO PEAK (hrs)= 6.917
RUNOFF VOLUME (mm)= 13.581
TOTAL RAINFALL (mm)= 58.270
RUNOFF COEFFICIENT = 0.233

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

```
       V    V   I    SSSSS  U   U    A    L             (v 5.0.2027)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\a56ba9e3-1680-40a2-b95b-c58a89400
Summary filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\a56ba9e3-1680-40a2-b95b-c58a89400

DATE: 07/10/2018 TIME: 03:43:33

USER:

COMMENTS: _____

```
  ********************************************
  ** SIMULATION : Run 09                     **
  ********************************************
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|    READ STORM    |    Filename: C:\Users\noconnor.SKAENG\AppD
|                  |              ata\Local\Temp\
```

		6d855ddb-cc48-438b-b3f9-a531d90d953e\f24b7e6f
Ptotal= 68.87 mm	Comments: 10-Year 12-Hour SCS II Design Storm	

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.72	3.25	2.75	6.25	12.40	9.25	2.41
0.50	1.72	3.50	2.75	6.50	12.40	9.50	2.41
0.75	1.72	3.75	2.75	6.75	5.51	9.75	2.41
1.00	1.72	4.00	2.75	7.00	5.51	10.00	2.41
1.25	1.72	4.25	4.13	7.25	4.13	10.25	1.38
1.50	1.72	4.50	4.13	7.50	4.13	10.50	1.38
1.75	1.72	4.75	5.51	7.75	4.13	10.75	1.38
2.00	1.72	5.00	5.51	8.00	4.13	11.00	1.38
2.25	2.07	5.25	8.26	8.25	2.41	11.25	1.38
2.50	2.07	5.50	8.26	8.50	2.41	11.50	1.38
2.75	2.07	5.75	33.06	8.75	2.41	11.75	1.38
3.00	2.07	6.00	90.91	9.00	2.41	12.00	1.38

CALIB			
NASHYD (0002)	Area (ha)= 27.12	Curve Number (CN)= 62.0	
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.94		

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	1.72	3.083	2.75	6.083	12.40	9.08	2.41
0.167	1.72	3.167	2.75	6.167	12.40	9.17	2.41
0.250	1.72	3.250	2.75	6.250	12.40	9.25	2.41
0.333	1.72	3.333	2.75	6.333	12.40	9.33	2.41
0.417	1.72	3.417	2.75	6.417	12.40	9.42	2.41
0.500	1.72	3.500	2.75	6.500	12.40	9.50	2.41
0.583	1.72	3.583	2.75	6.583	5.51	9.58	2.41
0.667	1.72	3.667	2.75	6.667	5.51	9.67	2.41
0.750	1.72	3.750	2.75	6.750	5.51	9.75	2.41
0.833	1.72	3.833	2.75	6.833	5.51	9.83	2.41
0.917	1.72	3.917	2.75	6.917	5.51	9.92	2.41
1.000	1.72	4.000	2.75	7.000	5.51	10.00	2.41
1.083	1.72	4.083	4.13	7.083	4.13	10.08	1.38
1.167	1.72	4.167	4.13	7.167	4.13	10.17	1.38
1.250	1.72	4.250	4.13	7.250	4.13	10.25	1.38
1.333	1.72	4.333	4.13	7.333	4.13	10.33	1.38
1.417	1.72	4.417	4.13	7.417	4.13	10.42	1.38
1.500	1.72	4.500	4.13	7.500	4.13	10.50	1.38
1.583	1.72	4.583	5.51	7.583	4.13	10.58	1.38
1.667	1.72	4.667	5.51	7.667	4.13	10.67	1.38
1.750	1.72	4.750	5.51	7.750	4.13	10.75	1.38
1.833	1.72	4.833	5.51	7.833	4.13	10.83	1.38
1.917	1.72	4.917	5.51	7.917	4.13	10.92	1.38
2.000	1.72	5.000	5.51	8.000	4.13	11.00	1.38
2.083	2.07	5.083	8.26	8.083	2.41	11.08	1.38
2.167	2.07	5.167	8.26	8.167	2.41	11.17	1.38
2.250	2.07	5.250	8.26	8.250	2.41	11.25	1.38
2.333	2.07	5.333	8.26	8.333	2.41	11.33	1.38
2.417	2.07	5.417	8.26	8.417	2.41	11.42	1.38
2.500	2.07	5.500	8.26	8.500	2.41	11.50	1.38
2.583	2.07	5.583	33.06	8.583	2.41	11.58	1.38
2.667	2.07	5.667	33.06	8.667	2.41	11.67	1.38
2.750	2.07	5.750	33.06	8.750	2.41	11.75	1.38
2.833	2.07	5.833	90.91	8.833	2.41	11.83	1.38
2.917	2.07	5.917	90.91	8.917	2.41	11.92	1.38
3.000	2.07	6.000	90.91	9.000	2.41	12.00	1.38

Unit Hyd Qpeak (cms)= 1.102

PEAK FLOW (cms)= 0.484 (i)
TIME TO PEAK (hrs)= 6.917
RUNOFF VOLUME (mm)= 18.579
TOTAL RAINFALL (mm)= 68.867
RUNOFF COEFFICIENT = 0.270

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

```
V    V   I    SSSSS  U   U    A    L              (v 5.0.2027)
V    V   I    SS     U   U   A A   L
 V  V    I     SS    U   U  AAAAA  L
 V  V    I      SS   U   U  A   A  L
  VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\accece79-a452-49cc-a06f-dc27bce8b
Summary filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\accece79-a452-49cc-a06f-dc27bce8b

DATE: 07/10/2018 TIME: 03:43:33

USER:

COMMENTS: _____

****
** SIMULATION : Run 10 **
****

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\6d855ddb-cc48-438b-b3f9-a531d90d953e\c37e24c1
Ptotal= 79.86 mm	Comments: 25-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.00	3.25	3.19	6.25	14.37	9.25	2.80
0.50	2.00	3.50	3.19	6.50	14.37	9.50	2.80
0.75	2.00	3.75	3.19	6.75	6.39	9.75	2.80
1.00	2.00	4.00	3.19	7.00	6.39	10.00	2.80
1.25	2.00	4.25	4.79	7.25	4.79	10.25	1.60
1.50	2.00	4.50	4.79	7.50	4.79	10.50	1.60
1.75	2.00	4.75	6.39	7.75	4.79	10.75	1.60
2.00	2.00	5.00	6.39	8.00	4.79	11.00	1.60
2.25	2.40	5.25	9.58	8.25	2.80	11.25	1.60
2.50	2.40	5.50	9.58	8.50	2.80	11.50	1.60
2.75	2.40	5.75	38.33	8.75	2.80	11.75	1.60
3.00	2.40	6.00	105.42	9.00	2.80	12.00	1.60

CALIB NASHYD (0002)	Area (ha)= 27.12	Curve Number (CN)= 62.0
ID= 1 DT= 5.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.94	

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.00	3.083	3.19	6.083	14.37	9.08	2.80
0.167	2.00	3.167	3.19	6.167	14.37	9.17	2.80
0.250	2.00	3.250	3.19	6.250	14.37	9.25	2.80
0.333	2.00	3.333	3.19	6.333	14.37	9.33	2.80
0.417	2.00	3.417	3.19	6.417	14.37	9.42	2.80
0.500	2.00	3.500	3.19	6.500	14.37	9.50	2.80
0.583	2.00	3.583	3.19	6.583	6.39	9.58	2.80
0.667	2.00	3.667	3.19	6.667	6.39	9.67	2.80
0.750	2.00	3.750	3.19	6.750	6.39	9.75	2.80
0.833	2.00	3.833	3.19	6.833	6.39	9.83	2.80
0.917	2.00	3.917	3.19	6.917	6.39	9.92	2.80
1.000	2.00	4.000	3.19	7.000	6.39	10.00	2.80
1.083	2.00	4.083	4.79	7.083	4.79	10.08	1.60
1.167	2.00	4.167	4.79	7.167	4.79	10.17	1.60
1.250	2.00	4.250	4.79	7.250	4.79	10.25	1.60
1.333	2.00	4.333	4.79	7.333	4.79	10.33	1.60
1.417	2.00	4.417	4.79	7.417	4.79	10.42	1.60
1.500	2.00	4.500	4.79	7.500	4.79	10.50	1.60
1.583	2.00	4.583	6.39	7.583	4.79	10.58	1.60
1.667	2.00	4.667	6.39	7.667	4.79	10.67	1.60
1.750	2.00	4.750	6.39	7.750	4.79	10.75	1.60
1.833	2.00	4.833	6.39	7.833	4.79	10.83	1.60

1.917	2.00	4.917	6.39	7.917	4.79	10.92	1.60
2.000	2.00	5.000	6.39	8.000	4.79	11.00	1.60
2.083	2.40	5.083	9.58	8.083	2.80	11.08	1.60
2.167	2.40	5.167	9.58	8.167	2.80	11.17	1.60
2.250	2.40	5.250	9.58	8.250	2.80	11.25	1.60
2.333	2.40	5.333	9.58	8.333	2.80	11.33	1.60
2.417	2.40	5.417	9.58	8.417	2.80	11.42	1.60
2.500	2.40	5.500	9.58	8.500	2.80	11.50	1.60
2.583	2.40	5.583	38.33	8.583	2.80	11.58	1.60
2.667	2.40	5.667	38.33	8.667	2.80	11.67	1.60
2.750	2.40	5.750	38.33	8.750	2.80	11.75	1.60
2.833	2.40	5.833	105.42	8.833	2.80	11.83	1.60
2.917	2.40	5.917	105.42	8.917	2.80	11.92	1.60
3.000	2.40	6.000	105.41	9.000	2.80	12.00	1.60

Unit Hyd Qpeak (cms)= 1.102

PEAK FLOW (cms)= 0.637 (i)
TIME TO PEAK (hrs)= 6.917
RUNOFF VOLUME (mm)= 24.308
TOTAL RAINFALL (mm)= 79.860
RUNOFF COEFFICIENT = 0.304

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

```
       V    V   I    SSSSS  U   U    A    L             (v 5.0.2027)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\9c55d5c3-5c48-4959-abdb-2e49ce96e

Summary filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\9c55d5c3-5c48-4959-abdb-2e49ce96e

DATE: 07/10/2018 TIME: 03:43:33

USER:

COMMENTS: _____

****
** SIMULATION : Run 11 **
****

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\6d855ddb-cc48-438b-b3f9-a531d90d953e\3a4df615
Ptotal= 87.91 mm	Comments: 50-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.20	3.25	3.52	6.25	15.82	9.25	3.08
0.50	2.20	3.50	3.52	6.50	15.82	9.50	3.08
0.75	2.20	3.75	3.52	6.75	7.03	9.75	3.08
1.00	2.20	4.00	3.52	7.00	7.03	10.00	3.08
1.25	2.20	4.25	5.27	7.25	5.27	10.25	1.76
1.50	2.20	4.50	5.27	7.50	5.27	10.50	1.76
1.75	2.20	4.75	7.03	7.75	5.27	10.75	1.76
2.00	2.20	5.00	7.03	8.00	5.27	11.00	1.76
2.25	2.64	5.25	10.55	8.25	3.08	11.25	1.76
2.50	2.64	5.50	10.55	8.50	3.08	11.50	1.76
2.75	2.64	5.75	42.20	8.75	3.08	11.75	1.76
3.00	2.64	6.00	116.04	9.00	3.08	12.00	1.76

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--------------------
| CALIB            |
| NASHYD   (  0002)|   Area    (ha)=  27.12   Curve Number   (CN)= 62.0
|ID= 1 DT= 5.0 min |   Ia      (mm)=   5.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.94

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


                              ---- TRANSFORMED HYETOGRAPH ----
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
               0.083    2.20 | 3.083    3.52 | 6.083   15.82 |  9.08    3.08
               0.167    2.20 | 3.167    3.52 | 6.167   15.82 |  9.17    3.08
               0.250    2.20 | 3.250    3.52 | 6.250   15.82 |  9.25    3.08
               0.333    2.20 | 3.333    3.52 | 6.333   15.82 |  9.33    3.08
               0.417    2.20 | 3.417    3.52 | 6.417   15.82 |  9.42    3.08
               0.500    2.20 | 3.500    3.52 | 6.500   15.82 |  9.50    3.08
               0.583    2.20 | 3.583    3.52 | 6.583    7.03 |  9.58    3.08
               0.667    2.20 | 3.667    3.52 | 6.667    7.03 |  9.67    3.08
               0.750    2.20 | 3.750    3.52 | 6.750    7.03 |  9.75    3.08
               0.833    2.20 | 3.833    3.52 | 6.833    7.03 |  9.83    3.08
               0.917    2.20 | 3.917    3.52 | 6.917    7.03 |  9.92    3.08
               1.000    2.20 | 4.000    3.52 | 7.000    7.03 | 10.00    3.08
               1.083    2.20 | 4.083    5.27 | 7.083    5.27 | 10.08    1.76
               1.167    2.20 | 4.167    5.27 | 7.167    5.27 | 10.17    1.76
               1.250    2.20 | 4.250    5.27 | 7.250    5.27 | 10.25    1.76
               1.333    2.20 | 4.333    5.27 | 7.333    5.27 | 10.33    1.76
               1.417    2.20 | 4.417    5.27 | 7.417    5.27 | 10.42    1.76
               1.500    2.20 | 4.500    5.27 | 7.500    5.27 | 10.50    1.76
               1.583    2.20 | 4.583    7.03 | 7.583    5.27 | 10.58    1.76
               1.667    2.20 | 4.667    7.03 | 7.667    5.27 | 10.67    1.76
               1.750    2.20 | 4.750    7.03 | 7.750    5.27 | 10.75    1.76
               1.833    2.20 | 4.833    7.03 | 7.833    5.27 | 10.83    1.76
               1.917    2.20 | 4.917    7.03 | 7.917    5.27 | 10.92    1.76
               2.000    2.20 | 5.000    7.03 | 8.000    5.27 | 11.00    1.76
               2.083    2.64 | 5.083   10.55 | 8.083    3.08 | 11.08    1.76
               2.167    2.64 | 5.167   10.55 | 8.167    3.08 | 11.17    1.76
               2.250    2.64 | 5.250   10.55 | 8.250    3.08 | 11.25    1.76
               2.333    2.64 | 5.333   10.55 | 8.333    3.08 | 11.33    1.76
               2.417    2.64 | 5.417   10.55 | 8.417    3.08 | 11.42    1.76
               2.500    2.64 | 5.500   10.55 | 8.500    3.08 | 11.50    1.76
               2.583    2.64 | 5.583   42.20 | 8.583    3.08 | 11.58    1.76
               2.667    2.64 | 5.667   42.20 | 8.667    3.08 | 11.67    1.76
               2.750    2.64 | 5.750   42.20 | 8.750    3.08 | 11.75    1.76
               2.833    2.64 | 5.833  116.04 | 8.833    3.08 | 11.83    1.76
               2.917    2.64 | 5.917  116.04 | 8.917    3.08 | 11.92    1.76
               3.000    2.64 | 6.000  116.04 | 9.000    3.08 | 12.00    1.76

     Unit Hyd Qpeak  (cms)=   1.102

     PEAK FLOW       (cms)=   0.758 (i)
     TIME TO PEAK    (hrs)=   6.917
     RUNOFF VOLUME    (mm)=  28.811
     TOTAL RAINFALL   (mm)=  87.910
     RUNOFF COEFFICIENT   =   0.328

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

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

       V    V   I    SSSSS  U   U    A    L             (v 5.0.2027)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\96e7d268-7afb-4a16-8e4b-509f80b
48
  Summary filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\96e7d268-7afb-4a16-8e4b-509f80b
48
```

DATE: 07/10/2018 TIME: 03:43:33

USER:

COMMENTS: _____

** SIMULATION : Run 12 **

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\6d855ddb-cc48-438b-b3f9-a531d90d953e\9c9568e7
Ptotal= 95.97 mm	Comments: 100-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.40	3.25	3.84	6.25	17.27	9.25	3.36
0.50	2.40	3.50	3.84	6.50	17.27	9.50	3.36
0.75	2.40	3.75	3.84	6.75	7.68	9.75	3.36
1.00	2.40	4.00	3.84	7.00	7.68	10.00	3.36
1.25	2.40	4.25	5.76	7.25	5.76	10.25	1.92
1.50	2.40	4.50	5.76	7.50	5.76	10.50	1.92
1.75	2.40	4.75	7.68	7.75	5.76	10.75	1.92
2.00	2.40	5.00	7.68	8.00	5.76	11.00	1.92
2.25	2.88	5.25	11.52	8.25	3.36	11.25	1.92
2.50	2.88	5.50	11.52	8.50	3.36	11.50	1.92
2.75	2.88	5.75	46.07	8.75	3.36	11.75	1.92
3.00	2.88	6.00	126.68	9.00	3.36	12.00	1.92

CALIB NASHYD (0002) ID= 1 DT= 5.0 min	Area (ha)= 27.12 Curve Number (CN)= 62.0 Ia (mm)= 5.00 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.94

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

---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.083	2.40	3.083	3.84	6.083	17.27	9.08	3.36
0.167	2.40	3.167	3.84	6.167	17.27	9.17	3.36
0.250	2.40	3.250	3.84	6.250	17.27	9.25	3.36
0.333	2.40	3.333	3.84	6.333	17.27	9.33	3.36
0.417	2.40	3.417	3.84	6.417	17.27	9.42	3.36
0.500	2.40	3.500	3.84	6.500	17.27	9.50	3.36
0.583	2.40	3.583	3.84	6.583	7.68	9.58	3.36
0.667	2.40	3.667	3.84	6.667	7.68	9.67	3.36
0.750	2.40	3.750	3.84	6.750	7.68	9.75	3.36
0.833	2.40	3.833	3.84	6.833	7.68	9.83	3.36
0.917	2.40	3.917	3.84	6.917	7.68	9.92	3.36
1.000	2.40	4.000	3.84	7.000	7.68	10.00	3.36
1.083	2.40	4.083	5.76	7.083	5.76	10.08	1.92
1.167	2.40	4.167	5.76	7.167	5.76	10.17	1.92
1.250	2.40	4.250	5.76	7.250	5.76	10.25	1.92
1.333	2.40	4.333	5.76	7.333	5.76	10.33	1.92
1.417	2.40	4.417	5.76	7.417	5.76	10.42	1.92
1.500	2.40	4.500	5.76	7.500	5.76	10.50	1.92
1.583	2.40	4.583	7.68	7.583	5.76	10.58	1.92
1.667	2.40	4.667	7.68	7.667	5.76	10.67	1.92
1.750	2.40	4.750	7.68	7.750	5.76	10.75	1.92
1.833	2.40	4.833	7.68	7.833	5.76	10.83	1.92
1.917	2.40	4.917	7.68	7.917	5.76	10.92	1.92
2.000	2.40	5.000	7.68	8.000	5.76	11.00	1.92
2.083	2.88	5.083	11.52	8.083	3.36	11.08	1.92
2.167	2.88	5.167	11.52	8.167	3.36	11.17	1.92
2.250	2.88	5.250	11.52	8.250	3.36	11.25	1.92
2.333	2.88	5.333	11.52	8.333	3.36	11.33	1.92
2.417	2.88	5.417	11.52	8.417	3.36	11.42	1.92
2.500	2.88	5.500	11.52	8.500	3.36	11.50	1.92
2.583	2.88	5.583	46.07	8.583	3.36	11.58	1.92
2.667	2.88	5.667	46.07	8.667	3.36	11.67	1.92
2.750	2.88	5.750	46.07	8.750	3.36	11.75	1.92
2.833	2.88	5.833	126.68	8.833	3.36	11.83	1.92
2.917	2.88	5.917	126.68	8.917	3.36	11.92	1.92
3.000	2.88	6.000	126.68	9.000	3.36	12.00	1.92

Unit Hyd Qpeak (cms)= 1.102

```
     PEAK FLOW       (cms)=   0.886 (i)
     TIME TO PEAK    (hrs)=   6.917
     RUNOFF VOLUME    (mm)=  33.551
     TOTAL RAINFALL   (mm)=  95.969
     RUNOFF COEFFICIENT   =   0.350

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

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 FINISH
================================================================================================================
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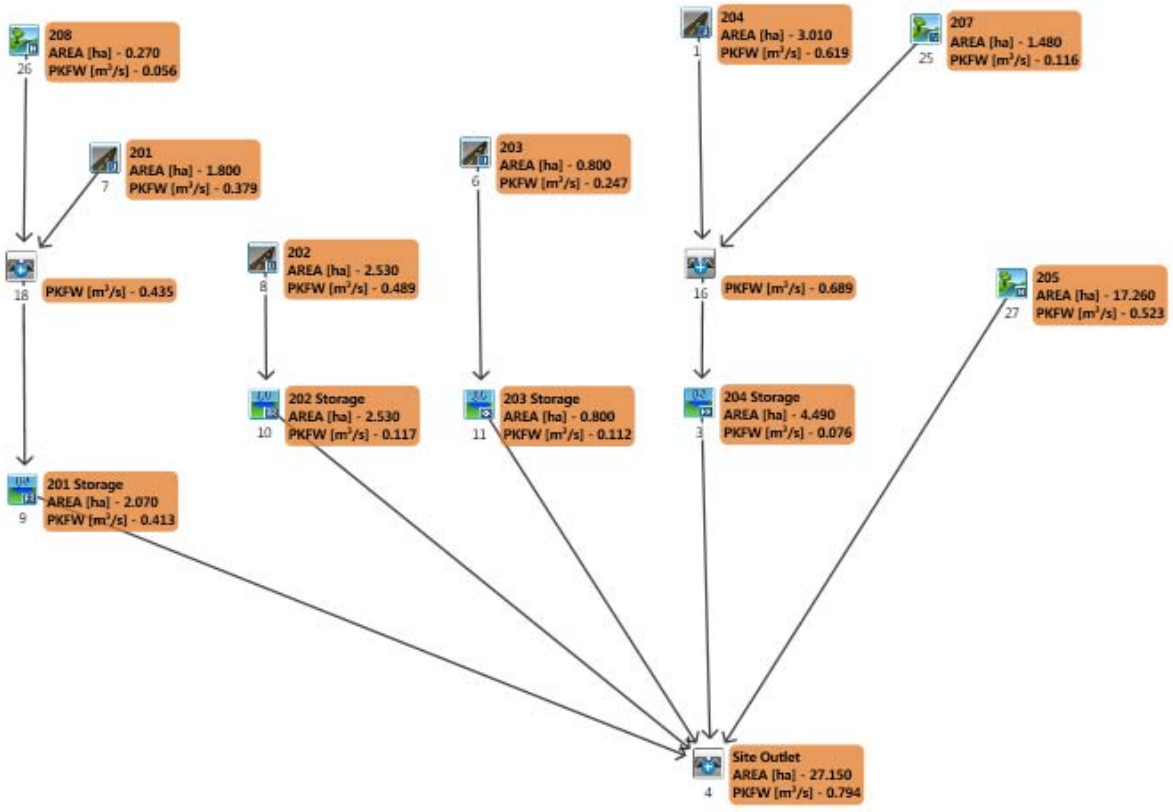
13: 286
FarSight Lands
Post Development VO Schematic



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       V    V   I    SSSSS  U   U    A    L             (v 5.0.2027)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
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DATE: 12/19/2018 TIME: 10:47:46

USER:

COMMENTS: _____

** SIMULATION : Run 01 **

CHICAGO STORM	Ptotal= 34.80 mm

IDF curve parameters: A= 647.700
B= 4.000
C= 0.784
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.27	1.17	17.17	2.17	5.25	3.17	2.69
0.33	2.59	1.33	81.81	2.33	4.49	3.33	2.50
0.50	3.04	1.50	22.50	2.50	3.93	3.50	2.34
0.67	3.72	1.67	11.86	2.67	3.51	3.67	2.20
0.83	4.86	1.83	8.23	2.83	3.18	3.83	2.08
1.00	7.29	2.00	6.38	3.00	2.91	4.00	1.98

CALIB	NASHYD (0025)	ID= 1 DT= 1.0 min

Area (ha)= 1.48 Curve Number (CN)= 67.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.34

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.27	1.017	17.17	2.017	5.25	3.02	2.69
0.033	2.27	1.033	17.17	2.033	5.25	3.03	2.69
0.050	2.27	1.050	17.17	2.050	5.25	3.05	2.69
0.067	2.27	1.067	17.17	2.067	5.25	3.07	2.69
0.083	2.27	1.083	17.17	2.083	5.25	3.08	2.69
0.100	2.27	1.100	17.17	2.100	5.25	3.10	2.69
0.117	2.27	1.117	17.17	2.117	5.25	3.12	2.69
0.133	2.27	1.133	17.17	2.133	5.25	3.13	2.69
0.150	2.27	1.150	17.17	2.150	5.25	3.15	2.69
0.167	2.27	1.167	17.17	2.167	5.25	3.17	2.69
0.183	2.59	1.183	81.81	2.183	4.49	3.18	2.50
0.200	2.59	1.200	81.81	2.200	4.49	3.20	2.50
0.217	2.59	1.217	81.81	2.217	4.49	3.22	2.50
0.233	2.59	1.233	81.81	2.233	4.49	3.23	2.50

0.250	2.59	1.250	81.81	2.250	4.49	3.25	2.50
0.267	2.59	1.267	81.81	2.267	4.49	3.27	2.50
0.283	2.59	1.283	81.81	2.283	4.49	3.28	2.50
0.300	2.59	1.300	81.81	2.300	4.49	3.30	2.50
0.317	2.59	1.317	81.81	2.317	4.49	3.32	2.50
0.333	2.59	1.333	81.81	2.333	4.49	3.33	2.50
0.350	3.04	1.350	22.50	2.350	3.93	3.35	2.34
0.367	3.04	1.367	22.50	2.367	3.93	3.37	2.34
0.383	3.04	1.383	22.50	2.383	3.93	3.38	2.34
0.400	3.04	1.400	22.50	2.400	3.93	3.40	2.34
0.417	3.04	1.417	22.50	2.417	3.93	3.42	2.34
0.433	3.04	1.433	22.50	2.433	3.93	3.43	2.34
0.450	3.04	1.450	22.50	2.450	3.93	3.45	2.34
0.467	3.04	1.467	22.50	2.467	3.93	3.47	2.34
0.483	3.04	1.483	22.50	2.483	3.93	3.48	2.34
0.500	3.04	1.500	22.50	2.500	3.93	3.50	2.34
0.517	3.72	1.517	11.86	2.517	3.51	3.52	2.20
0.533	3.72	1.533	11.86	2.533	3.51	3.53	2.20
0.550	3.72	1.550	11.86	2.550	3.51	3.55	2.20
0.567	3.72	1.567	11.86	2.567	3.51	3.57	2.20
0.583	3.72	1.583	11.86	2.583	3.51	3.58	2.20
0.600	3.72	1.600	11.86	2.600	3.51	3.60	2.20
0.617	3.72	1.617	11.86	2.617	3.51	3.62	2.20
0.633	3.72	1.633	11.86	2.633	3.51	3.63	2.20
0.650	3.72	1.650	11.86	2.650	3.51	3.65	2.20
0.667	3.72	1.667	11.86	2.667	3.51	3.67	2.20
0.683	4.86	1.683	8.23	2.683	3.18	3.68	2.08
0.700	4.86	1.700	8.23	2.700	3.18	3.70	2.08
0.717	4.86	1.717	8.23	2.717	3.18	3.72	2.08
0.733	4.86	1.733	8.23	2.733	3.18	3.73	2.08
0.750	4.86	1.750	8.23	2.750	3.18	3.75	2.08
0.767	4.86	1.767	8.23	2.767	3.18	3.77	2.08
0.783	4.86	1.783	8.23	2.783	3.18	3.78	2.08
0.800	4.86	1.800	8.23	2.800	3.18	3.80	2.08
0.817	4.86	1.817	8.23	2.817	3.18	3.82	2.08
0.833	4.86	1.833	8.23	2.833	3.18	3.83	2.08
0.850	7.29	1.850	6.38	2.850	2.91	3.85	1.98
0.867	7.29	1.867	6.38	2.867	2.91	3.87	1.98
0.883	7.29	1.883	6.38	2.883	2.91	3.88	1.98
0.900	7.29	1.900	6.38	2.900	2.91	3.90	1.98
0.917	7.29	1.917	6.38	2.917	2.91	3.92	1.98
0.933	7.29	1.933	6.38	2.933	2.91	3.93	1.98
0.950	7.29	1.950	6.38	2.950	2.91	3.95	1.98
0.967	7.29	1.967	6.38	2.967	2.91	3.97	1.98
0.983	7.29	1.983	6.38	2.983	2.91	3.98	1.98
1.000	7.29	2.000	6.38	3.000	2.91	4.00	1.98

Unit Hyd Qpeak (cms)= 0.166

PEAK FLOW (cms)= 0.017 (i)
TIME TO PEAK (hrs)= 1.767
RUNOFF VOLUME (mm)= 5.732
TOTAL RAINFALL (mm)= 34.800
RUNOFF COEFFICIENT = 0.165

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

CHICAGO STORM Ptotal= 34.80 mm

IDF curve parameters: A= 647.700
B= 4.000
C= 0.784
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.27	1.17	17.17	2.17	5.25	3.17	2.69
0.33	2.59	1.33	81.81	2.33	4.49	3.33	2.50
0.50	3.04	1.50	22.50	2.50	3.93	3.50	2.34
0.67	3.72	1.67	11.86	2.67	3.51	3.67	2.20
0.83	4.86	1.83	8.23	2.83	3.18	3.83	2.08
1.00	7.29	2.00	6.38	3.00	2.91	4.00	1.98

CALIB STANDHYD (0001) ID= 1 DT= 1.0 min

Area (ha)= 3.01
Total Imp(%)= 57.00 Dir. Conn.(%)= 46.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.72	1.29
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.50	3.00
Length	(m)=	141.66	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.27	1.017	17.17	2.017	5.25	3.02	2.69
0.033	2.27	1.033	17.17	2.033	5.25	3.03	2.69
0.050	2.27	1.050	17.17	2.050	5.25	3.05	2.69
0.067	2.27	1.067	17.17	2.067	5.25	3.07	2.69
0.083	2.27	1.083	17.17	2.083	5.25	3.08	2.69
0.100	2.27	1.100	17.17	2.100	5.25	3.10	2.69
0.117	2.27	1.117	17.17	2.117	5.25	3.12	2.69
0.133	2.27	1.133	17.17	2.133	5.25	3.13	2.69
0.150	2.27	1.150	17.17	2.150	5.25	3.15	2.69
0.167	2.27	1.167	17.17	2.167	5.25	3.17	2.69
0.183	2.59	1.183	81.81	2.183	4.49	3.18	2.50
0.200	2.59	1.200	81.81	2.200	4.49	3.20	2.50
0.217	2.59	1.217	81.81	2.217	4.49	3.22	2.50
0.233	2.59	1.233	81.81	2.233	4.49	3.23	2.50
0.250	2.59	1.250	81.81	2.250	4.49	3.25	2.50
0.267	2.59	1.267	81.81	2.267	4.49	3.27	2.50
0.283	2.59	1.283	81.81	2.283	4.49	3.28	2.50
0.300	2.59	1.300	81.81	2.300	4.49	3.30	2.50
0.317	2.59	1.317	81.81	2.317	4.49	3.32	2.50
0.333	2.59	1.333	81.81	2.333	4.49	3.33	2.50
0.350	3.04	1.350	22.50	2.350	3.93	3.35	2.34
0.367	3.04	1.367	22.50	2.367	3.93	3.37	2.34
0.383	3.04	1.383	22.50	2.383	3.93	3.38	2.34
0.400	3.04	1.400	22.50	2.400	3.93	3.40	2.34
0.417	3.04	1.417	22.50	2.417	3.93	3.42	2.34
0.433	3.04	1.433	22.50	2.433	3.93	3.43	2.34
0.450	3.04	1.450	22.50	2.450	3.93	3.45	2.34
0.467	3.04	1.467	22.50	2.467	3.93	3.47	2.34
0.483	3.04	1.483	22.50	2.483	3.93	3.48	2.34
0.500	3.04	1.500	22.50	2.500	3.93	3.50	2.34
0.517	3.72	1.517	11.86	2.517	3.51	3.52	2.20
0.533	3.72	1.533	11.86	2.533	3.51	3.53	2.20
0.550	3.72	1.550	11.86	2.550	3.51	3.55	2.20
0.567	3.72	1.567	11.86	2.567	3.51	3.57	2.20
0.583	3.72	1.583	11.86	2.583	3.51	3.58	2.20
0.600	3.72	1.600	11.86	2.600	3.51	3.60	2.20
0.617	3.72	1.617	11.86	2.617	3.51	3.62	2.20
0.633	3.72	1.633	11.86	2.633	3.51	3.63	2.20
0.650	3.72	1.650	11.86	2.650	3.51	3.65	2.20
0.667	3.72	1.667	11.86	2.667	3.51	3.67	2.20
0.683	4.86	1.683	8.23	2.683	3.18	3.68	2.08
0.700	4.86	1.700	8.23	2.700	3.18	3.70	2.08
0.717	4.86	1.717	8.23	2.717	3.18	3.72	2.08
0.733	4.86	1.733	8.23	2.733	3.18	3.73	2.08
0.750	4.86	1.750	8.23	2.750	3.18	3.75	2.08
0.767	4.86	1.767	8.23	2.767	3.18	3.77	2.08
0.783	4.86	1.783	8.23	2.783	3.18	3.78	2.08
0.800	4.86	1.800	8.23	2.800	3.18	3.80	2.08
0.817	4.86	1.817	8.23	2.817	3.18	3.82	2.08
0.833	4.86	1.833	8.23	2.833	3.18	3.83	2.08
0.850	7.29	1.850	6.38	2.850	2.91	3.85	1.98
0.867	7.29	1.867	6.38	2.867	2.91	3.87	1.98
0.883	7.29	1.883	6.38	2.883	2.91	3.88	1.98
0.900	7.29	1.900	6.38	2.900	2.91	3.90	1.98
0.917	7.29	1.917	6.38	2.917	2.91	3.92	1.98
0.933	7.29	1.933	6.38	2.933	2.91	3.93	1.98
0.950	7.29	1.950	6.38	2.950	2.91	3.95	1.98
0.967	7.29	1.967	6.38	2.967	2.91	3.97	1.98
0.983	7.29	1.983	6.38	2.983	2.91	3.98	1.98
1.000	7.29	2.000	6.38	3.000	2.91	4.00	1.98

Max.Eff.Inten.(mm/hr)=	81.81	8.16	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.02 (ii)	9.61 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.12	
			TOTALS
PEAK FLOW (cms)=	0.29	0.02	0.302 (iii)
TIME TO PEAK (hrs)=	1.33	1.47	1.33
RUNOFF VOLUME (mm)=	33.80	3.67	17.53
TOTAL RAINFALL (mm)=	34.80	34.80	34.80
RUNOFF COEFFICIENT =	0.97	0.11	0.50

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0016)
1 + 2 = 3

	AREA	QPEAK	TPEAK	R.V.

	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0001):	3.01	0.302	1.33	17.53
+ ID2= 2 (0025):	1.48	0.017	1.77	5.73
ID = 3 (0016):	4.49	0.305	1.35	13.64

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0003) IN= 2---> OUT= 1 DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0410	0.0864
	0.0000	0.0281	0.0800	0.1533
	0.0010	0.0321	0.0900	0.1746
	0.0040	0.0479	0.1110	0.2118
	0.0070	0.0518	0.1180	0.2246

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0016)	4.490	0.305	1.35	13.64
OUTFLOW: ID= 1 (0003)	4.490	0.010	4.07	6.85

PEAK FLOW REDUCTION [Qout/Qin](%)= 3.26
TIME SHIFT OF PEAK FLOW (min)=163.00
MAXIMUM STORAGE USED (ha.m.)= 0.0548

CHICAGO STORM Ptotal= 34.80 mm	IDF curve parameters: A= 647.700 B= 4.000 C= 0.784

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

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.27	1.17	17.17	2.17	5.25	3.17	2.69
0.33	2.59	1.33	81.81	2.33	4.49	3.33	2.50
0.50	3.04	1.50	22.50	2.50	3.93	3.50	2.34
0.67	3.72	1.67	11.86	2.67	3.51	3.67	2.20
0.83	4.86	1.83	8.23	2.83	3.18	3.83	2.08
1.00	7.29	2.00	6.38	3.00	2.91	4.00	1.98

CALIB NASHYD (0026) ID= 1 DT= 1.0 min	Area (ha)= 0.27	Curve Number (CN)= 71.0
	Ia (mm)= 3.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.02	

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.27	1.017	17.17	2.017	5.25	3.02	2.69
0.033	2.27	1.033	17.17	2.033	5.25	3.03	2.69
0.050	2.27	1.050	17.17	2.050	5.25	3.05	2.69
0.067	2.27	1.067	17.17	2.067	5.25	3.07	2.69
0.083	2.27	1.083	17.17	2.083	5.25	3.08	2.69
0.100	2.27	1.100	17.17	2.100	5.25	3.10	2.69
0.117	2.27	1.117	17.17	2.117	5.25	3.12	2.69
0.133	2.27	1.133	17.17	2.133	5.25	3.13	2.69
0.150	2.27	1.150	17.17	2.150	5.25	3.15	2.69
0.167	2.27	1.167	17.17	2.167	5.25	3.17	2.69
0.183	2.59	1.183	81.81	2.183	4.49	3.18	2.50
0.200	2.59	1.200	81.81	2.200	4.49	3.20	2.50
0.217	2.59	1.217	81.81	2.217	4.49	3.22	2.50
0.233	2.59	1.233	81.81	2.233	4.49	3.23	2.50
0.250	2.59	1.250	81.81	2.250	4.49	3.25	2.50
0.267	2.59	1.267	81.81	2.267	4.49	3.27	2.50
0.283	2.59	1.283	81.81	2.283	4.49	3.28	2.50
0.300	2.59	1.300	81.81	2.300	4.49	3.30	2.50
0.317	2.59	1.317	81.81	2.317	4.49	3.32	2.50
0.333	2.59	1.333	81.81	2.333	4.49	3.33	2.50
0.350	3.04	1.350	22.50	2.350	3.93	3.35	2.34
0.367	3.04	1.367	22.50	2.367	3.93	3.37	2.34
0.383	3.04	1.383	22.50	2.383	3.93	3.38	2.34
0.400	3.04	1.400	22.50	2.400	3.93	3.40	2.34
0.417	3.04	1.417	22.50	2.417	3.93	3.42	2.34
0.433	3.04	1.433	22.50	2.433	3.93	3.43	2.34
0.450	3.04	1.450	22.50	2.450	3.93	3.45	2.34
0.467	3.04	1.467	22.50	2.467	3.93	3.47	2.34

0.483	3.04	1.483	22.50	2.483	3.93	3.48	2.34
0.500	3.04	1.500	22.50	2.500	3.93	3.50	2.34
0.517	3.72	1.517	11.86	2.517	3.51	3.52	2.20
0.533	3.72	1.533	11.86	2.533	3.51	3.53	2.20
0.550	3.72	1.550	11.86	2.550	3.51	3.55	2.20
0.567	3.72	1.567	11.86	2.567	3.51	3.57	2.20
0.583	3.72	1.583	11.86	2.583	3.51	3.58	2.20
0.600	3.72	1.600	11.86	2.600	3.51	3.60	2.20
0.617	3.72	1.617	11.86	2.617	3.51	3.62	2.20
0.633	3.72	1.633	11.86	2.633	3.51	3.63	2.20
0.650	3.72	1.650	11.86	2.650	3.51	3.65	2.20
0.667	3.72	1.667	11.86	2.667	3.51	3.67	2.20
0.683	4.86	1.683	8.23	2.683	3.18	3.68	2.08
0.700	4.86	1.700	8.23	2.700	3.18	3.70	2.08
0.717	4.86	1.717	8.23	2.717	3.18	3.72	2.08
0.733	4.86	1.733	8.23	2.733	3.18	3.73	2.08
0.750	4.86	1.750	8.23	2.750	3.18	3.75	2.08
0.767	4.86	1.767	8.23	2.767	3.18	3.77	2.08
0.783	4.86	1.783	8.23	2.783	3.18	3.78	2.08
0.800	4.86	1.800	8.23	2.800	3.18	3.80	2.08
0.817	4.86	1.817	8.23	2.817	3.18	3.82	2.08
0.833	4.86	1.833	8.23	2.833	3.18	3.83	2.08
0.850	7.29	1.850	6.38	2.850	2.91	3.85	1.98
0.867	7.29	1.867	6.38	2.867	2.91	3.87	1.98
0.883	7.29	1.883	6.38	2.883	2.91	3.88	1.98
0.900	7.29	1.900	6.38	2.900	2.91	3.90	1.98
0.917	7.29	1.917	6.38	2.917	2.91	3.92	1.98
0.933	7.29	1.933	6.38	2.933	2.91	3.93	1.98
0.950	7.29	1.950	6.38	2.950	2.91	3.95	1.98
0.967	7.29	1.967	6.38	2.967	2.91	3.97	1.98
0.983	7.29	1.983	6.38	2.983	2.91	3.98	1.98
1.000	7.29	2.000	6.38	3.000	2.91	4.00	1.98

Unit Hyd Qpeak (cms)= 0.516

PEAK FLOW (cms)= 0.015 (i)
TIME TO PEAK (hrs)= 1.333
RUNOFF VOLUME (mm)= 7.266
TOTAL RAINFALL (mm)= 34.800
RUNOFF COEFFICIENT = 0.209

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

CHICAGO STORM Ptotal= 34.80 mm

IDF curve parameters: A= 647.700
B= 4.000
C= 0.784
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.27	1.17	17.17	2.17	5.25	3.17	2.69
0.33	2.59	1.33	81.81	2.33	4.49	3.33	2.50
0.50	3.04	1.50	22.50	2.50	3.93	3.50	2.34
0.67	3.72	1.67	11.86	2.67	3.51	3.67	2.20
0.83	4.86	1.83	8.23	2.83	3.18	3.83	2.08
1.00	7.29	2.00	6.38	3.00	2.91	4.00	1.98

CALIB STANDHYD (0007) ID= 1 DT= 1.0 min

Area (ha)= 1.80
Total Imp(%)= 59.00 Dir. Conn.(%)= 48.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.06	0.74
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	109.54	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.27	1.017	17.17	2.017	5.25	3.02	2.69
0.033	2.27	1.033	17.17	2.033	5.25	3.03	2.69
0.050	2.27	1.050	17.17	2.050	5.25	3.05	2.69
0.067	2.27	1.067	17.17	2.067	5.25	3.07	2.69
0.083	2.27	1.083	17.17	2.083	5.25	3.08	2.69
0.100	2.27	1.100	17.17	2.100	5.25	3.10	2.69
0.117	2.27	1.117	17.17	2.117	5.25	3.12	2.69
0.133	2.27	1.133	17.17	2.133	5.25	3.13	2.69

0.150	2.27	1.150	17.17	2.150	5.25	3.15	2.69
0.167	2.27	1.167	17.17	2.167	5.25	3.17	2.69
0.183	2.59	1.183	81.81	2.183	4.49	3.18	2.50
0.200	2.59	1.200	81.81	2.200	4.49	3.20	2.50
0.217	2.59	1.217	81.81	2.217	4.49	3.22	2.50
0.233	2.59	1.233	81.81	2.233	4.49	3.23	2.50
0.250	2.59	1.250	81.81	2.250	4.49	3.25	2.50
0.267	2.59	1.267	81.81	2.267	4.49	3.27	2.50
0.283	2.59	1.283	81.81	2.283	4.49	3.28	2.50
0.300	2.59	1.300	81.81	2.300	4.49	3.30	2.50
0.317	2.59	1.317	81.81	2.317	4.49	3.32	2.50
0.333	2.59	1.333	81.81	2.333	4.49	3.33	2.50
0.350	3.04	1.350	22.50	2.350	3.93	3.35	2.34
0.367	3.04	1.367	22.50	2.367	3.93	3.37	2.34
0.383	3.04	1.383	22.50	2.383	3.93	3.38	2.34
0.400	3.04	1.400	22.50	2.400	3.93	3.40	2.34
0.417	3.04	1.417	22.50	2.417	3.93	3.42	2.34
0.433	3.04	1.433	22.50	2.433	3.93	3.43	2.34
0.450	3.04	1.450	22.50	2.450	3.93	3.45	2.34
0.467	3.04	1.467	22.50	2.467	3.93	3.47	2.34
0.483	3.04	1.483	22.50	2.483	3.93	3.48	2.34
0.500	3.04	1.500	22.50	2.500	3.93	3.50	2.34
0.517	3.72	1.517	11.86	2.517	3.51	3.52	2.20
0.533	3.72	1.533	11.86	2.533	3.51	3.53	2.20
0.550	3.72	1.550	11.86	2.550	3.51	3.55	2.20
0.567	3.72	1.567	11.86	2.567	3.51	3.57	2.20
0.583	3.72	1.583	11.86	2.583	3.51	3.58	2.20
0.600	3.72	1.600	11.86	2.600	3.51	3.60	2.20
0.617	3.72	1.617	11.86	2.617	3.51	3.62	2.20
0.633	3.72	1.633	11.86	2.633	3.51	3.63	2.20
0.650	3.72	1.650	11.86	2.650	3.51	3.65	2.20
0.667	3.72	1.667	11.86	2.667	3.51	3.67	2.20
0.683	4.86	1.683	8.23	2.683	3.18	3.68	2.08
0.700	4.86	1.700	8.23	2.700	3.18	3.70	2.08
0.717	4.86	1.717	8.23	2.717	3.18	3.72	2.08
0.733	4.86	1.733	8.23	2.733	3.18	3.73	2.08
0.750	4.86	1.750	8.23	2.750	3.18	3.75	2.08
0.767	4.86	1.767	8.23	2.767	3.18	3.77	2.08
0.783	4.86	1.783	8.23	2.783	3.18	3.78	2.08
0.800	4.86	1.800	8.23	2.800	3.18	3.80	2.08
0.817	4.86	1.817	8.23	2.817	3.18	3.82	2.08
0.833	4.86	1.833	8.23	2.833	3.18	3.83	2.08
0.850	7.29	1.850	6.38	2.850	2.91	3.85	1.98
0.867	7.29	1.867	6.38	2.867	2.91	3.87	1.98
0.883	7.29	1.883	6.38	2.883	2.91	3.88	1.98
0.900	7.29	1.900	6.38	2.900	2.91	3.90	1.98
0.917	7.29	1.917	6.38	2.917	2.91	3.92	1.98
0.933	7.29	1.933	6.38	2.933	2.91	3.93	1.98
0.950	7.29	1.950	6.38	2.950	2.91	3.95	1.98
0.967	7.29	1.967	6.38	2.967	2.91	3.97	1.98
0.983	7.29	1.983	6.38	2.983	2.91	3.98	1.98
1.000	7.29	2.000	6.38	3.000	2.91	4.00	1.98

Max.Eff.Inten.(mm/hr)=	81.81	8.35	
over (min)	5.00	11.00	
Storage Coeff. (min)=	2.92 (ii)	10.10 (ii)	
Unit Hyd. Tpeak (min)=	5.00	11.00	
Unit Hyd. peak (cms)=	0.31	0.11	
			TOTALS
PEAK FLOW (cms)=	0.18	0.01	0.188 (iii)
TIME TO PEAK (hrs)=	1.33	1.48	1.33
RUNOFF VOLUME (mm)=	33.80	3.71	18.15
TOTAL RAINFALL (mm)=	34.80	34.80	34.80
RUNOFF COEFFICIENT =	0.97	0.11	0.52

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0018)		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
1 + 2 = 3	ID1= 1 (0026):	0.27	0.015	1.33	7.27
	+ ID2= 2 (0007):	1.80	0.188	1.33	18.15
	ID = 3 (0018):	2.07	0.203	1.33	16.73

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0009)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)

0.0000	0.0000	0.0330	0.0298
0.0020	0.0000	0.0480	0.0300
0.0190	0.0288	0.5150	0.0368
0.0250	0.0292	0.5380	0.0368

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0018)	2.070	0.203	1.33	16.73
OUTFLOW: ID= 1 (0009)	2.070	0.015	2.28	16.73

PEAK FLOW REDUCTION [Qout/Qin](%)= 7.58
TIME SHIFT OF PEAK FLOW (min)= 57.00
MAXIMUM STORAGE USED (ha.m.)= 0.0227

CHICAGO STORM Ptotal= 34.80 mm	IDF curve parameters: A= 647.700 B= 4.000 C= 0.784

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

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.27	1.17	17.17	2.17	5.25	3.17	2.69
0.33	2.59	1.33	81.81	2.33	4.49	3.33	2.50
0.50	3.04	1.50	22.50	2.50	3.93	3.50	2.34
0.67	3.72	1.67	11.86	2.67	3.51	3.67	2.20
0.83	4.86	1.83	8.23	2.83	3.18	3.83	2.08
1.00	7.29	2.00	6.38	3.00	2.91	4.00	1.98

CALIB STANDHYD (0006) ID= 1 DT= 1.0 min	Area (ha)= 0.80 Total Imp(%)= 87.00 Dir. Conn.(%)= 82.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.70	0.10
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	73.03	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.27	1.017	17.17	2.017	5.25	3.02	2.69
0.033	2.27	1.033	17.17	2.033	5.25	3.03	2.69
0.050	2.27	1.050	17.17	2.050	5.25	3.05	2.69
0.067	2.27	1.067	17.17	2.067	5.25	3.07	2.69
0.083	2.27	1.083	17.17	2.083	5.25	3.08	2.69
0.100	2.27	1.100	17.17	2.100	5.25	3.10	2.69
0.117	2.27	1.117	17.17	2.117	5.25	3.12	2.69
0.133	2.27	1.133	17.17	2.133	5.25	3.13	2.69
0.150	2.27	1.150	17.17	2.150	5.25	3.15	2.69
0.167	2.27	1.167	17.17	2.167	5.25	3.17	2.69
0.183	2.59	1.183	81.81	2.183	4.49	3.18	2.50
0.200	2.59	1.200	81.81	2.200	4.49	3.20	2.50
0.217	2.59	1.217	81.81	2.217	4.49	3.22	2.50
0.233	2.59	1.233	81.81	2.233	4.49	3.23	2.50
0.250	2.59	1.250	81.81	2.250	4.49	3.25	2.50
0.267	2.59	1.267	81.81	2.267	4.49	3.27	2.50
0.283	2.59	1.283	81.81	2.283	4.49	3.28	2.50
0.300	2.59	1.300	81.81	2.300	4.49	3.30	2.50
0.317	2.59	1.317	81.81	2.317	4.49	3.32	2.50
0.333	2.59	1.333	81.81	2.333	4.49	3.33	2.50
0.350	3.04	1.350	22.50	2.350	3.93	3.35	2.34
0.367	3.04	1.367	22.50	2.367	3.93	3.37	2.34
0.383	3.04	1.383	22.50	2.383	3.93	3.38	2.34
0.400	3.04	1.400	22.50	2.400	3.93	3.40	2.34
0.417	3.04	1.417	22.50	2.417	3.93	3.42	2.34
0.433	3.04	1.433	22.50	2.433	3.93	3.43	2.34
0.450	3.04	1.450	22.50	2.450	3.93	3.45	2.34
0.467	3.04	1.467	22.50	2.467	3.93	3.47	2.34
0.483	3.04	1.483	22.50	2.483	3.93	3.48	2.34
0.500	3.04	1.500	22.50	2.500	3.93	3.50	2.34
0.517	3.72	1.517	11.86	2.517	3.51	3.52	2.20
0.533	3.72	1.533	11.86	2.533	3.51	3.53	2.20
0.550	3.72	1.550	11.86	2.550	3.51	3.55	2.20
0.567	3.72	1.567	11.86	2.567	3.51	3.57	2.20
0.583	3.72	1.583	11.86	2.583	3.51	3.58	2.20
0.600	3.72	1.600	11.86	2.600	3.51	3.60	2.20
0.617	3.72	1.617	11.86	2.617	3.51	3.62	2.20

0.633	3.72	1.633	11.86	2.633	3.51	3.63	2.20
0.650	3.72	1.650	11.86	2.650	3.51	3.65	2.20
0.667	3.72	1.667	11.86	2.667	3.51	3.67	2.20
0.683	4.86	1.683	8.23	2.683	3.18	3.68	2.08
0.700	4.86	1.700	8.23	2.700	3.18	3.70	2.08
0.717	4.86	1.717	8.23	2.717	3.18	3.72	2.08
0.733	4.86	1.733	8.23	2.733	3.18	3.73	2.08
0.750	4.86	1.750	8.23	2.750	3.18	3.75	2.08
0.767	4.86	1.767	8.23	2.767	3.18	3.77	2.08
0.783	4.86	1.783	8.23	2.783	3.18	3.78	2.08
0.800	4.86	1.800	8.23	2.800	3.18	3.80	2.08
0.817	4.86	1.817	8.23	2.817	3.18	3.82	2.08
0.833	4.86	1.833	8.23	2.833	3.18	3.83	2.08
0.850	7.29	1.850	6.38	2.850	2.91	3.85	1.98
0.867	7.29	1.867	6.38	2.867	2.91	3.87	1.98
0.883	7.29	1.883	6.38	2.883	2.91	3.88	1.98
0.900	7.29	1.900	6.38	2.900	2.91	3.90	1.98
0.917	7.29	1.917	6.38	2.917	2.91	3.92	1.98
0.933	7.29	1.933	6.38	2.933	2.91	3.93	1.98
0.950	7.29	1.950	6.38	2.950	2.91	3.95	1.98
0.967	7.29	1.967	6.38	2.967	2.91	3.97	1.98
0.983	7.29	1.983	6.38	2.983	2.91	3.98	1.98
1.000	7.29	2.000	6.38	3.000	2.91	4.00	1.98

Max.Eff.Inten.(mm/hr)=	81.81	10.18		
over (min)	5.00	6.00		
Storage Coeff. (min)=	2.29 (ii)	5.95 (ii)		
Unit Hyd. Tpeak (min)=	5.00	6.00		
Unit Hyd. peak (cms)=	0.35	0.19		
			TOTALS	
PEAK FLOW (cms)=	0.14	0.00	0.146 (iii)	
TIME TO PEAK (hrs)=	1.33	1.40	1.33	
RUNOFF VOLUME (mm)=	33.80	4.09	28.45	
TOTAL RAINFALL (mm)=	34.80	34.80	34.80	
RUNOFF COEFFICIENT =	0.97	0.12	0.82	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0011)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0810	0.0180
	0.0010	0.0005	0.0910	0.0205
	0.0060	0.0056	0.1120	0.0249
	0.0100	0.0061	0.1190	0.0264
	0.0430	0.0101	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0006)	0.800	0.146	1.33	28.45
OUTFLOW: ID= 1 (0011)	0.800	0.047	1.50	28.29

PEAK FLOW REDUCTION [Qout/Qin](%)= 32.10
TIME SHIFT OF PEAK FLOW (min)= 10.00
MAXIMUM STORAGE USED (ha.m.)= 0.0109

CHICAGO STORM	IDF curve parameters: A= 647.700
Ptotal= 34.80 mm	B= 4.000
	C= 0.784

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

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.27	1.17	17.17	2.17	5.25	3.17	2.69
0.33	2.59	1.33	81.81	2.33	4.49	3.33	2.50
0.50	3.04	1.50	22.50	2.50	3.93	3.50	2.34
0.67	3.72	1.67	11.86	2.67	3.51	3.67	2.20
0.83	4.86	1.83	8.23	2.83	3.18	3.83	2.08
1.00	7.29	2.00	6.38	3.00	2.91	4.00	1.98

CALIB	
STANDHYD (0008)	Area (ha)= 2.53
ID= 1 DT= 1.0 min	Total Imp(%)= 52.00 Dir. Conn.(%)= 44.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.32	1.21
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	129.87	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.27	1.017	17.17	2.017	5.25	3.02	2.69
0.033	2.27	1.033	17.17	2.033	5.25	3.03	2.69
0.050	2.27	1.050	17.17	2.050	5.25	3.05	2.69
0.067	2.27	1.067	17.17	2.067	5.25	3.07	2.69
0.083	2.27	1.083	17.17	2.083	5.25	3.08	2.69
0.100	2.27	1.100	17.17	2.100	5.25	3.10	2.69
0.117	2.27	1.117	17.17	2.117	5.25	3.12	2.69
0.133	2.27	1.133	17.17	2.133	5.25	3.13	2.69
0.150	2.27	1.150	17.17	2.150	5.25	3.15	2.69
0.167	2.27	1.167	17.17	2.167	5.25	3.17	2.69
0.183	2.59	1.183	81.81	2.183	4.49	3.18	2.50
0.200	2.59	1.200	81.81	2.200	4.49	3.20	2.50
0.217	2.59	1.217	81.81	2.217	4.49	3.22	2.50
0.233	2.59	1.233	81.81	2.233	4.49	3.23	2.50
0.250	2.59	1.250	81.81	2.250	4.49	3.25	2.50
0.267	2.59	1.267	81.81	2.267	4.49	3.27	2.50
0.283	2.59	1.283	81.81	2.283	4.49	3.28	2.50
0.300	2.59	1.300	81.81	2.300	4.49	3.30	2.50
0.317	2.59	1.317	81.81	2.317	4.49	3.32	2.50
0.333	2.59	1.333	81.81	2.333	4.49	3.33	2.50
0.350	3.04	1.350	22.50	2.350	3.93	3.35	2.34
0.367	3.04	1.367	22.50	2.367	3.93	3.37	2.34
0.383	3.04	1.383	22.50	2.383	3.93	3.38	2.34
0.400	3.04	1.400	22.50	2.400	3.93	3.40	2.34
0.417	3.04	1.417	22.50	2.417	3.93	3.42	2.34
0.433	3.04	1.433	22.50	2.433	3.93	3.43	2.34
0.450	3.04	1.450	22.50	2.450	3.93	3.45	2.34
0.467	3.04	1.467	22.50	2.467	3.93	3.47	2.34
0.483	3.04	1.483	22.50	2.483	3.93	3.48	2.34
0.500	3.04	1.500	22.50	2.500	3.93	3.50	2.34
0.517	3.72	1.517	11.86	2.517	3.51	3.52	2.20
0.533	3.72	1.533	11.86	2.533	3.51	3.53	2.20
0.550	3.72	1.550	11.86	2.550	3.51	3.55	2.20
0.567	3.72	1.567	11.86	2.567	3.51	3.57	2.20
0.583	3.72	1.583	11.86	2.583	3.51	3.58	2.20
0.600	3.72	1.600	11.86	2.600	3.51	3.60	2.20
0.617	3.72	1.617	11.86	2.617	3.51	3.62	2.20
0.633	3.72	1.633	11.86	2.633	3.51	3.63	2.20
0.650	3.72	1.650	11.86	2.650	3.51	3.65	2.20
0.667	3.72	1.667	11.86	2.667	3.51	3.67	2.20
0.683	4.86	1.683	8.23	2.683	3.18	3.68	2.08
0.700	4.86	1.700	8.23	2.700	3.18	3.70	2.08
0.717	4.86	1.717	8.23	2.717	3.18	3.72	2.08
0.733	4.86	1.733	8.23	2.733	3.18	3.73	2.08
0.750	4.86	1.750	8.23	2.750	3.18	3.75	2.08
0.767	4.86	1.767	8.23	2.767	3.18	3.77	2.08
0.783	4.86	1.783	8.23	2.783	3.18	3.78	2.08
0.800	4.86	1.800	8.23	2.800	3.18	3.80	2.08
0.817	4.86	1.817	8.23	2.817	3.18	3.82	2.08
0.833	4.86	1.833	8.23	2.833	3.18	3.83	2.08
0.850	7.29	1.850	6.38	2.850	2.91	3.85	1.98
0.867	7.29	1.867	6.38	2.867	2.91	3.87	1.98
0.883	7.29	1.883	6.38	2.883	2.91	3.88	1.98
0.900	7.29	1.900	6.38	2.900	2.91	3.90	1.98
0.917	7.29	1.917	6.38	2.917	2.91	3.92	1.98
0.933	7.29	1.933	6.38	2.933	2.91	3.93	1.98
0.950	7.29	1.950	6.38	2.950	2.91	3.95	1.98
0.967	7.29	1.967	6.38	2.967	2.91	3.97	1.98
0.983	7.29	1.983	6.38	2.983	2.91	3.98	1.98
1.000	7.29	2.000	6.38	3.000	2.91	4.00	1.98

Max.Eff.Inten.(mm/hr)=		81.81	6.89	
over (min)		5.00	12.00	
Storage Coeff. (min)=		3.24 (ii)	11.16 (ii)	
Unit Hyd. Tpeak (min)=		5.00	12.00	
Unit Hyd. peak (cms)=		0.29	0.10	
				TOTALS
PEAK FLOW	(cms)=	0.23	0.01	0.238 (iii)
TIME TO PEAK	(hrs)=	1.33	1.52	1.35
RUNOFF VOLUME	(mm)=	33.80	3.37	16.76
TOTAL RAINFALL	(mm)=	34.80	34.80	34.80
RUNOFF COEFFICIENT	=	0.97	0.10	0.48

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)

(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.

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

RESERVOIR(0010) IN= 2---> OUT= 1 DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0810	0.0465
	0.0010	0.0012	0.0910	0.0530
	0.0060	0.0145	0.1120	0.0643
	0.0100	0.0157	0.1190	0.0683
	0.0430	0.0262	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0008)	2.530	0.238	1.35	16.76
OUTFLOW: ID= 1 (0010)	2.530	0.039	1.78	16.64

PEAK FLOW REDUCTION [Qout/Qin](%)= 16.21
TIME SHIFT OF PEAK FLOW (min)= 26.00
MAXIMUM STORAGE USED (ha.m.)= 0.0248

CHICAGO STORM Ptotal= 34.80 mm	IDF curve parameters: A= 647.700 B= 4.000 C= 0.784

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

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.27	1.17	17.17	2.17	5.25	3.17	2.69
0.33	2.59	1.33	81.81	2.33	4.49	3.33	2.50
0.50	3.04	1.50	22.50	2.50	3.93	3.50	2.34
0.67	3.72	1.67	11.86	2.67	3.51	3.67	2.20
0.83	4.86	1.83	8.23	2.83	3.18	3.83	2.08
1.00	7.29	2.00	6.38	3.00	2.91	4.00	1.98

CALIB NASHYD (0027) ID= 1 DT= 1.0 min	Area (ha)= 17.26	Curve Number (CN)= 60.0 Ia (mm)= 5.60	# of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.95

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.27	1.017	17.17	2.017	5.25	3.02	2.69
0.033	2.27	1.033	17.17	2.033	5.25	3.03	2.69
0.050	2.27	1.050	17.17	2.050	5.25	3.05	2.69
0.067	2.27	1.067	17.17	2.067	5.25	3.07	2.69
0.083	2.27	1.083	17.17	2.083	5.25	3.08	2.69
0.100	2.27	1.100	17.17	2.100	5.25	3.10	2.69
0.117	2.27	1.117	17.17	2.117	5.25	3.12	2.69
0.133	2.27	1.133	17.17	2.133	5.25	3.13	2.69
0.150	2.27	1.150	17.17	2.150	5.25	3.15	2.69
0.167	2.27	1.167	17.17	2.167	5.25	3.17	2.69
0.183	2.59	1.183	81.81	2.183	4.49	3.18	2.50
0.200	2.59	1.200	81.81	2.200	4.49	3.20	2.50
0.217	2.59	1.217	81.81	2.217	4.49	3.22	2.50
0.233	2.59	1.233	81.81	2.233	4.49	3.23	2.50
0.250	2.59	1.250	81.81	2.250	4.49	3.25	2.50
0.267	2.59	1.267	81.81	2.267	4.49	3.27	2.50
0.283	2.59	1.283	81.81	2.283	4.49	3.28	2.50
0.300	2.59	1.300	81.81	2.300	4.49	3.30	2.50
0.317	2.59	1.317	81.81	2.317	4.49	3.32	2.50
0.333	2.59	1.333	81.81	2.333	4.49	3.33	2.50
0.350	3.04	1.350	22.50	2.350	3.93	3.35	2.34
0.367	3.04	1.367	22.50	2.367	3.93	3.37	2.34
0.383	3.04	1.383	22.50	2.383	3.93	3.38	2.34
0.400	3.04	1.400	22.50	2.400	3.93	3.40	2.34
0.417	3.04	1.417	22.50	2.417	3.93	3.42	2.34
0.433	3.04	1.433	22.50	2.433	3.93	3.43	2.34
0.450	3.04	1.450	22.50	2.450	3.93	3.45	2.34
0.467	3.04	1.467	22.50	2.467	3.93	3.47	2.34
0.483	3.04	1.483	22.50	2.483	3.93	3.48	2.34
0.500	3.04	1.500	22.50	2.500	3.93	3.50	2.34
0.517	3.72	1.517	11.86	2.517	3.51	3.52	2.20
0.533	3.72	1.533	11.86	2.533	3.51	3.53	2.20
0.550	3.72	1.550	11.86	2.550	3.51	3.55	2.20
0.567	3.72	1.567	11.86	2.567	3.51	3.57	2.20

0.583	3.72	1.583	11.86	2.583	3.51	3.58	2.20
0.600	3.72	1.600	11.86	2.600	3.51	3.60	2.20
0.617	3.72	1.617	11.86	2.617	3.51	3.62	2.20
0.633	3.72	1.633	11.86	2.633	3.51	3.63	2.20
0.650	3.72	1.650	11.86	2.650	3.51	3.65	2.20
0.667	3.72	1.667	11.86	2.667	3.51	3.67	2.20
0.683	4.86	1.683	8.23	2.683	3.18	3.68	2.08
0.700	4.86	1.700	8.23	2.700	3.18	3.70	2.08
0.717	4.86	1.717	8.23	2.717	3.18	3.72	2.08
0.733	4.86	1.733	8.23	2.733	3.18	3.73	2.08
0.750	4.86	1.750	8.23	2.750	3.18	3.75	2.08
0.767	4.86	1.767	8.23	2.767	3.18	3.77	2.08
0.783	4.86	1.783	8.23	2.783	3.18	3.78	2.08
0.800	4.86	1.800	8.23	2.800	3.18	3.80	2.08
0.817	4.86	1.817	8.23	2.817	3.18	3.82	2.08
0.833	4.86	1.833	8.23	2.833	3.18	3.83	2.08
0.850	7.29	1.850	6.38	2.850	2.91	3.85	1.98
0.867	7.29	1.867	6.38	2.867	2.91	3.87	1.98
0.883	7.29	1.883	6.38	2.883	2.91	3.88	1.98
0.900	7.29	1.900	6.38	2.900	2.91	3.90	1.98
0.917	7.29	1.917	6.38	2.917	2.91	3.92	1.98
0.933	7.29	1.933	6.38	2.933	2.91	3.93	1.98
0.950	7.29	1.950	6.38	2.950	2.91	3.95	1.98
0.967	7.29	1.967	6.38	2.967	2.91	3.97	1.98
0.983	7.29	1.983	6.38	2.983	2.91	3.98	1.98
1.000	7.29	2.000	6.38	3.000	2.91	4.00	1.98

Unit Hyd Qpeak (cms)= 0.694

PEAK FLOW (cms)= 0.077 (i)
TIME TO PEAK (hrs)= 2.650
RUNOFF VOLUME (mm)= 4.295
TOTAL RAINFALL (mm)= 34.800
RUNOFF COEFFICIENT = 0.123

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

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):		2.53	0.039	1.78	16.64
+ ID2= 2 (0011):		0.80	0.047	1.50	28.29
ID = 3 (0004):		3.33	0.082	1.60	19.44

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0004):		3.33	0.082	1.60	19.44
+ ID2= 2 (0027):		17.26	0.077	2.65	4.29
ID = 1 (0004):		20.59	0.120	2.25	6.74

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0004):		20.59	0.120	2.25	6.74
+ ID2= 2 (0003):		4.49	0.010	4.07	6.85
ID = 3 (0004):		25.08	0.124	2.28	6.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0004):		25.08	0.124	2.28	6.76
+ ID2= 2 (0009):		2.07	0.015	2.28	16.73
ID = 1 (0004):		27.15	0.140	2.28	7.52

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
       V    V   I    SSSSS  U   U    A    L              (v 5.0.2027)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
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Summary filename:
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DATE: 12/19/2018 TIME: 10:47:46

USER:

COMMENTS: _____

** SIMULATION : Run 02 **

| CHICAGO STORM |
| Ptotal= 46.26 mm |

IDF curve parameters: A= 929.800
B= 4.000
C= 0.798
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.85	1.17	22.78	2.17	6.71	3.17	3.38
0.33	3.26	1.33	113.18	2.33	5.71	3.33	3.14
0.50	3.84	1.50	30.05	2.50	4.99	3.50	2.94
0.67	4.71	1.67	15.53	2.67	4.45	3.67	2.76
0.83	6.21	1.83	10.66	2.83	4.02	3.83	2.60
1.00	9.42	2.00	8.20	3.00	3.67	4.00	2.47

| CALIB |
| NASHYD (0025) |
|ID= 1 DT= 1.0 min |

Area (ha)= 1.48 Curve Number (CN)= 67.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.34

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.85	1.017	22.78	2.017	6.71	3.02	3.38
0.033	2.85	1.033	22.78	2.033	6.71	3.03	3.38
0.050	2.85	1.050	22.78	2.050	6.71	3.05	3.38
0.067	2.85	1.067	22.78	2.067	6.71	3.07	3.38
0.083	2.85	1.083	22.78	2.083	6.71	3.08	3.38
0.100	2.85	1.100	22.78	2.100	6.71	3.10	3.38
0.117	2.85	1.117	22.78	2.117	6.71	3.12	3.38
0.133	2.85	1.133	22.78	2.133	6.71	3.13	3.38
0.150	2.85	1.150	22.78	2.150	6.71	3.15	3.38
0.167	2.85	1.167	22.78	2.167	6.71	3.17	3.38
0.183	3.26	1.183	113.18	2.183	5.71	3.18	3.14
0.200	3.26	1.200	113.18	2.200	5.71	3.20	3.14
0.217	3.26	1.217	113.18	2.217	5.71	3.22	3.14
0.233	3.26	1.233	113.18	2.233	5.71	3.23	3.14
0.250	3.26	1.250	113.18	2.250	5.71	3.25	3.14

0.267	3.26	1.267	113.18	2.267	5.71	3.27	3.14
0.283	3.26	1.283	113.18	2.283	5.71	3.28	3.14
0.300	3.26	1.300	113.18	2.300	5.71	3.30	3.14
0.317	3.26	1.317	113.18	2.317	5.71	3.32	3.14
0.333	3.26	1.333	113.18	2.333	5.71	3.33	3.14
0.350	3.84	1.350	30.05	2.350	4.99	3.35	2.94
0.367	3.84	1.367	30.05	2.367	4.99	3.37	2.94
0.383	3.84	1.383	30.05	2.383	4.99	3.38	2.94
0.400	3.84	1.400	30.05	2.400	4.99	3.40	2.94
0.417	3.84	1.417	30.05	2.417	4.99	3.42	2.94
0.433	3.84	1.433	30.05	2.433	4.99	3.43	2.94
0.450	3.84	1.450	30.05	2.450	4.99	3.45	2.94
0.467	3.84	1.467	30.05	2.467	4.99	3.47	2.94
0.483	3.84	1.483	30.05	2.483	4.99	3.48	2.94
0.500	3.84	1.500	30.05	2.500	4.99	3.50	2.94
0.517	4.71	1.517	15.53	2.517	4.45	3.52	2.76
0.533	4.71	1.533	15.53	2.533	4.45	3.53	2.76
0.550	4.71	1.550	15.53	2.550	4.45	3.55	2.76
0.567	4.71	1.567	15.53	2.567	4.45	3.57	2.76
0.583	4.71	1.583	15.53	2.583	4.45	3.58	2.76
0.600	4.71	1.600	15.53	2.600	4.45	3.60	2.76
0.617	4.71	1.617	15.53	2.617	4.45	3.62	2.76
0.633	4.71	1.633	15.53	2.633	4.45	3.63	2.76
0.650	4.71	1.650	15.53	2.650	4.45	3.65	2.76
0.667	4.71	1.667	15.53	2.667	4.45	3.67	2.76
0.683	6.21	1.683	10.66	2.683	4.02	3.68	2.61
0.700	6.21	1.700	10.66	2.700	4.02	3.70	2.60
0.717	6.21	1.717	10.66	2.717	4.02	3.72	2.60
0.733	6.21	1.733	10.66	2.733	4.02	3.73	2.60
0.750	6.21	1.750	10.66	2.750	4.02	3.75	2.60
0.767	6.21	1.767	10.66	2.767	4.02	3.77	2.60
0.783	6.21	1.783	10.66	2.783	4.02	3.78	2.60
0.800	6.21	1.800	10.66	2.800	4.02	3.80	2.60
0.817	6.21	1.817	10.66	2.817	4.02	3.82	2.60
0.833	6.21	1.833	10.66	2.833	4.02	3.83	2.60
0.850	9.42	1.850	8.20	2.850	3.67	3.85	2.47
0.867	9.42	1.867	8.20	2.867	3.67	3.87	2.47
0.883	9.42	1.883	8.20	2.883	3.67	3.88	2.47
0.900	9.42	1.900	8.20	2.900	3.67	3.90	2.47
0.917	9.42	1.917	8.20	2.917	3.67	3.92	2.47
0.933	9.42	1.933	8.20	2.933	3.67	3.93	2.47
0.950	9.42	1.950	8.20	2.950	3.67	3.95	2.47
0.967	9.42	1.967	8.20	2.967	3.67	3.97	2.47
0.983	9.42	1.983	8.20	2.983	3.67	3.98	2.47
1.000	9.42	2.000	8.20	3.000	3.67	4.00	2.47

Unit Hyd Qpeak (cms)= 0.166

PEAK FLOW (cms)= 0.033 (i)
TIME TO PEAK (hrs)= 1.733
RUNOFF VOLUME (mm)= 10.231
TOTAL RAINFALL (mm)= 46.257
RUNOFF COEFFICIENT = 0.221

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

CHICAGO STORM Ptotal= 46.26 mm

IDF curve parameters: A= 929.800
B= 4.000
C= 0.798
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.85	1.17	22.78	2.17	6.71	3.17	3.38
0.33	3.26	1.33	113.18	2.33	5.71	3.33	3.14
0.50	3.84	1.50	30.05	2.50	4.99	3.50	2.94
0.67	4.71	1.67	15.53	2.67	4.45	3.67	2.76
0.83	6.21	1.83	10.66	2.83	4.02	3.83	2.60
1.00	9.42	2.00	8.20	3.00	3.67	4.00	2.47

CALIB STANDHYD (0001) ID= 1 DT= 1.0 min

Area (ha)= 3.01
Total Imp(%)= 57.00 Dir. Conn.(%)= 46.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.72	1.29
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.50	3.00
Length	(m)=	141.66	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.85	1.017	22.78	2.017	6.71	3.02	3.38
0.033	2.85	1.033	22.78	2.033	6.71	3.03	3.38
0.050	2.85	1.050	22.78	2.050	6.71	3.05	3.38
0.067	2.85	1.067	22.78	2.067	6.71	3.07	3.38
0.083	2.85	1.083	22.78	2.083	6.71	3.08	3.38
0.100	2.85	1.100	22.78	2.100	6.71	3.10	3.38
0.117	2.85	1.117	22.78	2.117	6.71	3.12	3.38
0.133	2.85	1.133	22.78	2.133	6.71	3.13	3.38
0.150	2.85	1.150	22.78	2.150	6.71	3.15	3.38
0.167	2.85	1.167	22.78	2.167	6.71	3.17	3.38
0.183	3.26	1.183	113.18	2.183	5.71	3.18	3.14
0.200	3.26	1.200	113.18	2.200	5.71	3.20	3.14
0.217	3.26	1.217	113.18	2.217	5.71	3.22	3.14
0.233	3.26	1.233	113.18	2.233	5.71	3.23	3.14
0.250	3.26	1.250	113.18	2.250	5.71	3.25	3.14
0.267	3.26	1.267	113.18	2.267	5.71	3.27	3.14
0.283	3.26	1.283	113.18	2.283	5.71	3.28	3.14
0.300	3.26	1.300	113.18	2.300	5.71	3.30	3.14
0.317	3.26	1.317	113.18	2.317	5.71	3.32	3.14
0.333	3.26	1.333	113.18	2.333	5.71	3.33	3.14
0.350	3.84	1.350	30.05	2.350	4.99	3.35	2.94
0.367	3.84	1.367	30.05	2.367	4.99	3.37	2.94
0.383	3.84	1.383	30.05	2.383	4.99	3.38	2.94
0.400	3.84	1.400	30.05	2.400	4.99	3.40	2.94
0.417	3.84	1.417	30.05	2.417	4.99	3.42	2.94
0.433	3.84	1.433	30.05	2.433	4.99	3.43	2.94
0.450	3.84	1.450	30.05	2.450	4.99	3.45	2.94
0.467	3.84	1.467	30.05	2.467	4.99	3.47	2.94
0.483	3.84	1.483	30.05	2.483	4.99	3.48	2.94
0.500	3.84	1.500	30.05	2.500	4.99	3.50	2.94
0.517	4.71	1.517	15.53	2.517	4.45	3.52	2.76
0.533	4.71	1.533	15.53	2.533	4.45	3.53	2.76
0.550	4.71	1.550	15.53	2.550	4.45	3.55	2.76
0.567	4.71	1.567	15.53	2.567	4.45	3.57	2.76
0.583	4.71	1.583	15.53	2.583	4.45	3.58	2.76
0.600	4.71	1.600	15.53	2.600	4.45	3.60	2.76
0.617	4.71	1.617	15.53	2.617	4.45	3.62	2.76
0.633	4.71	1.633	15.53	2.633	4.45	3.63	2.76
0.650	4.71	1.650	15.53	2.650	4.45	3.65	2.76
0.667	4.71	1.667	15.53	2.667	4.45	3.67	2.76
0.683	6.21	1.683	10.66	2.683	4.02	3.68	2.61
0.700	6.21	1.700	10.66	2.700	4.02	3.70	2.60
0.717	6.21	1.717	10.66	2.717	4.02	3.72	2.60
0.733	6.21	1.733	10.66	2.733	4.02	3.73	2.60
0.750	6.21	1.750	10.66	2.750	4.02	3.75	2.60
0.767	6.21	1.767	10.66	2.767	4.02	3.77	2.60
0.783	6.21	1.783	10.66	2.783	4.02	3.78	2.60
0.800	6.21	1.800	10.66	2.800	4.02	3.80	2.60
0.817	6.21	1.817	10.66	2.817	4.02	3.82	2.60
0.833	6.21	1.833	10.66	2.833	4.02	3.83	2.60
0.850	9.42	1.850	8.20	2.850	3.67	3.85	2.47
0.867	9.42	1.867	8.20	2.867	3.67	3.87	2.47
0.883	9.42	1.883	8.20	2.883	3.67	3.88	2.47
0.900	9.42	1.900	8.20	2.900	3.67	3.90	2.47
0.917	9.42	1.917	8.20	2.917	3.67	3.92	2.47
0.933	9.42	1.933	8.20	2.933	3.67	3.93	2.47
0.950	9.42	1.950	8.20	2.950	3.67	3.95	2.47
0.967	9.42	1.967	8.20	2.967	3.67	3.97	2.47
0.983	9.42	1.983	8.20	2.983	3.67	3.98	2.47
1.000	9.42	2.000	8.20	3.000	3.67	4.00	2.47

Max.Eff.Inten.(mm/hr)=	113.18	16.08		
over (min)	5.00	9.00		
Storage Coeff. (min)=	2.65 (ii)	8.44 (ii)		
Unit Hyd. Tpeak (min)=	5.00	9.00		
Unit Hyd. peak (cms)=	0.33	0.13		
			TOTALS	
PEAK FLOW (cms)=	0.41	0.04	0.436 (iii)	
TIME TO PEAK (hrs)=	1.33	1.45	1.33	
RUNOFF VOLUME (mm)=	45.26	6.61	24.39	
TOTAL RAINFALL (mm)=	46.26	46.26	46.26	
RUNOFF COEFFICIENT =	0.98	0.14	0.53	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0016)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)

ID1= 1 (	0001):	3.01	0.436	1.33	24.39
+ ID2= 2 (	0025):	1.48	0.033	1.73	10.23
ID = 3 (	0016):	4.49	0.442	1.35	19.72

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0003)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0410	0.0864
	0.0000	0.0281	0.0800	0.1533
	0.0010	0.0321	0.0900	0.1746
	0.0040	0.0479	0.1110	0.2118
	0.0070	0.0518	0.1180	0.2246

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (	0016)	4.490	0.442	1.35	19.72
OUTFLOW: ID= 1 (	0003)	4.490	0.024	3.22	12.81

PEAK FLOW REDUCTION [Qout/Qin](%)= 5.52
TIME SHIFT OF PEAK FLOW (min)=112.00
MAXIMUM STORAGE USED (ha.m.)= 0.0695

CHICAGO STORM	IDF curve parameters: A= 929.800
Ptotal= 46.26 mm	B= 4.000
	C= 0.798

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

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.85	1.17	22.78	2.17	6.71	3.17	3.38
0.33	3.26	1.33	113.18	2.33	5.71	3.33	3.14
0.50	3.84	1.50	30.05	2.50	4.99	3.50	2.94
0.67	4.71	1.67	15.53	2.67	4.45	3.67	2.76
0.83	6.21	1.83	10.66	2.83	4.02	3.83	2.60
1.00	9.42	2.00	8.20	3.00	3.67	4.00	2.47

CALIB					
NASHYD (0026)	Area (ha)=	0.27	Curve Number (CN)=	71.0	
ID= 1 DT= 1.0 min	Ia (mm)=	3.00	# of Linear Res.(N)=	3.00	
	U.H. Tp(hrs)=	0.02			

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.85	1.017	22.78	2.017	6.71	3.02	3.38
0.033	2.85	1.033	22.78	2.033	6.71	3.03	3.38
0.050	2.85	1.050	22.78	2.050	6.71	3.05	3.38
0.067	2.85	1.067	22.78	2.067	6.71	3.07	3.38
0.083	2.85	1.083	22.78	2.083	6.71	3.08	3.38
0.100	2.85	1.100	22.78	2.100	6.71	3.10	3.38
0.117	2.85	1.117	22.78	2.117	6.71	3.12	3.38
0.133	2.85	1.133	22.78	2.133	6.71	3.13	3.38
0.150	2.85	1.150	22.78	2.150	6.71	3.15	3.38
0.167	2.85	1.167	22.78	2.167	6.71	3.17	3.38
0.183	3.26	1.183	113.18	2.183	5.71	3.18	3.14
0.200	3.26	1.200	113.18	2.200	5.71	3.20	3.14
0.217	3.26	1.217	113.18	2.217	5.71	3.22	3.14
0.233	3.26	1.233	113.18	2.233	5.71	3.23	3.14
0.250	3.26	1.250	113.18	2.250	5.71	3.25	3.14
0.267	3.26	1.267	113.18	2.267	5.71	3.27	3.14
0.283	3.26	1.283	113.18	2.283	5.71	3.28	3.14
0.300	3.26	1.300	113.18	2.300	5.71	3.30	3.14
0.317	3.26	1.317	113.18	2.317	5.71	3.32	3.14
0.333	3.26	1.333	113.18	2.333	5.71	3.33	3.14
0.350	3.84	1.350	30.05	2.350	4.99	3.35	2.94
0.367	3.84	1.367	30.05	2.367	4.99	3.37	2.94
0.383	3.84	1.383	30.05	2.383	4.99	3.38	2.94
0.400	3.84	1.400	30.05	2.400	4.99	3.40	2.94
0.417	3.84	1.417	30.05	2.417	4.99	3.42	2.94
0.433	3.84	1.433	30.05	2.433	4.99	3.43	2.94
0.450	3.84	1.450	30.05	2.450	4.99	3.45	2.94
0.467	3.84	1.467	30.05	2.467	4.99	3.47	2.94
0.483	3.84	1.483	30.05	2.483	4.99	3.48	2.94

0.500	3.84	1.500	30.05	2.500	4.99	3.50	2.94
0.517	4.71	1.517	15.53	2.517	4.45	3.52	2.76
0.533	4.71	1.533	15.53	2.533	4.45	3.53	2.76
0.550	4.71	1.550	15.53	2.550	4.45	3.55	2.76
0.567	4.71	1.567	15.53	2.567	4.45	3.57	2.76
0.583	4.71	1.583	15.53	2.583	4.45	3.58	2.76
0.600	4.71	1.600	15.53	2.600	4.45	3.60	2.76
0.617	4.71	1.617	15.53	2.617	4.45	3.62	2.76
0.633	4.71	1.633	15.53	2.633	4.45	3.63	2.76
0.650	4.71	1.650	15.53	2.650	4.45	3.65	2.76
0.667	4.71	1.667	15.53	2.667	4.45	3.67	2.76
0.683	6.21	1.683	10.66	2.683	4.02	3.68	2.61
0.700	6.21	1.700	10.66	2.700	4.02	3.70	2.60
0.717	6.21	1.717	10.66	2.717	4.02	3.72	2.60
0.733	6.21	1.733	10.66	2.733	4.02	3.73	2.60
0.750	6.21	1.750	10.66	2.750	4.02	3.75	2.60
0.767	6.21	1.767	10.66	2.767	4.02	3.77	2.60
0.783	6.21	1.783	10.66	2.783	4.02	3.78	2.60
0.800	6.21	1.800	10.66	2.800	4.02	3.80	2.60
0.817	6.21	1.817	10.66	2.817	4.02	3.82	2.60
0.833	6.21	1.833	10.66	2.833	4.02	3.83	2.60
0.850	9.42	1.850	8.20	2.850	3.67	3.85	2.47
0.867	9.42	1.867	8.20	2.867	3.67	3.87	2.47
0.883	9.42	1.883	8.20	2.883	3.67	3.88	2.47
0.900	9.42	1.900	8.20	2.900	3.67	3.90	2.47
0.917	9.42	1.917	8.20	2.917	3.67	3.92	2.47
0.933	9.42	1.933	8.20	2.933	3.67	3.93	2.47
0.950	9.42	1.950	8.20	2.950	3.67	3.95	2.47
0.967	9.42	1.967	8.20	2.967	3.67	3.97	2.47
0.983	9.42	1.983	8.20	2.983	3.67	3.98	2.47
1.000	9.42	2.000	8.20	3.000	3.67	4.00	2.47

Unit Hyd Qpeak (cms)= 0.516

PEAK FLOW (cms)= 0.026 (i)
TIME TO PEAK (hrs)= 1.333
RUNOFF VOLUME (mm)= 12.398
TOTAL RAINFALL (mm)= 46.257
RUNOFF COEFFICIENT = 0.268

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

CHICAGO STORM
Ptotal= 46.26 mm

IDF curve parameters: A= 929.800
B= 4.000
C= 0.798
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.85	1.17	22.78	2.17	6.71	3.17	3.38
0.33	3.26	1.33	113.18	2.33	5.71	3.33	3.14
0.50	3.84	1.50	30.05	2.50	4.99	3.50	2.94
0.67	4.71	1.67	15.53	2.67	4.45	3.67	2.76
0.83	6.21	1.83	10.66	2.83	4.02	3.83	2.60
1.00	9.42	2.00	8.20	3.00	3.67	4.00	2.47

CALIB
STANDHYD (0007)
ID= 1 DT= 1.0 min

Area (ha)= 1.80
Total Imp(%)= 59.00 Dir. Conn.(%)= 48.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.06	0.74
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	109.54	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.85	1.017	22.78	2.017	6.71	3.02	3.38
0.033	2.85	1.033	22.78	2.033	6.71	3.03	3.38
0.050	2.85	1.050	22.78	2.050	6.71	3.05	3.38
0.067	2.85	1.067	22.78	2.067	6.71	3.07	3.38
0.083	2.85	1.083	22.78	2.083	6.71	3.08	3.38
0.100	2.85	1.100	22.78	2.100	6.71	3.10	3.38
0.117	2.85	1.117	22.78	2.117	6.71	3.12	3.38
0.133	2.85	1.133	22.78	2.133	6.71	3.13	3.38
0.150	2.85	1.150	22.78	2.150	6.71	3.15	3.38

0.167	2.85	1.167	22.78	2.167	6.71	3.17	3.38
0.183	3.26	1.183	113.18	2.183	5.71	3.18	3.14
0.200	3.26	1.200	113.18	2.200	5.71	3.20	3.14
0.217	3.26	1.217	113.18	2.217	5.71	3.22	3.14
0.233	3.26	1.233	113.18	2.233	5.71	3.23	3.14
0.250	3.26	1.250	113.18	2.250	5.71	3.25	3.14
0.267	3.26	1.267	113.18	2.267	5.71	3.27	3.14
0.283	3.26	1.283	113.18	2.283	5.71	3.28	3.14
0.300	3.26	1.300	113.18	2.300	5.71	3.30	3.14
0.317	3.26	1.317	113.18	2.317	5.71	3.32	3.14
0.333	3.26	1.333	113.18	2.333	5.71	3.33	3.14
0.350	3.84	1.350	30.05	2.350	4.99	3.35	2.94
0.367	3.84	1.367	30.05	2.367	4.99	3.37	2.94
0.383	3.84	1.383	30.05	2.383	4.99	3.38	2.94
0.400	3.84	1.400	30.05	2.400	4.99	3.40	2.94
0.417	3.84	1.417	30.05	2.417	4.99	3.42	2.94
0.433	3.84	1.433	30.05	2.433	4.99	3.43	2.94
0.450	3.84	1.450	30.05	2.450	4.99	3.45	2.94
0.467	3.84	1.467	30.05	2.467	4.99	3.47	2.94
0.483	3.84	1.483	30.05	2.483	4.99	3.48	2.94
0.500	3.84	1.500	30.05	2.500	4.99	3.50	2.94
0.517	4.71	1.517	15.53	2.517	4.45	3.52	2.76
0.533	4.71	1.533	15.53	2.533	4.45	3.53	2.76
0.550	4.71	1.550	15.53	2.550	4.45	3.55	2.76
0.567	4.71	1.567	15.53	2.567	4.45	3.57	2.76
0.583	4.71	1.583	15.53	2.583	4.45	3.58	2.76
0.600	4.71	1.600	15.53	2.600	4.45	3.60	2.76
0.617	4.71	1.617	15.53	2.617	4.45	3.62	2.76
0.633	4.71	1.633	15.53	2.633	4.45	3.63	2.76
0.650	4.71	1.650	15.53	2.650	4.45	3.65	2.76
0.667	4.71	1.667	15.53	2.667	4.45	3.67	2.76
0.683	6.21	1.683	10.66	2.683	4.02	3.68	2.61
0.700	6.21	1.700	10.66	2.700	4.02	3.70	2.60
0.717	6.21	1.717	10.66	2.717	4.02	3.72	2.60
0.733	6.21	1.733	10.66	2.733	4.02	3.73	2.60
0.750	6.21	1.750	10.66	2.750	4.02	3.75	2.60
0.767	6.21	1.767	10.66	2.767	4.02	3.77	2.60
0.783	6.21	1.783	10.66	2.783	4.02	3.78	2.60
0.800	6.21	1.800	10.66	2.800	4.02	3.80	2.60
0.817	6.21	1.817	10.66	2.817	4.02	3.82	2.60
0.833	6.21	1.833	10.66	2.833	4.02	3.83	2.60
0.850	9.42	1.850	8.20	2.850	3.67	3.85	2.47
0.867	9.42	1.867	8.20	2.867	3.67	3.87	2.47
0.883	9.42	1.883	8.20	2.883	3.67	3.88	2.47
0.900	9.42	1.900	8.20	2.900	3.67	3.90	2.47
0.917	9.42	1.917	8.20	2.917	3.67	3.92	2.47
0.933	9.42	1.933	8.20	2.933	3.67	3.93	2.47
0.950	9.42	1.950	8.20	2.950	3.67	3.95	2.47
0.967	9.42	1.967	8.20	2.967	3.67	3.97	2.47
0.983	9.42	1.983	8.20	2.983	3.67	3.98	2.47
1.000	9.42	2.000	8.20	3.000	3.67	4.00	2.47

Max.Eff.Inten.(mm/hr)=	113.18	16.43	
over (min)	5.00	9.00	
Storage Coeff. (min)=	2.57 (ii)	8.87 (ii)	
Unit Hyd. Tpeak (min)=	5.00	9.00	
Unit Hyd. peak (cms)=	0.33	0.13	
			TOTALS
PEAK FLOW (cms)=	0.26	0.02	0.272 (iii)
TIME TO PEAK (hrs)=	1.33	1.45	1.33
RUNOFF VOLUME (mm)=	45.26	6.68	25.19
TOTAL RAINFALL (mm)=	46.26	46.26	46.26
RUNOFF COEFFICIENT =	0.98	0.14	0.54

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0018)					
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.	
	(ha)	(cms)	(hrs)	(mm)	
ID1= 1 (0026):	0.27	0.026	1.33	12.40	
+ ID2= 2 (0007):	1.80	0.272	1.33	25.19	
ID = 3 (0018):	2.07	0.298	1.33	23.52	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0009)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW	STORAGE	OUTFLOW	STORAGE
	(cms)	(ha.m.)	(cms)	(ha.m.)
	0.0000	0.0000	0.0330	0.0298

0.0020	0.0000	0.0480	0.0300
0.0190	0.0288	0.5150	0.0368
0.0250	0.0292	0.5380	0.0368

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0018)	2.070	0.298	1.33	23.52
OUTFLOW: ID= 1 (0009)	2.070	0.047	1.75	23.52

PEAK FLOW REDUCTION [Qout/Qin](%)= 15.82
TIME SHIFT OF PEAK FLOW (min)= 25.00
MAXIMUM STORAGE USED (ha.m.)= 0.0300

CHICAGO STORM
Ptotal= 46.26 mm

IDF curve parameters: A= 929.800
B= 4.000
C= 0.798
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.85	1.17	22.78	2.17	6.71	3.17	3.38
0.33	3.26	1.33	113.18	2.33	5.71	3.33	3.14
0.50	3.84	1.50	30.05	2.50	4.99	3.50	2.94
0.67	4.71	1.67	15.53	2.67	4.45	3.67	2.76
0.83	6.21	1.83	10.66	2.83	4.02	3.83	2.60
1.00	9.42	2.00	8.20	3.00	3.67	4.00	2.47

CALIB
STANDHYD (0006)
ID= 1 DT= 1.0 min

Area (ha)= 0.80
Total Imp(%)= 87.00 Dir. Conn.(%)= 82.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.70	0.10
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	73.03	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.85	1.017	22.78	2.017	6.71	3.02	3.38
0.033	2.85	1.033	22.78	2.033	6.71	3.03	3.38
0.050	2.85	1.050	22.78	2.050	6.71	3.05	3.38
0.067	2.85	1.067	22.78	2.067	6.71	3.07	3.38
0.083	2.85	1.083	22.78	2.083	6.71	3.08	3.38
0.100	2.85	1.100	22.78	2.100	6.71	3.10	3.38
0.117	2.85	1.117	22.78	2.117	6.71	3.12	3.38
0.133	2.85	1.133	22.78	2.133	6.71	3.13	3.38
0.150	2.85	1.150	22.78	2.150	6.71	3.15	3.38
0.167	2.85	1.167	22.78	2.167	6.71	3.17	3.38
0.183	3.26	1.183	113.18	2.183	5.71	3.18	3.14
0.200	3.26	1.200	113.18	2.200	5.71	3.20	3.14
0.217	3.26	1.217	113.18	2.217	5.71	3.22	3.14
0.233	3.26	1.233	113.18	2.233	5.71	3.23	3.14
0.250	3.26	1.250	113.18	2.250	5.71	3.25	3.14
0.267	3.26	1.267	113.18	2.267	5.71	3.27	3.14
0.283	3.26	1.283	113.18	2.283	5.71	3.28	3.14
0.300	3.26	1.300	113.18	2.300	5.71	3.30	3.14
0.317	3.26	1.317	113.18	2.317	5.71	3.32	3.14
0.333	3.26	1.333	113.18	2.333	5.71	3.33	3.14
0.350	3.84	1.350	30.05	2.350	4.99	3.35	2.94
0.367	3.84	1.367	30.05	2.367	4.99	3.37	2.94
0.383	3.84	1.383	30.05	2.383	4.99	3.38	2.94
0.400	3.84	1.400	30.05	2.400	4.99	3.40	2.94
0.417	3.84	1.417	30.05	2.417	4.99	3.42	2.94
0.433	3.84	1.433	30.05	2.433	4.99	3.43	2.94
0.450	3.84	1.450	30.05	2.450	4.99	3.45	2.94
0.467	3.84	1.467	30.05	2.467	4.99	3.47	2.94
0.483	3.84	1.483	30.05	2.483	4.99	3.48	2.94
0.500	3.84	1.500	30.05	2.500	4.99	3.50	2.94
0.517	4.71	1.517	15.53	2.517	4.45	3.52	2.76
0.533	4.71	1.533	15.53	2.533	4.45	3.53	2.76
0.550	4.71	1.550	15.53	2.550	4.45	3.55	2.76
0.567	4.71	1.567	15.53	2.567	4.45	3.57	2.76
0.583	4.71	1.583	15.53	2.583	4.45	3.58	2.76
0.600	4.71	1.600	15.53	2.600	4.45	3.60	2.76
0.617	4.71	1.617	15.53	2.617	4.45	3.62	2.76
0.633	4.71	1.633	15.53	2.633	4.45	3.63	2.76

0.650	4.71	1.650	15.53	2.650	4.45	3.65	2.76
0.667	4.71	1.667	15.53	2.667	4.45	3.67	2.76
0.683	6.21	1.683	10.66	2.683	4.02	3.68	2.61
0.700	6.21	1.700	10.66	2.700	4.02	3.70	2.60
0.717	6.21	1.717	10.66	2.717	4.02	3.72	2.60
0.733	6.21	1.733	10.66	2.733	4.02	3.73	2.60
0.750	6.21	1.750	10.66	2.750	4.02	3.75	2.60
0.767	6.21	1.767	10.66	2.767	4.02	3.77	2.60
0.783	6.21	1.783	10.66	2.783	4.02	3.78	2.60
0.800	6.21	1.800	10.66	2.800	4.02	3.80	2.60
0.817	6.21	1.817	10.66	2.817	4.02	3.82	2.60
0.833	6.21	1.833	10.66	2.833	4.02	3.83	2.60
0.850	9.42	1.850	8.20	2.850	3.67	3.85	2.47
0.867	9.42	1.867	8.20	2.867	3.67	3.87	2.47
0.883	9.42	1.883	8.20	2.883	3.67	3.88	2.47
0.900	9.42	1.900	8.20	2.900	3.67	3.90	2.47
0.917	9.42	1.917	8.20	2.917	3.67	3.92	2.47
0.933	9.42	1.933	8.20	2.933	3.67	3.93	2.47
0.950	9.42	1.950	8.20	2.950	3.67	3.95	2.47
0.967	9.42	1.967	8.20	2.967	3.67	3.97	2.47
0.983	9.42	1.983	8.20	2.983	3.67	3.98	2.47
1.000	9.42	2.000	8.20	3.000	3.67	4.00	2.47

Max.Eff.Inten.(mm/hr)=	113.18	19.81	
over (min)	5.00	6.00	
Storage Coeff. (min)=	2.01 (ii)	5.23 (ii)	
Unit Hyd. Tpeak (min)=	5.00	6.00	
Unit Hyd. peak (cms)=	0.37	0.21	
			TOTALS
PEAK FLOW (cms)=	0.20	0.00	0.206 (iii)
TIME TO PEAK (hrs)=	1.33	1.38	1.33
RUNOFF VOLUME (mm)=	45.26	7.29	38.42
TOTAL RAINFALL (mm)=	46.26	46.26	46.26
RUNOFF COEFFICIENT =	0.98	0.16	0.83

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0011)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0810	0.0180
0.0010	0.0005	0.0910	0.0205
0.0060	0.0056	0.1120	0.0249
0.0100	0.0061	0.1190	0.0264
0.0430	0.0101	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0006)	0.800	0.206	1.33	38.42
OUTFLOW: ID= 1 (0011)	0.800	0.065	1.48	38.26

PEAK FLOW REDUCTION [Qout/Qin](%)= 31.49
TIME SHIFT OF PEAK FLOW (min)= 9.00
MAXIMUM STORAGE USED (ha.m.)= 0.0146

CHICAGO STORM
Ptotal= 46.26 mm

IDF curve parameters: A= 929.800
B= 4.000
C= 0.798
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.85	1.17	22.78	2.17	6.71	3.17	3.38
0.33	3.26	1.33	113.18	2.33	5.71	3.33	3.14
0.50	3.84	1.50	30.05	2.50	4.99	3.50	2.94
0.67	4.71	1.67	15.53	2.67	4.45	3.67	2.76
0.83	6.21	1.83	10.66	2.83	4.02	3.83	2.60
1.00	9.42	2.00	8.20	3.00	3.67	4.00	2.47

CALIB
STANDHYD (0008)
ID= 1 DT= 1.0 min

Area (ha)= 2.53
Total Imp(%)= 52.00 Dir. Conn.(%)= 44.00

IMPERVIOUS PERVIOUS (i)

Surface Area	(ha)=	1.32	1.21
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	129.87	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.85	1.017	22.78	2.017	6.71	3.02	3.38
0.033	2.85	1.033	22.78	2.033	6.71	3.03	3.38
0.050	2.85	1.050	22.78	2.050	6.71	3.05	3.38
0.067	2.85	1.067	22.78	2.067	6.71	3.07	3.38
0.083	2.85	1.083	22.78	2.083	6.71	3.08	3.38
0.100	2.85	1.100	22.78	2.100	6.71	3.10	3.38
0.117	2.85	1.117	22.78	2.117	6.71	3.12	3.38
0.133	2.85	1.133	22.78	2.133	6.71	3.13	3.38
0.150	2.85	1.150	22.78	2.150	6.71	3.15	3.38
0.167	2.85	1.167	22.78	2.167	6.71	3.17	3.38
0.183	3.26	1.183	113.18	2.183	5.71	3.18	3.14
0.200	3.26	1.200	113.18	2.200	5.71	3.20	3.14
0.217	3.26	1.217	113.18	2.217	5.71	3.22	3.14
0.233	3.26	1.233	113.18	2.233	5.71	3.23	3.14
0.250	3.26	1.250	113.18	2.250	5.71	3.25	3.14
0.267	3.26	1.267	113.18	2.267	5.71	3.27	3.14
0.283	3.26	1.283	113.18	2.283	5.71	3.28	3.14
0.300	3.26	1.300	113.18	2.300	5.71	3.30	3.14
0.317	3.26	1.317	113.18	2.317	5.71	3.32	3.14
0.333	3.26	1.333	113.18	2.333	5.71	3.33	3.14
0.350	3.84	1.350	30.05	2.350	4.99	3.35	2.94
0.367	3.84	1.367	30.05	2.367	4.99	3.37	2.94
0.383	3.84	1.383	30.05	2.383	4.99	3.38	2.94
0.400	3.84	1.400	30.05	2.400	4.99	3.40	2.94
0.417	3.84	1.417	30.05	2.417	4.99	3.42	2.94
0.433	3.84	1.433	30.05	2.433	4.99	3.43	2.94
0.450	3.84	1.450	30.05	2.450	4.99	3.45	2.94
0.467	3.84	1.467	30.05	2.467	4.99	3.47	2.94
0.483	3.84	1.483	30.05	2.483	4.99	3.48	2.94
0.500	3.84	1.500	30.05	2.500	4.99	3.50	2.94
0.517	4.71	1.517	15.53	2.517	4.45	3.52	2.76
0.533	4.71	1.533	15.53	2.533	4.45	3.53	2.76
0.550	4.71	1.550	15.53	2.550	4.45	3.55	2.76
0.567	4.71	1.567	15.53	2.567	4.45	3.57	2.76
0.583	4.71	1.583	15.53	2.583	4.45	3.58	2.76
0.600	4.71	1.600	15.53	2.600	4.45	3.60	2.76
0.617	4.71	1.617	15.53	2.617	4.45	3.62	2.76
0.633	4.71	1.633	15.53	2.633	4.45	3.63	2.76
0.650	4.71	1.650	15.53	2.650	4.45	3.65	2.76
0.667	4.71	1.667	15.53	2.667	4.45	3.67	2.76
0.683	6.21	1.683	10.66	2.683	4.02	3.68	2.61
0.700	6.21	1.700	10.66	2.700	4.02	3.70	2.60
0.717	6.21	1.717	10.66	2.717	4.02	3.72	2.60
0.733	6.21	1.733	10.66	2.733	4.02	3.73	2.60
0.750	6.21	1.750	10.66	2.750	4.02	3.75	2.60
0.767	6.21	1.767	10.66	2.767	4.02	3.77	2.60
0.783	6.21	1.783	10.66	2.783	4.02	3.78	2.60
0.800	6.21	1.800	10.66	2.800	4.02	3.80	2.60
0.817	6.21	1.817	10.66	2.817	4.02	3.82	2.60
0.833	6.21	1.833	10.66	2.833	4.02	3.83	2.60
0.850	9.42	1.850	8.20	2.850	3.67	3.85	2.47
0.867	9.42	1.867	8.20	2.867	3.67	3.87	2.47
0.883	9.42	1.883	8.20	2.883	3.67	3.88	2.47
0.900	9.42	1.900	8.20	2.900	3.67	3.90	2.47
0.917	9.42	1.917	8.20	2.917	3.67	3.92	2.47
0.933	9.42	1.933	8.20	2.933	3.67	3.93	2.47
0.950	9.42	1.950	8.20	2.950	3.67	3.95	2.47
0.967	9.42	1.967	8.20	2.967	3.67	3.97	2.47
0.983	9.42	1.983	8.20	2.983	3.67	3.98	2.47
1.000	9.42	2.000	8.20	3.000	3.67	4.00	2.47

Max.Eff.Inten.(mm/hr)=		113.18	13.71	
	over (min)	5.00	10.00	
Storage Coeff.	(min)=	2.84 (ii)	9.80 (ii)	
Unit Hyd. Tpeak	(min)=	5.00	10.00	
Unit Hyd. peak	(cms)=	0.32	0.11	
				TOTALS
PEAK FLOW	(cms)=	0.33	0.03	0.343 (iii)
TIME TO PEAK	(hrs)=	1.33	1.47	1.33
RUNOFF VOLUME	(mm)=	45.26	6.13	23.34
TOTAL RAINFALL	(mm)=	46.26	46.26	46.26
RUNOFF COEFFICIENT	=	0.98	0.13	0.50

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0010) IN= 2---> OUT= 1 DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0810	0.0465
	0.0010	0.0012	0.0910	0.0530
	0.0060	0.0145	0.1120	0.0643
	0.0100	0.0157	0.1190	0.0683
	0.0430	0.0262	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0008)	2.530	0.343	1.33	23.34
OUTFLOW: ID= 1 (0010)	2.530	0.057	1.75	23.22

PEAK FLOW REDUCTION [Qout/Qin](%)= 16.64
TIME SHIFT OF PEAK FLOW (min)= 25.00
MAXIMUM STORAGE USED (ha.m.)= 0.0338

CHICAGO STORM Ptotal= 46.26 mm

IDF curve parameters: A= 929.800
B= 4.000
C= 0.798
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	2.85	1.17	22.78	2.17	6.71	3.17	3.38
0.33	3.26	1.33	113.18	2.33	5.71	3.33	3.14
0.50	3.84	1.50	30.05	2.50	4.99	3.50	2.94
0.67	4.71	1.67	15.53	2.67	4.45	3.67	2.76
0.83	6.21	1.83	10.66	2.83	4.02	3.83	2.60
1.00	9.42	2.00	8.20	3.00	3.67	4.00	2.47

CALIB NASHYD (0027) ID= 1 DT= 1.0 min

Area (ha)= 17.26 Curve Number (CN)= 60.0
Ia (mm)= 5.60 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.95

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.85	1.017	22.78	2.017	6.71	3.02	3.38
0.033	2.85	1.033	22.78	2.033	6.71	3.03	3.38
0.050	2.85	1.050	22.78	2.050	6.71	3.05	3.38
0.067	2.85	1.067	22.78	2.067	6.71	3.07	3.38
0.083	2.85	1.083	22.78	2.083	6.71	3.08	3.38
0.100	2.85	1.100	22.78	2.100	6.71	3.10	3.38
0.117	2.85	1.117	22.78	2.117	6.71	3.12	3.38
0.133	2.85	1.133	22.78	2.133	6.71	3.13	3.38
0.150	2.85	1.150	22.78	2.150	6.71	3.15	3.38
0.167	2.85	1.167	22.78	2.167	6.71	3.17	3.38
0.183	3.26	1.183	113.18	2.183	5.71	3.18	3.14
0.200	3.26	1.200	113.18	2.200	5.71	3.20	3.14
0.217	3.26	1.217	113.18	2.217	5.71	3.22	3.14
0.233	3.26	1.233	113.18	2.233	5.71	3.23	3.14
0.250	3.26	1.250	113.18	2.250	5.71	3.25	3.14
0.267	3.26	1.267	113.18	2.267	5.71	3.27	3.14
0.283	3.26	1.283	113.18	2.283	5.71	3.28	3.14
0.300	3.26	1.300	113.18	2.300	5.71	3.30	3.14
0.317	3.26	1.317	113.18	2.317	5.71	3.32	3.14
0.333	3.26	1.333	113.18	2.333	5.71	3.33	3.14
0.350	3.84	1.350	30.05	2.350	4.99	3.35	2.94
0.367	3.84	1.367	30.05	2.367	4.99	3.37	2.94
0.383	3.84	1.383	30.05	2.383	4.99	3.38	2.94
0.400	3.84	1.400	30.05	2.400	4.99	3.40	2.94
0.417	3.84	1.417	30.05	2.417	4.99	3.42	2.94
0.433	3.84	1.433	30.05	2.433	4.99	3.43	2.94
0.450	3.84	1.450	30.05	2.450	4.99	3.45	2.94
0.467	3.84	1.467	30.05	2.467	4.99	3.47	2.94
0.483	3.84	1.483	30.05	2.483	4.99	3.48	2.94
0.500	3.84	1.500	30.05	2.500	4.99	3.50	2.94
0.517	4.71	1.517	15.53	2.517	4.45	3.52	2.76
0.533	4.71	1.533	15.53	2.533	4.45	3.53	2.76
0.550	4.71	1.550	15.53	2.550	4.45	3.55	2.76
0.567	4.71	1.567	15.53	2.567	4.45	3.57	2.76
0.583	4.71	1.583	15.53	2.583	4.45	3.58	2.76

0.600	4.71	1.600	15.53	2.600	4.45	3.60	2.76
0.617	4.71	1.617	15.53	2.617	4.45	3.62	2.76
0.633	4.71	1.633	15.53	2.633	4.45	3.63	2.76
0.650	4.71	1.650	15.53	2.650	4.45	3.65	2.76
0.667	4.71	1.667	15.53	2.667	4.45	3.67	2.76
0.683	6.21	1.683	10.66	2.683	4.02	3.68	2.61
0.700	6.21	1.700	10.66	2.700	4.02	3.70	2.60
0.717	6.21	1.717	10.66	2.717	4.02	3.72	2.60
0.733	6.21	1.733	10.66	2.733	4.02	3.73	2.60
0.750	6.21	1.750	10.66	2.750	4.02	3.75	2.60
0.767	6.21	1.767	10.66	2.767	4.02	3.77	2.60
0.783	6.21	1.783	10.66	2.783	4.02	3.78	2.60
0.800	6.21	1.800	10.66	2.800	4.02	3.80	2.60
0.817	6.21	1.817	10.66	2.817	4.02	3.82	2.60
0.833	6.21	1.833	10.66	2.833	4.02	3.83	2.60
0.850	9.42	1.850	8.20	2.850	3.67	3.85	2.47
0.867	9.42	1.867	8.20	2.867	3.67	3.87	2.47
0.883	9.42	1.883	8.20	2.883	3.67	3.88	2.47
0.900	9.42	1.900	8.20	2.900	3.67	3.90	2.47
0.917	9.42	1.917	8.20	2.917	3.67	3.92	2.47
0.933	9.42	1.933	8.20	2.933	3.67	3.93	2.47
0.950	9.42	1.950	8.20	2.950	3.67	3.95	2.47
0.967	9.42	1.967	8.20	2.967	3.67	3.97	2.47
0.983	9.42	1.983	8.20	2.983	3.67	3.98	2.47
1.000	9.42	2.000	8.20	3.000	3.67	4.00	2.47

Unit Hyd Qpeak (cms)= 0.694

PEAK FLOW (cms)= 0.146 (i)
TIME TO PEAK (hrs)= 2.583
RUNOFF VOLUME (mm)= 7.872
TOTAL RAINFALL (mm)= 46.257
RUNOFF COEFFICIENT = 0.170

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

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):		2.53	0.057	1.75	23.22
+ ID2= 2 (0011):		0.80	0.065	1.48	38.26
ID = 3 (0004):		3.33	0.118	1.57	26.84

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0004):		3.33	0.118	1.57	26.84
+ ID2= 2 (0027):		17.26	0.146	2.58	7.87
ID = 1 (0004):		20.59	0.214	2.32	10.94

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0004):		20.59	0.214	2.32	10.94
+ ID2= 2 (0003):		4.49	0.024	3.22	12.81
ID = 3 (0004):		25.08	0.235	2.37	11.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0004):		25.08	0.235	2.37	11.27
+ ID2= 2 (0009):		2.07	0.047	1.75	23.52
ID = 1 (0004):		27.15	0.261	2.23	12.21

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
       V    V   I    SSSSS  U   U    A    L              (v 5.0.2027)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
          VV    I    SSSSS  UUUUU  A   A  LLLLL

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\abc5b3df-6c49-4930-9304-6cc8f9bc0
Summary filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\abc5b3df-6c49-4930-9304-6cc8f9bc0

DATE: 12/19/2018 TIME: 10:47:46

USER:

COMMENTS: _____

****
** SIMULATION : Run 03 **
****

| CHICAGO STORM | Ptotal= 54.13 mm |

IDF curve parameters: A=1021.000
B= 3.000
C= 0.787
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.17	25.32	2.17	7.85	3.17	4.06
0.33	3.92	1.33	135.63	2.33	6.73	3.33	3.78
0.50	4.59	1.50	33.17	2.50	5.91	3.50	3.54
0.67	5.59	1.67	17.50	2.67	5.29	3.67	3.33
0.83	7.28	1.83	12.21	2.83	4.79	3.83	3.15
1.00	10.84	2.00	9.50	3.00	4.39	4.00	2.99

| CALIB | NASHYD (0025) | ID= 1 DT= 1.0 min |

Area (ha)= 1.48 Curve Number (CN)= 67.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.34

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	3.43	1.017	25.32	2.017	7.85	3.02	4.06
0.033	3.43	1.033	25.32	2.033	7.85	3.03	4.06
0.050	3.43	1.050	25.32	2.050	7.85	3.05	4.06
0.067	3.43	1.067	25.32	2.067	7.85	3.07	4.06
0.083	3.43	1.083	25.32	2.083	7.85	3.08	4.06
0.100	3.43	1.100	25.32	2.100	7.85	3.10	4.06
0.117	3.43	1.117	25.32	2.117	7.85	3.12	4.06
0.133	3.43	1.133	25.32	2.133	7.85	3.13	4.06
0.150	3.43	1.150	25.32	2.150	7.85	3.15	4.06
0.167	3.43	1.167	25.32	2.167	7.85	3.17	4.06
0.183	3.92	1.183	135.63	2.183	6.73	3.18	3.78
0.200	3.92	1.200	135.63	2.200	6.73	3.20	3.78
0.217	3.92	1.217	135.63	2.217	6.73	3.22	3.78
0.233	3.92	1.233	135.63	2.233	6.73	3.23	3.78
0.250	3.92	1.250	135.63	2.250	6.73	3.25	3.78
0.267	3.92	1.267	135.63	2.267	6.73	3.27	3.78

0.283	3.92	1.283	135.63	2.283	6.73	3.28	3.78
0.300	3.92	1.300	135.63	2.300	6.73	3.30	3.78
0.317	3.92	1.317	135.63	2.317	6.73	3.32	3.78
0.333	3.92	1.333	135.63	2.333	6.73	3.33	3.78
0.350	4.59	1.350	33.17	2.350	5.91	3.35	3.54
0.367	4.59	1.367	33.17	2.367	5.91	3.37	3.54
0.383	4.59	1.383	33.17	2.383	5.91	3.38	3.54
0.400	4.59	1.400	33.17	2.400	5.91	3.40	3.54
0.417	4.59	1.417	33.17	2.417	5.91	3.42	3.54
0.433	4.59	1.433	33.17	2.433	5.91	3.43	3.54
0.450	4.59	1.450	33.17	2.450	5.91	3.45	3.54
0.467	4.59	1.467	33.17	2.467	5.91	3.47	3.54
0.483	4.59	1.483	33.17	2.483	5.91	3.48	3.54
0.500	4.59	1.500	33.17	2.500	5.91	3.50	3.54
0.517	5.59	1.517	17.50	2.517	5.29	3.52	3.33
0.533	5.59	1.533	17.50	2.533	5.29	3.53	3.33
0.550	5.59	1.550	17.50	2.550	5.29	3.55	3.33
0.567	5.59	1.567	17.50	2.567	5.29	3.57	3.33
0.583	5.59	1.583	17.50	2.583	5.29	3.58	3.33
0.600	5.59	1.600	17.50	2.600	5.29	3.60	3.33
0.617	5.59	1.617	17.50	2.617	5.29	3.62	3.33
0.633	5.59	1.633	17.50	2.633	5.29	3.63	3.33
0.650	5.59	1.650	17.50	2.650	5.29	3.65	3.33
0.667	5.59	1.667	17.50	2.667	5.29	3.67	3.33
0.683	7.28	1.683	12.21	2.683	4.79	3.68	3.15
0.700	7.28	1.700	12.21	2.700	4.79	3.70	3.15
0.717	7.28	1.717	12.21	2.717	4.79	3.72	3.15
0.733	7.28	1.733	12.21	2.733	4.79	3.73	3.15
0.750	7.28	1.750	12.21	2.750	4.79	3.75	3.15
0.767	7.28	1.767	12.21	2.767	4.79	3.77	3.15
0.783	7.28	1.783	12.21	2.783	4.79	3.78	3.15
0.800	7.28	1.800	12.21	2.800	4.79	3.80	3.15
0.817	7.28	1.817	12.21	2.817	4.79	3.82	3.15
0.833	7.28	1.833	12.21	2.833	4.79	3.83	3.15
0.850	10.84	1.850	9.50	2.850	4.39	3.85	2.99
0.867	10.84	1.867	9.50	2.867	4.39	3.87	2.99
0.883	10.84	1.883	9.50	2.883	4.39	3.88	2.99
0.900	10.84	1.900	9.50	2.900	4.39	3.90	2.99
0.917	10.84	1.917	9.50	2.917	4.39	3.92	2.99
0.933	10.84	1.933	9.50	2.933	4.39	3.93	2.99
0.950	10.84	1.950	9.50	2.950	4.39	3.95	2.99
0.967	10.84	1.967	9.50	2.967	4.39	3.97	2.99
0.983	10.84	1.983	9.50	2.983	4.39	3.98	2.99
1.000	10.84	2.000	9.50	3.000	4.39	4.00	2.99

Unit Hyd Qpeak (cms)= 0.166

PEAK FLOW (cms)= 0.046 (i)
TIME TO PEAK (hrs)= 1.717
RUNOFF VOLUME (mm)= 13.855
TOTAL RAINFALL (mm)= 54.135
RUNOFF COEFFICIENT = 0.256

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

CHICAGO STORM	IDF curve parameters: A=1021.000
Ptotal= 54.13 mm	B= 3.000
	C= 0.787

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

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.17	25.32	2.17	7.85	3.17	4.06
0.33	3.92	1.33	135.63	2.33	6.73	3.33	3.78
0.50	4.59	1.50	33.17	2.50	5.91	3.50	3.54
0.67	5.59	1.67	17.50	2.67	5.29	3.67	3.33
0.83	7.28	1.83	12.21	2.83	4.79	3.83	3.15
1.00	10.84	2.00	9.50	3.00	4.39	4.00	2.99

CALIB	
STANDHYD (0001)	Area (ha)= 3.01
ID= 1 DT= 1.0 min	Total Imp(%)= 57.00 Dir. Conn.(%)= 46.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.72	1.29
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.50	3.00
Length	(m)=	141.66	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	3.43	1.017	25.32	2.017	7.85	3.02	4.06
0.033	3.43	1.033	25.32	2.033	7.85	3.03	4.06
0.050	3.43	1.050	25.32	2.050	7.85	3.05	4.06
0.067	3.43	1.067	25.32	2.067	7.85	3.07	4.06
0.083	3.43	1.083	25.32	2.083	7.85	3.08	4.06
0.100	3.43	1.100	25.32	2.100	7.85	3.10	4.06
0.117	3.43	1.117	25.32	2.117	7.85	3.12	4.06
0.133	3.43	1.133	25.32	2.133	7.85	3.13	4.06
0.150	3.43	1.150	25.32	2.150	7.85	3.15	4.06
0.167	3.43	1.167	25.32	2.167	7.85	3.17	4.06
0.183	3.92	1.183	135.63	2.183	6.73	3.18	3.78
0.200	3.92	1.200	135.63	2.200	6.73	3.20	3.78
0.217	3.92	1.217	135.63	2.217	6.73	3.22	3.78
0.233	3.92	1.233	135.63	2.233	6.73	3.23	3.78
0.250	3.92	1.250	135.63	2.250	6.73	3.25	3.78
0.267	3.92	1.267	135.63	2.267	6.73	3.27	3.78
0.283	3.92	1.283	135.63	2.283	6.73	3.28	3.78
0.300	3.92	1.300	135.63	2.300	6.73	3.30	3.78
0.317	3.92	1.317	135.63	2.317	6.73	3.32	3.78
0.333	3.92	1.333	135.63	2.333	6.73	3.33	3.78
0.350	4.59	1.350	33.17	2.350	5.91	3.35	3.54
0.367	4.59	1.367	33.17	2.367	5.91	3.37	3.54
0.383	4.59	1.383	33.17	2.383	5.91	3.38	3.54
0.400	4.59	1.400	33.17	2.400	5.91	3.40	3.54
0.417	4.59	1.417	33.17	2.417	5.91	3.42	3.54
0.433	4.59	1.433	33.17	2.433	5.91	3.43	3.54
0.450	4.59	1.450	33.17	2.450	5.91	3.45	3.54
0.467	4.59	1.467	33.17	2.467	5.91	3.47	3.54
0.483	4.59	1.483	33.17	2.483	5.91	3.48	3.54
0.500	4.59	1.500	33.17	2.500	5.91	3.50	3.54
0.517	5.59	1.517	17.50	2.517	5.29	3.52	3.33
0.533	5.59	1.533	17.50	2.533	5.29	3.53	3.33
0.550	5.59	1.550	17.50	2.550	5.29	3.55	3.33
0.567	5.59	1.567	17.50	2.567	5.29	3.57	3.33
0.583	5.59	1.583	17.50	2.583	5.29	3.58	3.33
0.600	5.59	1.600	17.50	2.600	5.29	3.60	3.33
0.617	5.59	1.617	17.50	2.617	5.29	3.62	3.33
0.633	5.59	1.633	17.50	2.633	5.29	3.63	3.33
0.650	5.59	1.650	17.50	2.650	5.29	3.65	3.33
0.667	5.59	1.667	17.50	2.667	5.29	3.67	3.33
0.683	7.28	1.683	12.21	2.683	4.79	3.68	3.15
0.700	7.28	1.700	12.21	2.700	4.79	3.70	3.15
0.717	7.28	1.717	12.21	2.717	4.79	3.72	3.15
0.733	7.28	1.733	12.21	2.733	4.79	3.73	3.15
0.750	7.28	1.750	12.21	2.750	4.79	3.75	3.15
0.767	7.28	1.767	12.21	2.767	4.79	3.77	3.15
0.783	7.28	1.783	12.21	2.783	4.79	3.78	3.15
0.800	7.28	1.800	12.21	2.800	4.79	3.80	3.15
0.817	7.28	1.817	12.21	2.817	4.79	3.82	3.15
0.833	7.28	1.833	12.21	2.833	4.79	3.83	3.15
0.850	10.84	1.850	9.50	2.850	4.39	3.85	2.99
0.867	10.84	1.867	9.50	2.867	4.39	3.87	2.99
0.883	10.84	1.883	9.50	2.883	4.39	3.88	2.99
0.900	10.84	1.900	9.50	2.900	4.39	3.90	2.99
0.917	10.84	1.917	9.50	2.917	4.39	3.92	2.99
0.933	10.84	1.933	9.50	2.933	4.39	3.93	2.99
0.950	10.84	1.950	9.50	2.950	4.39	3.95	2.99
0.967	10.84	1.967	9.50	2.967	4.39	3.97	2.99
0.983	10.84	1.983	9.50	2.983	4.39	3.98	2.99
1.000	10.84	2.000	9.50	3.000	4.39	4.00	2.99

Max.Eff.Inten.(mm/hr)=	135.63	23.08		
over (min)	5.00	8.00		
Storage Coeff. (min)=	2.47 (ii)	7.85 (ii)		
Unit Hyd. Tpeak (min)=	5.00	8.00		
Unit Hyd. peak (cms)=	0.34	0.14		
			TOTALS	
PEAK FLOW (cms)=	0.50	0.06	0.538 (iii)	
TIME TO PEAK (hrs)=	1.33	1.43	1.33	
RUNOFF VOLUME (mm)=	53.13	9.04	29.32	
TOTAL RAINFALL (mm)=	54.13	54.13	54.13	
RUNOFF COEFFICIENT =	0.98	0.17	0.54	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0016) | 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	3.01	0.538	1.33	29.32

```
      + ID2= 2 (  0025):     1.48   0.046     1.72    13.86
        ================================================
        ID = 3 (  0016):     4.49   0.547     1.35    24.22

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| RESERVOIR(  0003)|
| IN= 2---> OUT= 1 |
| DT=  1.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0410      0.0864
                          0.0000     0.0281   |   0.0800      0.1533
                          0.0010     0.0321   |   0.0900      0.1746
                          0.0040     0.0479   |   0.1110      0.2118
                          0.0070     0.0518   |   0.1180      0.2246

                                AREA     QPEAK     TPEAK       R.V.
                                (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0016)      4.490     0.547      1.35      24.22
   OUTFLOW: ID= 1 (  0003)      4.490     0.036      2.93      17.25

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  6.51
                  TIME SHIFT OF PEAK FLOW         (min)= 95.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0809

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--------------------
| CHICAGO STORM    |    IDF curve parameters: A=1021.000
| Ptotal= 54.13 mm |                          B=   3.000
--------------------                          C=   0.787
                       used in:   INTENSITY =  A / (t + B)^C

                       Duration of storm  =  4.00 hrs
                       Storm time step    = 10.00 min
                       Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    3.43 |  1.17   25.32 |  2.17    7.85 |  3.17    4.06
                0.33    3.92 |  1.33  135.63 |  2.33    6.73 |  3.33    3.78
                0.50    4.59 |  1.50   33.17 |  2.50    5.91 |  3.50    3.54
                0.67    5.59 |  1.67   17.50 |  2.67    5.29 |  3.67    3.33
                0.83    7.28 |  1.83   12.21 |  2.83    4.79 |  3.83    3.15
                1.00   10.84 |  2.00    9.50 |  3.00    4.39 |  4.00    2.99


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--------------------
| CALIB            |
| NASHYD   (  0026)|   Area    (ha)=   0.27   Curve Number   (CN)= 71.0
|ID= 1 DT= 1.0 min |   Ia      (mm)=   3.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.02

         NOTE:  RAINFALL WAS TRANSFORMED TO   1.0 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
               0.017    3.43 | 1.017   25.32 | 2.017    7.85 |  3.02    4.06
               0.033    3.43 | 1.033   25.32 | 2.033    7.85 |  3.03    4.06
               0.050    3.43 | 1.050   25.32 | 2.050    7.85 |  3.05    4.06
               0.067    3.43 | 1.067   25.32 | 2.067    7.85 |  3.07    4.06
               0.083    3.43 | 1.083   25.32 | 2.083    7.85 |  3.08    4.06
               0.100    3.43 | 1.100   25.32 | 2.100    7.85 |  3.10    4.06
               0.117    3.43 | 1.117   25.32 | 2.117    7.85 |  3.12    4.06
               0.133    3.43 | 1.133   25.32 | 2.133    7.85 |  3.13    4.06
               0.150    3.43 | 1.150   25.32 | 2.150    7.85 |  3.15    4.06
               0.167    3.43 | 1.167   25.32 | 2.167    7.85 |  3.17    4.06
               0.183    3.92 | 1.183  135.63 | 2.183    6.73 |  3.18    3.78
               0.200    3.92 | 1.200  135.63 | 2.200    6.73 |  3.20    3.78
               0.217    3.92 | 1.217  135.63 | 2.217    6.73 |  3.22    3.78
               0.233    3.92 | 1.233  135.63 | 2.233    6.73 |  3.23    3.78
               0.250    3.92 | 1.250  135.63 | 2.250    6.73 |  3.25    3.78
               0.267    3.92 | 1.267  135.63 | 2.267    6.73 |  3.27    3.78
               0.283    3.92 | 1.283  135.63 | 2.283    6.73 |  3.28    3.78
               0.300    3.92 | 1.300  135.63 | 2.300    6.73 |  3.30    3.78
               0.317    3.92 | 1.317  135.63 | 2.317    6.73 |  3.32    3.78
               0.333    3.92 | 1.333  135.63 | 2.333    6.73 |  3.33    3.78
               0.350    4.59 | 1.350   33.17 | 2.350    5.91 |  3.35    3.54
               0.367    4.59 | 1.367   33.17 | 2.367    5.91 |  3.37    3.54
               0.383    4.59 | 1.383   33.17 | 2.383    5.91 |  3.38    3.54
               0.400    4.59 | 1.400   33.17 | 2.400    5.91 |  3.40    3.54
               0.417    4.59 | 1.417   33.17 | 2.417    5.91 |  3.42    3.54
               0.433    4.59 | 1.433   33.17 | 2.433    5.91 |  3.43    3.54
               0.450    4.59 | 1.450   33.17 | 2.450    5.91 |  3.45    3.54
               0.467    4.59 | 1.467   33.17 | 2.467    5.91 |  3.47    3.54
               0.483    4.59 | 1.483   33.17 | 2.483    5.91 |  3.48    3.54
               0.500    4.59 | 1.500   33.17 | 2.500    5.91 |  3.50    3.54
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0.517	5.59	1.517	17.50	2.517	5.29	3.52	3.33
0.533	5.59	1.533	17.50	2.533	5.29	3.53	3.33
0.550	5.59	1.550	17.50	2.550	5.29	3.55	3.33
0.567	5.59	1.567	17.50	2.567	5.29	3.57	3.33
0.583	5.59	1.583	17.50	2.583	5.29	3.58	3.33
0.600	5.59	1.600	17.50	2.600	5.29	3.60	3.33
0.617	5.59	1.617	17.50	2.617	5.29	3.62	3.33
0.633	5.59	1.633	17.50	2.633	5.29	3.63	3.33
0.650	5.59	1.650	17.50	2.650	5.29	3.65	3.33
0.667	5.59	1.667	17.50	2.667	5.29	3.67	3.33
0.683	7.28	1.683	12.21	2.683	4.79	3.68	3.15
0.700	7.28	1.700	12.21	2.700	4.79	3.70	3.15
0.717	7.28	1.717	12.21	2.717	4.79	3.72	3.15
0.733	7.28	1.733	12.21	2.733	4.79	3.73	3.15
0.750	7.28	1.750	12.21	2.750	4.79	3.75	3.15
0.767	7.28	1.767	12.21	2.767	4.79	3.77	3.15
0.783	7.28	1.783	12.21	2.783	4.79	3.78	3.15
0.800	7.28	1.800	12.21	2.800	4.79	3.80	3.15
0.817	7.28	1.817	12.21	2.817	4.79	3.82	3.15
0.833	7.28	1.833	12.21	2.833	4.79	3.83	3.15
0.850	10.84	1.850	9.50	2.850	4.39	3.85	2.99
0.867	10.84	1.867	9.50	2.867	4.39	3.87	2.99
0.883	10.84	1.883	9.50	2.883	4.39	3.88	2.99
0.900	10.84	1.900	9.50	2.900	4.39	3.90	2.99
0.917	10.84	1.917	9.50	2.917	4.39	3.92	2.99
0.933	10.84	1.933	9.50	2.933	4.39	3.93	2.99
0.950	10.84	1.950	9.50	2.950	4.39	3.95	2.99
0.967	10.84	1.967	9.50	2.967	4.39	3.97	2.99
0.983	10.84	1.983	9.50	2.983	4.39	3.98	2.99
1.000	10.84	2.000	9.50	3.000	4.39	4.00	2.99

Unit Hyd Qpeak (cms)= 0.516

PEAK FLOW (cms)= 0.036 (i)
TIME TO PEAK (hrs)= 1.333
RUNOFF VOLUME (mm)= 16.443
TOTAL RAINFALL (mm)= 54.135
RUNOFF COEFFICIENT = 0.304

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

CHICAGO STORM Ptotal= 54.13 mm

IDF curve parameters: A=1021.000
B= 3.000
C= 0.787
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.17	25.32	2.17	7.85	3.17	4.06
0.33	3.92	1.33	135.63	2.33	6.73	3.33	3.78
0.50	4.59	1.50	33.17	2.50	5.91	3.50	3.54
0.67	5.59	1.67	17.50	2.67	5.29	3.67	3.33
0.83	7.28	1.83	12.21	2.83	4.79	3.83	3.15
1.00	10.84	2.00	9.50	3.00	4.39	4.00	2.99

CALIB STANDHYD (0007) ID= 1 DT= 1.0 min

Area (ha)= 1.80
Total Imp(%)= 59.00 Dir. Conn.(%)= 48.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.06	0.74
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	109.54	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	3.43	1.017	25.32	2.017	7.85	3.02	4.06
0.033	3.43	1.033	25.32	2.033	7.85	3.03	4.06
0.050	3.43	1.050	25.32	2.050	7.85	3.05	4.06
0.067	3.43	1.067	25.32	2.067	7.85	3.07	4.06
0.083	3.43	1.083	25.32	2.083	7.85	3.08	4.06
0.100	3.43	1.100	25.32	2.100	7.85	3.10	4.06
0.117	3.43	1.117	25.32	2.117	7.85	3.12	4.06
0.133	3.43	1.133	25.32	2.133	7.85	3.13	4.06
0.150	3.43	1.150	25.32	2.150	7.85	3.15	4.06
0.167	3.43	1.167	25.32	2.167	7.85	3.17	4.06

0.183	3.92	1.183	135.63	2.183	6.73	3.18	3.78
0.200	3.92	1.200	135.63	2.200	6.73	3.20	3.78
0.217	3.92	1.217	135.63	2.217	6.73	3.22	3.78
0.233	3.92	1.233	135.63	2.233	6.73	3.23	3.78
0.250	3.92	1.250	135.63	2.250	6.73	3.25	3.78
0.267	3.92	1.267	135.63	2.267	6.73	3.27	3.78
0.283	3.92	1.283	135.63	2.283	6.73	3.28	3.78
0.300	3.92	1.300	135.63	2.300	6.73	3.30	3.78
0.317	3.92	1.317	135.63	2.317	6.73	3.32	3.78
0.333	3.92	1.333	135.63	2.333	6.73	3.33	3.78
0.350	4.59	1.350	33.17	2.350	5.91	3.35	3.54
0.367	4.59	1.367	33.17	2.367	5.91	3.37	3.54
0.383	4.59	1.383	33.17	2.383	5.91	3.38	3.54
0.400	4.59	1.400	33.17	2.400	5.91	3.40	3.54
0.417	4.59	1.417	33.17	2.417	5.91	3.42	3.54
0.433	4.59	1.433	33.17	2.433	5.91	3.43	3.54
0.450	4.59	1.450	33.17	2.450	5.91	3.45	3.54
0.467	4.59	1.467	33.17	2.467	5.91	3.47	3.54
0.483	4.59	1.483	33.17	2.483	5.91	3.48	3.54
0.500	4.59	1.500	33.17	2.500	5.91	3.50	3.54
0.517	5.59	1.517	17.50	2.517	5.29	3.52	3.33
0.533	5.59	1.533	17.50	2.533	5.29	3.53	3.33
0.550	5.59	1.550	17.50	2.550	5.29	3.55	3.33
0.567	5.59	1.567	17.50	2.567	5.29	3.57	3.33
0.583	5.59	1.583	17.50	2.583	5.29	3.58	3.33
0.600	5.59	1.600	17.50	2.600	5.29	3.60	3.33
0.617	5.59	1.617	17.50	2.617	5.29	3.62	3.33
0.633	5.59	1.633	17.50	2.633	5.29	3.63	3.33
0.650	5.59	1.650	17.50	2.650	5.29	3.65	3.33
0.667	5.59	1.667	17.50	2.667	5.29	3.67	3.33
0.683	7.28	1.683	12.21	2.683	4.79	3.68	3.15
0.700	7.28	1.700	12.21	2.700	4.79	3.70	3.15
0.717	7.28	1.717	12.21	2.717	4.79	3.72	3.15
0.733	7.28	1.733	12.21	2.733	4.79	3.73	3.15
0.750	7.28	1.750	12.21	2.750	4.79	3.75	3.15
0.767	7.28	1.767	12.21	2.767	4.79	3.77	3.15
0.783	7.28	1.783	12.21	2.783	4.79	3.78	3.15
0.800	7.28	1.800	12.21	2.800	4.79	3.80	3.15
0.817	7.28	1.817	12.21	2.817	4.79	3.82	3.15
0.833	7.28	1.833	12.21	2.833	4.79	3.83	3.15
0.850	10.84	1.850	9.50	2.850	4.39	3.85	2.99
0.867	10.84	1.867	9.50	2.867	4.39	3.87	2.99
0.883	10.84	1.883	9.50	2.883	4.39	3.88	2.99
0.900	10.84	1.900	9.50	2.900	4.39	3.90	2.99
0.917	10.84	1.917	9.50	2.917	4.39	3.92	2.99
0.933	10.84	1.933	9.50	2.933	4.39	3.93	2.99
0.950	10.84	1.950	9.50	2.950	4.39	3.95	2.99
0.967	10.84	1.967	9.50	2.967	4.39	3.97	2.99
0.983	10.84	1.983	9.50	2.983	4.39	3.98	2.99
1.000	10.84	2.000	9.50	3.000	4.39	4.00	2.99

Max.Eff.Inten.(mm/hr)=	135.63	23.56	
over (min)	5.00	9.00	
Storage Coeff. (min)=	2.39 (ii)	8.25 (ii)	
Unit Hyd. Tpeak (min)=	5.00	9.00	
Unit Hyd. peak (cms)=	0.35	0.13	
			TOTALS
PEAK FLOW (cms)=	0.31	0.03	0.332 (iii)
TIME TO PEAK (hrs)=	1.33	1.45	1.33
RUNOFF VOLUME (mm)=	53.13	9.13	30.25
TOTAL RAINFALL (mm)=	54.13	54.13	54.13
RUNOFF COEFFICIENT =	0.98	0.17	0.56

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0018)					
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 1 (0026):	0.27	0.036	1.33	16.44	
+ ID2= 2 (0007):	1.80	0.332	1.33	30.25	
ID = 3 (0018):	2.07	0.369	1.33	28.45	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0009)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0330	0.0298
	0.0020	0.0000	0.0480	0.0300

0.0190	0.0288	0.5150	0.0368
0.0250	0.0292	0.5380	0.0368

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0018)	2.070	0.369	1.33	28.45
OUTFLOW: ID= 1 (0009)	2.070	0.114	1.53	28.45

PEAK FLOW REDUCTION [Qout/Qin](%)= 30.99
TIME SHIFT OF PEAK FLOW (min)= 12.00
MAXIMUM STORAGE USED (ha.m.)= 0.0310

CHICAGO STORM
Ptotal= 54.13 mm

IDF curve parameters: A=1021.000
B= 3.000
C= 0.787
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.17	25.32	2.17	7.85	3.17	4.06
0.33	3.92	1.33	135.63	2.33	6.73	3.33	3.78
0.50	4.59	1.50	33.17	2.50	5.91	3.50	3.54
0.67	5.59	1.67	17.50	2.67	5.29	3.67	3.33
0.83	7.28	1.83	12.21	2.83	4.79	3.83	3.15
1.00	10.84	2.00	9.50	3.00	4.39	4.00	2.99

CALIB STANDHYD (0006) ID= 1 DT= 1.0 min

Area (ha)= 0.80
Total Imp(%)= 87.00 Dir. Conn.(%)= 82.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.70	0.10
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	73.03	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	3.43	1.017	25.32	2.017	7.85	3.02	4.06
0.033	3.43	1.033	25.32	2.033	7.85	3.03	4.06
0.050	3.43	1.050	25.32	2.050	7.85	3.05	4.06
0.067	3.43	1.067	25.32	2.067	7.85	3.07	4.06
0.083	3.43	1.083	25.32	2.083	7.85	3.08	4.06
0.100	3.43	1.100	25.32	2.100	7.85	3.10	4.06
0.117	3.43	1.117	25.32	2.117	7.85	3.12	4.06
0.133	3.43	1.133	25.32	2.133	7.85	3.13	4.06
0.150	3.43	1.150	25.32	2.150	7.85	3.15	4.06
0.167	3.43	1.167	25.32	2.167	7.85	3.17	4.06
0.183	3.92	1.183	135.63	2.183	6.73	3.18	3.78
0.200	3.92	1.200	135.63	2.200	6.73	3.20	3.78
0.217	3.92	1.217	135.63	2.217	6.73	3.22	3.78
0.233	3.92	1.233	135.63	2.233	6.73	3.23	3.78
0.250	3.92	1.250	135.63	2.250	6.73	3.25	3.78
0.267	3.92	1.267	135.63	2.267	6.73	3.27	3.78
0.283	3.92	1.283	135.63	2.283	6.73	3.28	3.78
0.300	3.92	1.300	135.63	2.300	6.73	3.30	3.78
0.317	3.92	1.317	135.63	2.317	6.73	3.32	3.78
0.333	3.92	1.333	135.63	2.333	6.73	3.33	3.78
0.350	4.59	1.350	33.17	2.350	5.91	3.35	3.54
0.367	4.59	1.367	33.17	2.367	5.91	3.37	3.54
0.383	4.59	1.383	33.17	2.383	5.91	3.38	3.54
0.400	4.59	1.400	33.17	2.400	5.91	3.40	3.54
0.417	4.59	1.417	33.17	2.417	5.91	3.42	3.54
0.433	4.59	1.433	33.17	2.433	5.91	3.43	3.54
0.450	4.59	1.450	33.17	2.450	5.91	3.45	3.54
0.467	4.59	1.467	33.17	2.467	5.91	3.47	3.54
0.483	4.59	1.483	33.17	2.483	5.91	3.48	3.54
0.500	4.59	1.500	33.17	2.500	5.91	3.50	3.54
0.517	5.59	1.517	17.50	2.517	5.29	3.52	3.33
0.533	5.59	1.533	17.50	2.533	5.29	3.53	3.33
0.550	5.59	1.550	17.50	2.550	5.29	3.55	3.33
0.567	5.59	1.567	17.50	2.567	5.29	3.57	3.33
0.583	5.59	1.583	17.50	2.583	5.29	3.58	3.33
0.600	5.59	1.600	17.50	2.600	5.29	3.60	3.33
0.617	5.59	1.617	17.50	2.617	5.29	3.62	3.33
0.633	5.59	1.633	17.50	2.633	5.29	3.63	3.33
0.650	5.59	1.650	17.50	2.650	5.29	3.65	3.33

0.667	5.59	1.667	17.50	2.667	5.29	3.67	3.33
0.683	7.28	1.683	12.21	2.683	4.79	3.68	3.15
0.700	7.28	1.700	12.21	2.700	4.79	3.70	3.15
0.717	7.28	1.717	12.21	2.717	4.79	3.72	3.15
0.733	7.28	1.733	12.21	2.733	4.79	3.73	3.15
0.750	7.28	1.750	12.21	2.750	4.79	3.75	3.15
0.767	7.28	1.767	12.21	2.767	4.79	3.77	3.15
0.783	7.28	1.783	12.21	2.783	4.79	3.78	3.15
0.800	7.28	1.800	12.21	2.800	4.79	3.80	3.15
0.817	7.28	1.817	12.21	2.817	4.79	3.82	3.15
0.833	7.28	1.833	12.21	2.833	4.79	3.83	3.15
0.850	10.84	1.850	9.50	2.850	4.39	3.85	2.99
0.867	10.84	1.867	9.50	2.867	4.39	3.87	2.99
0.883	10.84	1.883	9.50	2.883	4.39	3.88	2.99
0.900	10.84	1.900	9.50	2.900	4.39	3.90	2.99
0.917	10.84	1.917	9.50	2.917	4.39	3.92	2.99
0.933	10.84	1.933	9.50	2.933	4.39	3.93	2.99
0.950	10.84	1.950	9.50	2.950	4.39	3.95	2.99
0.967	10.84	1.967	9.50	2.967	4.39	3.97	2.99
0.983	10.84	1.983	9.50	2.983	4.39	3.98	2.99
1.000	10.84	2.000	9.50	3.000	4.39	4.00	2.99

Max.Eff.Inten.(mm/hr)=	135.63	28.25	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.87 (ii)	4.86 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.38	0.23	
			TOTALS
PEAK FLOW (cms)=	0.24	0.01	0.249 (iii)
TIME TO PEAK (hrs)=	1.33	1.37	1.33
RUNOFF VOLUME (mm)=	53.13	9.92	45.35
TOTAL RAINFALL (mm)=	54.13	54.13	54.13
RUNOFF COEFFICIENT =	0.98	0.18	0.84

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0011)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0810	0.0180
0.0010	0.0005	0.0910	0.0205
0.0060	0.0056	0.1120	0.0249
0.0100	0.0061	0.1190	0.0264
0.0430	0.0101	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0006)	0.800	0.249	1.33	45.35
OUTFLOW: ID= 1 (0011)	0.800	0.077	1.47	45.20

PEAK FLOW REDUCTION [Qout/Qin](%)= 30.95
TIME SHIFT OF PEAK FLOW (min)= 8.00
MAXIMUM STORAGE USED (ha.m.)= 0.0172

CHICAGO STORM
Ptotal= 54.13 mm

IDF curve parameters: A=1021.000
B= 3.000
C= 0.787
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.17	25.32	2.17	7.85	3.17	4.06
0.33	3.92	1.33	135.63	2.33	6.73	3.33	3.78
0.50	4.59	1.50	33.17	2.50	5.91	3.50	3.54
0.67	5.59	1.67	17.50	2.67	5.29	3.67	3.33
0.83	7.28	1.83	12.21	2.83	4.79	3.83	3.15
1.00	10.84	2.00	9.50	3.00	4.39	4.00	2.99

CALIB
STANDHYD (0008)
ID= 1 DT= 1.0 min

Area (ha)= 2.53
Total Imp(%)= 52.00 Dir. Conn.(%)= 44.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.32	1.21

Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	129.87	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	3.43	1.017	25.32	2.017	7.85	3.02	4.06
0.033	3.43	1.033	25.32	2.033	7.85	3.03	4.06
0.050	3.43	1.050	25.32	2.050	7.85	3.05	4.06
0.067	3.43	1.067	25.32	2.067	7.85	3.07	4.06
0.083	3.43	1.083	25.32	2.083	7.85	3.08	4.06
0.100	3.43	1.100	25.32	2.100	7.85	3.10	4.06
0.117	3.43	1.117	25.32	2.117	7.85	3.12	4.06
0.133	3.43	1.133	25.32	2.133	7.85	3.13	4.06
0.150	3.43	1.150	25.32	2.150	7.85	3.15	4.06
0.167	3.43	1.167	25.32	2.167	7.85	3.17	4.06
0.183	3.92	1.183	135.63	2.183	6.73	3.18	3.78
0.200	3.92	1.200	135.63	2.200	6.73	3.20	3.78
0.217	3.92	1.217	135.63	2.217	6.73	3.22	3.78
0.233	3.92	1.233	135.63	2.233	6.73	3.23	3.78
0.250	3.92	1.250	135.63	2.250	6.73	3.25	3.78
0.267	3.92	1.267	135.63	2.267	6.73	3.27	3.78
0.283	3.92	1.283	135.63	2.283	6.73	3.28	3.78
0.300	3.92	1.300	135.63	2.300	6.73	3.30	3.78
0.317	3.92	1.317	135.63	2.317	6.73	3.32	3.78
0.333	3.92	1.333	135.63	2.333	6.73	3.33	3.78
0.350	4.59	1.350	33.17	2.350	5.91	3.35	3.54
0.367	4.59	1.367	33.17	2.367	5.91	3.37	3.54
0.383	4.59	1.383	33.17	2.383	5.91	3.38	3.54
0.400	4.59	1.400	33.17	2.400	5.91	3.40	3.54
0.417	4.59	1.417	33.17	2.417	5.91	3.42	3.54
0.433	4.59	1.433	33.17	2.433	5.91	3.43	3.54
0.450	4.59	1.450	33.17	2.450	5.91	3.45	3.54
0.467	4.59	1.467	33.17	2.467	5.91	3.47	3.54
0.483	4.59	1.483	33.17	2.483	5.91	3.48	3.54
0.500	4.59	1.500	33.17	2.500	5.91	3.50	3.54
0.517	5.59	1.517	17.50	2.517	5.29	3.52	3.33
0.533	5.59	1.533	17.50	2.533	5.29	3.53	3.33
0.550	5.59	1.550	17.50	2.550	5.29	3.55	3.33
0.567	5.59	1.567	17.50	2.567	5.29	3.57	3.33
0.583	5.59	1.583	17.50	2.583	5.29	3.58	3.33
0.600	5.59	1.600	17.50	2.600	5.29	3.60	3.33
0.617	5.59	1.617	17.50	2.617	5.29	3.62	3.33
0.633	5.59	1.633	17.50	2.633	5.29	3.63	3.33
0.650	5.59	1.650	17.50	2.650	5.29	3.65	3.33
0.667	5.59	1.667	17.50	2.667	5.29	3.67	3.33
0.683	7.28	1.683	12.21	2.683	4.79	3.68	3.15
0.700	7.28	1.700	12.21	2.700	4.79	3.70	3.15
0.717	7.28	1.717	12.21	2.717	4.79	3.72	3.15
0.733	7.28	1.733	12.21	2.733	4.79	3.73	3.15
0.750	7.28	1.750	12.21	2.750	4.79	3.75	3.15
0.767	7.28	1.767	12.21	2.767	4.79	3.77	3.15
0.783	7.28	1.783	12.21	2.783	4.79	3.78	3.15
0.800	7.28	1.800	12.21	2.800	4.79	3.80	3.15
0.817	7.28	1.817	12.21	2.817	4.79	3.82	3.15
0.833	7.28	1.833	12.21	2.833	4.79	3.83	3.15
0.850	10.84	1.850	9.50	2.850	4.39	3.85	2.99
0.867	10.84	1.867	9.50	2.867	4.39	3.87	2.99
0.883	10.84	1.883	9.50	2.883	4.39	3.88	2.99
0.900	10.84	1.900	9.50	2.900	4.39	3.90	2.99
0.917	10.84	1.917	9.50	2.917	4.39	3.92	2.99
0.933	10.84	1.933	9.50	2.933	4.39	3.93	2.99
0.950	10.84	1.950	9.50	2.950	4.39	3.95	2.99
0.967	10.84	1.967	9.50	2.967	4.39	3.97	2.99
0.983	10.84	1.983	9.50	2.983	4.39	3.98	2.99
1.000	10.84	2.000	9.50	3.000	4.39	4.00	2.99

Max.Eff.Inten.(mm/hr)=	135.63	19.76		
over (min)	5.00	10.00		
Storage Coeff. (min)=	2.65 (ii)	9.11 (ii)		
Unit Hyd. Tpeak (min)=	5.00	10.00		
Unit Hyd. peak (cms)=	0.33	0.12		
			TOTALS	
PEAK FLOW (cms)=	0.40	0.04	0.420 (iii)	
TIME TO PEAK (hrs)=	1.33	1.47	1.33	
RUNOFF VOLUME (mm)=	53.13	8.41	28.09	
TOTAL RAINFALL (mm)=	54.13	54.13	54.13	
RUNOFF COEFFICIENT =	0.98	0.16	0.52	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0010) / IN= 2---> OUT= 1 / DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0810	0.0465
	0.0010	0.0012	0.0910	0.0530
	0.0060	0.0145	0.1120	0.0643
	0.0100	0.0157	0.1190	0.0683
	0.0430	0.0262	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0008)	2.530	0.420	1.33	28.09
OUTFLOW: ID= 1 (0010)	2.530	0.069	1.75	27.97

PEAK FLOW REDUCTION [Qout/Qin](%)= 16.39
TIME SHIFT OF PEAK FLOW (min)= 25.00
MAXIMUM STORAGE USED (ha.m.)= 0.0400

CHICAGO STORM / Ptotal= 54.13 mm

IDF curve parameters: A=1021.000
B= 3.000
C= 0.787
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	3.43	1.17	25.32	2.17	7.85	3.17	4.06
0.33	3.92	1.33	135.63	2.33	6.73	3.33	3.78
0.50	4.59	1.50	33.17	2.50	5.91	3.50	3.54
0.67	5.59	1.67	17.50	2.67	5.29	3.67	3.33
0.83	7.28	1.83	12.21	2.83	4.79	3.83	3.15
1.00	10.84	2.00	9.50	3.00	4.39	4.00	2.99

CALIB / NASHYD (0027) / ID= 1 DT= 1.0 min

Area (ha)= 17.26 Curve Number (CN)= 60.0
Ia (mm)= 5.60 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.95

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	3.43	1.017	25.32	2.017	7.85	3.02	4.06
0.033	3.43	1.033	25.32	2.033	7.85	3.03	4.06
0.050	3.43	1.050	25.32	2.050	7.85	3.05	4.06
0.067	3.43	1.067	25.32	2.067	7.85	3.07	4.06
0.083	3.43	1.083	25.32	2.083	7.85	3.08	4.06
0.100	3.43	1.100	25.32	2.100	7.85	3.10	4.06
0.117	3.43	1.117	25.32	2.117	7.85	3.12	4.06
0.133	3.43	1.133	25.32	2.133	7.85	3.13	4.06
0.150	3.43	1.150	25.32	2.150	7.85	3.15	4.06
0.167	3.43	1.167	25.32	2.167	7.85	3.17	4.06
0.183	3.92	1.183	135.63	2.183	6.73	3.18	3.78
0.200	3.92	1.200	135.63	2.200	6.73	3.20	3.78
0.217	3.92	1.217	135.63	2.217	6.73	3.22	3.78
0.233	3.92	1.233	135.63	2.233	6.73	3.23	3.78
0.250	3.92	1.250	135.63	2.250	6.73	3.25	3.78
0.267	3.92	1.267	135.63	2.267	6.73	3.27	3.78
0.283	3.92	1.283	135.63	2.283	6.73	3.28	3.78
0.300	3.92	1.300	135.63	2.300	6.73	3.30	3.78
0.317	3.92	1.317	135.63	2.317	6.73	3.32	3.78
0.333	3.92	1.333	135.63	2.333	6.73	3.33	3.78
0.350	4.59	1.350	33.17	2.350	5.91	3.35	3.54
0.367	4.59	1.367	33.17	2.367	5.91	3.37	3.54
0.383	4.59	1.383	33.17	2.383	5.91	3.38	3.54
0.400	4.59	1.400	33.17	2.400	5.91	3.40	3.54
0.417	4.59	1.417	33.17	2.417	5.91	3.42	3.54
0.433	4.59	1.433	33.17	2.433	5.91	3.43	3.54
0.450	4.59	1.450	33.17	2.450	5.91	3.45	3.54
0.467	4.59	1.467	33.17	2.467	5.91	3.47	3.54
0.483	4.59	1.483	33.17	2.483	5.91	3.48	3.54
0.500	4.59	1.500	33.17	2.500	5.91	3.50	3.54
0.517	5.59	1.517	17.50	2.517	5.29	3.52	3.33
0.533	5.59	1.533	17.50	2.533	5.29	3.53	3.33
0.550	5.59	1.550	17.50	2.550	5.29	3.55	3.33
0.567	5.59	1.567	17.50	2.567	5.29	3.57	3.33
0.583	5.59	1.583	17.50	2.583	5.29	3.58	3.33
0.600	5.59	1.600	17.50	2.600	5.29	3.60	3.33

0.617	5.59	1.617	17.50	2.617	5.29	3.62	3.33
0.633	5.59	1.633	17.50	2.633	5.29	3.63	3.33
0.650	5.59	1.650	17.50	2.650	5.29	3.65	3.33
0.667	5.59	1.667	17.50	2.667	5.29	3.67	3.33
0.683	7.28	1.683	12.21	2.683	4.79	3.68	3.15
0.700	7.28	1.700	12.21	2.700	4.79	3.70	3.15
0.717	7.28	1.717	12.21	2.717	4.79	3.72	3.15
0.733	7.28	1.733	12.21	2.733	4.79	3.73	3.15
0.750	7.28	1.750	12.21	2.750	4.79	3.75	3.15
0.767	7.28	1.767	12.21	2.767	4.79	3.77	3.15
0.783	7.28	1.783	12.21	2.783	4.79	3.78	3.15
0.800	7.28	1.800	12.21	2.800	4.79	3.80	3.15
0.817	7.28	1.817	12.21	2.817	4.79	3.82	3.15
0.833	7.28	1.833	12.21	2.833	4.79	3.83	3.15
0.850	10.84	1.850	9.50	2.850	4.39	3.85	2.99
0.867	10.84	1.867	9.50	2.867	4.39	3.87	2.99
0.883	10.84	1.883	9.50	2.883	4.39	3.88	2.99
0.900	10.84	1.900	9.50	2.900	4.39	3.90	2.99
0.917	10.84	1.917	9.50	2.917	4.39	3.92	2.99
0.933	10.84	1.933	9.50	2.933	4.39	3.93	2.99
0.950	10.84	1.950	9.50	2.950	4.39	3.95	2.99
0.967	10.84	1.967	9.50	2.967	4.39	3.97	2.99
0.983	10.84	1.983	9.50	2.983	4.39	3.98	2.99
1.000	10.84	2.000	9.50	3.000	4.39	4.00	2.99

Unit Hyd Qpeak (cms)= 0.694

PEAK FLOW (cms)= 0.201 (i)
TIME TO PEAK (hrs)= 2.567
RUNOFF VOLUME (mm)= 10.812
TOTAL RAINFALL (mm)= 54.135
RUNOFF COEFFICIENT = 0.200

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

ADD HYD (0004)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):	2.53	0.069	1.75	27.97
+ ID2= 2 (0011):	0.80	0.077	1.47	45.20
ID = 3 (0004):	3.33	0.141	1.57	32.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0004):	3.33	0.141	1.57	32.11
+ ID2= 2 (0027):	17.26	0.201	2.57	10.81
ID = 1 (0004):	20.59	0.284	2.30	14.26

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0004):	20.59	0.284	2.30	14.26
+ ID2= 2 (0003):	4.49	0.036	2.93	17.25
ID = 3 (0004):	25.08	0.317	2.35	14.79

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0004):	25.08	0.317	2.35	14.79
+ ID2= 2 (0009):	2.07	0.114	1.53	28.45
ID = 1 (0004):	27.15	0.347	2.25	15.83

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\5142a06f-8067-46bf-bbb3-ca813798b
Summary filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\5142a06f-8067-46bf-bbb3-ca813798b

DATE: 12/19/2018 TIME: 10:47:46

USER:

COMMENTS: _____

****
** SIMULATION : Run 04 **
****

| CHICAGO STORM |
| Ptotal= 62.15 mm |

IDF curve parameters: A=1100.000
B= 2.000
C= 0.776
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.06	1.17	27.34	2.17	9.00	3.17	4.78
0.33	4.62	1.33	159.94	2.33	7.77	3.33	4.46
0.50	5.38	1.50	35.45	2.50	6.86	3.50	4.19
0.67	6.51	1.67	19.27	2.67	6.16	3.67	3.95
0.83	8.38	1.83	13.70	2.83	5.61	3.83	3.74
1.00	12.24	2.00	10.80	3.00	5.16	4.00	3.55

| CALIB |
| NASHYD (0025) |
|ID= 1 DT= 1.0 min |

Area (ha)= 1.48 Curve Number (CN)= 67.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.34

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.06	1.017	27.34	2.017	9.01	3.02	4.78
0.033	4.06	1.033	27.34	2.033	9.00	3.03	4.78
0.050	4.06	1.050	27.34	2.050	9.00	3.05	4.78
0.067	4.06	1.067	27.34	2.067	9.00	3.07	4.78
0.083	4.06	1.083	27.34	2.083	9.00	3.08	4.78
0.100	4.06	1.100	27.34	2.100	9.00	3.10	4.78
0.117	4.06	1.117	27.34	2.117	9.00	3.12	4.78
0.133	4.06	1.133	27.34	2.133	9.00	3.13	4.78
0.150	4.06	1.150	27.34	2.150	9.00	3.15	4.78
0.167	4.06	1.167	27.34	2.167	9.00	3.17	4.78
0.183	4.62	1.183	159.93	2.183	7.77	3.18	4.46
0.200	4.62	1.200	159.94	2.200	7.77	3.20	4.46
0.217	4.62	1.217	159.94	2.217	7.77	3.22	4.46
0.233	4.62	1.233	159.94	2.233	7.77	3.23	4.46
0.250	4.62	1.250	159.94	2.250	7.77	3.25	4.46
0.267	4.62	1.267	159.94	2.267	7.77	3.27	4.46
0.283	4.62	1.283	159.94	2.283	7.77	3.28	4.46

0.300	4.62	1.300	159.94	2.300	7.77	3.30	4.46
0.317	4.62	1.317	159.94	2.317	7.77	3.32	4.46
0.333	4.62	1.333	159.94	2.333	7.77	3.33	4.46
0.350	5.38	1.350	35.46	2.350	6.86	3.35	4.19
0.367	5.38	1.367	35.45	2.367	6.86	3.37	4.19
0.383	5.38	1.383	35.45	2.383	6.86	3.38	4.19
0.400	5.38	1.400	35.45	2.400	6.86	3.40	4.19
0.417	5.38	1.417	35.45	2.417	6.86	3.42	4.19
0.433	5.38	1.433	35.45	2.433	6.86	3.43	4.19
0.450	5.38	1.450	35.45	2.450	6.86	3.45	4.19
0.467	5.38	1.467	35.45	2.467	6.86	3.47	4.19
0.483	5.38	1.483	35.45	2.483	6.86	3.48	4.19
0.500	5.38	1.500	35.45	2.500	6.86	3.50	4.19
0.517	6.51	1.517	19.27	2.517	6.16	3.52	3.95
0.533	6.51	1.533	19.27	2.533	6.16	3.53	3.95
0.550	6.51	1.550	19.27	2.550	6.16	3.55	3.95
0.567	6.51	1.567	19.27	2.567	6.16	3.57	3.95
0.583	6.51	1.583	19.27	2.583	6.16	3.58	3.95
0.600	6.51	1.600	19.27	2.600	6.16	3.60	3.95
0.617	6.51	1.617	19.27	2.617	6.16	3.62	3.95
0.633	6.51	1.633	19.27	2.633	6.16	3.63	3.95
0.650	6.51	1.650	19.27	2.650	6.16	3.65	3.95
0.667	6.51	1.667	19.27	2.667	6.16	3.67	3.95
0.683	8.38	1.683	13.70	2.683	5.61	3.68	3.74
0.700	8.38	1.700	13.70	2.700	5.61	3.70	3.74
0.717	8.38	1.717	13.70	2.717	5.61	3.72	3.74
0.733	8.38	1.733	13.70	2.733	5.61	3.73	3.74
0.750	8.38	1.750	13.70	2.750	5.61	3.75	3.74
0.767	8.38	1.767	13.70	2.767	5.61	3.77	3.74
0.783	8.38	1.783	13.70	2.783	5.61	3.78	3.74
0.800	8.38	1.800	13.70	2.800	5.61	3.80	3.74
0.817	8.38	1.817	13.70	2.817	5.61	3.82	3.74
0.833	8.38	1.833	13.70	2.833	5.61	3.83	3.74
0.850	12.24	1.850	10.80	2.850	5.16	3.85	3.55
0.867	12.24	1.867	10.80	2.867	5.16	3.87	3.55
0.883	12.24	1.883	10.80	2.883	5.16	3.88	3.55
0.900	12.24	1.900	10.80	2.900	5.16	3.90	3.55
0.917	12.24	1.917	10.80	2.917	5.16	3.92	3.55
0.933	12.24	1.933	10.80	2.933	5.16	3.93	3.55
0.950	12.24	1.950	10.80	2.950	5.16	3.95	3.55
0.967	12.24	1.967	10.80	2.967	5.16	3.97	3.55
0.983	12.24	1.983	10.80	2.983	5.16	3.98	3.55
1.000	12.24	2.000	10.80	3.000	5.16	4.00	3.55

Unit Hyd Qpeak (cms)= 0.166

PEAK FLOW (cms)= 0.060 (i)
TIME TO PEAK (hrs)= 1.717
RUNOFF VOLUME (mm)= 17.923
TOTAL RAINFALL (mm)= 62.155
RUNOFF COEFFICIENT = 0.288

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

CHICAGO STORM Ptotal= 62.15 mm

IDF curve parameters: A=1100.000
B= 2.000
C= 0.776
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.06	1.17	27.34	2.17	9.00	3.17	4.78
0.33	4.62	1.33	159.94	2.33	7.77	3.33	4.46
0.50	5.38	1.50	35.45	2.50	6.86	3.50	4.19
0.67	6.51	1.67	19.27	2.67	6.16	3.67	3.95
0.83	8.38	1.83	13.70	2.83	5.61	3.83	3.74
1.00	12.24	2.00	10.80	3.00	5.16	4.00	3.55

CALIB STANDHYD (0001) ID= 1 DT= 1.0 min

Area (ha)= 3.01
Total Imp(%)= 57.00 Dir. Conn.(%)= 46.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.72	1.29
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.50	3.00
Length	(m)=	141.66	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.06	1.017	27.34	2.017	9.01	3.02	4.78
0.033	4.06	1.033	27.34	2.033	9.00	3.03	4.78
0.050	4.06	1.050	27.34	2.050	9.00	3.05	4.78
0.067	4.06	1.067	27.34	2.067	9.00	3.07	4.78
0.083	4.06	1.083	27.34	2.083	9.00	3.08	4.78
0.100	4.06	1.100	27.34	2.100	9.00	3.10	4.78
0.117	4.06	1.117	27.34	2.117	9.00	3.12	4.78
0.133	4.06	1.133	27.34	2.133	9.00	3.13	4.78
0.150	4.06	1.150	27.34	2.150	9.00	3.15	4.78
0.167	4.06	1.167	27.34	2.167	9.00	3.17	4.78
0.183	4.62	1.183	159.93	2.183	7.77	3.18	4.46
0.200	4.62	1.200	159.94	2.200	7.77	3.20	4.46
0.217	4.62	1.217	159.94	2.217	7.77	3.22	4.46
0.233	4.62	1.233	159.94	2.233	7.77	3.23	4.46
0.250	4.62	1.250	159.94	2.250	7.77	3.25	4.46
0.267	4.62	1.267	159.94	2.267	7.77	3.27	4.46
0.283	4.62	1.283	159.94	2.283	7.77	3.28	4.46
0.300	4.62	1.300	159.94	2.300	7.77	3.30	4.46
0.317	4.62	1.317	159.94	2.317	7.77	3.32	4.46
0.333	4.62	1.333	159.94	2.333	7.77	3.33	4.46
0.350	5.38	1.350	35.46	2.350	6.86	3.35	4.19
0.367	5.38	1.367	35.45	2.367	6.86	3.37	4.19
0.383	5.38	1.383	35.45	2.383	6.86	3.38	4.19
0.400	5.38	1.400	35.45	2.400	6.86	3.40	4.19
0.417	5.38	1.417	35.45	2.417	6.86	3.42	4.19
0.433	5.38	1.433	35.45	2.433	6.86	3.43	4.19
0.450	5.38	1.450	35.45	2.450	6.86	3.45	4.19
0.467	5.38	1.467	35.45	2.467	6.86	3.47	4.19
0.483	5.38	1.483	35.45	2.483	6.86	3.48	4.19
0.500	5.38	1.500	35.45	2.500	6.86	3.50	4.19
0.517	6.51	1.517	19.27	2.517	6.16	3.52	3.95
0.533	6.51	1.533	19.27	2.533	6.16	3.53	3.95
0.550	6.51	1.550	19.27	2.550	6.16	3.55	3.95
0.567	6.51	1.567	19.27	2.567	6.16	3.57	3.95
0.583	6.51	1.583	19.27	2.583	6.16	3.58	3.95
0.600	6.51	1.600	19.27	2.600	6.16	3.60	3.95
0.617	6.51	1.617	19.27	2.617	6.16	3.62	3.95
0.633	6.51	1.633	19.27	2.633	6.16	3.63	3.95
0.650	6.51	1.650	19.27	2.650	6.16	3.65	3.95
0.667	6.51	1.667	19.27	2.667	6.16	3.67	3.95
0.683	8.38	1.683	13.70	2.683	5.61	3.68	3.74
0.700	8.38	1.700	13.70	2.700	5.61	3.70	3.74
0.717	8.38	1.717	13.70	2.717	5.61	3.72	3.74
0.733	8.38	1.733	13.70	2.733	5.61	3.73	3.74
0.750	8.38	1.750	13.70	2.750	5.61	3.75	3.74
0.767	8.38	1.767	13.70	2.767	5.61	3.77	3.74
0.783	8.38	1.783	13.70	2.783	5.61	3.78	3.74
0.800	8.38	1.800	13.70	2.800	5.61	3.80	3.74
0.817	8.38	1.817	13.70	2.817	5.61	3.82	3.74
0.833	8.38	1.833	13.70	2.833	5.61	3.83	3.74
0.850	12.24	1.850	10.80	2.850	5.16	3.85	3.55
0.867	12.24	1.867	10.80	2.867	5.16	3.87	3.55
0.883	12.24	1.883	10.80	2.883	5.16	3.88	3.55
0.900	12.24	1.900	10.80	2.900	5.16	3.90	3.55
0.917	12.24	1.917	10.80	2.917	5.16	3.92	3.55
0.933	12.24	1.933	10.80	2.933	5.16	3.93	3.55
0.950	12.24	1.950	10.80	2.950	5.16	3.95	3.55
0.967	12.24	1.967	10.80	2.967	5.16	3.97	3.55
0.983	12.24	1.983	10.80	2.983	5.16	3.98	3.55
1.000	12.24	2.000	10.80	3.000	5.16	4.00	3.55

Max.Eff.Inten.(mm/hr)=	159.94	31.64		
over (min)	5.00	8.00		
Storage Coeff. (min)=	2.31 (ii)	7.35 (ii)		
Unit Hyd. Tpeak (min)=	5.00	8.00		
Unit Hyd. peak (cms)=	0.35	0.15		
			TOTALS	
PEAK FLOW (cms)=	0.59	0.08	0.648 (iii)	
TIME TO PEAK (hrs)=	1.33	1.42	1.33	
RUNOFF VOLUME (mm)=	61.15	11.82	34.51	
TOTAL RAINFALL (mm)=	62.15	62.15	62.15	
RUNOFF COEFFICIENT =	0.98	0.19	0.56	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0016)				
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	3.01	0.648	1.33	34.51
+ ID2= 2 (0025):	1.48	0.060	1.72	17.92

```
       ==================================================
       ID = 3 (  0016):     4.49   0.661     1.33    29.04

     NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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--------------------
| RESERVOIR(  0003)|
| IN= 2---> OUT= 1 |
| DT=  1.0 min     |     OUTFLOW    STORAGE   |  OUTFLOW    STORAGE
--------------------      (cms)     (ha.m.)   |   (cms)     (ha.m.)
                          0.0000     0.0000   |   0.0410      0.0864
                          0.0000     0.0281   |   0.0800      0.1533
                          0.0010     0.0321   |   0.0900      0.1746
                          0.0040     0.0479   |   0.1110      0.2118
                          0.0070     0.0518   |   0.1180      0.2246

                               AREA     QPEAK     TPEAK       R.V.
                               (ha)     (cms)     (hrs)       (mm)
   INFLOW : ID= 2 (  0016)     4.490     0.661      1.33      29.04
   OUTFLOW: ID= 1 (  0003)     4.490     0.045      2.88      22.02

                  PEAK   FLOW   REDUCTION [Qout/Qin](%)=  6.85
                  TIME SHIFT OF PEAK FLOW         (min)= 93.00
                  MAXIMUM  STORAGE   USED       (ha.m.)=  0.0937

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| CHICAGO STORM    |    IDF curve parameters: A=1100.000
| Ptotal= 62.15 mm |                          B=   2.000
--------------------                          C=   0.776
                       used in:   INTENSITY =  A / (t + B)^C

                       Duration of storm  =  4.00 hrs
                       Storm time step    = 10.00 min
                       Time to peak ratio =  0.33

                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.17    4.06 |  1.17   27.34 |  2.17    9.00 |  3.17    4.78
                0.33    4.62 |  1.33  159.94 |  2.33    7.77 |  3.33    4.46
                0.50    5.38 |  1.50   35.45 |  2.50    6.86 |  3.50    4.19
                0.67    6.51 |  1.67   19.27 |  2.67    6.16 |  3.67    3.95
                0.83    8.38 |  1.83   13.70 |  2.83    5.61 |  3.83    3.74
                1.00   12.24 |  2.00   10.80 |  3.00    5.16 |  4.00    3.55


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| CALIB            |
| NASHYD   (  0026)|   Area    (ha)=   0.27   Curve Number   (CN)= 71.0
|ID= 1 DT= 1.0 min |   Ia      (mm)=   3.00   # of Linear Res.(N)= 3.00
--------------------   U.H. Tp(hrs)=   0.02

         NOTE:  RAINFALL WAS TRANSFORMED TO   1.0 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
               0.017    4.06 | 1.017   27.34 | 2.017    9.01 |  3.02    4.78
               0.033    4.06 | 1.033   27.34 | 2.033    9.00 |  3.03    4.78
               0.050    4.06 | 1.050   27.34 | 2.050    9.00 |  3.05    4.78
               0.067    4.06 | 1.067   27.34 | 2.067    9.00 |  3.07    4.78
               0.083    4.06 | 1.083   27.34 | 2.083    9.00 |  3.08    4.78
               0.100    4.06 | 1.100   27.34 | 2.100    9.00 |  3.10    4.78
               0.117    4.06 | 1.117   27.34 | 2.117    9.00 |  3.12    4.78
               0.133    4.06 | 1.133   27.34 | 2.133    9.00 |  3.13    4.78
               0.150    4.06 | 1.150   27.34 | 2.150    9.00 |  3.15    4.78
               0.167    4.06 | 1.167   27.34 | 2.167    9.00 |  3.17    4.78
               0.183    4.62 | 1.183  159.93 | 2.183    7.77 |  3.18    4.46
               0.200    4.62 | 1.200  159.94 | 2.200    7.77 |  3.20    4.46
               0.217    4.62 | 1.217  159.94 | 2.217    7.77 |  3.22    4.46
               0.233    4.62 | 1.233  159.94 | 2.233    7.77 |  3.23    4.46
               0.250    4.62 | 1.250  159.94 | 2.250    7.77 |  3.25    4.46
               0.267    4.62 | 1.267  159.94 | 2.267    7.77 |  3.27    4.46
               0.283    4.62 | 1.283  159.94 | 2.283    7.77 |  3.28    4.46
               0.300    4.62 | 1.300  159.94 | 2.300    7.77 |  3.30    4.46
               0.317    4.62 | 1.317  159.94 | 2.317    7.77 |  3.32    4.46
               0.333    4.62 | 1.333  159.94 | 2.333    7.77 |  3.33    4.46
               0.350    5.38 | 1.350   35.46 | 2.350    6.86 |  3.35    4.19
               0.367    5.38 | 1.367   35.45 | 2.367    6.86 |  3.37    4.19
               0.383    5.38 | 1.383   35.45 | 2.383    6.86 |  3.38    4.19
               0.400    5.38 | 1.400   35.45 | 2.400    6.86 |  3.40    4.19
               0.417    5.38 | 1.417   35.45 | 2.417    6.86 |  3.42    4.19
               0.433    5.38 | 1.433   35.45 | 2.433    6.86 |  3.43    4.19
               0.450    5.38 | 1.450   35.45 | 2.450    6.86 |  3.45    4.19
               0.467    5.38 | 1.467   35.45 | 2.467    6.86 |  3.47    4.19
               0.483    5.38 | 1.483   35.45 | 2.483    6.86 |  3.48    4.19
               0.500    5.38 | 1.500   35.45 | 2.500    6.86 |  3.50    4.19
               0.517    6.51 | 1.517   19.27 | 2.517    6.16 |  3.52    3.95
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0.533	6.51	1.533	19.27	2.533	6.16	3.53	3.95
0.550	6.51	1.550	19.27	2.550	6.16	3.55	3.95
0.567	6.51	1.567	19.27	2.567	6.16	3.57	3.95
0.583	6.51	1.583	19.27	2.583	6.16	3.58	3.95
0.600	6.51	1.600	19.27	2.600	6.16	3.60	3.95
0.617	6.51	1.617	19.27	2.617	6.16	3.62	3.95
0.633	6.51	1.633	19.27	2.633	6.16	3.63	3.95
0.650	6.51	1.650	19.27	2.650	6.16	3.65	3.95
0.667	6.51	1.667	19.27	2.667	6.16	3.67	3.95
0.683	8.38	1.683	13.70	2.683	5.61	3.68	3.74
0.700	8.38	1.700	13.70	2.700	5.61	3.70	3.74
0.717	8.38	1.717	13.70	2.717	5.61	3.72	3.74
0.733	8.38	1.733	13.70	2.733	5.61	3.73	3.74
0.750	8.38	1.750	13.70	2.750	5.61	3.75	3.74
0.767	8.38	1.767	13.70	2.767	5.61	3.77	3.74
0.783	8.38	1.783	13.70	2.783	5.61	3.78	3.74
0.800	8.38	1.800	13.70	2.800	5.61	3.80	3.74
0.817	8.38	1.817	13.70	2.817	5.61	3.82	3.74
0.833	8.38	1.833	13.70	2.833	5.61	3.83	3.74
0.850	12.24	1.850	10.80	2.850	5.16	3.85	3.55
0.867	12.24	1.867	10.80	2.867	5.16	3.87	3.55
0.883	12.24	1.883	10.80	2.883	5.16	3.88	3.55
0.900	12.24	1.900	10.80	2.900	5.16	3.90	3.55
0.917	12.24	1.917	10.80	2.917	5.16	3.92	3.55
0.933	12.24	1.933	10.80	2.933	5.16	3.93	3.55
0.950	12.24	1.950	10.80	2.950	5.16	3.95	3.55
0.967	12.24	1.967	10.80	2.967	5.16	3.97	3.55
0.983	12.24	1.983	10.80	2.983	5.16	3.98	3.55
1.000	12.24	2.000	10.80	3.000	5.16	4.00	3.55

Unit Hyd Qpeak (cms)= 0.516

PEAK FLOW (cms)= 0.048 (i)
TIME TO PEAK (hrs)= 1.333
RUNOFF VOLUME (mm)= 20.923
TOTAL RAINFALL (mm)= 62.155
RUNOFF COEFFICIENT = 0.337

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

CHICAGO STORM Ptotal= 62.15 mm

IDF curve parameters: A=1100.000
B= 2.000
C= 0.776
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.06	1.17	27.34	2.17	9.00	3.17	4.78
0.33	4.62	1.33	159.94	2.33	7.77	3.33	4.46
0.50	5.38	1.50	35.45	2.50	6.86	3.50	4.19
0.67	6.51	1.67	19.27	2.67	6.16	3.67	3.95
0.83	8.38	1.83	13.70	2.83	5.61	3.83	3.74
1.00	12.24	2.00	10.80	3.00	5.16	4.00	3.55

CALIB STANDHYD (0007) ID= 1 DT= 1.0 min

Area (ha)= 1.80
Total Imp(%)= 59.00 Dir. Conn.(%)= 48.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.06	0.74
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	109.54	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.06	1.017	27.34	2.017	9.01	3.02	4.78
0.033	4.06	1.033	27.34	2.033	9.00	3.03	4.78
0.050	4.06	1.050	27.34	2.050	9.00	3.05	4.78
0.067	4.06	1.067	27.34	2.067	9.00	3.07	4.78
0.083	4.06	1.083	27.34	2.083	9.00	3.08	4.78
0.100	4.06	1.100	27.34	2.100	9.00	3.10	4.78
0.117	4.06	1.117	27.34	2.117	9.00	3.12	4.78
0.133	4.06	1.133	27.34	2.133	9.00	3.13	4.78
0.150	4.06	1.150	27.34	2.150	9.00	3.15	4.78
0.167	4.06	1.167	27.34	2.167	9.00	3.17	4.78
0.183	4.62	1.183	159.93	2.183	7.77	3.18	4.46

0.200	4.62	1.200	159.94	2.200	7.77	3.20	4.46
0.217	4.62	1.217	159.94	2.217	7.77	3.22	4.46
0.233	4.62	1.233	159.94	2.233	7.77	3.23	4.46
0.250	4.62	1.250	159.94	2.250	7.77	3.25	4.46
0.267	4.62	1.267	159.94	2.267	7.77	3.27	4.46
0.283	4.62	1.283	159.94	2.283	7.77	3.28	4.46
0.300	4.62	1.300	159.94	2.300	7.77	3.30	4.46
0.317	4.62	1.317	159.94	2.317	7.77	3.32	4.46
0.333	4.62	1.333	159.94	2.333	7.77	3.33	4.46
0.350	5.38	1.350	35.46	2.350	6.86	3.35	4.19
0.367	5.38	1.367	35.45	2.367	6.86	3.37	4.19
0.383	5.38	1.383	35.45	2.383	6.86	3.38	4.19
0.400	5.38	1.400	35.45	2.400	6.86	3.40	4.19
0.417	5.38	1.417	35.45	2.417	6.86	3.42	4.19
0.433	5.38	1.433	35.45	2.433	6.86	3.43	4.19
0.450	5.38	1.450	35.45	2.450	6.86	3.45	4.19
0.467	5.38	1.467	35.45	2.467	6.86	3.47	4.19
0.483	5.38	1.483	35.45	2.483	6.86	3.48	4.19
0.500	5.38	1.500	35.45	2.500	6.86	3.50	4.19
0.517	6.51	1.517	19.27	2.517	6.16	3.52	3.95
0.533	6.51	1.533	19.27	2.533	6.16	3.53	3.95
0.550	6.51	1.550	19.27	2.550	6.16	3.55	3.95
0.567	6.51	1.567	19.27	2.567	6.16	3.57	3.95
0.583	6.51	1.583	19.27	2.583	6.16	3.58	3.95
0.600	6.51	1.600	19.27	2.600	6.16	3.60	3.95
0.617	6.51	1.617	19.27	2.617	6.16	3.62	3.95
0.633	6.51	1.633	19.27	2.633	6.16	3.63	3.95
0.650	6.51	1.650	19.27	2.650	6.16	3.65	3.95
0.667	6.51	1.667	19.27	2.667	6.16	3.67	3.95
0.683	8.38	1.683	13.70	2.683	5.61	3.68	3.74
0.700	8.38	1.700	13.70	2.700	5.61	3.70	3.74
0.717	8.38	1.717	13.70	2.717	5.61	3.72	3.74
0.733	8.38	1.733	13.70	2.733	5.61	3.73	3.74
0.750	8.38	1.750	13.70	2.750	5.61	3.75	3.74
0.767	8.38	1.767	13.70	2.767	5.61	3.77	3.74
0.783	8.38	1.783	13.70	2.783	5.61	3.78	3.74
0.800	8.38	1.800	13.70	2.800	5.61	3.80	3.74
0.817	8.38	1.817	13.70	2.817	5.61	3.82	3.74
0.833	8.38	1.833	13.70	2.833	5.61	3.83	3.74
0.850	12.24	1.850	10.80	2.850	5.16	3.85	3.55
0.867	12.24	1.867	10.80	2.867	5.16	3.87	3.55
0.883	12.24	1.883	10.80	2.883	5.16	3.88	3.55
0.900	12.24	1.900	10.80	2.900	5.16	3.90	3.55
0.917	12.24	1.917	10.80	2.917	5.16	3.92	3.55
0.933	12.24	1.933	10.80	2.933	5.16	3.93	3.55
0.950	12.24	1.950	10.80	2.950	5.16	3.95	3.55
0.967	12.24	1.967	10.80	2.967	5.16	3.97	3.55
0.983	12.24	1.983	10.80	2.983	5.16	3.98	3.55
1.000	12.24	2.000	10.80	3.000	5.16	4.00	3.55

Max.Eff.Inten.(mm/hr)=		159.94	32.28	
over (min)		5.00	8.00	
Storage Coeff. (min)=		2.24 (ii)	7.73 (ii)	
Unit Hyd. Tpeak (min)=		5.00	8.00	
Unit Hyd. peak (cms)=		0.36	0.14	
				TOTALS
PEAK FLOW	(cms)=	0.37	0.05	0.402 (iii)
TIME TO PEAK	(hrs)=	1.33	1.42	1.33
RUNOFF VOLUME	(mm)=	61.15	11.93	35.56
TOTAL RAINFALL	(mm)=	62.15	62.15	62.15
RUNOFF COEFFICIENT	=	0.98	0.19	0.57

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0018)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0026):		0.27	0.048	1.33	20.92
+ ID2= 2 (0007):		1.80	0.402	1.33	35.56
ID = 3 (0018):		2.07	0.450	1.33	33.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0009)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0330	0.0298
	0.0020	0.0000	0.0480	0.0300
	0.0190	0.0288	0.5150	0.0368

0.0250 0.0292 | 0.5380 0.0368

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0018)	2.070	0.450	1.33	33.65
OUTFLOW: ID= 1 (0009)	2.070	0.199	1.45	33.65

PEAK FLOW REDUCTION [Qout/Qin](%)= 44.27
TIME SHIFT OF PEAK FLOW (min)= 7.00
MAXIMUM STORAGE USED (ha.m.)= 0.0322

CHICAGO STORM Ptotal= 62.15 mm	IDF curve parameters: A=1100.000 B= 2.000 C= 0.776

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

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.06	1.17	27.34	2.17	9.00	3.17	4.78
0.33	4.62	1.33	159.94	2.33	7.77	3.33	4.46
0.50	5.38	1.50	35.45	2.50	6.86	3.50	4.19
0.67	6.51	1.67	19.27	2.67	6.16	3.67	3.95
0.83	8.38	1.83	13.70	2.83	5.61	3.83	3.74
1.00	12.24	2.00	10.80	3.00	5.16	4.00	3.55

CALIB STANDHYD (0006) ID= 1 DT= 1.0 min	Area (ha)= 0.80 Total Imp(%)= 87.00 Dir. Conn.(%)= 82.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.70	0.10
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	73.03	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.06	1.017	27.34	2.017	9.01	3.02	4.78
0.033	4.06	1.033	27.34	2.033	9.00	3.03	4.78
0.050	4.06	1.050	27.34	2.050	9.00	3.05	4.78
0.067	4.06	1.067	27.34	2.067	9.00	3.07	4.78
0.083	4.06	1.083	27.34	2.083	9.00	3.08	4.78
0.100	4.06	1.100	27.34	2.100	9.00	3.10	4.78
0.117	4.06	1.117	27.34	2.117	9.00	3.12	4.78
0.133	4.06	1.133	27.34	2.133	9.00	3.13	4.78
0.150	4.06	1.150	27.34	2.150	9.00	3.15	4.78
0.167	4.06	1.167	27.34	2.167	9.00	3.17	4.78
0.183	4.62	1.183	159.93	2.183	7.77	3.18	4.46
0.200	4.62	1.200	159.94	2.200	7.77	3.20	4.46
0.217	4.62	1.217	159.94	2.217	7.77	3.22	4.46
0.233	4.62	1.233	159.94	2.233	7.77	3.23	4.46
0.250	4.62	1.250	159.94	2.250	7.77	3.25	4.46
0.267	4.62	1.267	159.94	2.267	7.77	3.27	4.46
0.283	4.62	1.283	159.94	2.283	7.77	3.28	4.46
0.300	4.62	1.300	159.94	2.300	7.77	3.30	4.46
0.317	4.62	1.317	159.94	2.317	7.77	3.32	4.46
0.333	4.62	1.333	159.94	2.333	7.77	3.33	4.46
0.350	5.38	1.350	35.46	2.350	6.86	3.35	4.19
0.367	5.38	1.367	35.45	2.367	6.86	3.37	4.19
0.383	5.38	1.383	35.45	2.383	6.86	3.38	4.19
0.400	5.38	1.400	35.45	2.400	6.86	3.40	4.19
0.417	5.38	1.417	35.45	2.417	6.86	3.42	4.19
0.433	5.38	1.433	35.45	2.433	6.86	3.43	4.19
0.450	5.38	1.450	35.45	2.450	6.86	3.45	4.19
0.467	5.38	1.467	35.45	2.467	6.86	3.47	4.19
0.483	5.38	1.483	35.45	2.483	6.86	3.48	4.19
0.500	5.38	1.500	35.45	2.500	6.86	3.50	4.19
0.517	6.51	1.517	19.27	2.517	6.16	3.52	3.95
0.533	6.51	1.533	19.27	2.533	6.16	3.53	3.95
0.550	6.51	1.550	19.27	2.550	6.16	3.55	3.95
0.567	6.51	1.567	19.27	2.567	6.16	3.57	3.95
0.583	6.51	1.583	19.27	2.583	6.16	3.58	3.95
0.600	6.51	1.600	19.27	2.600	6.16	3.60	3.95
0.617	6.51	1.617	19.27	2.617	6.16	3.62	3.95
0.633	6.51	1.633	19.27	2.633	6.16	3.63	3.95
0.650	6.51	1.650	19.27	2.650	6.16	3.65	3.95
0.667	6.51	1.667	19.27	2.667	6.16	3.67	3.95

0.683	8.38	1.683	13.70	2.683	5.61	3.68	3.74
0.700	8.38	1.700	13.70	2.700	5.61	3.70	3.74
0.717	8.38	1.717	13.70	2.717	5.61	3.72	3.74
0.733	8.38	1.733	13.70	2.733	5.61	3.73	3.74
0.750	8.38	1.750	13.70	2.750	5.61	3.75	3.74
0.767	8.38	1.767	13.70	2.767	5.61	3.77	3.74
0.783	8.38	1.783	13.70	2.783	5.61	3.78	3.74
0.800	8.38	1.800	13.70	2.800	5.61	3.80	3.74
0.817	8.38	1.817	13.70	2.817	5.61	3.82	3.74
0.833	8.38	1.833	13.70	2.833	5.61	3.83	3.74
0.850	12.24	1.850	10.80	2.850	5.16	3.85	3.55
0.867	12.24	1.867	10.80	2.867	5.16	3.87	3.55
0.883	12.24	1.883	10.80	2.883	5.16	3.88	3.55
0.900	12.24	1.900	10.80	2.900	5.16	3.90	3.55
0.917	12.24	1.917	10.80	2.917	5.16	3.92	3.55
0.933	12.24	1.933	10.80	2.933	5.16	3.93	3.55
0.950	12.24	1.950	10.80	2.950	5.16	3.95	3.55
0.967	12.24	1.967	10.80	2.967	5.16	3.97	3.55
0.983	12.24	1.983	10.80	2.983	5.16	3.98	3.55
1.000	12.24	2.000	10.80	3.000	5.16	4.00	3.55

			TOTALS
Max.Eff.Inten.(mm/hr)=	159.94	38.53	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.75 (ii)	4.55 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.40	0.24	
PEAK FLOW (cms)=	0.29	0.01	0.296 (iii)
TIME TO PEAK (hrs)=	1.33	1.37	1.33
RUNOFF VOLUME (mm)=	61.15	12.91	52.47
TOTAL RAINFALL (mm)=	62.15	62.15	62.15
RUNOFF COEFFICIENT =	0.98	0.21	0.84

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0011)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0810	0.0180
	0.0010	0.0005	0.0910	0.0205
	0.0060	0.0056	0.1120	0.0249
	0.0100	0.0061	0.1190	0.0264
	0.0430	0.0101	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0006)	0.800	0.296	1.33	52.47
OUTFLOW: ID= 1 (0011)	0.800	0.089	1.45	52.31

PEAK FLOW REDUCTION [Qout/Qin](%)= 29.95
TIME SHIFT OF PEAK FLOW (min)= 7.00
MAXIMUM STORAGE USED (ha.m.)= 0.0200

CHICAGO STORM	IDF curve parameters: A=1100.000
Ptotal= 62.15 mm	B= 2.000
	C= 0.776

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

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME (hrs)	RAIN (mm/hr)	TIME (hrs)	RAIN (mm/hr)	TIME (hrs)	RAIN (mm/hr)	TIME (hrs)	RAIN (mm/hr)
0.17	4.06	1.17	27.34	2.17	9.00	3.17	4.78
0.33	4.62	1.33	159.94	2.33	7.77	3.33	4.46
0.50	5.38	1.50	35.45	2.50	6.86	3.50	4.19
0.67	6.51	1.67	19.27	2.67	6.16	3.67	3.95
0.83	8.38	1.83	13.70	2.83	5.61	3.83	3.74
1.00	12.24	2.00	10.80	3.00	5.16	4.00	3.55

CALIB		
STANDHYD (0008)	Area (ha)= 2.53	
ID= 1 DT= 1.0 min	Total Imp(%)= 52.00	Dir. Conn.(%)= 44.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.32	1.21
Dep. Storage	(mm)=	1.00	5.00

Average Slope	(%)=	1.00	2.00
Length	(m)=	129.87	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.06	1.017	27.34	2.017	9.01	3.02	4.78
0.033	4.06	1.033	27.34	2.033	9.00	3.03	4.78
0.050	4.06	1.050	27.34	2.050	9.00	3.05	4.78
0.067	4.06	1.067	27.34	2.067	9.00	3.07	4.78
0.083	4.06	1.083	27.34	2.083	9.00	3.08	4.78
0.100	4.06	1.100	27.34	2.100	9.00	3.10	4.78
0.117	4.06	1.117	27.34	2.117	9.00	3.12	4.78
0.133	4.06	1.133	27.34	2.133	9.00	3.13	4.78
0.150	4.06	1.150	27.34	2.150	9.00	3.15	4.78
0.167	4.06	1.167	27.34	2.167	9.00	3.17	4.78
0.183	4.62	1.183	159.93	2.183	7.77	3.18	4.46
0.200	4.62	1.200	159.94	2.200	7.77	3.20	4.46
0.217	4.62	1.217	159.94	2.217	7.77	3.22	4.46
0.233	4.62	1.233	159.94	2.233	7.77	3.23	4.46
0.250	4.62	1.250	159.94	2.250	7.77	3.25	4.46
0.267	4.62	1.267	159.94	2.267	7.77	3.27	4.46
0.283	4.62	1.283	159.94	2.283	7.77	3.28	4.46
0.300	4.62	1.300	159.94	2.300	7.77	3.30	4.46
0.317	4.62	1.317	159.94	2.317	7.77	3.32	4.46
0.333	4.62	1.333	159.94	2.333	7.77	3.33	4.46
0.350	5.38	1.350	35.46	2.350	6.86	3.35	4.19
0.367	5.38	1.367	35.45	2.367	6.86	3.37	4.19
0.383	5.38	1.383	35.45	2.383	6.86	3.38	4.19
0.400	5.38	1.400	35.45	2.400	6.86	3.40	4.19
0.417	5.38	1.417	35.45	2.417	6.86	3.42	4.19
0.433	5.38	1.433	35.45	2.433	6.86	3.43	4.19
0.450	5.38	1.450	35.45	2.450	6.86	3.45	4.19
0.467	5.38	1.467	35.45	2.467	6.86	3.47	4.19
0.483	5.38	1.483	35.45	2.483	6.86	3.48	4.19
0.500	5.38	1.500	35.45	2.500	6.86	3.50	4.19
0.517	6.51	1.517	19.27	2.517	6.16	3.52	3.95
0.533	6.51	1.533	19.27	2.533	6.16	3.53	3.95
0.550	6.51	1.550	19.27	2.550	6.16	3.55	3.95
0.567	6.51	1.567	19.27	2.567	6.16	3.57	3.95
0.583	6.51	1.583	19.27	2.583	6.16	3.58	3.95
0.600	6.51	1.600	19.27	2.600	6.16	3.60	3.95
0.617	6.51	1.617	19.27	2.617	6.16	3.62	3.95
0.633	6.51	1.633	19.27	2.633	6.16	3.63	3.95
0.650	6.51	1.650	19.27	2.650	6.16	3.65	3.95
0.667	6.51	1.667	19.27	2.667	6.16	3.67	3.95
0.683	8.38	1.683	13.70	2.683	5.61	3.68	3.74
0.700	8.38	1.700	13.70	2.700	5.61	3.70	3.74
0.717	8.38	1.717	13.70	2.717	5.61	3.72	3.74
0.733	8.38	1.733	13.70	2.733	5.61	3.73	3.74
0.750	8.38	1.750	13.70	2.750	5.61	3.75	3.74
0.767	8.38	1.767	13.70	2.767	5.61	3.77	3.74
0.783	8.38	1.783	13.70	2.783	5.61	3.78	3.74
0.800	8.38	1.800	13.70	2.800	5.61	3.80	3.74
0.817	8.38	1.817	13.70	2.817	5.61	3.82	3.74
0.833	8.38	1.833	13.70	2.833	5.61	3.83	3.74
0.850	12.24	1.850	10.80	2.850	5.16	3.85	3.55
0.867	12.24	1.867	10.80	2.867	5.16	3.87	3.55
0.883	12.24	1.883	10.80	2.883	5.16	3.88	3.55
0.900	12.24	1.900	10.80	2.900	5.16	3.90	3.55
0.917	12.24	1.917	10.80	2.917	5.16	3.92	3.55
0.933	12.24	1.933	10.80	2.933	5.16	3.93	3.55
0.950	12.24	1.950	10.80	2.950	5.16	3.95	3.55
0.967	12.24	1.967	10.80	2.967	5.16	3.97	3.55
0.983	12.24	1.983	10.80	2.983	5.16	3.98	3.55
1.000	12.24	2.000	10.80	3.000	5.16	4.00	3.55

Max.Eff.Inten.(mm/hr)=		159.94	27.21	
over (min)		5.00	9.00	
Storage Coeff. (min)=		2.48 (ii)	8.53 (ii)	
Unit Hyd. Tpeak (min)=		5.00	9.00	
Unit Hyd. peak (cms)=		0.34	0.13	
				TOTALS
PEAK FLOW	(cms)=	0.47	0.06	0.509 (iii)
TIME TO PEAK	(hrs)=	1.33	1.45	1.33
RUNOFF VOLUME	(mm)=	61.15	11.04	33.09
TOTAL RAINFALL	(mm)=	62.15	62.15	62.15
RUNOFF COEFFICIENT	=	0.98	0.18	0.53

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0010) IN= 2---> OUT= 1 DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0810	0.0465
	0.0010	0.0012	0.0910	0.0530
	0.0060	0.0145	0.1120	0.0643
	0.0100	0.0157	0.1190	0.0683
	0.0430	0.0262	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0008)	2.530	0.509	1.33	33.09
OUTFLOW: ID= 1 (0010)	2.530	0.081	1.73	32.97

PEAK FLOW REDUCTION [Qout/Qin](%)= 15.97
TIME SHIFT OF PEAK FLOW (min)= 24.00
MAXIMUM STORAGE USED (ha.m.)= 0.0467

CHICAGO STORM
Ptotal= 62.15 mm

IDF curve parameters: A=1100.000
B= 2.000
C= 0.776
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.06	1.17	27.34	2.17	9.00	3.17	4.78
0.33	4.62	1.33	159.94	2.33	7.77	3.33	4.46
0.50	5.38	1.50	35.45	2.50	6.86	3.50	4.19
0.67	6.51	1.67	19.27	2.67	6.16	3.67	3.95
0.83	8.38	1.83	13.70	2.83	5.61	3.83	3.74
1.00	12.24	2.00	10.80	3.00	5.16	4.00	3.55

CALIB
NASHYD (0027)
ID= 1 DT= 1.0 min

Area (ha)= 17.26 Curve Number (CN)= 60.0
Ia (mm)= 5.60 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.95

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.06	1.017	27.34	2.017	9.01	3.02	4.78
0.033	4.06	1.033	27.34	2.033	9.00	3.03	4.78
0.050	4.06	1.050	27.34	2.050	9.00	3.05	4.78
0.067	4.06	1.067	27.34	2.067	9.00	3.07	4.78
0.083	4.06	1.083	27.34	2.083	9.00	3.08	4.78
0.100	4.06	1.100	27.34	2.100	9.00	3.10	4.78
0.117	4.06	1.117	27.34	2.117	9.00	3.12	4.78
0.133	4.06	1.133	27.34	2.133	9.00	3.13	4.78
0.150	4.06	1.150	27.34	2.150	9.00	3.15	4.78
0.167	4.06	1.167	27.34	2.167	9.00	3.17	4.78
0.183	4.62	1.183	159.93	2.183	7.77	3.18	4.46
0.200	4.62	1.200	159.94	2.200	7.77	3.20	4.46
0.217	4.62	1.217	159.94	2.217	7.77	3.22	4.46
0.233	4.62	1.233	159.94	2.233	7.77	3.23	4.46
0.250	4.62	1.250	159.94	2.250	7.77	3.25	4.46
0.267	4.62	1.267	159.94	2.267	7.77	3.27	4.46
0.283	4.62	1.283	159.94	2.283	7.77	3.28	4.46
0.300	4.62	1.300	159.94	2.300	7.77	3.30	4.46
0.317	4.62	1.317	159.94	2.317	7.77	3.32	4.46
0.333	4.62	1.333	159.94	2.333	7.77	3.33	4.46
0.350	5.38	1.350	35.46	2.350	6.86	3.35	4.19
0.367	5.38	1.367	35.45	2.367	6.86	3.37	4.19
0.383	5.38	1.383	35.45	2.383	6.86	3.38	4.19
0.400	5.38	1.400	35.45	2.400	6.86	3.40	4.19
0.417	5.38	1.417	35.45	2.417	6.86	3.42	4.19
0.433	5.38	1.433	35.45	2.433	6.86	3.43	4.19
0.450	5.38	1.450	35.45	2.450	6.86	3.45	4.19
0.467	5.38	1.467	35.45	2.467	6.86	3.47	4.19
0.483	5.38	1.483	35.45	2.483	6.86	3.48	4.19
0.500	5.38	1.500	35.45	2.500	6.86	3.50	4.19
0.517	6.51	1.517	19.27	2.517	6.16	3.52	3.95
0.533	6.51	1.533	19.27	2.533	6.16	3.53	3.95
0.550	6.51	1.550	19.27	2.550	6.16	3.55	3.95
0.567	6.51	1.567	19.27	2.567	6.16	3.57	3.95
0.583	6.51	1.583	19.27	2.583	6.16	3.58	3.95
0.600	6.51	1.600	19.27	2.600	6.16	3.60	3.95
0.617	6.51	1.617	19.27	2.617	6.16	3.62	3.95

0.633	6.51	1.633	19.27	2.633	6.16	3.63	3.95
0.650	6.51	1.650	19.27	2.650	6.16	3.65	3.95
0.667	6.51	1.667	19.27	2.667	6.16	3.67	3.95
0.683	8.38	1.683	13.70	2.683	5.61	3.68	3.74
0.700	8.38	1.700	13.70	2.700	5.61	3.70	3.74
0.717	8.38	1.717	13.70	2.717	5.61	3.72	3.74
0.733	8.38	1.733	13.70	2.733	5.61	3.73	3.74
0.750	8.38	1.750	13.70	2.750	5.61	3.75	3.74
0.767	8.38	1.767	13.70	2.767	5.61	3.77	3.74
0.783	8.38	1.783	13.70	2.783	5.61	3.78	3.74
0.800	8.38	1.800	13.70	2.800	5.61	3.80	3.74
0.817	8.38	1.817	13.70	2.817	5.61	3.82	3.74
0.833	8.38	1.833	13.70	2.833	5.61	3.83	3.74
0.850	12.24	1.850	10.80	2.850	5.16	3.85	3.55
0.867	12.24	1.867	10.80	2.867	5.16	3.87	3.55
0.883	12.24	1.883	10.80	2.883	5.16	3.88	3.55
0.900	12.24	1.900	10.80	2.900	5.16	3.90	3.55
0.917	12.24	1.917	10.80	2.917	5.16	3.92	3.55
0.933	12.24	1.933	10.80	2.933	5.16	3.93	3.55
0.950	12.24	1.950	10.80	2.950	5.16	3.95	3.55
0.967	12.24	1.967	10.80	2.967	5.16	3.97	3.55
0.983	12.24	1.983	10.80	2.983	5.16	3.98	3.55
1.000	12.24	2.000	10.80	3.000	5.16	4.00	3.55

Unit Hyd Qpeak (cms)= 0.694

PEAK FLOW (cms)= 0.263 (i)
TIME TO PEAK (hrs)= 2.550
RUNOFF VOLUME (mm)= 14.159
TOTAL RAINFALL (mm)= 62.155
RUNOFF COEFFICIENT = 0.228

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

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0010):	2.53	0.081	1.73	32.97
	+ ID2= 2 (0011):	0.80	0.089	1.45	52.31
	ID = 3 (0004):	3.33	0.165	1.57	37.61

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
	ID1= 3 (0004):	3.33	0.165	1.57	37.61
	+ ID2= 2 (0027):	17.26	0.263	2.55	14.16
	ID = 1 (0004):	20.59	0.364	2.28	17.95

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0004):	20.59	0.364	2.28	17.95
	+ ID2= 2 (0003):	4.49	0.045	2.88	22.02
	ID = 3 (0004):	25.08	0.407	2.32	18.68

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
	ID1= 3 (0004):	25.08	0.407	2.32	18.68
	+ ID2= 2 (0009):	2.07	0.199	1.45	33.65
	ID = 1 (0004):	27.15	0.440	2.27	19.82

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

V V I SSSSS U U A L (v 5.0.2027)
V V I SS U U A A L

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

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\81930a62-97b7-4ffd-8954-cd9171e36

Summary filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\81930a62-97b7-4ffd-8954-cd9171e36

DATE: 12/19/2018 TIME: 10:47:46

USER:

COMMENTS: _____

*****

0.317	4.76	1.317	184.62	2.317	8.29	3.32	4.59
0.333	4.76	1.333	184.62	2.333	8.29	3.33	4.59
0.350	5.60	1.350	43.10	2.350	7.26	3.35	4.29
0.367	5.60	1.367	43.10	2.367	7.26	3.37	4.29
0.383	5.60	1.383	43.10	2.383	7.26	3.38	4.29
0.400	5.60	1.400	43.10	2.400	7.26	3.40	4.29
0.417	5.60	1.417	43.10	2.417	7.26	3.42	4.29
0.433	5.60	1.433	43.10	2.433	7.26	3.43	4.29
0.450	5.60	1.450	43.10	2.450	7.26	3.45	4.29
0.467	5.60	1.467	43.10	2.467	7.26	3.47	4.29
0.483	5.60	1.483	43.10	2.483	7.26	3.48	4.29
0.500	5.60	1.500	43.10	2.500	7.26	3.50	4.29
0.517	6.86	1.517	22.23	2.517	6.47	3.52	4.03
0.533	6.86	1.533	22.23	2.533	6.47	3.53	4.03
0.550	6.86	1.550	22.23	2.550	6.47	3.55	4.03
0.567	6.86	1.567	22.23	2.567	6.47	3.57	4.03
0.583	6.86	1.583	22.23	2.583	6.47	3.58	4.03
0.600	6.86	1.600	22.23	2.600	6.47	3.60	4.03
0.617	6.86	1.617	22.23	2.617	6.47	3.62	4.03
0.633	6.86	1.633	22.23	2.633	6.47	3.63	4.03
0.650	6.86	1.650	22.23	2.650	6.47	3.65	4.03
0.667	6.86	1.667	22.23	2.667	6.47	3.67	4.03
0.683	9.00	1.683	15.32	2.683	5.85	3.68	3.81
0.700	9.00	1.700	15.32	2.700	5.85	3.70	3.81
0.717	9.00	1.717	15.32	2.717	5.85	3.72	3.81
0.733	9.00	1.733	15.32	2.733	5.85	3.73	3.81
0.750	9.00	1.750	15.32	2.750	5.85	3.75	3.81
0.767	9.00	1.767	15.32	2.767	5.85	3.77	3.81
0.783	9.00	1.783	15.32	2.783	5.85	3.78	3.81
0.800	9.00	1.800	15.32	2.800	5.85	3.80	3.81
0.817	9.00	1.817	15.32	2.817	5.85	3.82	3.81
0.833	9.00	1.833	15.32	2.833	5.85	3.83	3.81
0.850	13.56	1.850	11.84	2.850	5.35	3.85	3.61
0.867	13.56	1.867	11.84	2.867	5.35	3.87	3.61
0.883	13.56	1.883	11.84	2.883	5.35	3.88	3.61
0.900	13.56	1.900	11.84	2.900	5.35	3.90	3.61
0.917	13.56	1.917	11.84	2.917	5.35	3.92	3.61
0.933	13.56	1.933	11.84	2.933	5.35	3.93	3.61
0.950	13.56	1.950	11.84	2.950	5.35	3.95	3.61
0.967	13.56	1.967	11.84	2.967	5.35	3.97	3.61
0.983	13.56	1.983	11.84	2.983	5.35	3.98	3.61
1.000	13.56	2.000	11.84	3.000	5.35	4.00	3.61

Unit Hyd Qpeak (cms)= 0.166

PEAK FLOW (cms)= 0.079 (i)
TIME TO PEAK (hrs)= 1.700
RUNOFF VOLUME (mm)= 22.404
TOTAL RAINFALL (mm)= 70.316
RUNOFF COEFFICIENT = 0.319

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

CHICAGO STORM Ptotal= 70.32 mm

IDF curve parameters: A=1448.000
B= 3.000
C= 0.803
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.16	1.17	32.64	2.17	9.72	3.17	4.94
0.33	4.76	1.33	184.62	2.33	8.29	3.33	4.59
0.50	5.60	1.50	43.10	2.50	7.26	3.50	4.29
0.67	6.86	1.67	22.23	2.67	6.47	3.67	4.03
0.83	9.00	1.83	15.32	2.83	5.85	3.83	3.81
1.00	13.56	2.00	11.84	3.00	5.35	4.00	3.61

CALIB STANDHYD (0001) ID= 1 DT= 1.0 min

Area (ha)= 3.01
Total Imp(%)= 57.00 Dir. Conn.(%)= 46.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.72	1.29
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.50	3.00
Length	(m)=	141.66	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.16	1.017	32.64	2.017	9.72	3.02	4.94
0.033	4.16	1.033	32.64	2.033	9.72	3.03	4.94
0.050	4.16	1.050	32.64	2.050	9.72	3.05	4.94
0.067	4.16	1.067	32.64	2.067	9.72	3.07	4.94
0.083	4.16	1.083	32.64	2.083	9.72	3.08	4.94
0.100	4.16	1.100	32.64	2.100	9.72	3.10	4.94
0.117	4.16	1.117	32.64	2.117	9.72	3.12	4.94
0.133	4.16	1.133	32.64	2.133	9.72	3.13	4.94
0.150	4.16	1.150	32.64	2.150	9.72	3.15	4.94
0.167	4.16	1.167	32.64	2.167	9.72	3.17	4.94
0.183	4.76	1.183	184.61	2.183	8.29	3.18	4.59
0.200	4.76	1.200	184.62	2.200	8.29	3.20	4.59
0.217	4.76	1.217	184.62	2.217	8.29	3.22	4.59
0.233	4.76	1.233	184.62	2.233	8.29	3.23	4.59
0.250	4.76	1.250	184.62	2.250	8.29	3.25	4.59
0.267	4.76	1.267	184.62	2.267	8.29	3.27	4.59
0.283	4.76	1.283	184.62	2.283	8.29	3.28	4.59
0.300	4.76	1.300	184.62	2.300	8.29	3.30	4.59
0.317	4.76	1.317	184.62	2.317	8.29	3.32	4.59
0.333	4.76	1.333	184.62	2.333	8.29	3.33	4.59
0.350	5.60	1.350	43.10	2.350	7.26	3.35	4.29
0.367	5.60	1.367	43.10	2.367	7.26	3.37	4.29
0.383	5.60	1.383	43.10	2.383	7.26	3.38	4.29
0.400	5.60	1.400	43.10	2.400	7.26	3.40	4.29
0.417	5.60	1.417	43.10	2.417	7.26	3.42	4.29
0.433	5.60	1.433	43.10	2.433	7.26	3.43	4.29
0.450	5.60	1.450	43.10	2.450	7.26	3.45	4.29
0.467	5.60	1.467	43.10	2.467	7.26	3.47	4.29
0.483	5.60	1.483	43.10	2.483	7.26	3.48	4.29
0.500	5.60	1.500	43.10	2.500	7.26	3.50	4.29
0.517	6.86	1.517	22.23	2.517	6.47	3.52	4.03
0.533	6.86	1.533	22.23	2.533	6.47	3.53	4.03
0.550	6.86	1.550	22.23	2.550	6.47	3.55	4.03
0.567	6.86	1.567	22.23	2.567	6.47	3.57	4.03
0.583	6.86	1.583	22.23	2.583	6.47	3.58	4.03
0.600	6.86	1.600	22.23	2.600	6.47	3.60	4.03
0.617	6.86	1.617	22.23	2.617	6.47	3.62	4.03
0.633	6.86	1.633	22.23	2.633	6.47	3.63	4.03
0.650	6.86	1.650	22.23	2.650	6.47	3.65	4.03
0.667	6.86	1.667	22.23	2.667	6.47	3.67	4.03
0.683	9.00	1.683	15.32	2.683	5.85	3.68	3.81
0.700	9.00	1.700	15.32	2.700	5.85	3.70	3.81
0.717	9.00	1.717	15.32	2.717	5.85	3.72	3.81
0.733	9.00	1.733	15.32	2.733	5.85	3.73	3.81
0.750	9.00	1.750	15.32	2.750	5.85	3.75	3.81
0.767	9.00	1.767	15.32	2.767	5.85	3.77	3.81
0.783	9.00	1.783	15.32	2.783	5.85	3.78	3.81
0.800	9.00	1.800	15.32	2.800	5.85	3.80	3.81
0.817	9.00	1.817	15.32	2.817	5.85	3.82	3.81
0.833	9.00	1.833	15.32	2.833	5.85	3.83	3.81
0.850	13.56	1.850	11.84	2.850	5.35	3.85	3.61
0.867	13.56	1.867	11.84	2.867	5.35	3.87	3.61
0.883	13.56	1.883	11.84	2.883	5.35	3.88	3.61
0.900	13.56	1.900	11.84	2.900	5.35	3.90	3.61
0.917	13.56	1.917	11.84	2.917	5.35	3.92	3.61
0.933	13.56	1.933	11.84	2.933	5.35	3.93	3.61
0.950	13.56	1.950	11.84	2.950	5.35	3.95	3.61
0.967	13.56	1.967	11.84	2.967	5.35	3.97	3.61
0.983	13.56	1.983	11.84	2.983	5.35	3.98	3.61
1.000	13.56	2.000	11.84	3.000	5.35	4.00	3.61

Max.Eff.Inten.(mm/hr)=	184.62	41.59		
over (min)	5.00	7.00		
Storage Coeff. (min)=	2.18 (ii)	6.94 (ii)		
Unit Hyd. Tpeak (min)=	5.00	7.00		
Unit Hyd. peak (cms)=	0.36	0.16		
			TOTALS	
PEAK FLOW (cms)=	0.69	0.11	0.772 (iii)	
TIME TO PEAK (hrs)=	1.33	1.40	1.33	
RUNOFF VOLUME (mm)=	69.32	14.95	39.95	
TOTAL RAINFALL (mm)=	70.32	70.32	70.32	
RUNOFF COEFFICIENT =	0.99	0.21	0.57	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0016)					
1 + 2 = 3		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):		3.01	0.772	1.33	39.95
+ ID2= 2 (0025):		1.48	0.079	1.70	22.40

ID = 3 (0016): 4.49 0.789 1.35 34.17

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0003)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0410	0.0864
	0.0000	0.0281	0.0800	0.1533
	0.0010	0.0321	0.0900	0.1746
	0.0040	0.0479	0.1110	0.2118
	0.0070	0.0518	0.1180	0.2246

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0016)	4.490	0.789	1.35	34.17
OUTFLOW: ID= 1 (0003)	4.490	0.055	2.75	27.08

PEAK FLOW REDUCTION [Qout/Qin](%)= 6.94
TIME SHIFT OF PEAK FLOW (min)= 84.00
MAXIMUM STORAGE USED (ha.m.)= 0.1100

CHICAGO STORM	IDF curve parameters: A=1448.000
Ptotal= 70.32 mm	B= 3.000
	C= 0.803

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

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.16	1.17	32.64	2.17	9.72	3.17	4.94
0.33	4.76	1.33	184.62	2.33	8.29	3.33	4.59
0.50	5.60	1.50	43.10	2.50	7.26	3.50	4.29
0.67	6.86	1.67	22.23	2.67	6.47	3.67	4.03
0.83	9.00	1.83	15.32	2.83	5.85	3.83	3.81
1.00	13.56	2.00	11.84	3.00	5.35	4.00	3.61

CALIB			
NASHYD (0026)	Area (ha)= 0.27	Curve Number (CN)= 71.0	
ID= 1 DT= 1.0 min	Ia (mm)= 3.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.02		

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.16	1.017	32.64	2.017	9.72	3.02	4.94
0.033	4.16	1.033	32.64	2.033	9.72	3.03	4.94
0.050	4.16	1.050	32.64	2.050	9.72	3.05	4.94
0.067	4.16	1.067	32.64	2.067	9.72	3.07	4.94
0.083	4.16	1.083	32.64	2.083	9.72	3.08	4.94
0.100	4.16	1.100	32.64	2.100	9.72	3.10	4.94
0.117	4.16	1.117	32.64	2.117	9.72	3.12	4.94
0.133	4.16	1.133	32.64	2.133	9.72	3.13	4.94
0.150	4.16	1.150	32.64	2.150	9.72	3.15	4.94
0.167	4.16	1.167	32.64	2.167	9.72	3.17	4.94
0.183	4.76	1.183	184.61	2.183	8.29	3.18	4.59
0.200	4.76	1.200	184.62	2.200	8.29	3.20	4.59
0.217	4.76	1.217	184.62	2.217	8.29	3.22	4.59
0.233	4.76	1.233	184.62	2.233	8.29	3.23	4.59
0.250	4.76	1.250	184.62	2.250	8.29	3.25	4.59
0.267	4.76	1.267	184.62	2.267	8.29	3.27	4.59
0.283	4.76	1.283	184.62	2.283	8.29	3.28	4.59
0.300	4.76	1.300	184.62	2.300	8.29	3.30	4.59
0.317	4.76	1.317	184.62	2.317	8.29	3.32	4.59
0.333	4.76	1.333	184.62	2.333	8.29	3.33	4.59
0.350	5.60	1.350	43.10	2.350	7.26	3.35	4.29
0.367	5.60	1.367	43.10	2.367	7.26	3.37	4.29
0.383	5.60	1.383	43.10	2.383	7.26	3.38	4.29
0.400	5.60	1.400	43.10	2.400	7.26	3.40	4.29
0.417	5.60	1.417	43.10	2.417	7.26	3.42	4.29
0.433	5.60	1.433	43.10	2.433	7.26	3.43	4.29
0.450	5.60	1.450	43.10	2.450	7.26	3.45	4.29
0.467	5.60	1.467	43.10	2.467	7.26	3.47	4.29
0.483	5.60	1.483	43.10	2.483	7.26	3.48	4.29
0.500	5.60	1.500	43.10	2.500	7.26	3.50	4.29
0.517	6.86	1.517	22.23	2.517	6.47	3.52	4.03
0.533	6.86	1.533	22.23	2.533	6.47	3.53	4.03

0.550	6.86	1.550	22.23	2.550	6.47	3.55	4.03
0.567	6.86	1.567	22.23	2.567	6.47	3.57	4.03
0.583	6.86	1.583	22.23	2.583	6.47	3.58	4.03
0.600	6.86	1.600	22.23	2.600	6.47	3.60	4.03
0.617	6.86	1.617	22.23	2.617	6.47	3.62	4.03
0.633	6.86	1.633	22.23	2.633	6.47	3.63	4.03
0.650	6.86	1.650	22.23	2.650	6.47	3.65	4.03
0.667	6.86	1.667	22.23	2.667	6.47	3.67	4.03
0.683	9.00	1.683	15.32	2.683	5.85	3.68	3.81
0.700	9.00	1.700	15.32	2.700	5.85	3.70	3.81
0.717	9.00	1.717	15.32	2.717	5.85	3.72	3.81
0.733	9.00	1.733	15.32	2.733	5.85	3.73	3.81
0.750	9.00	1.750	15.32	2.750	5.85	3.75	3.81
0.767	9.00	1.767	15.32	2.767	5.85	3.77	3.81
0.783	9.00	1.783	15.32	2.783	5.85	3.78	3.81
0.800	9.00	1.800	15.32	2.800	5.85	3.80	3.81
0.817	9.00	1.817	15.32	2.817	5.85	3.82	3.81
0.833	9.00	1.833	15.32	2.833	5.85	3.83	3.81
0.850	13.56	1.850	11.84	2.850	5.35	3.85	3.61
0.867	13.56	1.867	11.84	2.867	5.35	3.87	3.61
0.883	13.56	1.883	11.84	2.883	5.35	3.88	3.61
0.900	13.56	1.900	11.84	2.900	5.35	3.90	3.61
0.917	13.56	1.917	11.84	2.917	5.35	3.92	3.61
0.933	13.56	1.933	11.84	2.933	5.35	3.93	3.61
0.950	13.56	1.950	11.84	2.950	5.35	3.95	3.61
0.967	13.56	1.967	11.84	2.967	5.35	3.97	3.61
0.983	13.56	1.983	11.84	2.983	5.35	3.98	3.61
1.000	13.56	2.000	11.84	3.000	5.35	4.00	3.61

Unit Hyd Qpeak (cms)= 0.516

PEAK FLOW (cms)= 0.061 (i)
TIME TO PEAK (hrs)= 1.333
RUNOFF VOLUME (mm)= 25.802
TOTAL RAINFALL (mm)= 70.316
RUNOFF COEFFICIENT = 0.367

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

CHICAGO STORM
Ptotal= 70.32 mm

IDF curve parameters: A=1448.000
B= 3.000
C= 0.803
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.16	1.17	32.64	2.17	9.72	3.17	4.94
0.33	4.76	1.33	184.62	2.33	8.29	3.33	4.59
0.50	5.60	1.50	43.10	2.50	7.26	3.50	4.29
0.67	6.86	1.67	22.23	2.67	6.47	3.67	4.03
0.83	9.00	1.83	15.32	2.83	5.85	3.83	3.81
1.00	13.56	2.00	11.84	3.00	5.35	4.00	3.61

CALIB
STANDHYD (0007)
ID= 1 DT= 1.0 min

Area (ha)= 1.80
Total Imp(%)= 59.00 Dir. Conn.(%)= 48.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.06	0.74
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00
Length (m)=	109.54	40.00
Mannings n =	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.16	1.017	32.64	2.017	9.72	3.02	4.94
0.033	4.16	1.033	32.64	2.033	9.72	3.03	4.94
0.050	4.16	1.050	32.64	2.050	9.72	3.05	4.94
0.067	4.16	1.067	32.64	2.067	9.72	3.07	4.94
0.083	4.16	1.083	32.64	2.083	9.72	3.08	4.94
0.100	4.16	1.100	32.64	2.100	9.72	3.10	4.94
0.117	4.16	1.117	32.64	2.117	9.72	3.12	4.94
0.133	4.16	1.133	32.64	2.133	9.72	3.13	4.94
0.150	4.16	1.150	32.64	2.150	9.72	3.15	4.94
0.167	4.16	1.167	32.64	2.167	9.72	3.17	4.94
0.183	4.76	1.183	184.61	2.183	8.29	3.18	4.59
0.200	4.76	1.200	184.62	2.200	8.29	3.20	4.59

0.217	4.76	1.217	184.62	2.217	8.29	3.22	4.59
0.233	4.76	1.233	184.62	2.233	8.29	3.23	4.59
0.250	4.76	1.250	184.62	2.250	8.29	3.25	4.59
0.267	4.76	1.267	184.62	2.267	8.29	3.27	4.59
0.283	4.76	1.283	184.62	2.283	8.29	3.28	4.59
0.300	4.76	1.300	184.62	2.300	8.29	3.30	4.59
0.317	4.76	1.317	184.62	2.317	8.29	3.32	4.59
0.333	4.76	1.333	184.62	2.333	8.29	3.33	4.59
0.350	5.60	1.350	43.10	2.350	7.26	3.35	4.29
0.367	5.60	1.367	43.10	2.367	7.26	3.37	4.29
0.383	5.60	1.383	43.10	2.383	7.26	3.38	4.29
0.400	5.60	1.400	43.10	2.400	7.26	3.40	4.29
0.417	5.60	1.417	43.10	2.417	7.26	3.42	4.29
0.433	5.60	1.433	43.10	2.433	7.26	3.43	4.29
0.450	5.60	1.450	43.10	2.450	7.26	3.45	4.29
0.467	5.60	1.467	43.10	2.467	7.26	3.47	4.29
0.483	5.60	1.483	43.10	2.483	7.26	3.48	4.29
0.500	5.60	1.500	43.10	2.500	7.26	3.50	4.29
0.517	6.86	1.517	22.23	2.517	6.47	3.52	4.03
0.533	6.86	1.533	22.23	2.533	6.47	3.53	4.03
0.550	6.86	1.550	22.23	2.550	6.47	3.55	4.03
0.567	6.86	1.567	22.23	2.567	6.47	3.57	4.03
0.583	6.86	1.583	22.23	2.583	6.47	3.58	4.03
0.600	6.86	1.600	22.23	2.600	6.47	3.60	4.03
0.617	6.86	1.617	22.23	2.617	6.47	3.62	4.03
0.633	6.86	1.633	22.23	2.633	6.47	3.63	4.03
0.650	6.86	1.650	22.23	2.650	6.47	3.65	4.03
0.667	6.86	1.667	22.23	2.667	6.47	3.67	4.03
0.683	9.00	1.683	15.32	2.683	5.85	3.68	3.81
0.700	9.00	1.700	15.32	2.700	5.85	3.70	3.81
0.717	9.00	1.717	15.32	2.717	5.85	3.72	3.81
0.733	9.00	1.733	15.32	2.733	5.85	3.73	3.81
0.750	9.00	1.750	15.32	2.750	5.85	3.75	3.81
0.767	9.00	1.767	15.32	2.767	5.85	3.77	3.81
0.783	9.00	1.783	15.32	2.783	5.85	3.78	3.81
0.800	9.00	1.800	15.32	2.800	5.85	3.80	3.81
0.817	9.00	1.817	15.32	2.817	5.85	3.82	3.81
0.833	9.00	1.833	15.32	2.833	5.85	3.83	3.81
0.850	13.56	1.850	11.84	2.850	5.35	3.85	3.61
0.867	13.56	1.867	11.84	2.867	5.35	3.87	3.61
0.883	13.56	1.883	11.84	2.883	5.35	3.88	3.61
0.900	13.56	1.900	11.84	2.900	5.35	3.90	3.61
0.917	13.56	1.917	11.84	2.917	5.35	3.92	3.61
0.933	13.56	1.933	11.84	2.933	5.35	3.93	3.61
0.950	13.56	1.950	11.84	2.950	5.35	3.95	3.61
0.967	13.56	1.967	11.84	2.967	5.35	3.97	3.61
0.983	13.56	1.983	11.84	2.983	5.35	3.98	3.61
1.000	13.56	2.000	11.84	3.000	5.35	4.00	3.61

Max.Eff.Inten.(mm/hr)=	184.62	42.41		
over (min)	5.00	8.00		
Storage Coeff. (min)=	2.11 (ii)	7.30 (ii)		
Unit Hyd. Tpeak (min)=	5.00	8.00		
Unit Hyd. peak (cms)=	0.37	0.15		
			TOTALS	
PEAK FLOW (cms)=	0.43	0.06	0.474 (iii)	
TIME TO PEAK (hrs)=	1.33	1.42	1.33	
RUNOFF VOLUME (mm)=	69.32	15.08	41.11	
TOTAL RAINFALL (mm)=	70.32	70.32	70.32	
RUNOFF COEFFICIENT =	0.99	0.21	0.58	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0018)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0026):		0.27	0.061	1.33	25.80
+ ID2= 2 (0007):		1.80	0.474	1.33	41.11
ID = 3 (0018):		2.07	0.535	1.33	39.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0009)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0330	0.0298
	0.0020	0.0000	0.0480	0.0300
	0.0190	0.0288	0.5150	0.0368
	0.0250	0.0292	0.5380	0.0368

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0018)	2.070	0.535	1.33	39.11
OUTFLOW: ID= 1 (0009)	2.070	0.323	1.42	39.11

PEAK FLOW REDUCTION [Qout/Qin](%)= 60.50
TIME SHIFT OF PEAK FLOW (min)= 5.00
MAXIMUM STORAGE USED (ha.m.)= 0.0341

CHICAGO STORM
Ptotal= 70.32 mm

IDF curve parameters: A=1448.000
B= 3.000
C= 0.803
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.16	1.17	32.64	2.17	9.72	3.17	4.94
0.33	4.76	1.33	184.62	2.33	8.29	3.33	4.59
0.50	5.60	1.50	43.10	2.50	7.26	3.50	4.29
0.67	6.86	1.67	22.23	2.67	6.47	3.67	4.03
0.83	9.00	1.83	15.32	2.83	5.85	3.83	3.81
1.00	13.56	2.00	11.84	3.00	5.35	4.00	3.61

CALIB STANDHYD (0006) ID= 1 DT= 1.0 min

Area (ha)= 0.80
Total Imp(%)= 87.00 Dir. Conn.(%)= 82.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.70	0.10
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	73.03	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.16	1.017	32.64	2.017	9.72	3.02	4.94
0.033	4.16	1.033	32.64	2.033	9.72	3.03	4.94
0.050	4.16	1.050	32.64	2.050	9.72	3.05	4.94
0.067	4.16	1.067	32.64	2.067	9.72	3.07	4.94
0.083	4.16	1.083	32.64	2.083	9.72	3.08	4.94
0.100	4.16	1.100	32.64	2.100	9.72	3.10	4.94
0.117	4.16	1.117	32.64	2.117	9.72	3.12	4.94
0.133	4.16	1.133	32.64	2.133	9.72	3.13	4.94
0.150	4.16	1.150	32.64	2.150	9.72	3.15	4.94
0.167	4.16	1.167	32.64	2.167	9.72	3.17	4.94
0.183	4.76	1.183	184.61	2.183	8.29	3.18	4.59
0.200	4.76	1.200	184.62	2.200	8.29	3.20	4.59
0.217	4.76	1.217	184.62	2.217	8.29	3.22	4.59
0.233	4.76	1.233	184.62	2.233	8.29	3.23	4.59
0.250	4.76	1.250	184.62	2.250	8.29	3.25	4.59
0.267	4.76	1.267	184.62	2.267	8.29	3.27	4.59
0.283	4.76	1.283	184.62	2.283	8.29	3.28	4.59
0.300	4.76	1.300	184.62	2.300	8.29	3.30	4.59
0.317	4.76	1.317	184.62	2.317	8.29	3.32	4.59
0.333	4.76	1.333	184.62	2.333	8.29	3.33	4.59
0.350	5.60	1.350	43.10	2.350	7.26	3.35	4.29
0.367	5.60	1.367	43.10	2.367	7.26	3.37	4.29
0.383	5.60	1.383	43.10	2.383	7.26	3.38	4.29
0.400	5.60	1.400	43.10	2.400	7.26	3.40	4.29
0.417	5.60	1.417	43.10	2.417	7.26	3.42	4.29
0.433	5.60	1.433	43.10	2.433	7.26	3.43	4.29
0.450	5.60	1.450	43.10	2.450	7.26	3.45	4.29
0.467	5.60	1.467	43.10	2.467	7.26	3.47	4.29
0.483	5.60	1.483	43.10	2.483	7.26	3.48	4.29
0.500	5.60	1.500	43.10	2.500	7.26	3.50	4.29
0.517	6.86	1.517	22.23	2.517	6.47	3.52	4.03
0.533	6.86	1.533	22.23	2.533	6.47	3.53	4.03
0.550	6.86	1.550	22.23	2.550	6.47	3.55	4.03
0.567	6.86	1.567	22.23	2.567	6.47	3.57	4.03
0.583	6.86	1.583	22.23	2.583	6.47	3.58	4.03
0.600	6.86	1.600	22.23	2.600	6.47	3.60	4.03
0.617	6.86	1.617	22.23	2.617	6.47	3.62	4.03
0.633	6.86	1.633	22.23	2.633	6.47	3.63	4.03
0.650	6.86	1.650	22.23	2.650	6.47	3.65	4.03
0.667	6.86	1.667	22.23	2.667	6.47	3.67	4.03
0.683	9.00	1.683	15.32	2.683	5.85	3.68	3.81

0.700	9.00	1.700	15.32	2.700	5.85	3.70	3.81
0.717	9.00	1.717	15.32	2.717	5.85	3.72	3.81
0.733	9.00	1.733	15.32	2.733	5.85	3.73	3.81
0.750	9.00	1.750	15.32	2.750	5.85	3.75	3.81
0.767	9.00	1.767	15.32	2.767	5.85	3.77	3.81
0.783	9.00	1.783	15.32	2.783	5.85	3.78	3.81
0.800	9.00	1.800	15.32	2.800	5.85	3.80	3.81
0.817	9.00	1.817	15.32	2.817	5.85	3.82	3.81
0.833	9.00	1.833	15.32	2.833	5.85	3.83	3.81
0.850	13.56	1.850	11.84	2.850	5.35	3.85	3.61
0.867	13.56	1.867	11.84	2.867	5.35	3.87	3.61
0.883	13.56	1.883	11.84	2.883	5.35	3.88	3.61
0.900	13.56	1.900	11.84	2.900	5.35	3.90	3.61
0.917	13.56	1.917	11.84	2.917	5.35	3.92	3.61
0.933	13.56	1.933	11.84	2.933	5.35	3.93	3.61
0.950	13.56	1.950	11.84	2.950	5.35	3.95	3.61
0.967	13.56	1.967	11.84	2.967	5.35	3.97	3.61
0.983	13.56	1.983	11.84	2.983	5.35	3.98	3.61
1.000	13.56	2.000	11.84	3.000	5.35	4.00	3.61

Max.Eff.Inten.(mm/hr)=	184.62	50.43	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.66 (ii)	4.30 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.40	0.25	
			TOTALS
PEAK FLOW (cms)=	0.33	0.01	0.345 (iii)
TIME TO PEAK (hrs)=	1.33	1.37	1.33
RUNOFF VOLUME (mm)=	69.32	16.26	59.76
TOTAL RAINFALL (mm)=	70.32	70.32	70.32
RUNOFF COEFFICIENT =	0.99	0.23	0.85

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0011) IN= 2---> OUT= 1 DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0810	0.0180
	0.0010	0.0005	0.0910	0.0205
	0.0060	0.0056	0.1120	0.0249
	0.0100	0.0061	0.1190	0.0264
	0.0430	0.0101	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0006)	0.800	0.345	1.33	59.76
OUTFLOW: ID= 1 (0011)	0.800	0.103	1.47	59.61

PEAK FLOW REDUCTION [Qout/Qin](%)= 29.88
TIME SHIFT OF PEAK FLOW (min)= 8.00
MAXIMUM STORAGE USED (ha.m.)= 0.0230

CHICAGO STORM Ptotal= 70.32 mm

IDF curve parameters: A=1448.000
B= 3.000
C= 0.803
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME (hrs)	RAIN (mm/hr)	TIME (hrs)	RAIN (mm/hr)	TIME (hrs)	RAIN (mm/hr)	TIME (hrs)	RAIN (mm/hr)
0.17	4.16	1.17	32.64	2.17	9.72	3.17	4.94
0.33	4.76	1.33	184.62	2.33	8.29	3.33	4.59
0.50	5.60	1.50	43.10	2.50	7.26	3.50	4.29
0.67	6.86	1.67	22.23	2.67	6.47	3.67	4.03
0.83	9.00	1.83	15.32	2.83	5.85	3.83	3.81
1.00	13.56	2.00	11.84	3.00	5.35	4.00	3.61

CALIB STANDHYD (0008) ID= 1 DT= 1.0 min

Area (ha)= 2.53
Total Imp(%)= 52.00 Dir. Conn.(%)= 44.00

	IMPERVIOUS	PERVIOUS (i)
Surface Area (ha)=	1.32	1.21
Dep. Storage (mm)=	1.00	5.00
Average Slope (%)=	1.00	2.00

Length	(m)=	129.87	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.16	1.017	32.64	2.017	9.72	3.02	4.94
0.033	4.16	1.033	32.64	2.033	9.72	3.03	4.94
0.050	4.16	1.050	32.64	2.050	9.72	3.05	4.94
0.067	4.16	1.067	32.64	2.067	9.72	3.07	4.94
0.083	4.16	1.083	32.64	2.083	9.72	3.08	4.94
0.100	4.16	1.100	32.64	2.100	9.72	3.10	4.94
0.117	4.16	1.117	32.64	2.117	9.72	3.12	4.94
0.133	4.16	1.133	32.64	2.133	9.72	3.13	4.94
0.150	4.16	1.150	32.64	2.150	9.72	3.15	4.94
0.167	4.16	1.167	32.64	2.167	9.72	3.17	4.94
0.183	4.76	1.183	184.61	2.183	8.29	3.18	4.59
0.200	4.76	1.200	184.62	2.200	8.29	3.20	4.59
0.217	4.76	1.217	184.62	2.217	8.29	3.22	4.59
0.233	4.76	1.233	184.62	2.233	8.29	3.23	4.59
0.250	4.76	1.250	184.62	2.250	8.29	3.25	4.59
0.267	4.76	1.267	184.62	2.267	8.29	3.27	4.59
0.283	4.76	1.283	184.62	2.283	8.29	3.28	4.59
0.300	4.76	1.300	184.62	2.300	8.29	3.30	4.59
0.317	4.76	1.317	184.62	2.317	8.29	3.32	4.59
0.333	4.76	1.333	184.62	2.333	8.29	3.33	4.59
0.350	5.60	1.350	43.10	2.350	7.26	3.35	4.29
0.367	5.60	1.367	43.10	2.367	7.26	3.37	4.29
0.383	5.60	1.383	43.10	2.383	7.26	3.38	4.29
0.400	5.60	1.400	43.10	2.400	7.26	3.40	4.29
0.417	5.60	1.417	43.10	2.417	7.26	3.42	4.29
0.433	5.60	1.433	43.10	2.433	7.26	3.43	4.29
0.450	5.60	1.450	43.10	2.450	7.26	3.45	4.29
0.467	5.60	1.467	43.10	2.467	7.26	3.47	4.29
0.483	5.60	1.483	43.10	2.483	7.26	3.48	4.29
0.500	5.60	1.500	43.10	2.500	7.26	3.50	4.29
0.517	6.86	1.517	22.23	2.517	6.47	3.52	4.03
0.533	6.86	1.533	22.23	2.533	6.47	3.53	4.03
0.550	6.86	1.550	22.23	2.550	6.47	3.55	4.03
0.567	6.86	1.567	22.23	2.567	6.47	3.57	4.03
0.583	6.86	1.583	22.23	2.583	6.47	3.58	4.03
0.600	6.86	1.600	22.23	2.600	6.47	3.60	4.03
0.617	6.86	1.617	22.23	2.617	6.47	3.62	4.03
0.633	6.86	1.633	22.23	2.633	6.47	3.63	4.03
0.650	6.86	1.650	22.23	2.650	6.47	3.65	4.03
0.667	6.86	1.667	22.23	2.667	6.47	3.67	4.03
0.683	9.00	1.683	15.32	2.683	5.85	3.68	3.81
0.700	9.00	1.700	15.32	2.700	5.85	3.70	3.81
0.717	9.00	1.717	15.32	2.717	5.85	3.72	3.81
0.733	9.00	1.733	15.32	2.733	5.85	3.73	3.81
0.750	9.00	1.750	15.32	2.750	5.85	3.75	3.81
0.767	9.00	1.767	15.32	2.767	5.85	3.77	3.81
0.783	9.00	1.783	15.32	2.783	5.85	3.78	3.81
0.800	9.00	1.800	15.32	2.800	5.85	3.80	3.81
0.817	9.00	1.817	15.32	2.817	5.85	3.82	3.81
0.833	9.00	1.833	15.32	2.833	5.85	3.83	3.81
0.850	13.56	1.850	11.84	2.850	5.35	3.85	3.61
0.867	13.56	1.867	11.84	2.867	5.35	3.87	3.61
0.883	13.56	1.883	11.84	2.883	5.35	3.88	3.61
0.900	13.56	1.900	11.84	2.900	5.35	3.90	3.61
0.917	13.56	1.917	11.84	2.917	5.35	3.92	3.61
0.933	13.56	1.933	11.84	2.933	5.35	3.93	3.61
0.950	13.56	1.950	11.84	2.950	5.35	3.95	3.61
0.967	13.56	1.967	11.84	2.967	5.35	3.97	3.61
0.983	13.56	1.983	11.84	2.983	5.35	3.98	3.61
1.000	13.56	2.000	11.84	3.000	5.35	4.00	3.61

Max.Eff.Inten.(mm/hr)=		184.62	35.88	
	over (min)	5.00	9.00	
Storage Coeff. (min)=		2.34 (ii)	8.06 (ii)	
Unit Hyd. Tpeak (min)=		5.00	9.00	
Unit Hyd. peak (cms)=		0.35	0.14	
				TOTALS
PEAK FLOW	(cms)=	0.55	0.08	0.600 (iii)
TIME TO PEAK	(hrs)=	1.33	1.43	1.33
RUNOFF VOLUME	(mm)=	69.32	13.99	38.33
TOTAL RAINFALL	(mm)=	70.32	70.32	70.32
RUNOFF COEFFICIENT	=	0.99	0.20	0.55

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| RESERVOIR(0010)|
| IN= 2---> OUT= 1 |
| DT= 1.0 min |

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0810	0.0465
0.0010	0.0012	0.0910	0.0530
0.0060	0.0145	0.1120	0.0643
0.0100	0.0157	0.1190	0.0683
0.0430	0.0262	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0008)	2.530	0.600	1.33	38.33
OUTFLOW: ID= 1 (0010)	2.530	0.095	1.73	38.21

PEAK FLOW REDUCTION [Qout/Qin](%)= 15.87
TIME SHIFT OF PEAK FLOW (min)= 24.00
MAXIMUM STORAGE USED (ha.m.)= 0.0553

| CHICAGO STORM |
| Ptotal= 70.32 mm |

IDF curve parameters: A=1448.000
B= 3.000
C= 0.803
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.16	1.17	32.64	2.17	9.72	3.17	4.94
0.33	4.76	1.33	184.62	2.33	8.29	3.33	4.59
0.50	5.60	1.50	43.10	2.50	7.26	3.50	4.29
0.67	6.86	1.67	22.23	2.67	6.47	3.67	4.03
0.83	9.00	1.83	15.32	2.83	5.85	3.83	3.81
1.00	13.56	2.00	11.84	3.00	5.35	4.00	3.61

| CALIB |
| NASHYD (0027)|
|ID= 1 DT= 1.0 min |

Area (ha)= 17.26 Curve Number (CN)= 60.0
Ia (mm)= 5.60 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.95

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.16	1.017	32.64	2.017	9.72	3.02	4.94
0.033	4.16	1.033	32.64	2.033	9.72	3.03	4.94
0.050	4.16	1.050	32.64	2.050	9.72	3.05	4.94
0.067	4.16	1.067	32.64	2.067	9.72	3.07	4.94
0.083	4.16	1.083	32.64	2.083	9.72	3.08	4.94
0.100	4.16	1.100	32.64	2.100	9.72	3.10	4.94
0.117	4.16	1.117	32.64	2.117	9.72	3.12	4.94
0.133	4.16	1.133	32.64	2.133	9.72	3.13	4.94
0.150	4.16	1.150	32.64	2.150	9.72	3.15	4.94
0.167	4.16	1.167	32.64	2.167	9.72	3.17	4.94
0.183	4.76	1.183	184.61	2.183	8.29	3.18	4.59
0.200	4.76	1.200	184.62	2.200	8.29	3.20	4.59
0.217	4.76	1.217	184.62	2.217	8.29	3.22	4.59
0.233	4.76	1.233	184.62	2.233	8.29	3.23	4.59
0.250	4.76	1.250	184.62	2.250	8.29	3.25	4.59
0.267	4.76	1.267	184.62	2.267	8.29	3.27	4.59
0.283	4.76	1.283	184.62	2.283	8.29	3.28	4.59
0.300	4.76	1.300	184.62	2.300	8.29	3.30	4.59
0.317	4.76	1.317	184.62	2.317	8.29	3.32	4.59
0.333	4.76	1.333	184.62	2.333	8.29	3.33	4.59
0.350	5.60	1.350	43.10	2.350	7.26	3.35	4.29
0.367	5.60	1.367	43.10	2.367	7.26	3.37	4.29
0.383	5.60	1.383	43.10	2.383	7.26	3.38	4.29
0.400	5.60	1.400	43.10	2.400	7.26	3.40	4.29
0.417	5.60	1.417	43.10	2.417	7.26	3.42	4.29
0.433	5.60	1.433	43.10	2.433	7.26	3.43	4.29
0.450	5.60	1.450	43.10	2.450	7.26	3.45	4.29
0.467	5.60	1.467	43.10	2.467	7.26	3.47	4.29
0.483	5.60	1.483	43.10	2.483	7.26	3.48	4.29
0.500	5.60	1.500	43.10	2.500	7.26	3.50	4.29
0.517	6.86	1.517	22.23	2.517	6.47	3.52	4.03
0.533	6.86	1.533	22.23	2.533	6.47	3.53	4.03
0.550	6.86	1.550	22.23	2.550	6.47	3.55	4.03
0.567	6.86	1.567	22.23	2.567	6.47	3.57	4.03
0.583	6.86	1.583	22.23	2.583	6.47	3.58	4.03
0.600	6.86	1.600	22.23	2.600	6.47	3.60	4.03
0.617	6.86	1.617	22.23	2.617	6.47	3.62	4.03
0.633	6.86	1.633	22.23	2.633	6.47	3.63	4.03

0.650	6.86	1.650	22.23	2.650	6.47	3.65	4.03
0.667	6.86	1.667	22.23	2.667	6.47	3.67	4.03
0.683	9.00	1.683	15.32	2.683	5.85	3.68	3.81
0.700	9.00	1.700	15.32	2.700	5.85	3.70	3.81
0.717	9.00	1.717	15.32	2.717	5.85	3.72	3.81
0.733	9.00	1.733	15.32	2.733	5.85	3.73	3.81
0.750	9.00	1.750	15.32	2.750	5.85	3.75	3.81
0.767	9.00	1.767	15.32	2.767	5.85	3.77	3.81
0.783	9.00	1.783	15.32	2.783	5.85	3.78	3.81
0.800	9.00	1.800	15.32	2.800	5.85	3.80	3.81
0.817	9.00	1.817	15.32	2.817	5.85	3.82	3.81
0.833	9.00	1.833	15.32	2.833	5.85	3.83	3.81
0.850	13.56	1.850	11.84	2.850	5.35	3.85	3.61
0.867	13.56	1.867	11.84	2.867	5.35	3.87	3.61
0.883	13.56	1.883	11.84	2.883	5.35	3.88	3.61
0.900	13.56	1.900	11.84	2.900	5.35	3.90	3.61
0.917	13.56	1.917	11.84	2.917	5.35	3.92	3.61
0.933	13.56	1.933	11.84	2.933	5.35	3.93	3.61
0.950	13.56	1.950	11.84	2.950	5.35	3.95	3.61
0.967	13.56	1.967	11.84	2.967	5.35	3.97	3.61
0.983	13.56	1.983	11.84	2.983	5.35	3.98	3.61
1.000	13.56	2.000	11.84	3.000	5.35	4.00	3.61

Unit Hyd Qpeak (cms)= 0.694

PEAK FLOW (cms)= 0.344 (i)
TIME TO PEAK (hrs)= 2.517
RUNOFF VOLUME (mm)= 17.894
TOTAL RAINFALL (mm)= 70.316
RUNOFF COEFFICIENT = 0.254

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

ADD HYD (0004) | 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):	2.53	0.095	1.73	38.21
+ ID2= 2 (0011):	0.80	0.103	1.47	59.61
ID = 3 (0004):	3.33	0.192	1.57	43.35

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004) | 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0004):	3.33	0.192	1.57	43.35
+ ID2= 2 (0027):	17.26	0.344	2.52	17.89
ID = 1 (0004):	20.59	0.466	2.37	22.01

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004) | 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0004):	20.59	0.466	2.37	22.01
+ ID2= 2 (0003):	4.49	0.055	2.75	27.08
ID = 3 (0004):	25.08	0.520	2.38	22.92

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004) | 3 + 2 = 1	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0004):	25.08	0.520	2.38	22.92
+ ID2= 2 (0009):	2.07	0.323	1.42	39.11
ID = 1 (0004):	27.15	0.552	2.37	24.15

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

V V I SSSSS U U A L (v 5.0.2027)
V V I SS U U A A L
V V I SS U U AAAAA L

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

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\65a4ab80-dabe-430a-bd79-aba3c1bf6
Summary filename:
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DATE: 12/19/2018 TIME: 10:47:46

USER:

COMMENTS: _____

****
** SIMULATION : Run 06 **
****

CHICAGO STORM	Ptotal= 78.03 mm

IDF curve parameters: A=1770.000
B= 4.000
C= 0.820
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.34	1.17	38.21	2.17	10.60	3.17	5.19
0.33	5.00	1.33	203.31	2.33	8.96	3.33	4.81
0.50	5.92	1.50	50.96	2.50	7.78	3.50	4.48
0.67	7.33	1.67	25.51	2.67	6.90	3.67	4.20
0.83	9.77	1.83	17.18	2.83	6.21	3.83	3.96
1.00	15.10	2.00	13.06	3.00	5.65	4.00	3.74

CALIB	NASHYD (0025)	ID= 1 DT= 1.0 min

Area (ha)= 1.48 Curve Number (CN)= 67.0
Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.34

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.34	1.017	38.21	2.017	10.60	3.02	5.19
0.033	4.34	1.033	38.21	2.033	10.60	3.03	5.19
0.050	4.34	1.050	38.21	2.050	10.60	3.05	5.19
0.067	4.34	1.067	38.21	2.067	10.60	3.07	5.19
0.083	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.100	4.34	1.100	38.21	2.100	10.60	3.10	5.19
0.117	4.34	1.117	38.21	2.117	10.60	3.12	5.19
0.133	4.34	1.133	38.21	2.133	10.60	3.13	5.19
0.150	4.34	1.150	38.21	2.150	10.60	3.15	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.183	5.00	1.183	203.30	2.183	8.96	3.18	4.81
0.200	5.00	1.200	203.31	2.200	8.96	3.20	4.81
0.217	5.00	1.217	203.31	2.217	8.96	3.22	4.81
0.233	5.00	1.233	203.31	2.233	8.96	3.23	4.81
0.250	5.00	1.250	203.31	2.250	8.96	3.25	4.81
0.267	5.00	1.267	203.31	2.267	8.96	3.27	4.81
0.283	5.00	1.283	203.31	2.283	8.96	3.28	4.81
0.300	5.00	1.300	203.31	2.300	8.96	3.30	4.81
0.317	5.00	1.317	203.31	2.317	8.96	3.32	4.81

0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.350	5.92	1.350	50.97	2.350	7.78	3.35	4.48
0.367	5.92	1.367	50.96	2.367	7.78	3.37	4.48
0.383	5.92	1.383	50.96	2.383	7.78	3.38	4.48
0.400	5.92	1.400	50.96	2.400	7.78	3.40	4.48
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.433	5.92	1.433	50.96	2.433	7.78	3.43	4.48
0.450	5.92	1.450	50.96	2.450	7.78	3.45	4.48
0.467	5.92	1.467	50.96	2.467	7.78	3.47	4.48
0.483	5.92	1.483	50.96	2.483	7.78	3.48	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.517	7.33	1.517	25.51	2.517	6.90	3.52	4.20
0.533	7.33	1.533	25.51	2.533	6.90	3.53	4.20
0.550	7.33	1.550	25.51	2.550	6.90	3.55	4.20
0.567	7.33	1.567	25.51	2.567	6.90	3.57	4.20
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.600	7.33	1.600	25.51	2.600	6.90	3.60	4.20
0.617	7.33	1.617	25.51	2.617	6.90	3.62	4.20
0.633	7.33	1.633	25.51	2.633	6.90	3.63	4.20
0.650	7.33	1.650	25.51	2.650	6.90	3.65	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.683	9.77	1.683	17.18	2.683	6.21	3.68	3.96
0.700	9.77	1.700	17.18	2.700	6.21	3.70	3.96
0.717	9.77	1.717	17.18	2.717	6.21	3.72	3.96
0.733	9.77	1.733	17.18	2.733	6.21	3.73	3.96
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.767	9.77	1.767	17.18	2.767	6.21	3.77	3.96
0.783	9.77	1.783	17.18	2.783	6.21	3.78	3.96
0.800	9.77	1.800	17.18	2.800	6.21	3.80	3.96
0.817	9.77	1.817	17.18	2.817	6.21	3.82	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.850	15.10	1.850	13.06	2.850	5.65	3.85	3.74
0.867	15.10	1.867	13.06	2.867	5.65	3.87	3.74
0.883	15.10	1.883	13.06	2.883	5.65	3.88	3.74
0.900	15.10	1.900	13.06	2.900	5.65	3.90	3.74
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
0.933	15.10	1.933	13.06	2.933	5.65	3.93	3.74
0.950	15.10	1.950	13.06	2.950	5.65	3.95	3.74
0.967	15.10	1.967	13.06	2.967	5.65	3.97	3.74
0.983	15.10	1.983	13.06	2.983	5.65	3.98	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Unit Hyd Qpeak (cms)= 0.166

PEAK FLOW (cms)= 0.097 (i)
TIME TO PEAK (hrs)= 1.700
RUNOFF VOLUME (mm)= 26.916
TOTAL RAINFALL (mm)= 78.027
RUNOFF COEFFICIENT = 0.345

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

CHICAGO STORM	IDF curve parameters: A=1770.000
Ptotal= 78.03 mm	B= 4.000
	C= 0.820

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

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.34	1.17	38.21	2.17	10.60	3.17	5.19
0.33	5.00	1.33	203.31	2.33	8.96	3.33	4.81
0.50	5.92	1.50	50.96	2.50	7.78	3.50	4.48
0.67	7.33	1.67	25.51	2.67	6.90	3.67	4.20
0.83	9.77	1.83	17.18	2.83	6.21	3.83	3.96
1.00	15.10	2.00	13.06	3.00	5.65	4.00	3.74

CALIB	Area (ha)= 3.01
STANDHYD (0001)	Total Imp(%)= 57.00 Dir. Conn.(%)= 46.00
ID= 1 DT= 1.0 min	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.72	1.29
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.50	3.00
Length	(m)=	141.66	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.34	1.017	38.21	2.017	10.60	3.02	5.19
0.033	4.34	1.033	38.21	2.033	10.60	3.03	5.19
0.050	4.34	1.050	38.21	2.050	10.60	3.05	5.19
0.067	4.34	1.067	38.21	2.067	10.60	3.07	5.19
0.083	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.100	4.34	1.100	38.21	2.100	10.60	3.10	5.19
0.117	4.34	1.117	38.21	2.117	10.60	3.12	5.19
0.133	4.34	1.133	38.21	2.133	10.60	3.13	5.19
0.150	4.34	1.150	38.21	2.150	10.60	3.15	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.183	5.00	1.183	203.30	2.183	8.96	3.18	4.81
0.200	5.00	1.200	203.31	2.200	8.96	3.20	4.81
0.217	5.00	1.217	203.31	2.217	8.96	3.22	4.81
0.233	5.00	1.233	203.31	2.233	8.96	3.23	4.81
0.250	5.00	1.250	203.31	2.250	8.96	3.25	4.81
0.267	5.00	1.267	203.31	2.267	8.96	3.27	4.81
0.283	5.00	1.283	203.31	2.283	8.96	3.28	4.81
0.300	5.00	1.300	203.31	2.300	8.96	3.30	4.81
0.317	5.00	1.317	203.31	2.317	8.96	3.32	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.350	5.92	1.350	50.97	2.350	7.78	3.35	4.48
0.367	5.92	1.367	50.96	2.367	7.78	3.37	4.48
0.383	5.92	1.383	50.96	2.383	7.78	3.38	4.48
0.400	5.92	1.400	50.96	2.400	7.78	3.40	4.48
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.433	5.92	1.433	50.96	2.433	7.78	3.43	4.48
0.450	5.92	1.450	50.96	2.450	7.78	3.45	4.48
0.467	5.92	1.467	50.96	2.467	7.78	3.47	4.48
0.483	5.92	1.483	50.96	2.483	7.78	3.48	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.517	7.33	1.517	25.51	2.517	6.90	3.52	4.20
0.533	7.33	1.533	25.51	2.533	6.90	3.53	4.20
0.550	7.33	1.550	25.51	2.550	6.90	3.55	4.20
0.567	7.33	1.567	25.51	2.567	6.90	3.57	4.20
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.600	7.33	1.600	25.51	2.600	6.90	3.60	4.20
0.617	7.33	1.617	25.51	2.617	6.90	3.62	4.20
0.633	7.33	1.633	25.51	2.633	6.90	3.63	4.20
0.650	7.33	1.650	25.51	2.650	6.90	3.65	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.683	9.77	1.683	17.18	2.683	6.21	3.68	3.96
0.700	9.77	1.700	17.18	2.700	6.21	3.70	3.96
0.717	9.77	1.717	17.18	2.717	6.21	3.72	3.96
0.733	9.77	1.733	17.18	2.733	6.21	3.73	3.96
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.767	9.77	1.767	17.18	2.767	6.21	3.77	3.96
0.783	9.77	1.783	17.18	2.783	6.21	3.78	3.96
0.800	9.77	1.800	17.18	2.800	6.21	3.80	3.96
0.817	9.77	1.817	17.18	2.817	6.21	3.82	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.850	15.10	1.850	13.06	2.850	5.65	3.85	3.74
0.867	15.10	1.867	13.06	2.867	5.65	3.87	3.74
0.883	15.10	1.883	13.06	2.883	5.65	3.88	3.74
0.900	15.10	1.900	13.06	2.900	5.65	3.90	3.74
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
0.933	15.10	1.933	13.06	2.933	5.65	3.93	3.74
0.950	15.10	1.950	13.06	2.950	5.65	3.95	3.74
0.967	15.10	1.967	13.06	2.967	5.65	3.97	3.74
0.983	15.10	1.983	13.06	2.983	5.65	3.98	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max.Eff.Inten.(mm/hr)=	203.31	50.67		
over (min)	5.00	7.00		
Storage Coeff. (min)=	2.10 (ii)	6.68 (ii)		
Unit Hyd. Tpeak (min)=	5.00	7.00		
Unit Hyd. peak (cms)=	0.37	0.17		
			TOTALS	
PEAK FLOW (cms)=	0.76	0.14	0.866 (iii)	
TIME TO PEAK (hrs)=	1.33	1.40	1.33	
RUNOFF VOLUME (mm)=	77.03	18.15	45.23	
TOTAL RAINFALL (mm)=	78.03	78.03	78.03	
RUNOFF COEFFICIENT =	0.99	0.23	0.58	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0016) | 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0001):	3.01	0.866	1.33	45.23
+ ID2= 2 (0025):	1.48	0.097	1.70	26.92
ID = 3 (0016):	4.49	0.888	1.35	39.19

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0003) IN= 2---> OUT= 1 DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0410	0.0864
	0.0000	0.0281	0.0800	0.1533
	0.0010	0.0321	0.0900	0.1746
	0.0040	0.0479	0.1110	0.2118
	0.0070	0.0518	0.1180	0.2246

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0016)	4.490	0.888	1.35	39.19
OUTFLOW: ID= 1 (0003)	4.490	0.064	2.72	32.06

PEAK FLOW REDUCTION [Qout/Qin](%)= 7.22
TIME SHIFT OF PEAK FLOW (min)= 82.00
MAXIMUM STORAGE USED (ha.m.)= 0.1261

CHICAGO STORM Ptotal= 78.03 mm

IDF curve parameters: A=1770.000
B= 4.000
C= 0.820
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.34	1.17	38.21	2.17	10.60	3.17	5.19
0.33	5.00	1.33	203.31	2.33	8.96	3.33	4.81
0.50	5.92	1.50	50.96	2.50	7.78	3.50	4.48
0.67	7.33	1.67	25.51	2.67	6.90	3.67	4.20
0.83	9.77	1.83	17.18	2.83	6.21	3.83	3.96
1.00	15.10	2.00	13.06	3.00	5.65	4.00	3.74

CALIB NASHYD (0026) ID= 1 DT= 1.0 min	Area (ha)= 0.27	Curve Number (CN)= 71.0
	Ia (mm)= 3.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.02	

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.34	1.017	38.21	2.017	10.60	3.02	5.19
0.033	4.34	1.033	38.21	2.033	10.60	3.03	5.19
0.050	4.34	1.050	38.21	2.050	10.60	3.05	5.19
0.067	4.34	1.067	38.21	2.067	10.60	3.07	5.19
0.083	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.100	4.34	1.100	38.21	2.100	10.60	3.10	5.19
0.117	4.34	1.117	38.21	2.117	10.60	3.12	5.19
0.133	4.34	1.133	38.21	2.133	10.60	3.13	5.19
0.150	4.34	1.150	38.21	2.150	10.60	3.15	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.183	5.00	1.183	203.30	2.183	8.96	3.18	4.81
0.200	5.00	1.200	203.31	2.200	8.96	3.20	4.81
0.217	5.00	1.217	203.31	2.217	8.96	3.22	4.81
0.233	5.00	1.233	203.31	2.233	8.96	3.23	4.81
0.250	5.00	1.250	203.31	2.250	8.96	3.25	4.81
0.267	5.00	1.267	203.31	2.267	8.96	3.27	4.81
0.283	5.00	1.283	203.31	2.283	8.96	3.28	4.81
0.300	5.00	1.300	203.31	2.300	8.96	3.30	4.81
0.317	5.00	1.317	203.31	2.317	8.96	3.32	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.350	5.92	1.350	50.97	2.350	7.78	3.35	4.48
0.367	5.92	1.367	50.96	2.367	7.78	3.37	4.48
0.383	5.92	1.383	50.96	2.383	7.78	3.38	4.48
0.400	5.92	1.400	50.96	2.400	7.78	3.40	4.48
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.433	5.92	1.433	50.96	2.433	7.78	3.43	4.48
0.450	5.92	1.450	50.96	2.450	7.78	3.45	4.48
0.467	5.92	1.467	50.96	2.467	7.78	3.47	4.48
0.483	5.92	1.483	50.96	2.483	7.78	3.48	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.517	7.33	1.517	25.51	2.517	6.90	3.52	4.20
0.533	7.33	1.533	25.51	2.533	6.90	3.53	4.20
0.550	7.33	1.550	25.51	2.550	6.90	3.55	4.20

0.567	7.33	1.567	25.51	2.567	6.90	3.57	4.20
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.600	7.33	1.600	25.51	2.600	6.90	3.60	4.20
0.617	7.33	1.617	25.51	2.617	6.90	3.62	4.20
0.633	7.33	1.633	25.51	2.633	6.90	3.63	4.20
0.650	7.33	1.650	25.51	2.650	6.90	3.65	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.683	9.77	1.683	17.18	2.683	6.21	3.68	3.96
0.700	9.77	1.700	17.18	2.700	6.21	3.70	3.96
0.717	9.77	1.717	17.18	2.717	6.21	3.72	3.96
0.733	9.77	1.733	17.18	2.733	6.21	3.73	3.96
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.767	9.77	1.767	17.18	2.767	6.21	3.77	3.96
0.783	9.77	1.783	17.18	2.783	6.21	3.78	3.96
0.800	9.77	1.800	17.18	2.800	6.21	3.80	3.96
0.817	9.77	1.817	17.18	2.817	6.21	3.82	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.850	15.10	1.850	13.06	2.850	5.65	3.85	3.74
0.867	15.10	1.867	13.06	2.867	5.65	3.87	3.74
0.883	15.10	1.883	13.06	2.883	5.65	3.88	3.74
0.900	15.10	1.900	13.06	2.900	5.65	3.90	3.74
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
0.933	15.10	1.933	13.06	2.933	5.65	3.93	3.74
0.950	15.10	1.950	13.06	2.950	5.65	3.95	3.74
0.967	15.10	1.967	13.06	2.967	5.65	3.97	3.74
0.983	15.10	1.983	13.06	2.983	5.65	3.98	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Unit Hyd Qpeak (cms)= 0.516

PEAK FLOW (cms)= 0.072 (i)
TIME TO PEAK (hrs)= 1.333
RUNOFF VOLUME (mm)= 30.669
TOTAL RAINFALL (mm)= 78.027
RUNOFF COEFFICIENT = 0.393

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

CHICAGO STORM Ptotal= 78.03 mm

IDF curve parameters: A=1770.000
B= 4.000
C= 0.820
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.34	1.17	38.21	2.17	10.60	3.17	5.19
0.33	5.00	1.33	203.31	2.33	8.96	3.33	4.81
0.50	5.92	1.50	50.96	2.50	7.78	3.50	4.48
0.67	7.33	1.67	25.51	2.67	6.90	3.67	4.20
0.83	9.77	1.83	17.18	2.83	6.21	3.83	3.96
1.00	15.10	2.00	13.06	3.00	5.65	4.00	3.74

CALIB STANDHYD (0007) ID= 1 DT= 1.0 min

Area (ha)= 1.80
Total Imp(%)= 59.00 Dir. Conn.(%)= 48.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.06	0.74
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	109.54	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.34	1.017	38.21	2.017	10.60	3.02	5.19
0.033	4.34	1.033	38.21	2.033	10.60	3.03	5.19
0.050	4.34	1.050	38.21	2.050	10.60	3.05	5.19
0.067	4.34	1.067	38.21	2.067	10.60	3.07	5.19
0.083	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.100	4.34	1.100	38.21	2.100	10.60	3.10	5.19
0.117	4.34	1.117	38.21	2.117	10.60	3.12	5.19
0.133	4.34	1.133	38.21	2.133	10.60	3.13	5.19
0.150	4.34	1.150	38.21	2.150	10.60	3.15	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.183	5.00	1.183	203.30	2.183	8.96	3.18	4.81
0.200	5.00	1.200	203.31	2.200	8.96	3.20	4.81
0.217	5.00	1.217	203.31	2.217	8.96	3.22	4.81

0.233	5.00	1.233	203.31	2.233	8.96	3.23	4.81
0.250	5.00	1.250	203.31	2.250	8.96	3.25	4.81
0.267	5.00	1.267	203.31	2.267	8.96	3.27	4.81
0.283	5.00	1.283	203.31	2.283	8.96	3.28	4.81
0.300	5.00	1.300	203.31	2.300	8.96	3.30	4.81
0.317	5.00	1.317	203.31	2.317	8.96	3.32	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.350	5.92	1.350	50.97	2.350	7.78	3.35	4.48
0.367	5.92	1.367	50.96	2.367	7.78	3.37	4.48
0.383	5.92	1.383	50.96	2.383	7.78	3.38	4.48
0.400	5.92	1.400	50.96	2.400	7.78	3.40	4.48
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.433	5.92	1.433	50.96	2.433	7.78	3.43	4.48
0.450	5.92	1.450	50.96	2.450	7.78	3.45	4.48
0.467	5.92	1.467	50.96	2.467	7.78	3.47	4.48
0.483	5.92	1.483	50.96	2.483	7.78	3.48	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.517	7.33	1.517	25.51	2.517	6.90	3.52	4.20
0.533	7.33	1.533	25.51	2.533	6.90	3.53	4.20
0.550	7.33	1.550	25.51	2.550	6.90	3.55	4.20
0.567	7.33	1.567	25.51	2.567	6.90	3.57	4.20
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.600	7.33	1.600	25.51	2.600	6.90	3.60	4.20
0.617	7.33	1.617	25.51	2.617	6.90	3.62	4.20
0.633	7.33	1.633	25.51	2.633	6.90	3.63	4.20
0.650	7.33	1.650	25.51	2.650	6.90	3.65	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.683	9.77	1.683	17.18	2.683	6.21	3.68	3.96
0.700	9.77	1.700	17.18	2.700	6.21	3.70	3.96
0.717	9.77	1.717	17.18	2.717	6.21	3.72	3.96
0.733	9.77	1.733	17.18	2.733	6.21	3.73	3.96
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.767	9.77	1.767	17.18	2.767	6.21	3.77	3.96
0.783	9.77	1.783	17.18	2.783	6.21	3.78	3.96
0.800	9.77	1.800	17.18	2.800	6.21	3.80	3.96
0.817	9.77	1.817	17.18	2.817	6.21	3.82	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.850	15.10	1.850	13.06	2.850	5.65	3.85	3.74
0.867	15.10	1.867	13.06	2.867	5.65	3.87	3.74
0.883	15.10	1.883	13.06	2.883	5.65	3.88	3.74
0.900	15.10	1.900	13.06	2.900	5.65	3.90	3.74
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
0.933	15.10	1.933	13.06	2.933	5.65	3.93	3.74
0.950	15.10	1.950	13.06	2.950	5.65	3.95	3.74
0.967	15.10	1.967	13.06	2.967	5.65	3.97	3.74
0.983	15.10	1.983	13.06	2.983	5.65	3.98	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max.Eff.Inten.(mm/hr)=	203.31	51.66		
over (min)	5.00	8.00		
Storage Coeff. (min)=	2.03 (ii)	7.02 (ii)		
Unit Hyd. Tpeak (min)=	5.00	8.00		
Unit Hyd. peak (cms)=	0.37	0.15		
			TOTALS	
PEAK FLOW (cms)=	0.48	0.08	0.530 (iii)	
TIME TO PEAK (hrs)=	1.33	1.42	1.33	
RUNOFF VOLUME (mm)=	77.03	18.30	46.49	
TOTAL RAINFALL (mm)=	78.03	78.03	78.03	
RUNOFF COEFFICIENT =	0.99	0.23	0.60	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0018)					
1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)	
ID1= 1 (0026):	0.27	0.072	1.33	30.67	
+ ID2= 2 (0007):	1.80	0.530	1.33	46.49	
ID = 3 (0018):	2.07	0.602	1.33	44.42	

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0009)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0330	0.0298
	0.0020	0.0000	0.0480	0.0300
	0.0190	0.0288	0.5150	0.0368
	0.0250	0.0292	0.5380	0.0368

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0018)	2.070	0.602	1.33	44.42
OUTFLOW: ID= 1 (0009)	2.070	0.420	1.40	44.42

PEAK FLOW REDUCTION [Qout/Qin](%)= 69.82
TIME SHIFT OF PEAK FLOW (min)= 4.00
MAXIMUM STORAGE USED (ha.m.)= 0.0354

CHICAGO STORM Ptotal= 78.03 mm

IDF curve parameters: A=1770.000
B= 4.000
C= 0.820
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.34	1.17	38.21	2.17	10.60	3.17	5.19
0.33	5.00	1.33	203.31	2.33	8.96	3.33	4.81
0.50	5.92	1.50	50.96	2.50	7.78	3.50	4.48
0.67	7.33	1.67	25.51	2.67	6.90	3.67	4.20
0.83	9.77	1.83	17.18	2.83	6.21	3.83	3.96
1.00	15.10	2.00	13.06	3.00	5.65	4.00	3.74

CALIB STANDHYD (0006) ID= 1 DT= 1.0 min

Area (ha)= 0.80
Total Imp(%)= 87.00 Dir. Conn.(%)= 82.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.70	0.10
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	73.03	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.34	1.017	38.21	2.017	10.60	3.02	5.19
0.033	4.34	1.033	38.21	2.033	10.60	3.03	5.19
0.050	4.34	1.050	38.21	2.050	10.60	3.05	5.19
0.067	4.34	1.067	38.21	2.067	10.60	3.07	5.19
0.083	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.100	4.34	1.100	38.21	2.100	10.60	3.10	5.19
0.117	4.34	1.117	38.21	2.117	10.60	3.12	5.19
0.133	4.34	1.133	38.21	2.133	10.60	3.13	5.19
0.150	4.34	1.150	38.21	2.150	10.60	3.15	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.183	5.00	1.183	203.30	2.183	8.96	3.18	4.81
0.200	5.00	1.200	203.31	2.200	8.96	3.20	4.81
0.217	5.00	1.217	203.31	2.217	8.96	3.22	4.81
0.233	5.00	1.233	203.31	2.233	8.96	3.23	4.81
0.250	5.00	1.250	203.31	2.250	8.96	3.25	4.81
0.267	5.00	1.267	203.31	2.267	8.96	3.27	4.81
0.283	5.00	1.283	203.31	2.283	8.96	3.28	4.81
0.300	5.00	1.300	203.31	2.300	8.96	3.30	4.81
0.317	5.00	1.317	203.31	2.317	8.96	3.32	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.350	5.92	1.350	50.97	2.350	7.78	3.35	4.48
0.367	5.92	1.367	50.96	2.367	7.78	3.37	4.48
0.383	5.92	1.383	50.96	2.383	7.78	3.38	4.48
0.400	5.92	1.400	50.96	2.400	7.78	3.40	4.48
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.433	5.92	1.433	50.96	2.433	7.78	3.43	4.48
0.450	5.92	1.450	50.96	2.450	7.78	3.45	4.48
0.467	5.92	1.467	50.96	2.467	7.78	3.47	4.48
0.483	5.92	1.483	50.96	2.483	7.78	3.48	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.517	7.33	1.517	25.51	2.517	6.90	3.52	4.20
0.533	7.33	1.533	25.51	2.533	6.90	3.53	4.20
0.550	7.33	1.550	25.51	2.550	6.90	3.55	4.20
0.567	7.33	1.567	25.51	2.567	6.90	3.57	4.20
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.600	7.33	1.600	25.51	2.600	6.90	3.60	4.20
0.617	7.33	1.617	25.51	2.617	6.90	3.62	4.20
0.633	7.33	1.633	25.51	2.633	6.90	3.63	4.20
0.650	7.33	1.650	25.51	2.650	6.90	3.65	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.683	9.77	1.683	17.18	2.683	6.21	3.68	3.96
0.700	9.77	1.700	17.18	2.700	6.21	3.70	3.96

0.717	9.77	1.717	17.18	2.717	6.21	3.72	3.96
0.733	9.77	1.733	17.18	2.733	6.21	3.73	3.96
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.767	9.77	1.767	17.18	2.767	6.21	3.77	3.96
0.783	9.77	1.783	17.18	2.783	6.21	3.78	3.96
0.800	9.77	1.800	17.18	2.800	6.21	3.80	3.96
0.817	9.77	1.817	17.18	2.817	6.21	3.82	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.850	15.10	1.850	13.06	2.850	5.65	3.85	3.74
0.867	15.10	1.867	13.06	2.867	5.65	3.87	3.74
0.883	15.10	1.883	13.06	2.883	5.65	3.88	3.74
0.900	15.10	1.900	13.06	2.900	5.65	3.90	3.74
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
0.933	15.10	1.933	13.06	2.933	5.65	3.93	3.74
0.950	15.10	1.950	13.06	2.950	5.65	3.95	3.74
0.967	15.10	1.967	13.06	2.967	5.65	3.97	3.74
0.983	15.10	1.983	13.06	2.983	5.65	3.98	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max.Eff.Inten.(mm/hr)=	203.31	61.24	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.59 (ii)	4.14 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.41	0.26	
			TOTALS
PEAK FLOW (cms)=	0.37	0.02	0.382 (iii)
TIME TO PEAK (hrs)=	1.33	1.37	1.33
RUNOFF VOLUME (mm)=	77.03	19.69	66.70
TOTAL RAINFALL (mm)=	78.03	78.03	78.03
RUNOFF COEFFICIENT =	0.99	0.25	0.85

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0011) IN= 2---> OUT= 1 DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0810	0.0180
	0.0010	0.0005	0.0910	0.0205
	0.0060	0.0056	0.1120	0.0249
	0.0100	0.0061	0.1190	0.0264
	0.0430	0.0101	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0006)	0.800	0.382	1.33	66.70
OUTFLOW: ID= 1 (0011)	0.800	0.115	1.47	66.55

PEAK FLOW REDUCTION [Qout/Qin](%)= 30.19
TIME SHIFT OF PEAK FLOW (min)= 8.00
MAXIMUM STORAGE USED (ha.m.)= 0.0256

CHICAGO STORM Ptotal= 78.03 mm

IDF curve parameters: A=1770.000
B= 4.000
C= 0.820
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.34	1.17	38.21	2.17	10.60	3.17	5.19
0.33	5.00	1.33	203.31	2.33	8.96	3.33	4.81
0.50	5.92	1.50	50.96	2.50	7.78	3.50	4.48
0.67	7.33	1.67	25.51	2.67	6.90	3.67	4.20
0.83	9.77	1.83	17.18	2.83	6.21	3.83	3.96
1.00	15.10	2.00	13.06	3.00	5.65	4.00	3.74

CALIB STANDHYD (0008) ID= 1 DT= 1.0 min	Area (ha)= 2.53 Total Imp(%)= 52.00 Dir. Conn.(%)= 44.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.32	1.21
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	129.87	40.00

Mannings n = 0.013 0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.34	1.017	38.21	2.017	10.60	3.02	5.19
0.033	4.34	1.033	38.21	2.033	10.60	3.03	5.19
0.050	4.34	1.050	38.21	2.050	10.60	3.05	5.19
0.067	4.34	1.067	38.21	2.067	10.60	3.07	5.19
0.083	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.100	4.34	1.100	38.21	2.100	10.60	3.10	5.19
0.117	4.34	1.117	38.21	2.117	10.60	3.12	5.19
0.133	4.34	1.133	38.21	2.133	10.60	3.13	5.19
0.150	4.34	1.150	38.21	2.150	10.60	3.15	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.183	5.00	1.183	203.30	2.183	8.96	3.18	4.81
0.200	5.00	1.200	203.31	2.200	8.96	3.20	4.81
0.217	5.00	1.217	203.31	2.217	8.96	3.22	4.81
0.233	5.00	1.233	203.31	2.233	8.96	3.23	4.81
0.250	5.00	1.250	203.31	2.250	8.96	3.25	4.81
0.267	5.00	1.267	203.31	2.267	8.96	3.27	4.81
0.283	5.00	1.283	203.31	2.283	8.96	3.28	4.81
0.300	5.00	1.300	203.31	2.300	8.96	3.30	4.81
0.317	5.00	1.317	203.31	2.317	8.96	3.32	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.350	5.92	1.350	50.97	2.350	7.78	3.35	4.48
0.367	5.92	1.367	50.96	2.367	7.78	3.37	4.48
0.383	5.92	1.383	50.96	2.383	7.78	3.38	4.48
0.400	5.92	1.400	50.96	2.400	7.78	3.40	4.48
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.433	5.92	1.433	50.96	2.433	7.78	3.43	4.48
0.450	5.92	1.450	50.96	2.450	7.78	3.45	4.48
0.467	5.92	1.467	50.96	2.467	7.78	3.47	4.48
0.483	5.92	1.483	50.96	2.483	7.78	3.48	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.517	7.33	1.517	25.51	2.517	6.90	3.52	4.20
0.533	7.33	1.533	25.51	2.533	6.90	3.53	4.20
0.550	7.33	1.550	25.51	2.550	6.90	3.55	4.20
0.567	7.33	1.567	25.51	2.567	6.90	3.57	4.20
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.600	7.33	1.600	25.51	2.600	6.90	3.60	4.20
0.617	7.33	1.617	25.51	2.617	6.90	3.62	4.20
0.633	7.33	1.633	25.51	2.633	6.90	3.63	4.20
0.650	7.33	1.650	25.51	2.650	6.90	3.65	4.20
0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.683	9.77	1.683	17.18	2.683	6.21	3.68	3.96
0.700	9.77	1.700	17.18	2.700	6.21	3.70	3.96
0.717	9.77	1.717	17.18	2.717	6.21	3.72	3.96
0.733	9.77	1.733	17.18	2.733	6.21	3.73	3.96
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.767	9.77	1.767	17.18	2.767	6.21	3.77	3.96
0.783	9.77	1.783	17.18	2.783	6.21	3.78	3.96
0.800	9.77	1.800	17.18	2.800	6.21	3.80	3.96
0.817	9.77	1.817	17.18	2.817	6.21	3.82	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.850	15.10	1.850	13.06	2.850	5.65	3.85	3.74
0.867	15.10	1.867	13.06	2.867	5.65	3.87	3.74
0.883	15.10	1.883	13.06	2.883	5.65	3.88	3.74
0.900	15.10	1.900	13.06	2.900	5.65	3.90	3.74
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
0.933	15.10	1.933	13.06	2.933	5.65	3.93	3.74
0.950	15.10	1.950	13.06	2.950	5.65	3.95	3.74
0.967	15.10	1.967	13.06	2.967	5.65	3.97	3.74
0.983	15.10	1.983	13.06	2.983	5.65	3.98	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Max.Eff.Inten.(mm/hr)=	203.31	43.83		
over (min)	5.00	8.00		
Storage Coeff. (min)=	2.25 (ii)	7.75 (ii)		
Unit Hyd. Tpeak (min)=	5.00	8.00		
Unit Hyd. peak (cms)=	0.35	0.14		
			TOTALS	
PEAK FLOW (cms)=	0.61	0.10	0.679 (iii)	
TIME TO PEAK (hrs)=	1.33	1.43	1.33	
RUNOFF VOLUME (mm)=	77.03	17.03	43.43	
TOTAL RAINFALL (mm)=	78.03	78.03	78.03	
RUNOFF COEFFICIENT =	0.99	0.22	0.56	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| RESERVOIR(0010)|

IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0810	0.0465
0.0010	0.0012	0.0910	0.0530
0.0060	0.0145	0.1120	0.0643
0.0100	0.0157	0.1190	0.0683
0.0430	0.0262	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0008)	2.530	0.679	1.33	43.43
OUTFLOW: ID= 1 (0010)	2.530	0.110	1.73	43.31

PEAK FLOW REDUCTION [Qout/Qin](%)= 16.18
TIME SHIFT OF PEAK FLOW (min)= 24.00
MAXIMUM STORAGE USED (ha.m.)= 0.0631

CHICAGO STORM
Ptotal= 78.03 mm

IDF curve parameters: A=1770.000
B= 4.000
C= 0.820
used in: INTENSITY = A / (t + B)^C

Duration of storm = 4.00 hrs
Storm time step = 10.00 min
Time to peak ratio = 0.33

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.17	4.34	1.17	38.21	2.17	10.60	3.17	5.19
0.33	5.00	1.33	203.31	2.33	8.96	3.33	4.81
0.50	5.92	1.50	50.96	2.50	7.78	3.50	4.48
0.67	7.33	1.67	25.51	2.67	6.90	3.67	4.20
0.83	9.77	1.83	17.18	2.83	6.21	3.83	3.96
1.00	15.10	2.00	13.06	3.00	5.65	4.00	3.74

CALIB
NASHYD (0027)
ID= 1 DT= 1.0 min

Area (ha)= 17.26 Curve Number (CN)= 60.0
Ia (mm)= 5.60 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.95

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	4.34	1.017	38.21	2.017	10.60	3.02	5.19
0.033	4.34	1.033	38.21	2.033	10.60	3.03	5.19
0.050	4.34	1.050	38.21	2.050	10.60	3.05	5.19
0.067	4.34	1.067	38.21	2.067	10.60	3.07	5.19
0.083	4.34	1.083	38.21	2.083	10.60	3.08	5.19
0.100	4.34	1.100	38.21	2.100	10.60	3.10	5.19
0.117	4.34	1.117	38.21	2.117	10.60	3.12	5.19
0.133	4.34	1.133	38.21	2.133	10.60	3.13	5.19
0.150	4.34	1.150	38.21	2.150	10.60	3.15	5.19
0.167	4.34	1.167	38.21	2.167	10.60	3.17	5.19
0.183	5.00	1.183	203.30	2.183	8.96	3.18	4.81
0.200	5.00	1.200	203.31	2.200	8.96	3.20	4.81
0.217	5.00	1.217	203.31	2.217	8.96	3.22	4.81
0.233	5.00	1.233	203.31	2.233	8.96	3.23	4.81
0.250	5.00	1.250	203.31	2.250	8.96	3.25	4.81
0.267	5.00	1.267	203.31	2.267	8.96	3.27	4.81
0.283	5.00	1.283	203.31	2.283	8.96	3.28	4.81
0.300	5.00	1.300	203.31	2.300	8.96	3.30	4.81
0.317	5.00	1.317	203.31	2.317	8.96	3.32	4.81
0.333	5.00	1.333	203.31	2.333	8.96	3.33	4.81
0.350	5.92	1.350	50.97	2.350	7.78	3.35	4.48
0.367	5.92	1.367	50.96	2.367	7.78	3.37	4.48
0.383	5.92	1.383	50.96	2.383	7.78	3.38	4.48
0.400	5.92	1.400	50.96	2.400	7.78	3.40	4.48
0.417	5.92	1.417	50.96	2.417	7.78	3.42	4.48
0.433	5.92	1.433	50.96	2.433	7.78	3.43	4.48
0.450	5.92	1.450	50.96	2.450	7.78	3.45	4.48
0.467	5.92	1.467	50.96	2.467	7.78	3.47	4.48
0.483	5.92	1.483	50.96	2.483	7.78	3.48	4.48
0.500	5.92	1.500	50.96	2.500	7.78	3.50	4.48
0.517	7.33	1.517	25.51	2.517	6.90	3.52	4.20
0.533	7.33	1.533	25.51	2.533	6.90	3.53	4.20
0.550	7.33	1.550	25.51	2.550	6.90	3.55	4.20
0.567	7.33	1.567	25.51	2.567	6.90	3.57	4.20
0.583	7.33	1.583	25.51	2.583	6.90	3.58	4.20
0.600	7.33	1.600	25.51	2.600	6.90	3.60	4.20
0.617	7.33	1.617	25.51	2.617	6.90	3.62	4.20
0.633	7.33	1.633	25.51	2.633	6.90	3.63	4.20
0.650	7.33	1.650	25.51	2.650	6.90	3.65	4.20

0.667	7.33	1.667	25.51	2.667	6.90	3.67	4.20
0.683	9.77	1.683	17.18	2.683	6.21	3.68	3.96
0.700	9.77	1.700	17.18	2.700	6.21	3.70	3.96
0.717	9.77	1.717	17.18	2.717	6.21	3.72	3.96
0.733	9.77	1.733	17.18	2.733	6.21	3.73	3.96
0.750	9.77	1.750	17.18	2.750	6.21	3.75	3.96
0.767	9.77	1.767	17.18	2.767	6.21	3.77	3.96
0.783	9.77	1.783	17.18	2.783	6.21	3.78	3.96
0.800	9.77	1.800	17.18	2.800	6.21	3.80	3.96
0.817	9.77	1.817	17.18	2.817	6.21	3.82	3.96
0.833	9.77	1.833	17.18	2.833	6.21	3.83	3.96
0.850	15.10	1.850	13.06	2.850	5.65	3.85	3.74
0.867	15.10	1.867	13.06	2.867	5.65	3.87	3.74
0.883	15.10	1.883	13.06	2.883	5.65	3.88	3.74
0.900	15.10	1.900	13.06	2.900	5.65	3.90	3.74
0.917	15.10	1.917	13.06	2.917	5.65	3.92	3.74
0.933	15.10	1.933	13.06	2.933	5.65	3.93	3.74
0.950	15.10	1.950	13.06	2.950	5.65	3.95	3.74
0.967	15.10	1.967	13.06	2.967	5.65	3.97	3.74
0.983	15.10	1.983	13.06	2.983	5.65	3.98	3.74
1.000	15.10	2.000	13.06	3.000	5.65	4.00	3.74

Unit Hyd Qpeak (cms)= 0.694

PEAK FLOW (cms)= 0.426 (i)
TIME TO PEAK (hrs)= 2.500
RUNOFF VOLUME (mm)= 21.698
TOTAL RAINFALL (mm)= 78.027
RUNOFF COEFFICIENT = 0.278

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

ADD HYD (0004)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):	2.53	0.110	1.73	43.31
+ ID2= 2 (0011):	0.80	0.115	1.47	66.55
ID = 3 (0004):	3.33	0.218	1.57	48.89

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0004):	3.33	0.218	1.57	48.89
+ ID2= 2 (0027):	17.26	0.426	2.50	21.70
ID = 1 (0004):	20.59	0.563	2.37	26.10

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0004):	20.59	0.563	2.37	26.10
+ ID2= 2 (0003):	4.49	0.064	2.72	32.06
ID = 3 (0004):	25.08	0.626	2.37	27.16

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)
3 + 2 = 1

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 3 (0004):	25.08	0.626	2.37	27.16
+ ID2= 2 (0009):	2.07	0.420	1.40	44.42
ID = 1 (0004):	27.15	0.674	1.42	28.48

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

V V I SSSSS U U A L (v 5.0.2027)
V V I SS U U A A L
V V I SS U U AAAAA L
V V I SS U U A A L

```
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\9aca2527-dd57-4a92-bbac-426954c2e
Summary filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\9aca2527-dd57-4a92-bbac-426954c2e

DATE: 12/19/2018 TIME: 10:47:47

USER:

COMMENTS: _____

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

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\41490e84
Ptotal= 44.51 mm	Comments: 2-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.11	3.25	1.78	6.25	8.01	9.25	1.56
0.50	1.11	3.50	1.78	6.50	8.01	9.50	1.56
0.75	1.11	3.75	1.78	6.75	3.56	9.75	1.56
1.00	1.11	4.00	1.78	7.00	3.56	10.00	1.56
1.25	1.11	4.25	2.67	7.25	2.67	10.25	0.89
1.50	1.11	4.50	2.67	7.50	2.67	10.50	0.89
1.75	1.11	4.75	3.56	7.75	2.67	10.75	0.89
2.00	1.11	5.00	3.56	8.00	2.67	11.00	0.89
2.25	1.34	5.25	5.34	8.25	1.56	11.25	0.89
2.50	1.34	5.50	5.34	8.50	1.56	11.50	0.89
2.75	1.34	5.75	21.36	8.75	1.56	11.75	0.89
3.00	1.34	6.00	58.75	9.00	1.56	12.00	0.89

CALIB / NASHYD (0025) / ID= 1 DT= 1.0 min	Area (ha)= 1.48	Curve Number (CN)= 67.0
	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.34	

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.11	3.017	1.78	6.017	8.01	9.02	1.56
0.033	1.11	3.033	1.78	6.033	8.01	9.03	1.56
0.050	1.11	3.050	1.78	6.050	8.01	9.05	1.56
0.067	1.11	3.067	1.78	6.067	8.01	9.07	1.56
0.083	1.11	3.083	1.78	6.083	8.01	9.08	1.56
0.100	1.11	3.100	1.78	6.100	8.01	9.10	1.56
0.117	1.11	3.117	1.78	6.117	8.01	9.12	1.56
0.133	1.11	3.133	1.78	6.133	8.01	9.13	1.56
0.150	1.11	3.150	1.78	6.150	8.01	9.15	1.56
0.167	1.11	3.167	1.78	6.167	8.01	9.17	1.56
0.183	1.11	3.183	1.78	6.183	8.01	9.18	1.56
0.200	1.11	3.200	1.78	6.200	8.01	9.20	1.56
0.217	1.11	3.217	1.78	6.217	8.01	9.22	1.56
0.233	1.11	3.233	1.78	6.233	8.01	9.23	1.56
0.250	1.11	3.250	1.78	6.250	8.01	9.25	1.56
0.267	1.11	3.267	1.78	6.267	8.01	9.27	1.56
0.283	1.11	3.283	1.78	6.283	8.01	9.28	1.56

0.300	1.11	3.300	1.78	6.300	8.01	9.30	1.56
0.317	1.11	3.317	1.78	6.317	8.01	9.32	1.56
0.333	1.11	3.333	1.78	6.333	8.01	9.33	1.56
0.350	1.11	3.350	1.78	6.350	8.01	9.35	1.56
0.367	1.11	3.367	1.78	6.367	8.01	9.37	1.56
0.383	1.11	3.383	1.78	6.383	8.01	9.38	1.56
0.400	1.11	3.400	1.78	6.400	8.01	9.40	1.56
0.417	1.11	3.417	1.78	6.417	8.01	9.42	1.56
0.433	1.11	3.433	1.78	6.433	8.01	9.43	1.56
0.450	1.11	3.450	1.78	6.450	8.01	9.45	1.56
0.467	1.11	3.467	1.78	6.467	8.01	9.47	1.56
0.483	1.11	3.483	1.78	6.483	8.01	9.48	1.56
0.500	1.11	3.500	1.78	6.500	8.00	9.50	1.56
0.517	1.11	3.517	1.78	6.517	3.56	9.52	1.56
0.533	1.11	3.533	1.78	6.533	3.56	9.53	1.56
0.550	1.11	3.550	1.78	6.550	3.56	9.55	1.56
0.567	1.11	3.567	1.78	6.567	3.56	9.57	1.56
0.583	1.11	3.583	1.78	6.583	3.56	9.58	1.56
0.600	1.11	3.600	1.78	6.600	3.56	9.60	1.56
0.617	1.11	3.617	1.78	6.617	3.56	9.62	1.56
0.633	1.11	3.633	1.78	6.633	3.56	9.63	1.56
0.650	1.11	3.650	1.78	6.650	3.56	9.65	1.56
0.667	1.11	3.667	1.78	6.667	3.56	9.67	1.56
0.683	1.11	3.683	1.78	6.683	3.56	9.68	1.56
0.700	1.11	3.700	1.78	6.700	3.56	9.70	1.56
0.717	1.11	3.717	1.78	6.717	3.56	9.72	1.56
0.733	1.11	3.733	1.78	6.733	3.56	9.73	1.56
0.750	1.11	3.750	1.78	6.750	3.56	9.75	1.56
0.767	1.11	3.767	1.78	6.767	3.56	9.77	1.56
0.783	1.11	3.783	1.78	6.783	3.56	9.78	1.56
0.800	1.11	3.800	1.78	6.800	3.56	9.80	1.56
0.817	1.11	3.817	1.78	6.817	3.56	9.82	1.56
0.833	1.11	3.833	1.78	6.833	3.56	9.83	1.56
0.850	1.11	3.850	1.78	6.850	3.56	9.85	1.56
0.867	1.11	3.867	1.78	6.867	3.56	9.87	1.56
0.883	1.11	3.883	1.78	6.883	3.56	9.88	1.56
0.900	1.11	3.900	1.78	6.900	3.56	9.90	1.56
0.917	1.11	3.917	1.78	6.917	3.56	9.92	1.56
0.933	1.11	3.933	1.78	6.933	3.56	9.93	1.56
0.950	1.11	3.950	1.78	6.950	3.56	9.95	1.56
0.967	1.11	3.967	1.78	6.967	3.56	9.97	1.56
0.983	1.11	3.983	1.78	6.983	3.56	9.98	1.56
1.000	1.11	4.000	1.78	7.000	3.56	10.00	1.56
1.017	1.11	4.017	2.67	7.017	2.67	10.02	0.89
1.033	1.11	4.033	2.67	7.033	2.67	10.03	0.89
1.050	1.11	4.050	2.67	7.050	2.67	10.05	0.89
1.067	1.11	4.067	2.67	7.067	2.67	10.07	0.89
1.083	1.11	4.083	2.67	7.083	2.67	10.08	0.89
1.100	1.11	4.100	2.67	7.100	2.67	10.10	0.89
1.117	1.11	4.117	2.67	7.117	2.67	10.12	0.89
1.133	1.11	4.133	2.67	7.133	2.67	10.13	0.89
1.150	1.11	4.150	2.67	7.150	2.67	10.15	0.89
1.167	1.11	4.167	2.67	7.167	2.67	10.17	0.89
1.183	1.11	4.183	2.67	7.183	2.67	10.18	0.89
1.200	1.11	4.200	2.67	7.200	2.67	10.20	0.89
1.217	1.11	4.217	2.67	7.217	2.67	10.22	0.89
1.233	1.11	4.233	2.67	7.233	2.67	10.23	0.89
1.250	1.11	4.250	2.67	7.250	2.67	10.25	0.89
1.267	1.11	4.267	2.67	7.267	2.67	10.27	0.89
1.283	1.11	4.283	2.67	7.283	2.67	10.28	0.89
1.300	1.11	4.300	2.67	7.300	2.67	10.30	0.89
1.317	1.11	4.317	2.67	7.317	2.67	10.32	0.89
1.333	1.11	4.333	2.67	7.333	2.67	10.33	0.89
1.350	1.11	4.350	2.67	7.350	2.67	10.35	0.89
1.367	1.11	4.367	2.67	7.367	2.67	10.37	0.89
1.383	1.11	4.383	2.67	7.383	2.67	10.38	0.89
1.400	1.11	4.400	2.67	7.400	2.67	10.40	0.89
1.417	1.11	4.417	2.67	7.417	2.67	10.42	0.89
1.433	1.11	4.433	2.67	7.433	2.67	10.43	0.89
1.450	1.11	4.450	2.67	7.450	2.67	10.45	0.89
1.467	1.11	4.467	2.67	7.467	2.67	10.47	0.89
1.483	1.11	4.483	2.67	7.483	2.67	10.48	0.89
1.500	1.11	4.500	2.67	7.500	2.67	10.50	0.89
1.517	1.11	4.517	3.56	7.517	2.67	10.52	0.89
1.533	1.11	4.533	3.56	7.533	2.67	10.53	0.89
1.550	1.11	4.550	3.56	7.550	2.67	10.55	0.89
1.567	1.11	4.567	3.56	7.567	2.67	10.57	0.89
1.583	1.11	4.583	3.56	7.583	2.67	10.58	0.89
1.600	1.11	4.600	3.56	7.600	2.67	10.60	0.89
1.617	1.11	4.617	3.56	7.617	2.67	10.62	0.89
1.633	1.11	4.633	3.56	7.633	2.67	10.63	0.89
1.650	1.11	4.650	3.56	7.650	2.67	10.65	0.89
1.667	1.11	4.667	3.56	7.667	2.67	10.67	0.89
1.683	1.11	4.683	3.56	7.683	2.67	10.68	0.89
1.700	1.11	4.700	3.56	7.700	2.67	10.70	0.89
1.717	1.11	4.717	3.56	7.717	2.67	10.72	0.89
1.733	1.11	4.733	3.56	7.733	2.67	10.73	0.89
1.750	1.11	4.750	3.56	7.750	2.67	10.75	0.89
1.767	1.11	4.767	3.56	7.767	2.67	10.77	0.89
1.783	1.11	4.783	3.56	7.783	2.67	10.78	0.89
1.800	1.11	4.800	3.56	7.800	2.67	10.80	0.89

1.817	1.11	4.817	3.56	7.817	2.67	10.82	0.89
1.833	1.11	4.833	3.56	7.833	2.67	10.83	0.89
1.850	1.11	4.850	3.56	7.850	2.67	10.85	0.89
1.867	1.11	4.867	3.56	7.867	2.67	10.87	0.89
1.883	1.11	4.883	3.56	7.883	2.67	10.88	0.89
1.900	1.11	4.900	3.56	7.900	2.67	10.90	0.89
1.917	1.11	4.917	3.56	7.917	2.67	10.92	0.89
1.933	1.11	4.933	3.56	7.933	2.67	10.93	0.89
1.950	1.11	4.950	3.56	7.950	2.67	10.95	0.89
1.967	1.11	4.967	3.56	7.967	2.67	10.97	0.89
1.983	1.11	4.983	3.56	7.983	2.67	10.98	0.89
2.000	1.11	5.000	3.56	8.000	2.67	11.00	0.89
2.017	1.34	5.017	5.34	8.017	1.56	11.02	0.89
2.033	1.34	5.033	5.34	8.033	1.56	11.03	0.89
2.050	1.34	5.050	5.34	8.050	1.56	11.05	0.89
2.067	1.34	5.067	5.34	8.067	1.56	11.07	0.89
2.083	1.34	5.083	5.34	8.083	1.56	11.08	0.89
2.100	1.34	5.100	5.34	8.100	1.56	11.10	0.89
2.117	1.34	5.117	5.34	8.117	1.56	11.12	0.89
2.133	1.34	5.133	5.34	8.133	1.56	11.13	0.89
2.150	1.34	5.150	5.34	8.150	1.56	11.15	0.89
2.167	1.34	5.167	5.34	8.167	1.56	11.17	0.89
2.183	1.34	5.183	5.34	8.183	1.56	11.18	0.89
2.200	1.34	5.200	5.34	8.200	1.56	11.20	0.89
2.217	1.34	5.217	5.34	8.217	1.56	11.22	0.89
2.233	1.34	5.233	5.34	8.233	1.56	11.23	0.89
2.250	1.34	5.250	5.34	8.250	1.56	11.25	0.89
2.267	1.34	5.267	5.34	8.267	1.56	11.27	0.89
2.283	1.34	5.283	5.34	8.283	1.56	11.28	0.89
2.300	1.34	5.300	5.34	8.300	1.56	11.30	0.89
2.317	1.34	5.317	5.34	8.317	1.56	11.32	0.89
2.333	1.34	5.333	5.34	8.333	1.56	11.33	0.89
2.350	1.34	5.350	5.34	8.350	1.56	11.35	0.89
2.367	1.34	5.367	5.34	8.367	1.56	11.37	0.89
2.383	1.34	5.383	5.34	8.383	1.56	11.38	0.89
2.400	1.34	5.400	5.34	8.400	1.56	11.40	0.89
2.417	1.34	5.417	5.34	8.417	1.56	11.42	0.89
2.433	1.34	5.433	5.34	8.433	1.56	11.43	0.89
2.450	1.34	5.450	5.34	8.450	1.56	11.45	0.89
2.467	1.34	5.467	5.34	8.467	1.56	11.47	0.89
2.483	1.34	5.483	5.34	8.483	1.56	11.48	0.89
2.500	1.34	5.500	5.36	8.500	1.56	11.50	0.89
2.517	1.34	5.517	21.36	8.517	1.56	11.52	0.89
2.533	1.34	5.533	21.36	8.533	1.56	11.53	0.89
2.550	1.34	5.550	21.36	8.550	1.56	11.55	0.89
2.567	1.34	5.567	21.36	8.567	1.56	11.57	0.89
2.583	1.34	5.583	21.36	8.583	1.56	11.58	0.89
2.600	1.34	5.600	21.36	8.600	1.56	11.60	0.89
2.617	1.34	5.617	21.36	8.617	1.56	11.62	0.89
2.633	1.34	5.633	21.36	8.633	1.56	11.63	0.89
2.650	1.34	5.650	21.36	8.650	1.56	11.65	0.89
2.667	1.34	5.667	21.36	8.667	1.56	11.67	0.89
2.683	1.34	5.683	21.36	8.683	1.56	11.68	0.89
2.700	1.34	5.700	21.36	8.700	1.56	11.70	0.89
2.717	1.34	5.717	21.36	8.717	1.56	11.72	0.89
2.733	1.34	5.733	21.36	8.733	1.56	11.73	0.89
2.750	1.34	5.750	21.41	8.750	1.56	11.75	0.89
2.767	1.34	5.767	58.75	8.767	1.56	11.77	0.89
2.783	1.34	5.783	58.75	8.783	1.56	11.78	0.89
2.800	1.34	5.800	58.75	8.800	1.56	11.80	0.89
2.817	1.34	5.817	58.75	8.817	1.56	11.82	0.89
2.833	1.34	5.833	58.75	8.833	1.56	11.83	0.89
2.850	1.34	5.850	58.75	8.850	1.56	11.85	0.89
2.867	1.34	5.867	58.75	8.867	1.56	11.87	0.89
2.883	1.34	5.883	58.75	8.883	1.56	11.88	0.89
2.900	1.34	5.900	58.75	8.900	1.56	11.90	0.89
2.917	1.34	5.917	58.75	8.917	1.56	11.92	0.89
2.933	1.34	5.933	58.75	8.933	1.56	11.93	0.89
2.950	1.34	5.950	58.75	8.950	1.56	11.95	0.89
2.967	1.34	5.967	58.75	8.967	1.56	11.97	0.89
2.983	1.34	5.983	58.75	8.983	1.56	11.98	0.89
3.000	1.34	6.000	58.68	9.000	1.56	12.00	0.89

Unit Hyd Qpeak (cms)= 0.166

PEAK FLOW (cms)= 0.028 (i)
TIME TO PEAK (hrs)= 6.250
RUNOFF VOLUME (mm)= 9.482
TOTAL RAINFALL (mm)= 44.510
RUNOFF COEFFICIENT = 0.213

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

READ STORM	Filename:	C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\41490e84
Ptotal= 44.51 mm	Comments:	2-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.11	3.25	1.78	6.25	8.01	9.25	1.56
0.50	1.11	3.50	1.78	6.50	8.01	9.50	1.56
0.75	1.11	3.75	1.78	6.75	3.56	9.75	1.56
1.00	1.11	4.00	1.78	7.00	3.56	10.00	1.56
1.25	1.11	4.25	2.67	7.25	2.67	10.25	0.89
1.50	1.11	4.50	2.67	7.50	2.67	10.50	0.89
1.75	1.11	4.75	3.56	7.75	2.67	10.75	0.89
2.00	1.11	5.00	3.56	8.00	2.67	11.00	0.89
2.25	1.34	5.25	5.34	8.25	1.56	11.25	0.89
2.50	1.34	5.50	5.34	8.50	1.56	11.50	0.89
2.75	1.34	5.75	21.36	8.75	1.56	11.75	0.89
3.00	1.34	6.00	58.75	9.00	1.56	12.00	0.89

CALIB
STANDHYD (0001)
ID= 1 DT= 1.0 min

Area (ha)= 3.01
Total Imp(%)= 57.00 Dir. Conn.(%)= 46.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.72	1.29
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.50	3.00
Length	(m)=	141.66	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.11	3.017	1.78	6.017	8.01	9.02	1.56
0.033	1.11	3.033	1.78	6.033	8.01	9.03	1.56
0.050	1.11	3.050	1.78	6.050	8.01	9.05	1.56
0.067	1.11	3.067	1.78	6.067	8.01	9.07	1.56
0.083	1.11	3.083	1.78	6.083	8.01	9.08	1.56
0.100	1.11	3.100	1.78	6.100	8.01	9.10	1.56
0.117	1.11	3.117	1.78	6.117	8.01	9.12	1.56
0.133	1.11	3.133	1.78	6.133	8.01	9.13	1.56
0.150	1.11	3.150	1.78	6.150	8.01	9.15	1.56
0.167	1.11	3.167	1.78	6.167	8.01	9.17	1.56
0.183	1.11	3.183	1.78	6.183	8.01	9.18	1.56
0.200	1.11	3.200	1.78	6.200	8.01	9.20	1.56
0.217	1.11	3.217	1.78	6.217	8.01	9.22	1.56
0.233	1.11	3.233	1.78	6.233	8.01	9.23	1.56
0.250	1.11	3.250	1.78	6.250	8.01	9.25	1.56
0.267	1.11	3.267	1.78	6.267	8.01	9.27	1.56
0.283	1.11	3.283	1.78	6.283	8.01	9.28	1.56
0.300	1.11	3.300	1.78	6.300	8.01	9.30	1.56
0.317	1.11	3.317	1.78	6.317	8.01	9.32	1.56
0.333	1.11	3.333	1.78	6.333	8.01	9.33	1.56
0.350	1.11	3.350	1.78	6.350	8.01	9.35	1.56
0.367	1.11	3.367	1.78	6.367	8.01	9.37	1.56
0.383	1.11	3.383	1.78	6.383	8.01	9.38	1.56
0.400	1.11	3.400	1.78	6.400	8.01	9.40	1.56
0.417	1.11	3.417	1.78	6.417	8.01	9.42	1.56
0.433	1.11	3.433	1.78	6.433	8.01	9.43	1.56
0.450	1.11	3.450	1.78	6.450	8.01	9.45	1.56
0.467	1.11	3.467	1.78	6.467	8.01	9.47	1.56
0.483	1.11	3.483	1.78	6.483	8.01	9.48	1.56
0.500	1.11	3.500	1.78	6.500	8.00	9.50	1.56
0.517	1.11	3.517	1.78	6.517	3.56	9.52	1.56
0.533	1.11	3.533	1.78	6.533	3.56	9.53	1.56
0.550	1.11	3.550	1.78	6.550	3.56	9.55	1.56
0.567	1.11	3.567	1.78	6.567	3.56	9.57	1.56
0.583	1.11	3.583	1.78	6.583	3.56	9.58	1.56
0.600	1.11	3.600	1.78	6.600	3.56	9.60	1.56
0.617	1.11	3.617	1.78	6.617	3.56	9.62	1.56
0.633	1.11	3.633	1.78	6.633	3.56	9.63	1.56
0.650	1.11	3.650	1.78	6.650	3.56	9.65	1.56
0.667	1.11	3.667	1.78	6.667	3.56	9.67	1.56
0.683	1.11	3.683	1.78	6.683	3.56	9.68	1.56
0.700	1.11	3.700	1.78	6.700	3.56	9.70	1.56
0.717	1.11	3.717	1.78	6.717	3.56	9.72	1.56
0.733	1.11	3.733	1.78	6.733	3.56	9.73	1.56
0.750	1.11	3.750	1.78	6.750	3.56	9.75	1.56
0.767	1.11	3.767	1.78	6.767	3.56	9.77	1.56
0.783	1.11	3.783	1.78	6.783	3.56	9.78	1.56
0.800	1.11	3.800	1.78	6.800	3.56	9.80	1.56
0.817	1.11	3.817	1.78	6.817	3.56	9.82	1.56
0.833	1.11	3.833	1.78	6.833	3.56	9.83	1.56
0.850	1.11	3.850	1.78	6.850	3.56	9.85	1.56
0.867	1.11	3.867	1.78	6.867	3.56	9.87	1.56
0.883	1.11	3.883	1.78	6.883	3.56	9.88	1.56
0.900	1.11	3.900	1.78	6.900	3.56	9.90	1.56
0.917	1.11	3.917	1.78	6.917	3.56	9.92	1.56
0.933	1.11	3.933	1.78	6.933	3.56	9.93	1.56

0.950	1.11	3.950	1.78	6.950	3.56	9.95	1.56
0.967	1.11	3.967	1.78	6.967	3.56	9.97	1.56
0.983	1.11	3.983	1.78	6.983	3.56	9.98	1.56
1.000	1.11	4.000	1.78	7.000	3.56	10.00	1.56
1.017	1.11	4.017	2.67	7.017	2.67	10.02	0.89
1.033	1.11	4.033	2.67	7.033	2.67	10.03	0.89
1.050	1.11	4.050	2.67	7.050	2.67	10.05	0.89
1.067	1.11	4.067	2.67	7.067	2.67	10.07	0.89
1.083	1.11	4.083	2.67	7.083	2.67	10.08	0.89
1.100	1.11	4.100	2.67	7.100	2.67	10.10	0.89
1.117	1.11	4.117	2.67	7.117	2.67	10.12	0.89
1.133	1.11	4.133	2.67	7.133	2.67	10.13	0.89
1.150	1.11	4.150	2.67	7.150	2.67	10.15	0.89
1.167	1.11	4.167	2.67	7.167	2.67	10.17	0.89
1.183	1.11	4.183	2.67	7.183	2.67	10.18	0.89
1.200	1.11	4.200	2.67	7.200	2.67	10.20	0.89
1.217	1.11	4.217	2.67	7.217	2.67	10.22	0.89
1.233	1.11	4.233	2.67	7.233	2.67	10.23	0.89
1.250	1.11	4.250	2.67	7.250	2.67	10.25	0.89
1.267	1.11	4.267	2.67	7.267	2.67	10.27	0.89
1.283	1.11	4.283	2.67	7.283	2.67	10.28	0.89
1.300	1.11	4.300	2.67	7.300	2.67	10.30	0.89
1.317	1.11	4.317	2.67	7.317	2.67	10.32	0.89
1.333	1.11	4.333	2.67	7.333	2.67	10.33	0.89
1.350	1.11	4.350	2.67	7.350	2.67	10.35	0.89
1.367	1.11	4.367	2.67	7.367	2.67	10.37	0.89
1.383	1.11	4.383	2.67	7.383	2.67	10.38	0.89
1.400	1.11	4.400	2.67	7.400	2.67	10.40	0.89
1.417	1.11	4.417	2.67	7.417	2.67	10.42	0.89
1.433	1.11	4.433	2.67	7.433	2.67	10.43	0.89
1.450	1.11	4.450	2.67	7.450	2.67	10.45	0.89
1.467	1.11	4.467	2.67	7.467	2.67	10.47	0.89
1.483	1.11	4.483	2.67	7.483	2.67	10.48	0.89
1.500	1.11	4.500	2.67	7.500	2.67	10.50	0.89
1.517	1.11	4.517	3.56	7.517	2.67	10.52	0.89
1.533	1.11	4.533	3.56	7.533	2.67	10.53	0.89
1.550	1.11	4.550	3.56	7.550	2.67	10.55	0.89
1.567	1.11	4.567	3.56	7.567	2.67	10.57	0.89
1.583	1.11	4.583	3.56	7.583	2.67	10.58	0.89
1.600	1.11	4.600	3.56	7.600	2.67	10.60	0.89
1.617	1.11	4.617	3.56	7.617	2.67	10.62	0.89
1.633	1.11	4.633	3.56	7.633	2.67	10.63	0.89
1.650	1.11	4.650	3.56	7.650	2.67	10.65	0.89
1.667	1.11	4.667	3.56	7.667	2.67	10.67	0.89
1.683	1.11	4.683	3.56	7.683	2.67	10.68	0.89
1.700	1.11	4.700	3.56	7.700	2.67	10.70	0.89
1.717	1.11	4.717	3.56	7.717	2.67	10.72	0.89
1.733	1.11	4.733	3.56	7.733	2.67	10.73	0.89
1.750	1.11	4.750	3.56	7.750	2.67	10.75	0.89
1.767	1.11	4.767	3.56	7.767	2.67	10.77	0.89
1.783	1.11	4.783	3.56	7.783	2.67	10.78	0.89
1.800	1.11	4.800	3.56	7.800	2.67	10.80	0.89
1.817	1.11	4.817	3.56	7.817	2.67	10.82	0.89
1.833	1.11	4.833	3.56	7.833	2.67	10.83	0.89
1.850	1.11	4.850	3.56	7.850	2.67	10.85	0.89
1.867	1.11	4.867	3.56	7.867	2.67	10.87	0.89
1.883	1.11	4.883	3.56	7.883	2.67	10.88	0.89
1.900	1.11	4.900	3.56	7.900	2.67	10.90	0.89
1.917	1.11	4.917	3.56	7.917	2.67	10.92	0.89
1.933	1.11	4.933	3.56	7.933	2.67	10.93	0.89
1.950	1.11	4.950	3.56	7.950	2.67	10.95	0.89
1.967	1.11	4.967	3.56	7.967	2.67	10.97	0.89
1.983	1.11	4.983	3.56	7.983	2.67	10.98	0.89
2.000	1.11	5.000	3.56	8.000	2.67	11.00	0.89
2.017	1.34	5.017	5.34	8.017	1.56	11.02	0.89
2.033	1.34	5.033	5.34	8.033	1.56	11.03	0.89
2.050	1.34	5.050	5.34	8.050	1.56	11.05	0.89
2.067	1.34	5.067	5.34	8.067	1.56	11.07	0.89
2.083	1.34	5.083	5.34	8.083	1.56	11.08	0.89
2.100	1.34	5.100	5.34	8.100	1.56	11.10	0.89
2.117	1.34	5.117	5.34	8.117	1.56	11.12	0.89
2.133	1.34	5.133	5.34	8.133	1.56	11.13	0.89
2.150	1.34	5.150	5.34	8.150	1.56	11.15	0.89
2.167	1.34	5.167	5.34	8.167	1.56	11.17	0.89
2.183	1.34	5.183	5.34	8.183	1.56	11.18	0.89
2.200	1.34	5.200	5.34	8.200	1.56	11.20	0.89
2.217	1.34	5.217	5.34	8.217	1.56	11.22	0.89
2.233	1.34	5.233	5.34	8.233	1.56	11.23	0.89
2.250	1.34	5.250	5.34	8.250	1.56	11.25	0.89
2.267	1.34	5.267	5.34	8.267	1.56	11.27	0.89
2.283	1.34	5.283	5.34	8.283	1.56	11.28	0.89
2.300	1.34	5.300	5.34	8.300	1.56	11.30	0.89
2.317	1.34	5.317	5.34	8.317	1.56	11.32	0.89
2.333	1.34	5.333	5.34	8.333	1.56	11.33	0.89
2.350	1.34	5.350	5.34	8.350	1.56	11.35	0.89
2.367	1.34	5.367	5.34	8.367	1.56	11.37	0.89
2.383	1.34	5.383	5.34	8.383	1.56	11.38	0.89
2.400	1.34	5.400	5.34	8.400	1.56	11.40	0.89
2.417	1.34	5.417	5.34	8.417	1.56	11.42	0.89
2.433	1.34	5.433	5.34	8.433	1.56	11.43	0.89
2.450	1.34	5.450	5.34	8.450	1.56	11.45	0.89

2.467	1.34	5.467	5.34	8.467	1.56	11.47	0.89
2.483	1.34	5.483	5.34	8.483	1.56	11.48	0.89
2.500	1.34	5.500	5.36	8.500	1.56	11.50	0.89
2.517	1.34	5.517	21.36	8.517	1.56	11.52	0.89
2.533	1.34	5.533	21.36	8.533	1.56	11.53	0.89
2.550	1.34	5.550	21.36	8.550	1.56	11.55	0.89
2.567	1.34	5.567	21.36	8.567	1.56	11.57	0.89
2.583	1.34	5.583	21.36	8.583	1.56	11.58	0.89
2.600	1.34	5.600	21.36	8.600	1.56	11.60	0.89
2.617	1.34	5.617	21.36	8.617	1.56	11.62	0.89
2.633	1.34	5.633	21.36	8.633	1.56	11.63	0.89
2.650	1.34	5.650	21.36	8.650	1.56	11.65	0.89
2.667	1.34	5.667	21.36	8.667	1.56	11.67	0.89
2.683	1.34	5.683	21.36	8.683	1.56	11.68	0.89
2.700	1.34	5.700	21.36	8.700	1.56	11.70	0.89
2.717	1.34	5.717	21.36	8.717	1.56	11.72	0.89
2.733	1.34	5.733	21.36	8.733	1.56	11.73	0.89
2.750	1.34	5.750	21.41	8.750	1.56	11.75	0.89
2.767	1.34	5.767	58.75	8.767	1.56	11.77	0.89
2.783	1.34	5.783	58.75	8.783	1.56	11.78	0.89
2.800	1.34	5.800	58.75	8.800	1.56	11.80	0.89
2.817	1.34	5.817	58.75	8.817	1.56	11.82	0.89
2.833	1.34	5.833	58.75	8.833	1.56	11.83	0.89
2.850	1.34	5.850	58.75	8.850	1.56	11.85	0.89
2.867	1.34	5.867	58.75	8.867	1.56	11.87	0.89
2.883	1.34	5.883	58.75	8.883	1.56	11.88	0.89
2.900	1.34	5.900	58.75	8.900	1.56	11.90	0.89
2.917	1.34	5.917	58.75	8.917	1.56	11.92	0.89
2.933	1.34	5.933	58.75	8.933	1.56	11.93	0.89
2.950	1.34	5.950	58.75	8.950	1.56	11.95	0.89
2.967	1.34	5.967	58.75	8.967	1.56	11.97	0.89
2.983	1.34	5.983	58.75	8.983	1.56	11.98	0.89
3.000	1.34	6.000	58.68	9.000	1.56	12.00	0.89

Max.Eff.Inten.(mm/hr)=	58.75	12.52		
over (min)	5.00	11.00		
Storage Coeff. (min)=	3.45 (ii)	10.97 (ii)		
Unit Hyd. Tpeak (min)=	5.00	11.00		
Unit Hyd. peak (cms)=	0.28	0.10		
			TOTALS	
PEAK FLOW (cms)=	0.22	0.03	0.246 (iii)	
TIME TO PEAK (hrs)=	6.00	6.10	6.00	
RUNOFF VOLUME (mm)=	43.51	6.11	23.31	
TOTAL RAINFALL (mm)=	44.51	44.51	44.51	
RUNOFF COEFFICIENT =	0.98	0.14	0.52	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0016)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0001):		3.01	0.246	6.00	23.31
+ ID2= 2 (0025):		1.48	0.028	6.25	9.48
ID = 3 (0016):		4.49	0.261	6.00	18.76

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0003)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0410	0.0864
	0.0000	0.0281	0.0800	0.1533
	0.0010	0.0321	0.0900	0.1746
	0.0040	0.0479	0.1110	0.2118
	0.0070	0.0518	0.1180	0.2246

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0016)	4.490	0.261	6.00	18.76
OUTFLOW: ID= 1 (0003)	4.490	0.017	8.05	11.42

PEAK FLOW REDUCTION [Qout/Qin](%)= 6.36
TIME SHIFT OF PEAK FLOW (min)=123.00
MAXIMUM STORAGE USED (ha.m.)= 0.0616

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppD

		ata\Local\Temp\
		79084dd1-c78d-40ca-a50a-120316a195ef\41490e84
Ptotal= 44.51 mm	Comments:	2-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.11	3.25	1.78	6.25	8.01	9.25	1.56
0.50	1.11	3.50	1.78	6.50	8.01	9.50	1.56
0.75	1.11	3.75	1.78	6.75	3.56	9.75	1.56
1.00	1.11	4.00	1.78	7.00	3.56	10.00	1.56
1.25	1.11	4.25	2.67	7.25	2.67	10.25	0.89
1.50	1.11	4.50	2.67	7.50	2.67	10.50	0.89
1.75	1.11	4.75	3.56	7.75	2.67	10.75	0.89
2.00	1.11	5.00	3.56	8.00	2.67	11.00	0.89
2.25	1.34	5.25	5.34	8.25	1.56	11.25	0.89
2.50	1.34	5.50	5.34	8.50	1.56	11.50	0.89
2.75	1.34	5.75	21.36	8.75	1.56	11.75	0.89
3.00	1.34	6.00	58.75	9.00	1.56	12.00	0.89

CALIB NASHYD (0026)	Area (ha)=	0.27 Curve Number (CN)= 71.0
ID= 1 DT= 1.0 min	Ia (mm)=	3.00 # of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.02

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.11	3.017	1.78	6.017	8.01	9.02	1.56
0.033	1.11	3.033	1.78	6.033	8.01	9.03	1.56
0.050	1.11	3.050	1.78	6.050	8.01	9.05	1.56
0.067	1.11	3.067	1.78	6.067	8.01	9.07	1.56
0.083	1.11	3.083	1.78	6.083	8.01	9.08	1.56
0.100	1.11	3.100	1.78	6.100	8.01	9.10	1.56
0.117	1.11	3.117	1.78	6.117	8.01	9.12	1.56
0.133	1.11	3.133	1.78	6.133	8.01	9.13	1.56
0.150	1.11	3.150	1.78	6.150	8.01	9.15	1.56
0.167	1.11	3.167	1.78	6.167	8.01	9.17	1.56
0.183	1.11	3.183	1.78	6.183	8.01	9.18	1.56
0.200	1.11	3.200	1.78	6.200	8.01	9.20	1.56
0.217	1.11	3.217	1.78	6.217	8.01	9.22	1.56
0.233	1.11	3.233	1.78	6.233	8.01	9.23	1.56
0.250	1.11	3.250	1.78	6.250	8.01	9.25	1.56
0.267	1.11	3.267	1.78	6.267	8.01	9.27	1.56
0.283	1.11	3.283	1.78	6.283	8.01	9.28	1.56
0.300	1.11	3.300	1.78	6.300	8.01	9.30	1.56
0.317	1.11	3.317	1.78	6.317	8.01	9.32	1.56
0.333	1.11	3.333	1.78	6.333	8.01	9.33	1.56
0.350	1.11	3.350	1.78	6.350	8.01	9.35	1.56
0.367	1.11	3.367	1.78	6.367	8.01	9.37	1.56
0.383	1.11	3.383	1.78	6.383	8.01	9.38	1.56
0.400	1.11	3.400	1.78	6.400	8.01	9.40	1.56
0.417	1.11	3.417	1.78	6.417	8.01	9.42	1.56
0.433	1.11	3.433	1.78	6.433	8.01	9.43	1.56
0.450	1.11	3.450	1.78	6.450	8.01	9.45	1.56
0.467	1.11	3.467	1.78	6.467	8.01	9.47	1.56
0.483	1.11	3.483	1.78	6.483	8.01	9.48	1.56
0.500	1.11	3.500	1.78	6.500	8.00	9.50	1.56
0.517	1.11	3.517	1.78	6.517	3.56	9.52	1.56
0.533	1.11	3.533	1.78	6.533	3.56	9.53	1.56
0.550	1.11	3.550	1.78	6.550	3.56	9.55	1.56
0.567	1.11	3.567	1.78	6.567	3.56	9.57	1.56
0.583	1.11	3.583	1.78	6.583	3.56	9.58	1.56
0.600	1.11	3.600	1.78	6.600	3.56	9.60	1.56
0.617	1.11	3.617	1.78	6.617	3.56	9.62	1.56
0.633	1.11	3.633	1.78	6.633	3.56	9.63	1.56
0.650	1.11	3.650	1.78	6.650	3.56	9.65	1.56
0.667	1.11	3.667	1.78	6.667	3.56	9.67	1.56
0.683	1.11	3.683	1.78	6.683	3.56	9.68	1.56
0.700	1.11	3.700	1.78	6.700	3.56	9.70	1.56
0.717	1.11	3.717	1.78	6.717	3.56	9.72	1.56
0.733	1.11	3.733	1.78	6.733	3.56	9.73	1.56
0.750	1.11	3.750	1.78	6.750	3.56	9.75	1.56
0.767	1.11	3.767	1.78	6.767	3.56	9.77	1.56
0.783	1.11	3.783	1.78	6.783	3.56	9.78	1.56
0.800	1.11	3.800	1.78	6.800	3.56	9.80	1.56
0.817	1.11	3.817	1.78	6.817	3.56	9.82	1.56
0.833	1.11	3.833	1.78	6.833	3.56	9.83	1.56
0.850	1.11	3.850	1.78	6.850	3.56	9.85	1.56
0.867	1.11	3.867	1.78	6.867	3.56	9.87	1.56
0.883	1.11	3.883	1.78	6.883	3.56	9.88	1.56
0.900	1.11	3.900	1.78	6.900	3.56	9.90	1.56
0.917	1.11	3.917	1.78	6.917	3.56	9.92	1.56
0.933	1.11	3.933	1.78	6.933	3.56	9.93	1.56
0.950	1.11	3.950	1.78	6.950	3.56	9.95	1.56
0.967	1.11	3.967	1.78	6.967	3.56	9.97	1.56

0.983	1.11	3.983	1.78	6.983	3.56	9.98	1.56
1.000	1.11	4.000	1.78	7.000	3.56	10.00	1.56
1.017	1.11	4.017	2.67	7.017	2.67	10.02	0.89
1.033	1.11	4.033	2.67	7.033	2.67	10.03	0.89
1.050	1.11	4.050	2.67	7.050	2.67	10.05	0.89
1.067	1.11	4.067	2.67	7.067	2.67	10.07	0.89
1.083	1.11	4.083	2.67	7.083	2.67	10.08	0.89
1.100	1.11	4.100	2.67	7.100	2.67	10.10	0.89
1.117	1.11	4.117	2.67	7.117	2.67	10.12	0.89
1.133	1.11	4.133	2.67	7.133	2.67	10.13	0.89
1.150	1.11	4.150	2.67	7.150	2.67	10.15	0.89
1.167	1.11	4.167	2.67	7.167	2.67	10.17	0.89
1.183	1.11	4.183	2.67	7.183	2.67	10.18	0.89
1.200	1.11	4.200	2.67	7.200	2.67	10.20	0.89
1.217	1.11	4.217	2.67	7.217	2.67	10.22	0.89
1.233	1.11	4.233	2.67	7.233	2.67	10.23	0.89
1.250	1.11	4.250	2.67	7.250	2.67	10.25	0.89
1.267	1.11	4.267	2.67	7.267	2.67	10.27	0.89
1.283	1.11	4.283	2.67	7.283	2.67	10.28	0.89
1.300	1.11	4.300	2.67	7.300	2.67	10.30	0.89
1.317	1.11	4.317	2.67	7.317	2.67	10.32	0.89
1.333	1.11	4.333	2.67	7.333	2.67	10.33	0.89
1.350	1.11	4.350	2.67	7.350	2.67	10.35	0.89
1.367	1.11	4.367	2.67	7.367	2.67	10.37	0.89
1.383	1.11	4.383	2.67	7.383	2.67	10.38	0.89
1.400	1.11	4.400	2.67	7.400	2.67	10.40	0.89
1.417	1.11	4.417	2.67	7.417	2.67	10.42	0.89
1.433	1.11	4.433	2.67	7.433	2.67	10.43	0.89
1.450	1.11	4.450	2.67	7.450	2.67	10.45	0.89
1.467	1.11	4.467	2.67	7.467	2.67	10.47	0.89
1.483	1.11	4.483	2.67	7.483	2.67	10.48	0.89
1.500	1.11	4.500	2.67	7.500	2.67	10.50	0.89
1.517	1.11	4.517	3.56	7.517	2.67	10.52	0.89
1.533	1.11	4.533	3.56	7.533	2.67	10.53	0.89
1.550	1.11	4.550	3.56	7.550	2.67	10.55	0.89
1.567	1.11	4.567	3.56	7.567	2.67	10.57	0.89
1.583	1.11	4.583	3.56	7.583	2.67	10.58	0.89
1.600	1.11	4.600	3.56	7.600	2.67	10.60	0.89
1.617	1.11	4.617	3.56	7.617	2.67	10.62	0.89
1.633	1.11	4.633	3.56	7.633	2.67	10.63	0.89
1.650	1.11	4.650	3.56	7.650	2.67	10.65	0.89
1.667	1.11	4.667	3.56	7.667	2.67	10.67	0.89
1.683	1.11	4.683	3.56	7.683	2.67	10.68	0.89
1.700	1.11	4.700	3.56	7.700	2.67	10.70	0.89
1.717	1.11	4.717	3.56	7.717	2.67	10.72	0.89
1.733	1.11	4.733	3.56	7.733	2.67	10.73	0.89
1.750	1.11	4.750	3.56	7.750	2.67	10.75	0.89
1.767	1.11	4.767	3.56	7.767	2.67	10.77	0.89
1.783	1.11	4.783	3.56	7.783	2.67	10.78	0.89
1.800	1.11	4.800	3.56	7.800	2.67	10.80	0.89
1.817	1.11	4.817	3.56	7.817	2.67	10.82	0.89
1.833	1.11	4.833	3.56	7.833	2.67	10.83	0.89
1.850	1.11	4.850	3.56	7.850	2.67	10.85	0.89
1.867	1.11	4.867	3.56	7.867	2.67	10.87	0.89
1.883	1.11	4.883	3.56	7.883	2.67	10.88	0.89
1.900	1.11	4.900	3.56	7.900	2.67	10.90	0.89
1.917	1.11	4.917	3.56	7.917	2.67	10.92	0.89
1.933	1.11	4.933	3.56	7.933	2.67	10.93	0.89
1.950	1.11	4.950	3.56	7.950	2.67	10.95	0.89
1.967	1.11	4.967	3.56	7.967	2.67	10.97	0.89
1.983	1.11	4.983	3.56	7.983	2.67	10.98	0.89
2.000	1.11	5.000	3.56	8.000	2.67	11.00	0.89
2.017	1.34	5.017	5.34	8.017	1.56	11.02	0.89
2.033	1.34	5.033	5.34	8.033	1.56	11.03	0.89
2.050	1.34	5.050	5.34	8.050	1.56	11.05	0.89
2.067	1.34	5.067	5.34	8.067	1.56	11.07	0.89
2.083	1.34	5.083	5.34	8.083	1.56	11.08	0.89
2.100	1.34	5.100	5.34	8.100	1.56	11.10	0.89
2.117	1.34	5.117	5.34	8.117	1.56	11.12	0.89
2.133	1.34	5.133	5.34	8.133	1.56	11.13	0.89
2.150	1.34	5.150	5.34	8.150	1.56	11.15	0.89
2.167	1.34	5.167	5.34	8.167	1.56	11.17	0.89
2.183	1.34	5.183	5.34	8.183	1.56	11.18	0.89
2.200	1.34	5.200	5.34	8.200	1.56	11.20	0.89
2.217	1.34	5.217	5.34	8.217	1.56	11.22	0.89
2.233	1.34	5.233	5.34	8.233	1.56	11.23	0.89
2.250	1.34	5.250	5.34	8.250	1.56	11.25	0.89
2.267	1.34	5.267	5.34	8.267	1.56	11.27	0.89
2.283	1.34	5.283	5.34	8.283	1.56	11.28	0.89
2.300	1.34	5.300	5.34	8.300	1.56	11.30	0.89
2.317	1.34	5.317	5.34	8.317	1.56	11.32	0.89
2.333	1.34	5.333	5.34	8.333	1.56	11.33	0.89
2.350	1.34	5.350	5.34	8.350	1.56	11.35	0.89
2.367	1.34	5.367	5.34	8.367	1.56	11.37	0.89
2.383	1.34	5.383	5.34	8.383	1.56	11.38	0.89
2.400	1.34	5.400	5.34	8.400	1.56	11.40	0.89
2.417	1.34	5.417	5.34	8.417	1.56	11.42	0.89
2.433	1.34	5.433	5.34	8.433	1.56	11.43	0.89
2.450	1.34	5.450	5.34	8.450	1.56	11.45	0.89
2.467	1.34	5.467	5.34	8.467	1.56	11.47	0.89
2.483	1.34	5.483	5.34	8.483	1.56	11.48	0.89

2.500	1.34	5.500	5.36	8.500	1.56	11.50	0.89
2.517	1.34	5.517	21.36	8.517	1.56	11.52	0.89
2.533	1.34	5.533	21.36	8.533	1.56	11.53	0.89
2.550	1.34	5.550	21.36	8.550	1.56	11.55	0.89
2.567	1.34	5.567	21.36	8.567	1.56	11.57	0.89
2.583	1.34	5.583	21.36	8.583	1.56	11.58	0.89
2.600	1.34	5.600	21.36	8.600	1.56	11.60	0.89
2.617	1.34	5.617	21.36	8.617	1.56	11.62	0.89
2.633	1.34	5.633	21.36	8.633	1.56	11.63	0.89
2.650	1.34	5.650	21.36	8.650	1.56	11.65	0.89
2.667	1.34	5.667	21.36	8.667	1.56	11.67	0.89
2.683	1.34	5.683	21.36	8.683	1.56	11.68	0.89
2.700	1.34	5.700	21.36	8.700	1.56	11.70	0.89
2.717	1.34	5.717	21.36	8.717	1.56	11.72	0.89
2.733	1.34	5.733	21.36	8.733	1.56	11.73	0.89
2.750	1.34	5.750	21.41	8.750	1.56	11.75	0.89
2.767	1.34	5.767	58.75	8.767	1.56	11.77	0.89
2.783	1.34	5.783	58.75	8.783	1.56	11.78	0.89
2.800	1.34	5.800	58.75	8.800	1.56	11.80	0.89
2.817	1.34	5.817	58.75	8.817	1.56	11.82	0.89
2.833	1.34	5.833	58.75	8.833	1.56	11.83	0.89
2.850	1.34	5.850	58.75	8.850	1.56	11.85	0.89
2.867	1.34	5.867	58.75	8.867	1.56	11.87	0.89
2.883	1.34	5.883	58.75	8.883	1.56	11.88	0.89
2.900	1.34	5.900	58.75	8.900	1.56	11.90	0.89
2.917	1.34	5.917	58.75	8.917	1.56	11.92	0.89
2.933	1.34	5.933	58.75	8.933	1.56	11.93	0.89
2.950	1.34	5.950	58.75	8.950	1.56	11.95	0.89
2.967	1.34	5.967	58.75	8.967	1.56	11.97	0.89
2.983	1.34	5.983	58.75	8.983	1.56	11.98	0.89
3.000	1.34	6.000	58.68	9.000	1.56	12.00	0.89

Unit Hyd Qpeak (cms)= 0.516

PEAK FLOW (cms)= 0.016 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 11.554
TOTAL RAINFALL (mm)= 44.510
RUNOFF COEFFICIENT = 0.260

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

READ STORM | Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\41490e84
Ptotal= 44.51 mm | Comments: 2-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.11	3.25	1.78	6.25	8.01	9.25	1.56
0.50	1.11	3.50	1.78	6.50	8.01	9.50	1.56
0.75	1.11	3.75	1.78	6.75	3.56	9.75	1.56
1.00	1.11	4.00	1.78	7.00	3.56	10.00	1.56
1.25	1.11	4.25	2.67	7.25	2.67	10.25	0.89
1.50	1.11	4.50	2.67	7.50	2.67	10.50	0.89
1.75	1.11	4.75	3.56	7.75	2.67	10.75	0.89
2.00	1.11	5.00	3.56	8.00	2.67	11.00	0.89
2.25	1.34	5.25	5.34	8.25	1.56	11.25	0.89
2.50	1.34	5.50	5.34	8.50	1.56	11.50	0.89
2.75	1.34	5.75	21.36	8.75	1.56	11.75	0.89
3.00	1.34	6.00	58.75	9.00	1.56	12.00	0.89

CALIB
STANDHYD (0007)
ID= 1 DT= 1.0 min | Area (ha)= 1.80
Total Imp(%)= 59.00 Dir. Conn.(%)= 48.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.06	0.74
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	109.54	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.11	3.017	1.78	6.017	8.01	9.02	1.56
0.033	1.11	3.033	1.78	6.033	8.01	9.03	1.56
0.050	1.11	3.050	1.78	6.050	8.01	9.05	1.56
0.067	1.11	3.067	1.78	6.067	8.01	9.07	1.56
0.083	1.11	3.083	1.78	6.083	8.01	9.08	1.56
0.100	1.11	3.100	1.78	6.100	8.01	9.10	1.56

0.117	1.11	3.117	1.78	6.117	8.01	9.12	1.56
0.133	1.11	3.133	1.78	6.133	8.01	9.13	1.56
0.150	1.11	3.150	1.78	6.150	8.01	9.15	1.56
0.167	1.11	3.167	1.78	6.167	8.01	9.17	1.56
0.183	1.11	3.183	1.78	6.183	8.01	9.18	1.56
0.200	1.11	3.200	1.78	6.200	8.01	9.20	1.56
0.217	1.11	3.217	1.78	6.217	8.01	9.22	1.56
0.233	1.11	3.233	1.78	6.233	8.01	9.23	1.56
0.250	1.11	3.250	1.78	6.250	8.01	9.25	1.56
0.267	1.11	3.267	1.78	6.267	8.01	9.27	1.56
0.283	1.11	3.283	1.78	6.283	8.01	9.28	1.56
0.300	1.11	3.300	1.78	6.300	8.01	9.30	1.56
0.317	1.11	3.317	1.78	6.317	8.01	9.32	1.56
0.333	1.11	3.333	1.78	6.333	8.01	9.33	1.56
0.350	1.11	3.350	1.78	6.350	8.01	9.35	1.56
0.367	1.11	3.367	1.78	6.367	8.01	9.37	1.56
0.383	1.11	3.383	1.78	6.383	8.01	9.38	1.56
0.400	1.11	3.400	1.78	6.400	8.01	9.40	1.56
0.417	1.11	3.417	1.78	6.417	8.01	9.42	1.56
0.433	1.11	3.433	1.78	6.433	8.01	9.43	1.56
0.450	1.11	3.450	1.78	6.450	8.01	9.45	1.56
0.467	1.11	3.467	1.78	6.467	8.01	9.47	1.56
0.483	1.11	3.483	1.78	6.483	8.01	9.48	1.56
0.500	1.11	3.500	1.78	6.500	8.00	9.50	1.56
0.517	1.11	3.517	1.78	6.517	3.56	9.52	1.56
0.533	1.11	3.533	1.78	6.533	3.56	9.53	1.56
0.550	1.11	3.550	1.78	6.550	3.56	9.55	1.56
0.567	1.11	3.567	1.78	6.567	3.56	9.57	1.56
0.583	1.11	3.583	1.78	6.583	3.56	9.58	1.56
0.600	1.11	3.600	1.78	6.600	3.56	9.60	1.56
0.617	1.11	3.617	1.78	6.617	3.56	9.62	1.56
0.633	1.11	3.633	1.78	6.633	3.56	9.63	1.56
0.650	1.11	3.650	1.78	6.650	3.56	9.65	1.56
0.667	1.11	3.667	1.78	6.667	3.56	9.67	1.56
0.683	1.11	3.683	1.78	6.683	3.56	9.68	1.56
0.700	1.11	3.700	1.78	6.700	3.56	9.70	1.56
0.717	1.11	3.717	1.78	6.717	3.56	9.72	1.56
0.733	1.11	3.733	1.78	6.733	3.56	9.73	1.56
0.750	1.11	3.750	1.78	6.750	3.56	9.75	1.56
0.767	1.11	3.767	1.78	6.767	3.56	9.77	1.56
0.783	1.11	3.783	1.78	6.783	3.56	9.78	1.56
0.800	1.11	3.800	1.78	6.800	3.56	9.80	1.56
0.817	1.11	3.817	1.78	6.817	3.56	9.82	1.56
0.833	1.11	3.833	1.78	6.833	3.56	9.83	1.56
0.850	1.11	3.850	1.78	6.850	3.56	9.85	1.56
0.867	1.11	3.867	1.78	6.867	3.56	9.87	1.56
0.883	1.11	3.883	1.78	6.883	3.56	9.88	1.56
0.900	1.11	3.900	1.78	6.900	3.56	9.90	1.56
0.917	1.11	3.917	1.78	6.917	3.56	9.92	1.56
0.933	1.11	3.933	1.78	6.933	3.56	9.93	1.56
0.950	1.11	3.950	1.78	6.950	3.56	9.95	1.56
0.967	1.11	3.967	1.78	6.967	3.56	9.97	1.56
0.983	1.11	3.983	1.78	6.983	3.56	9.98	1.56
1.000	1.11	4.000	1.78	7.000	3.56	10.00	1.56
1.017	1.11	4.017	2.67	7.017	2.67	10.02	0.89
1.033	1.11	4.033	2.67	7.033	2.67	10.03	0.89
1.050	1.11	4.050	2.67	7.050	2.67	10.05	0.89
1.067	1.11	4.067	2.67	7.067	2.67	10.07	0.89
1.083	1.11	4.083	2.67	7.083	2.67	10.08	0.89
1.100	1.11	4.100	2.67	7.100	2.67	10.10	0.89
1.117	1.11	4.117	2.67	7.117	2.67	10.12	0.89
1.133	1.11	4.133	2.67	7.133	2.67	10.13	0.89
1.150	1.11	4.150	2.67	7.150	2.67	10.15	0.89
1.167	1.11	4.167	2.67	7.167	2.67	10.17	0.89
1.183	1.11	4.183	2.67	7.183	2.67	10.18	0.89
1.200	1.11	4.200	2.67	7.200	2.67	10.20	0.89
1.217	1.11	4.217	2.67	7.217	2.67	10.22	0.89
1.233	1.11	4.233	2.67	7.233	2.67	10.23	0.89
1.250	1.11	4.250	2.67	7.250	2.67	10.25	0.89
1.267	1.11	4.267	2.67	7.267	2.67	10.27	0.89
1.283	1.11	4.283	2.67	7.283	2.67	10.28	0.89
1.300	1.11	4.300	2.67	7.300	2.67	10.30	0.89
1.317	1.11	4.317	2.67	7.317	2.67	10.32	0.89
1.333	1.11	4.333	2.67	7.333	2.67	10.33	0.89
1.350	1.11	4.350	2.67	7.350	2.67	10.35	0.89
1.367	1.11	4.367	2.67	7.367	2.67	10.37	0.89
1.383	1.11	4.383	2.67	7.383	2.67	10.38	0.89
1.400	1.11	4.400	2.67	7.400	2.67	10.40	0.89
1.417	1.11	4.417	2.67	7.417	2.67	10.42	0.89
1.433	1.11	4.433	2.67	7.433	2.67	10.43	0.89
1.450	1.11	4.450	2.67	7.450	2.67	10.45	0.89
1.467	1.11	4.467	2.67	7.467	2.67	10.47	0.89
1.483	1.11	4.483	2.67	7.483	2.67	10.48	0.89
1.500	1.11	4.500	2.67	7.500	2.67	10.50	0.89
1.517	1.11	4.517	3.56	7.517	2.67	10.52	0.89
1.533	1.11	4.533	3.56	7.533	2.67	10.53	0.89
1.550	1.11	4.550	3.56	7.550	2.67	10.55	0.89
1.567	1.11	4.567	3.56	7.567	2.67	10.57	0.89
1.583	1.11	4.583	3.56	7.583	2.67	10.58	0.89
1.600	1.11	4.600	3.56	7.600	2.67	10.60	0.89
1.617	1.11	4.617	3.56	7.617	2.67	10.62	0.89

1.633	1.11	4.633	3.56	7.633	2.67	10.63	0.89
1.650	1.11	4.650	3.56	7.650	2.67	10.65	0.89
1.667	1.11	4.667	3.56	7.667	2.67	10.67	0.89
1.683	1.11	4.683	3.56	7.683	2.67	10.68	0.89
1.700	1.11	4.700	3.56	7.700	2.67	10.70	0.89
1.717	1.11	4.717	3.56	7.717	2.67	10.72	0.89
1.733	1.11	4.733	3.56	7.733	2.67	10.73	0.89
1.750	1.11	4.750	3.56	7.750	2.67	10.75	0.89
1.767	1.11	4.767	3.56	7.767	2.67	10.77	0.89
1.783	1.11	4.783	3.56	7.783	2.67	10.78	0.89
1.800	1.11	4.800	3.56	7.800	2.67	10.80	0.89
1.817	1.11	4.817	3.56	7.817	2.67	10.82	0.89
1.833	1.11	4.833	3.56	7.833	2.67	10.83	0.89
1.850	1.11	4.850	3.56	7.850	2.67	10.85	0.89
1.867	1.11	4.867	3.56	7.867	2.67	10.87	0.89
1.883	1.11	4.883	3.56	7.883	2.67	10.88	0.89
1.900	1.11	4.900	3.56	7.900	2.67	10.90	0.89
1.917	1.11	4.917	3.56	7.917	2.67	10.92	0.89
1.933	1.11	4.933	3.56	7.933	2.67	10.93	0.89
1.950	1.11	4.950	3.56	7.950	2.67	10.95	0.89
1.967	1.11	4.967	3.56	7.967	2.67	10.97	0.89
1.983	1.11	4.983	3.56	7.983	2.67	10.98	0.89
2.000	1.11	5.000	3.56	8.000	2.67	11.00	0.89
2.017	1.34	5.017	5.34	8.017	1.56	11.02	0.89
2.033	1.34	5.033	5.34	8.033	1.56	11.03	0.89
2.050	1.34	5.050	5.34	8.050	1.56	11.05	0.89
2.067	1.34	5.067	5.34	8.067	1.56	11.07	0.89
2.083	1.34	5.083	5.34	8.083	1.56	11.08	0.89
2.100	1.34	5.100	5.34	8.100	1.56	11.10	0.89
2.117	1.34	5.117	5.34	8.117	1.56	11.12	0.89
2.133	1.34	5.133	5.34	8.133	1.56	11.13	0.89
2.150	1.34	5.150	5.34	8.150	1.56	11.15	0.89
2.167	1.34	5.167	5.34	8.167	1.56	11.17	0.89
2.183	1.34	5.183	5.34	8.183	1.56	11.18	0.89
2.200	1.34	5.200	5.34	8.200	1.56	11.20	0.89
2.217	1.34	5.217	5.34	8.217	1.56	11.22	0.89
2.233	1.34	5.233	5.34	8.233	1.56	11.23	0.89
2.250	1.34	5.250	5.34	8.250	1.56	11.25	0.89
2.267	1.34	5.267	5.34	8.267	1.56	11.27	0.89
2.283	1.34	5.283	5.34	8.283	1.56	11.28	0.89
2.300	1.34	5.300	5.34	8.300	1.56	11.30	0.89
2.317	1.34	5.317	5.34	8.317	1.56	11.32	0.89
2.333	1.34	5.333	5.34	8.333	1.56	11.33	0.89
2.350	1.34	5.350	5.34	8.350	1.56	11.35	0.89
2.367	1.34	5.367	5.34	8.367	1.56	11.37	0.89
2.383	1.34	5.383	5.34	8.383	1.56	11.38	0.89
2.400	1.34	5.400	5.34	8.400	1.56	11.40	0.89
2.417	1.34	5.417	5.34	8.417	1.56	11.42	0.89
2.433	1.34	5.433	5.34	8.433	1.56	11.43	0.89
2.450	1.34	5.450	5.34	8.450	1.56	11.45	0.89
2.467	1.34	5.467	5.34	8.467	1.56	11.47	0.89
2.483	1.34	5.483	5.34	8.483	1.56	11.48	0.89
2.500	1.34	5.500	5.36	8.500	1.56	11.50	0.89
2.517	1.34	5.517	21.36	8.517	1.56	11.52	0.89
2.533	1.34	5.533	21.36	8.533	1.56	11.53	0.89
2.550	1.34	5.550	21.36	8.550	1.56	11.55	0.89
2.567	1.34	5.567	21.36	8.567	1.56	11.57	0.89
2.583	1.34	5.583	21.36	8.583	1.56	11.58	0.89
2.600	1.34	5.600	21.36	8.600	1.56	11.60	0.89
2.617	1.34	5.617	21.36	8.617	1.56	11.62	0.89
2.633	1.34	5.633	21.36	8.633	1.56	11.63	0.89
2.650	1.34	5.650	21.36	8.650	1.56	11.65	0.89
2.667	1.34	5.667	21.36	8.667	1.56	11.67	0.89
2.683	1.34	5.683	21.36	8.683	1.56	11.68	0.89
2.700	1.34	5.700	21.36	8.700	1.56	11.70	0.89
2.717	1.34	5.717	21.36	8.717	1.56	11.72	0.89
2.733	1.34	5.733	21.36	8.733	1.56	11.73	0.89
2.750	1.34	5.750	21.41	8.750	1.56	11.75	0.89
2.767	1.34	5.767	58.75	8.767	1.56	11.77	0.89
2.783	1.34	5.783	58.75	8.783	1.56	11.78	0.89
2.800	1.34	5.800	58.75	8.800	1.56	11.80	0.89
2.817	1.34	5.817	58.75	8.817	1.56	11.82	0.89
2.833	1.34	5.833	58.75	8.833	1.56	11.83	0.89
2.850	1.34	5.850	58.75	8.850	1.56	11.85	0.89
2.867	1.34	5.867	58.75	8.867	1.56	11.87	0.89
2.883	1.34	5.883	58.75	8.883	1.56	11.88	0.89
2.900	1.34	5.900	58.75	8.900	1.56	11.90	0.89
2.917	1.34	5.917	58.75	8.917	1.56	11.92	0.89
2.933	1.34	5.933	58.75	8.933	1.56	11.93	0.89
2.950	1.34	5.950	58.75	8.950	1.56	11.95	0.89
2.967	1.34	5.967	58.75	8.967	1.56	11.97	0.89
2.983	1.34	5.983	58.75	8.983	1.56	11.98	0.89
3.000	1.34	6.000	58.68	9.000	1.56	12.00	0.89

Max.Eff.Inten.(mm/hr)=	58.75	12.78	
over (min)	5.00	12.00	
Storage Coeff. (min)=	3.34 (ii)	11.54 (ii)	
Unit Hyd. Tpeak (min)=	5.00	12.00	
Unit Hyd. peak (cms)=	0.29	0.10	
			TOTALS
PEAK FLOW (cms)=	0.14	0.02	0.152 (iii)

TIME TO PEAK (hrs)=	6.00	6.12	6.00
RUNOFF VOLUME (mm)=	43.51	6.18	24.09
TOTAL RAINFALL (mm)=	44.51	44.51	44.51
RUNOFF COEFFICIENT =	0.98	0.14	0.54

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0018)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0026):	0.27	0.016	6.00	11.55
+ ID2= 2 (0007):	1.80	0.152	6.00	24.09
ID = 3 (0018):	2.07	0.168	6.00	22.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0009)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0330	0.0298
0.0020	0.0000	0.0480	0.0300
0.0190	0.0288	0.5150	0.0368
0.0250	0.0292	0.5380	0.0368

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0018)	2.070	0.168	6.00	22.46
OUTFLOW: ID= 1 (0009)	2.070	0.017	6.63	22.46

PEAK FLOW REDUCTION [Qout/Qin](%)= 10.21
TIME SHIFT OF PEAK FLOW (min)= 38.00
MAXIMUM STORAGE USED (ha.m.)= 0.0256

READ STORM
Ptotal= 44.51 mm

Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\41490e84
Comments: 2-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.11	3.25	1.78	6.25	8.01	9.25	1.56
0.50	1.11	3.50	1.78	6.50	8.01	9.50	1.56
0.75	1.11	3.75	1.78	6.75	3.56	9.75	1.56
1.00	1.11	4.00	1.78	7.00	3.56	10.00	1.56
1.25	1.11	4.25	2.67	7.25	2.67	10.25	0.89
1.50	1.11	4.50	2.67	7.50	2.67	10.50	0.89
1.75	1.11	4.75	3.56	7.75	2.67	10.75	0.89
2.00	1.11	5.00	3.56	8.00	2.67	11.00	0.89
2.25	1.34	5.25	5.34	8.25	1.56	11.25	0.89
2.50	1.34	5.50	5.34	8.50	1.56	11.50	0.89
2.75	1.34	5.75	21.36	8.75	1.56	11.75	0.89
3.00	1.34	6.00	58.75	9.00	1.56	12.00	0.89

CALIB
STANDHYD (0006)
ID= 1 DT= 1.0 min

Area (ha)= 0.80
Total Imp(%)= 87.00 Dir. Conn.(%)= 82.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.70	0.10
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	73.03	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.11	3.017	1.78	6.017	8.01	9.02	1.56
0.033	1.11	3.033	1.78	6.033	8.01	9.03	1.56
0.050	1.11	3.050	1.78	6.050	8.01	9.05	1.56

0.067	1.11	3.067	1.78	6.067	8.01	9.07	1.56
0.083	1.11	3.083	1.78	6.083	8.01	9.08	1.56
0.100	1.11	3.100	1.78	6.100	8.01	9.10	1.56
0.117	1.11	3.117	1.78	6.117	8.01	9.12	1.56
0.133	1.11	3.133	1.78	6.133	8.01	9.13	1.56
0.150	1.11	3.150	1.78	6.150	8.01	9.15	1.56
0.167	1.11	3.167	1.78	6.167	8.01	9.17	1.56
0.183	1.11	3.183	1.78	6.183	8.01	9.18	1.56
0.200	1.11	3.200	1.78	6.200	8.01	9.20	1.56
0.217	1.11	3.217	1.78	6.217	8.01	9.22	1.56
0.233	1.11	3.233	1.78	6.233	8.01	9.23	1.56
0.250	1.11	3.250	1.78	6.250	8.01	9.25	1.56
0.267	1.11	3.267	1.78	6.267	8.01	9.27	1.56
0.283	1.11	3.283	1.78	6.283	8.01	9.28	1.56
0.300	1.11	3.300	1.78	6.300	8.01	9.30	1.56
0.317	1.11	3.317	1.78	6.317	8.01	9.32	1.56
0.333	1.11	3.333	1.78	6.333	8.01	9.33	1.56
0.350	1.11	3.350	1.78	6.350	8.01	9.35	1.56
0.367	1.11	3.367	1.78	6.367	8.01	9.37	1.56
0.383	1.11	3.383	1.78	6.383	8.01	9.38	1.56
0.400	1.11	3.400	1.78	6.400	8.01	9.40	1.56
0.417	1.11	3.417	1.78	6.417	8.01	9.42	1.56
0.433	1.11	3.433	1.78	6.433	8.01	9.43	1.56
0.450	1.11	3.450	1.78	6.450	8.01	9.45	1.56
0.467	1.11	3.467	1.78	6.467	8.01	9.47	1.56
0.483	1.11	3.483	1.78	6.483	8.01	9.48	1.56
0.500	1.11	3.500	1.78	6.500	8.00	9.50	1.56
0.517	1.11	3.517	1.78	6.517	3.56	9.52	1.56
0.533	1.11	3.533	1.78	6.533	3.56	9.53	1.56
0.550	1.11	3.550	1.78	6.550	3.56	9.55	1.56
0.567	1.11	3.567	1.78	6.567	3.56	9.57	1.56
0.583	1.11	3.583	1.78	6.583	3.56	9.58	1.56
0.600	1.11	3.600	1.78	6.600	3.56	9.60	1.56
0.617	1.11	3.617	1.78	6.617	3.56	9.62	1.56
0.633	1.11	3.633	1.78	6.633	3.56	9.63	1.56
0.650	1.11	3.650	1.78	6.650	3.56	9.65	1.56
0.667	1.11	3.667	1.78	6.667	3.56	9.67	1.56
0.683	1.11	3.683	1.78	6.683	3.56	9.68	1.56
0.700	1.11	3.700	1.78	6.700	3.56	9.70	1.56
0.717	1.11	3.717	1.78	6.717	3.56	9.72	1.56
0.733	1.11	3.733	1.78	6.733	3.56	9.73	1.56
0.750	1.11	3.750	1.78	6.750	3.56	9.75	1.56
0.767	1.11	3.767	1.78	6.767	3.56	9.77	1.56
0.783	1.11	3.783	1.78	6.783	3.56	9.78	1.56
0.800	1.11	3.800	1.78	6.800	3.56	9.80	1.56
0.817	1.11	3.817	1.78	6.817	3.56	9.82	1.56
0.833	1.11	3.833	1.78	6.833	3.56	9.83	1.56
0.850	1.11	3.850	1.78	6.850	3.56	9.85	1.56
0.867	1.11	3.867	1.78	6.867	3.56	9.87	1.56
0.883	1.11	3.883	1.78	6.883	3.56	9.88	1.56
0.900	1.11	3.900	1.78	6.900	3.56	9.90	1.56
0.917	1.11	3.917	1.78	6.917	3.56	9.92	1.56
0.933	1.11	3.933	1.78	6.933	3.56	9.93	1.56
0.950	1.11	3.950	1.78	6.950	3.56	9.95	1.56
0.967	1.11	3.967	1.78	6.967	3.56	9.97	1.56
0.983	1.11	3.983	1.78	6.983	3.56	9.98	1.56
1.000	1.11	4.000	1.78	7.000	3.56	10.00	1.56
1.017	1.11	4.017	2.67	7.017	2.67	10.02	0.89
1.033	1.11	4.033	2.67	7.033	2.67	10.03	0.89
1.050	1.11	4.050	2.67	7.050	2.67	10.05	0.89
1.067	1.11	4.067	2.67	7.067	2.67	10.07	0.89
1.083	1.11	4.083	2.67	7.083	2.67	10.08	0.89
1.100	1.11	4.100	2.67	7.100	2.67	10.10	0.89
1.117	1.11	4.117	2.67	7.117	2.67	10.12	0.89
1.133	1.11	4.133	2.67	7.133	2.67	10.13	0.89
1.150	1.11	4.150	2.67	7.150	2.67	10.15	0.89
1.167	1.11	4.167	2.67	7.167	2.67	10.17	0.89
1.183	1.11	4.183	2.67	7.183	2.67	10.18	0.89
1.200	1.11	4.200	2.67	7.200	2.67	10.20	0.89
1.217	1.11	4.217	2.67	7.217	2.67	10.22	0.89
1.233	1.11	4.233	2.67	7.233	2.67	10.23	0.89
1.250	1.11	4.250	2.67	7.250	2.67	10.25	0.89
1.267	1.11	4.267	2.67	7.267	2.67	10.27	0.89
1.283	1.11	4.283	2.67	7.283	2.67	10.28	0.89
1.300	1.11	4.300	2.67	7.300	2.67	10.30	0.89
1.317	1.11	4.317	2.67	7.317	2.67	10.32	0.89
1.333	1.11	4.333	2.67	7.333	2.67	10.33	0.89
1.350	1.11	4.350	2.67	7.350	2.67	10.35	0.89
1.367	1.11	4.367	2.67	7.367	2.67	10.37	0.89
1.383	1.11	4.383	2.67	7.383	2.67	10.38	0.89
1.400	1.11	4.400	2.67	7.400	2.67	10.40	0.89
1.417	1.11	4.417	2.67	7.417	2.67	10.42	0.89
1.433	1.11	4.433	2.67	7.433	2.67	10.43	0.89
1.450	1.11	4.450	2.67	7.450	2.67	10.45	0.89
1.467	1.11	4.467	2.67	7.467	2.67	10.47	0.89
1.483	1.11	4.483	2.67	7.483	2.67	10.48	0.89
1.500	1.11	4.500	2.67	7.500	2.67	10.50	0.89
1.517	1.11	4.517	3.56	7.517	2.67	10.52	0.89
1.533	1.11	4.533	3.56	7.533	2.67	10.53	0.89
1.550	1.11	4.550	3.56	7.550	2.67	10.55	0.89
1.567	1.11	4.567	3.56	7.567	2.67	10.57	0.89

1.583	1.11	4.583	3.56	7.583	2.67	10.58	0.89
1.600	1.11	4.600	3.56	7.600	2.67	10.60	0.89
1.617	1.11	4.617	3.56	7.617	2.67	10.62	0.89
1.633	1.11	4.633	3.56	7.633	2.67	10.63	0.89
1.650	1.11	4.650	3.56	7.650	2.67	10.65	0.89
1.667	1.11	4.667	3.56	7.667	2.67	10.67	0.89
1.683	1.11	4.683	3.56	7.683	2.67	10.68	0.89
1.700	1.11	4.700	3.56	7.700	2.67	10.70	0.89
1.717	1.11	4.717	3.56	7.717	2.67	10.72	0.89
1.733	1.11	4.733	3.56	7.733	2.67	10.73	0.89
1.750	1.11	4.750	3.56	7.750	2.67	10.75	0.89
1.767	1.11	4.767	3.56	7.767	2.67	10.77	0.89
1.783	1.11	4.783	3.56	7.783	2.67	10.78	0.89
1.800	1.11	4.800	3.56	7.800	2.67	10.80	0.89
1.817	1.11	4.817	3.56	7.817	2.67	10.82	0.89
1.833	1.11	4.833	3.56	7.833	2.67	10.83	0.89
1.850	1.11	4.850	3.56	7.850	2.67	10.85	0.89
1.867	1.11	4.867	3.56	7.867	2.67	10.87	0.89
1.883	1.11	4.883	3.56	7.883	2.67	10.88	0.89
1.900	1.11	4.900	3.56	7.900	2.67	10.90	0.89
1.917	1.11	4.917	3.56	7.917	2.67	10.92	0.89
1.933	1.11	4.933	3.56	7.933	2.67	10.93	0.89
1.950	1.11	4.950	3.56	7.950	2.67	10.95	0.89
1.967	1.11	4.967	3.56	7.967	2.67	10.97	0.89
1.983	1.11	4.983	3.56	7.983	2.67	10.98	0.89
2.000	1.11	5.000	3.56	8.000	2.67	11.00	0.89
2.017	1.34	5.017	5.34	8.017	1.56	11.02	0.89
2.033	1.34	5.033	5.34	8.033	1.56	11.03	0.89
2.050	1.34	5.050	5.34	8.050	1.56	11.05	0.89
2.067	1.34	5.067	5.34	8.067	1.56	11.07	0.89
2.083	1.34	5.083	5.34	8.083	1.56	11.08	0.89
2.100	1.34	5.100	5.34	8.100	1.56	11.10	0.89
2.117	1.34	5.117	5.34	8.117	1.56	11.12	0.89
2.133	1.34	5.133	5.34	8.133	1.56	11.13	0.89
2.150	1.34	5.150	5.34	8.150	1.56	11.15	0.89
2.167	1.34	5.167	5.34	8.167	1.56	11.17	0.89
2.183	1.34	5.183	5.34	8.183	1.56	11.18	0.89
2.200	1.34	5.200	5.34	8.200	1.56	11.20	0.89
2.217	1.34	5.217	5.34	8.217	1.56	11.22	0.89
2.233	1.34	5.233	5.34	8.233	1.56	11.23	0.89
2.250	1.34	5.250	5.34	8.250	1.56	11.25	0.89
2.267	1.34	5.267	5.34	8.267	1.56	11.27	0.89
2.283	1.34	5.283	5.34	8.283	1.56	11.28	0.89
2.300	1.34	5.300	5.34	8.300	1.56	11.30	0.89
2.317	1.34	5.317	5.34	8.317	1.56	11.32	0.89
2.333	1.34	5.333	5.34	8.333	1.56	11.33	0.89
2.350	1.34	5.350	5.34	8.350	1.56	11.35	0.89
2.367	1.34	5.367	5.34	8.367	1.56	11.37	0.89
2.383	1.34	5.383	5.34	8.383	1.56	11.38	0.89
2.400	1.34	5.400	5.34	8.400	1.56	11.40	0.89
2.417	1.34	5.417	5.34	8.417	1.56	11.42	0.89
2.433	1.34	5.433	5.34	8.433	1.56	11.43	0.89
2.450	1.34	5.450	5.34	8.450	1.56	11.45	0.89
2.467	1.34	5.467	5.34	8.467	1.56	11.47	0.89
2.483	1.34	5.483	5.34	8.483	1.56	11.48	0.89
2.500	1.34	5.500	5.36	8.500	1.56	11.50	0.89
2.517	1.34	5.517	21.36	8.517	1.56	11.52	0.89
2.533	1.34	5.533	21.36	8.533	1.56	11.53	0.89
2.550	1.34	5.550	21.36	8.550	1.56	11.55	0.89
2.567	1.34	5.567	21.36	8.567	1.56	11.57	0.89
2.583	1.34	5.583	21.36	8.583	1.56	11.58	0.89
2.600	1.34	5.600	21.36	8.600	1.56	11.60	0.89
2.617	1.34	5.617	21.36	8.617	1.56	11.62	0.89
2.633	1.34	5.633	21.36	8.633	1.56	11.63	0.89
2.650	1.34	5.650	21.36	8.650	1.56	11.65	0.89
2.667	1.34	5.667	21.36	8.667	1.56	11.67	0.89
2.683	1.34	5.683	21.36	8.683	1.56	11.68	0.89
2.700	1.34	5.700	21.36	8.700	1.56	11.70	0.89
2.717	1.34	5.717	21.36	8.717	1.56	11.72	0.89
2.733	1.34	5.733	21.36	8.733	1.56	11.73	0.89
2.750	1.34	5.750	21.41	8.750	1.56	11.75	0.89
2.767	1.34	5.767	58.75	8.767	1.56	11.77	0.89
2.783	1.34	5.783	58.75	8.783	1.56	11.78	0.89
2.800	1.34	5.800	58.75	8.800	1.56	11.80	0.89
2.817	1.34	5.817	58.75	8.817	1.56	11.82	0.89
2.833	1.34	5.833	58.75	8.833	1.56	11.83	0.89
2.850	1.34	5.850	58.75	8.850	1.56	11.85	0.89
2.867	1.34	5.867	58.75	8.867	1.56	11.87	0.89
2.883	1.34	5.883	58.75	8.883	1.56	11.88	0.89
2.900	1.34	5.900	58.75	8.900	1.56	11.90	0.89
2.917	1.34	5.917	58.75	8.917	1.56	11.92	0.89
2.933	1.34	5.933	58.75	8.933	1.56	11.93	0.89
2.950	1.34	5.950	58.75	8.950	1.56	11.95	0.89
2.967	1.34	5.967	58.75	8.967	1.56	11.97	0.89
2.983	1.34	5.983	58.75	8.983	1.56	11.98	0.89
3.000	1.34	6.000	58.68	9.000	1.56	12.00	0.89

Max.Eff.Inten.(mm/hr)=	58.75	15.23
over (min)	5.00	7.00
Storage Coeff. (min)=	2.62 (ii)	6.80 (ii)
Unit Hyd. Tpeak (min)=	5.00	7.00

Unit Hyd. peak	(cms)=	0.33	0.16	
				TOTALS
PEAK FLOW	(cms)=	0.11	0.00	0.110 (iii)
TIME TO PEAK	(hrs)=	6.00	6.03	6.00
RUNOFF VOLUME	(mm)=	43.51	6.75	36.89
TOTAL RAINFALL	(mm)=	44.51	44.51	44.51
RUNOFF COEFFICIENT	=	0.98	0.15	0.83

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0011)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0810	0.0180
	0.0010	0.0005	0.0910	0.0205
	0.0060	0.0056	0.1120	0.0249
	0.0100	0.0061	0.1190	0.0264
	0.0430	0.0101	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0006)	0.800	0.110	6.00	36.89
OUTFLOW: ID= 1 (0011)	0.800	0.054	6.08	36.73

PEAK FLOW REDUCTION [Qout/Qin](%)= 48.78
TIME SHIFT OF PEAK FLOW (min)= 5.00
MAXIMUM STORAGE USED (ha.m.)= 0.0123

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\41490e84
Ptotal= 44.51 mm	Comments: 2-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.11	3.25	1.78	6.25	8.01	9.25	1.56
0.50	1.11	3.50	1.78	6.50	8.01	9.50	1.56
0.75	1.11	3.75	1.78	6.75	3.56	9.75	1.56
1.00	1.11	4.00	1.78	7.00	3.56	10.00	1.56
1.25	1.11	4.25	2.67	7.25	2.67	10.25	0.89
1.50	1.11	4.50	2.67	7.50	2.67	10.50	0.89
1.75	1.11	4.75	3.56	7.75	2.67	10.75	0.89
2.00	1.11	5.00	3.56	8.00	2.67	11.00	0.89
2.25	1.34	5.25	5.34	8.25	1.56	11.25	0.89
2.50	1.34	5.50	5.34	8.50	1.56	11.50	0.89
2.75	1.34	5.75	21.36	8.75	1.56	11.75	0.89
3.00	1.34	6.00	58.75	9.00	1.56	12.00	0.89

CALIB		
STANDHYD (0008)	Area (ha)= 2.53	
ID= 1 DT= 1.0 min	Total Imp(%)= 52.00	Dir. Conn.(%)= 44.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.32	1.21
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	129.87	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.11	3.017	1.78	6.017	8.01	9.02	1.56
0.033	1.11	3.033	1.78	6.033	8.01	9.03	1.56
0.050	1.11	3.050	1.78	6.050	8.01	9.05	1.56
0.067	1.11	3.067	1.78	6.067	8.01	9.07	1.56
0.083	1.11	3.083	1.78	6.083	8.01	9.08	1.56
0.100	1.11	3.100	1.78	6.100	8.01	9.10	1.56
0.117	1.11	3.117	1.78	6.117	8.01	9.12	1.56
0.133	1.11	3.133	1.78	6.133	8.01	9.13	1.56
0.150	1.11	3.150	1.78	6.150	8.01	9.15	1.56
0.167	1.11	3.167	1.78	6.167	8.01	9.17	1.56
0.183	1.11	3.183	1.78	6.183	8.01	9.18	1.56
0.200	1.11	3.200	1.78	6.200	8.01	9.20	1.56

0.217	1.11	3.217	1.78	6.217	8.01	9.22	1.56
0.233	1.11	3.233	1.78	6.233	8.01	9.23	1.56
0.250	1.11	3.250	1.78	6.250	8.01	9.25	1.56
0.267	1.11	3.267	1.78	6.267	8.01	9.27	1.56
0.283	1.11	3.283	1.78	6.283	8.01	9.28	1.56
0.300	1.11	3.300	1.78	6.300	8.01	9.30	1.56
0.317	1.11	3.317	1.78	6.317	8.01	9.32	1.56
0.333	1.11	3.333	1.78	6.333	8.01	9.33	1.56
0.350	1.11	3.350	1.78	6.350	8.01	9.35	1.56
0.367	1.11	3.367	1.78	6.367	8.01	9.37	1.56
0.383	1.11	3.383	1.78	6.383	8.01	9.38	1.56
0.400	1.11	3.400	1.78	6.400	8.01	9.40	1.56
0.417	1.11	3.417	1.78	6.417	8.01	9.42	1.56
0.433	1.11	3.433	1.78	6.433	8.01	9.43	1.56
0.450	1.11	3.450	1.78	6.450	8.01	9.45	1.56
0.467	1.11	3.467	1.78	6.467	8.01	9.47	1.56
0.483	1.11	3.483	1.78	6.483	8.01	9.48	1.56
0.500	1.11	3.500	1.78	6.500	8.00	9.50	1.56
0.517	1.11	3.517	1.78	6.517	3.56	9.52	1.56
0.533	1.11	3.533	1.78	6.533	3.56	9.53	1.56
0.550	1.11	3.550	1.78	6.550	3.56	9.55	1.56
0.567	1.11	3.567	1.78	6.567	3.56	9.57	1.56
0.583	1.11	3.583	1.78	6.583	3.56	9.58	1.56
0.600	1.11	3.600	1.78	6.600	3.56	9.60	1.56
0.617	1.11	3.617	1.78	6.617	3.56	9.62	1.56
0.633	1.11	3.633	1.78	6.633	3.56	9.63	1.56
0.650	1.11	3.650	1.78	6.650	3.56	9.65	1.56
0.667	1.11	3.667	1.78	6.667	3.56	9.67	1.56
0.683	1.11	3.683	1.78	6.683	3.56	9.68	1.56
0.700	1.11	3.700	1.78	6.700	3.56	9.70	1.56
0.717	1.11	3.717	1.78	6.717	3.56	9.72	1.56
0.733	1.11	3.733	1.78	6.733	3.56	9.73	1.56
0.750	1.11	3.750	1.78	6.750	3.56	9.75	1.56
0.767	1.11	3.767	1.78	6.767	3.56	9.77	1.56
0.783	1.11	3.783	1.78	6.783	3.56	9.78	1.56
0.800	1.11	3.800	1.78	6.800	3.56	9.80	1.56
0.817	1.11	3.817	1.78	6.817	3.56	9.82	1.56
0.833	1.11	3.833	1.78	6.833	3.56	9.83	1.56
0.850	1.11	3.850	1.78	6.850	3.56	9.85	1.56
0.867	1.11	3.867	1.78	6.867	3.56	9.87	1.56
0.883	1.11	3.883	1.78	6.883	3.56	9.88	1.56
0.900	1.11	3.900	1.78	6.900	3.56	9.90	1.56
0.917	1.11	3.917	1.78	6.917	3.56	9.92	1.56
0.933	1.11	3.933	1.78	6.933	3.56	9.93	1.56
0.950	1.11	3.950	1.78	6.950	3.56	9.95	1.56
0.967	1.11	3.967	1.78	6.967	3.56	9.97	1.56
0.983	1.11	3.983	1.78	6.983	3.56	9.98	1.56
1.000	1.11	4.000	1.78	7.000	3.56	10.00	1.56
1.017	1.11	4.017	2.67	7.017	2.67	10.02	0.89
1.033	1.11	4.033	2.67	7.033	2.67	10.03	0.89
1.050	1.11	4.050	2.67	7.050	2.67	10.05	0.89
1.067	1.11	4.067	2.67	7.067	2.67	10.07	0.89
1.083	1.11	4.083	2.67	7.083	2.67	10.08	0.89
1.100	1.11	4.100	2.67	7.100	2.67	10.10	0.89
1.117	1.11	4.117	2.67	7.117	2.67	10.12	0.89
1.133	1.11	4.133	2.67	7.133	2.67	10.13	0.89
1.150	1.11	4.150	2.67	7.150	2.67	10.15	0.89
1.167	1.11	4.167	2.67	7.167	2.67	10.17	0.89
1.183	1.11	4.183	2.67	7.183	2.67	10.18	0.89
1.200	1.11	4.200	2.67	7.200	2.67	10.20	0.89
1.217	1.11	4.217	2.67	7.217	2.67	10.22	0.89
1.233	1.11	4.233	2.67	7.233	2.67	10.23	0.89
1.250	1.11	4.250	2.67	7.250	2.67	10.25	0.89
1.267	1.11	4.267	2.67	7.267	2.67	10.27	0.89
1.283	1.11	4.283	2.67	7.283	2.67	10.28	0.89
1.300	1.11	4.300	2.67	7.300	2.67	10.30	0.89
1.317	1.11	4.317	2.67	7.317	2.67	10.32	0.89
1.333	1.11	4.333	2.67	7.333	2.67	10.33	0.89
1.350	1.11	4.350	2.67	7.350	2.67	10.35	0.89
1.367	1.11	4.367	2.67	7.367	2.67	10.37	0.89
1.383	1.11	4.383	2.67	7.383	2.67	10.38	0.89
1.400	1.11	4.400	2.67	7.400	2.67	10.40	0.89
1.417	1.11	4.417	2.67	7.417	2.67	10.42	0.89
1.433	1.11	4.433	2.67	7.433	2.67	10.43	0.89
1.450	1.11	4.450	2.67	7.450	2.67	10.45	0.89
1.467	1.11	4.467	2.67	7.467	2.67	10.47	0.89
1.483	1.11	4.483	2.67	7.483	2.67	10.48	0.89
1.500	1.11	4.500	2.67	7.500	2.67	10.50	0.89
1.517	1.11	4.517	3.56	7.517	2.67	10.52	0.89
1.533	1.11	4.533	3.56	7.533	2.67	10.53	0.89
1.550	1.11	4.550	3.56	7.550	2.67	10.55	0.89
1.567	1.11	4.567	3.56	7.567	2.67	10.57	0.89
1.583	1.11	4.583	3.56	7.583	2.67	10.58	0.89
1.600	1.11	4.600	3.56	7.600	2.67	10.60	0.89
1.617	1.11	4.617	3.56	7.617	2.67	10.62	0.89
1.633	1.11	4.633	3.56	7.633	2.67	10.63	0.89
1.650	1.11	4.650	3.56	7.650	2.67	10.65	0.89
1.667	1.11	4.667	3.56	7.667	2.67	10.67	0.89
1.683	1.11	4.683	3.56	7.683	2.67	10.68	0.89
1.700	1.11	4.700	3.56	7.700	2.67	10.70	0.89
1.717	1.11	4.717	3.56	7.717	2.67	10.72	0.89

1.733	1.11	4.733	3.56	7.733	2.67	10.73	0.89
1.750	1.11	4.750	3.56	7.750	2.67	10.75	0.89
1.767	1.11	4.767	3.56	7.767	2.67	10.77	0.89
1.783	1.11	4.783	3.56	7.783	2.67	10.78	0.89
1.800	1.11	4.800	3.56	7.800	2.67	10.80	0.89
1.817	1.11	4.817	3.56	7.817	2.67	10.82	0.89
1.833	1.11	4.833	3.56	7.833	2.67	10.83	0.89
1.850	1.11	4.850	3.56	7.850	2.67	10.85	0.89
1.867	1.11	4.867	3.56	7.867	2.67	10.87	0.89
1.883	1.11	4.883	3.56	7.883	2.67	10.88	0.89
1.900	1.11	4.900	3.56	7.900	2.67	10.90	0.89
1.917	1.11	4.917	3.56	7.917	2.67	10.92	0.89
1.933	1.11	4.933	3.56	7.933	2.67	10.93	0.89
1.950	1.11	4.950	3.56	7.950	2.67	10.95	0.89
1.967	1.11	4.967	3.56	7.967	2.67	10.97	0.89
1.983	1.11	4.983	3.56	7.983	2.67	10.98	0.89
2.000	1.11	5.000	3.56	8.000	2.67	11.00	0.89
2.017	1.34	5.017	5.34	8.017	1.56	11.02	0.89
2.033	1.34	5.033	5.34	8.033	1.56	11.03	0.89
2.050	1.34	5.050	5.34	8.050	1.56	11.05	0.89
2.067	1.34	5.067	5.34	8.067	1.56	11.07	0.89
2.083	1.34	5.083	5.34	8.083	1.56	11.08	0.89
2.100	1.34	5.100	5.34	8.100	1.56	11.10	0.89
2.117	1.34	5.117	5.34	8.117	1.56	11.12	0.89
2.133	1.34	5.133	5.34	8.133	1.56	11.13	0.89
2.150	1.34	5.150	5.34	8.150	1.56	11.15	0.89
2.167	1.34	5.167	5.34	8.167	1.56	11.17	0.89
2.183	1.34	5.183	5.34	8.183	1.56	11.18	0.89
2.200	1.34	5.200	5.34	8.200	1.56	11.20	0.89
2.217	1.34	5.217	5.34	8.217	1.56	11.22	0.89
2.233	1.34	5.233	5.34	8.233	1.56	11.23	0.89
2.250	1.34	5.250	5.34	8.250	1.56	11.25	0.89
2.267	1.34	5.267	5.34	8.267	1.56	11.27	0.89
2.283	1.34	5.283	5.34	8.283	1.56	11.28	0.89
2.300	1.34	5.300	5.34	8.300	1.56	11.30	0.89
2.317	1.34	5.317	5.34	8.317	1.56	11.32	0.89
2.333	1.34	5.333	5.34	8.333	1.56	11.33	0.89
2.350	1.34	5.350	5.34	8.350	1.56	11.35	0.89
2.367	1.34	5.367	5.34	8.367	1.56	11.37	0.89
2.383	1.34	5.383	5.34	8.383	1.56	11.38	0.89
2.400	1.34	5.400	5.34	8.400	1.56	11.40	0.89
2.417	1.34	5.417	5.34	8.417	1.56	11.42	0.89
2.433	1.34	5.433	5.34	8.433	1.56	11.43	0.89
2.450	1.34	5.450	5.34	8.450	1.56	11.45	0.89
2.467	1.34	5.467	5.34	8.467	1.56	11.47	0.89
2.483	1.34	5.483	5.34	8.483	1.56	11.48	0.89
2.500	1.34	5.500	5.36	8.500	1.56	11.50	0.89
2.517	1.34	5.517	21.36	8.517	1.56	11.52	0.89
2.533	1.34	5.533	21.36	8.533	1.56	11.53	0.89
2.550	1.34	5.550	21.36	8.550	1.56	11.55	0.89
2.567	1.34	5.567	21.36	8.567	1.56	11.57	0.89
2.583	1.34	5.583	21.36	8.583	1.56	11.58	0.89
2.600	1.34	5.600	21.36	8.600	1.56	11.60	0.89
2.617	1.34	5.617	21.36	8.617	1.56	11.62	0.89
2.633	1.34	5.633	21.36	8.633	1.56	11.63	0.89
2.650	1.34	5.650	21.36	8.650	1.56	11.65	0.89
2.667	1.34	5.667	21.36	8.667	1.56	11.67	0.89
2.683	1.34	5.683	21.36	8.683	1.56	11.68	0.89
2.700	1.34	5.700	21.36	8.700	1.56	11.70	0.89
2.717	1.34	5.717	21.36	8.717	1.56	11.72	0.89
2.733	1.34	5.733	21.36	8.733	1.56	11.73	0.89
2.750	1.34	5.750	21.41	8.750	1.56	11.75	0.89
2.767	1.34	5.767	58.75	8.767	1.56	11.77	0.89
2.783	1.34	5.783	58.75	8.783	1.56	11.78	0.89
2.800	1.34	5.800	58.75	8.800	1.56	11.80	0.89
2.817	1.34	5.817	58.75	8.817	1.56	11.82	0.89
2.833	1.34	5.833	58.75	8.833	1.56	11.83	0.89
2.850	1.34	5.850	58.75	8.850	1.56	11.85	0.89
2.867	1.34	5.867	58.75	8.867	1.56	11.87	0.89
2.883	1.34	5.883	58.75	8.883	1.56	11.88	0.89
2.900	1.34	5.900	58.75	8.900	1.56	11.90	0.89
2.917	1.34	5.917	58.75	8.917	1.56	11.92	0.89
2.933	1.34	5.933	58.75	8.933	1.56	11.93	0.89
2.950	1.34	5.950	58.75	8.950	1.56	11.95	0.89
2.967	1.34	5.967	58.75	8.967	1.56	11.97	0.89
2.983	1.34	5.983	58.75	8.983	1.56	11.98	0.89
3.000	1.34	6.000	58.68	9.000	1.56	12.00	0.89

Max.Eff.Inten.(mm/hr)=	58.75	7.80	
over (min)	5.00	24.00	
Storage Coeff. (min)=	3.70 (ii)	23.28 (ii)	
Unit Hyd. Tpeak (min)=	5.00	24.00	
Unit Hyd. peak (cms)=	0.27	0.05	
			TOTALS
PEAK FLOW (cms)=	0.18	0.01	0.184 (iii)
TIME TO PEAK (hrs)=	6.00	6.32	6.00
RUNOFF VOLUME (mm)=	43.51	5.66	22.31
TOTAL RAINFALL (mm)=	44.51	44.51	44.51
RUNOFF COEFFICIENT =	0.98	0.13	0.50

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

| RESERVOIR(0010)| IN= 2---> OUT= 1 | DT= 1.0 min |

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0810	0.0465
0.0010	0.0012	0.0910	0.0530
0.0060	0.0145	0.1120	0.0643
0.0100	0.0157	0.1190	0.0683
0.0430	0.0262	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0008)	2.530	0.184	6.00	22.31
OUTFLOW: ID= 1 (0010)	2.530	0.046	6.23	22.19

PEAK FLOW REDUCTION [Qout/Qin](%)= 25.18
TIME SHIFT OF PEAK FLOW (min)= 14.00
MAXIMUM STORAGE USED (ha.m.)= 0.0280

| READ STORM | Ptotal= 44.51 mm |

Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\41490e84
Comments: 2-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.11	3.25	1.78	6.25	8.01	9.25	1.56
0.50	1.11	3.50	1.78	6.50	8.01	9.50	1.56
0.75	1.11	3.75	1.78	6.75	3.56	9.75	1.56
1.00	1.11	4.00	1.78	7.00	3.56	10.00	1.56
1.25	1.11	4.25	2.67	7.25	2.67	10.25	0.89
1.50	1.11	4.50	2.67	7.50	2.67	10.50	0.89
1.75	1.11	4.75	3.56	7.75	2.67	10.75	0.89
2.00	1.11	5.00	3.56	8.00	2.67	11.00	0.89
2.25	1.34	5.25	5.34	8.25	1.56	11.25	0.89
2.50	1.34	5.50	5.34	8.50	1.56	11.50	0.89
2.75	1.34	5.75	21.36	8.75	1.56	11.75	0.89
3.00	1.34	6.00	58.75	9.00	1.56	12.00	0.89

| CALIB NASHYD (0027) | ID= 1 DT= 1.0 min |

Area (ha)= 17.26 Curve Number (CN)= 60.0
Ia (mm)= 5.60 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.95

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.11	3.017	1.78	6.017	8.01	9.02	1.56
0.033	1.11	3.033	1.78	6.033	8.01	9.03	1.56
0.050	1.11	3.050	1.78	6.050	8.01	9.05	1.56
0.067	1.11	3.067	1.78	6.067	8.01	9.07	1.56
0.083	1.11	3.083	1.78	6.083	8.01	9.08	1.56
0.100	1.11	3.100	1.78	6.100	8.01	9.10	1.56
0.117	1.11	3.117	1.78	6.117	8.01	9.12	1.56
0.133	1.11	3.133	1.78	6.133	8.01	9.13	1.56
0.150	1.11	3.150	1.78	6.150	8.01	9.15	1.56
0.167	1.11	3.167	1.78	6.167	8.01	9.17	1.56
0.183	1.11	3.183	1.78	6.183	8.01	9.18	1.56
0.200	1.11	3.200	1.78	6.200	8.01	9.20	1.56
0.217	1.11	3.217	1.78	6.217	8.01	9.22	1.56
0.233	1.11	3.233	1.78	6.233	8.01	9.23	1.56
0.250	1.11	3.250	1.78	6.250	8.01	9.25	1.56
0.267	1.11	3.267	1.78	6.267	8.01	9.27	1.56
0.283	1.11	3.283	1.78	6.283	8.01	9.28	1.56
0.300	1.11	3.300	1.78	6.300	8.01	9.30	1.56
0.317	1.11	3.317	1.78	6.317	8.01	9.32	1.56
0.333	1.11	3.333	1.78	6.333	8.01	9.33	1.56
0.350	1.11	3.350	1.78	6.350	8.01	9.35	1.56
0.367	1.11	3.367	1.78	6.367	8.01	9.37	1.56
0.383	1.11	3.383	1.78	6.383	8.01	9.38	1.56
0.400	1.11	3.400	1.78	6.400	8.01	9.40	1.56
0.417	1.11	3.417	1.78	6.417	8.01	9.42	1.56
0.433	1.11	3.433	1.78	6.433	8.01	9.43	1.56
0.450	1.11	3.450	1.78	6.450	8.01	9.45	1.56

0.467	1.11	3.467	1.78	6.467	8.01	9.47	1.56
0.483	1.11	3.483	1.78	6.483	8.01	9.48	1.56
0.500	1.11	3.500	1.78	6.500	8.00	9.50	1.56
0.517	1.11	3.517	1.78	6.517	3.56	9.52	1.56
0.533	1.11	3.533	1.78	6.533	3.56	9.53	1.56
0.550	1.11	3.550	1.78	6.550	3.56	9.55	1.56
0.567	1.11	3.567	1.78	6.567	3.56	9.57	1.56
0.583	1.11	3.583	1.78	6.583	3.56	9.58	1.56
0.600	1.11	3.600	1.78	6.600	3.56	9.60	1.56
0.617	1.11	3.617	1.78	6.617	3.56	9.62	1.56
0.633	1.11	3.633	1.78	6.633	3.56	9.63	1.56
0.650	1.11	3.650	1.78	6.650	3.56	9.65	1.56
0.667	1.11	3.667	1.78	6.667	3.56	9.67	1.56
0.683	1.11	3.683	1.78	6.683	3.56	9.68	1.56
0.700	1.11	3.700	1.78	6.700	3.56	9.70	1.56
0.717	1.11	3.717	1.78	6.717	3.56	9.72	1.56
0.733	1.11	3.733	1.78	6.733	3.56	9.73	1.56
0.750	1.11	3.750	1.78	6.750	3.56	9.75	1.56
0.767	1.11	3.767	1.78	6.767	3.56	9.77	1.56
0.783	1.11	3.783	1.78	6.783	3.56	9.78	1.56
0.800	1.11	3.800	1.78	6.800	3.56	9.80	1.56
0.817	1.11	3.817	1.78	6.817	3.56	9.82	1.56
0.833	1.11	3.833	1.78	6.833	3.56	9.83	1.56
0.850	1.11	3.850	1.78	6.850	3.56	9.85	1.56
0.867	1.11	3.867	1.78	6.867	3.56	9.87	1.56
0.883	1.11	3.883	1.78	6.883	3.56	9.88	1.56
0.900	1.11	3.900	1.78	6.900	3.56	9.90	1.56
0.917	1.11	3.917	1.78	6.917	3.56	9.92	1.56
0.933	1.11	3.933	1.78	6.933	3.56	9.93	1.56
0.950	1.11	3.950	1.78	6.950	3.56	9.95	1.56
0.967	1.11	3.967	1.78	6.967	3.56	9.97	1.56
0.983	1.11	3.983	1.78	6.983	3.56	9.98	1.56
1.000	1.11	4.000	1.78	7.000	3.56	10.00	1.56
1.017	1.11	4.017	2.67	7.017	2.67	10.02	0.89
1.033	1.11	4.033	2.67	7.033	2.67	10.03	0.89
1.050	1.11	4.050	2.67	7.050	2.67	10.05	0.89
1.067	1.11	4.067	2.67	7.067	2.67	10.07	0.89
1.083	1.11	4.083	2.67	7.083	2.67	10.08	0.89
1.100	1.11	4.100	2.67	7.100	2.67	10.10	0.89
1.117	1.11	4.117	2.67	7.117	2.67	10.12	0.89
1.133	1.11	4.133	2.67	7.133	2.67	10.13	0.89
1.150	1.11	4.150	2.67	7.150	2.67	10.15	0.89
1.167	1.11	4.167	2.67	7.167	2.67	10.17	0.89
1.183	1.11	4.183	2.67	7.183	2.67	10.18	0.89
1.200	1.11	4.200	2.67	7.200	2.67	10.20	0.89
1.217	1.11	4.217	2.67	7.217	2.67	10.22	0.89
1.233	1.11	4.233	2.67	7.233	2.67	10.23	0.89
1.250	1.11	4.250	2.67	7.250	2.67	10.25	0.89
1.267	1.11	4.267	2.67	7.267	2.67	10.27	0.89
1.283	1.11	4.283	2.67	7.283	2.67	10.28	0.89
1.300	1.11	4.300	2.67	7.300	2.67	10.30	0.89
1.317	1.11	4.317	2.67	7.317	2.67	10.32	0.89
1.333	1.11	4.333	2.67	7.333	2.67	10.33	0.89
1.350	1.11	4.350	2.67	7.350	2.67	10.35	0.89
1.367	1.11	4.367	2.67	7.367	2.67	10.37	0.89
1.383	1.11	4.383	2.67	7.383	2.67	10.38	0.89
1.400	1.11	4.400	2.67	7.400	2.67	10.40	0.89
1.417	1.11	4.417	2.67	7.417	2.67	10.42	0.89
1.433	1.11	4.433	2.67	7.433	2.67	10.43	0.89
1.450	1.11	4.450	2.67	7.450	2.67	10.45	0.89
1.467	1.11	4.467	2.67	7.467	2.67	10.47	0.89
1.483	1.11	4.483	2.67	7.483	2.67	10.48	0.89
1.500	1.11	4.500	2.67	7.500	2.67	10.50	0.89
1.517	1.11	4.517	3.56	7.517	2.67	10.52	0.89
1.533	1.11	4.533	3.56	7.533	2.67	10.53	0.89
1.550	1.11	4.550	3.56	7.550	2.67	10.55	0.89
1.567	1.11	4.567	3.56	7.567	2.67	10.57	0.89
1.583	1.11	4.583	3.56	7.583	2.67	10.58	0.89
1.600	1.11	4.600	3.56	7.600	2.67	10.60	0.89
1.617	1.11	4.617	3.56	7.617	2.67	10.62	0.89
1.633	1.11	4.633	3.56	7.633	2.67	10.63	0.89
1.650	1.11	4.650	3.56	7.650	2.67	10.65	0.89
1.667	1.11	4.667	3.56	7.667	2.67	10.67	0.89
1.683	1.11	4.683	3.56	7.683	2.67	10.68	0.89
1.700	1.11	4.700	3.56	7.700	2.67	10.70	0.89
1.717	1.11	4.717	3.56	7.717	2.67	10.72	0.89
1.733	1.11	4.733	3.56	7.733	2.67	10.73	0.89
1.750	1.11	4.750	3.56	7.750	2.67	10.75	0.89
1.767	1.11	4.767	3.56	7.767	2.67	10.77	0.89
1.783	1.11	4.783	3.56	7.783	2.67	10.78	0.89
1.800	1.11	4.800	3.56	7.800	2.67	10.80	0.89
1.817	1.11	4.817	3.56	7.817	2.67	10.82	0.89
1.833	1.11	4.833	3.56	7.833	2.67	10.83	0.89
1.850	1.11	4.850	3.56	7.850	2.67	10.85	0.89
1.867	1.11	4.867	3.56	7.867	2.67	10.87	0.89
1.883	1.11	4.883	3.56	7.883	2.67	10.88	0.89
1.900	1.11	4.900	3.56	7.900	2.67	10.90	0.89
1.917	1.11	4.917	3.56	7.917	2.67	10.92	0.89
1.933	1.11	4.933	3.56	7.933	2.67	10.93	0.89
1.950	1.11	4.950	3.56	7.950	2.67	10.95	0.89
1.967	1.11	4.967	3.56	7.967	2.67	10.97	0.89

1.983	1.11	4.983	3.56	7.983	2.67	10.98	0.89
2.000	1.11	5.000	3.56	8.000	2.67	11.00	0.89
2.017	1.34	5.017	5.34	8.017	1.56	11.02	0.89
2.033	1.34	5.033	5.34	8.033	1.56	11.03	0.89
2.050	1.34	5.050	5.34	8.050	1.56	11.05	0.89
2.067	1.34	5.067	5.34	8.067	1.56	11.07	0.89
2.083	1.34	5.083	5.34	8.083	1.56	11.08	0.89
2.100	1.34	5.100	5.34	8.100	1.56	11.10	0.89
2.117	1.34	5.117	5.34	8.117	1.56	11.12	0.89
2.133	1.34	5.133	5.34	8.133	1.56	11.13	0.89
2.150	1.34	5.150	5.34	8.150	1.56	11.15	0.89
2.167	1.34	5.167	5.34	8.167	1.56	11.17	0.89
2.183	1.34	5.183	5.34	8.183	1.56	11.18	0.89
2.200	1.34	5.200	5.34	8.200	1.56	11.20	0.89
2.217	1.34	5.217	5.34	8.217	1.56	11.22	0.89
2.233	1.34	5.233	5.34	8.233	1.56	11.23	0.89
2.250	1.34	5.250	5.34	8.250	1.56	11.25	0.89
2.267	1.34	5.267	5.34	8.267	1.56	11.27	0.89
2.283	1.34	5.283	5.34	8.283	1.56	11.28	0.89
2.300	1.34	5.300	5.34	8.300	1.56	11.30	0.89
2.317	1.34	5.317	5.34	8.317	1.56	11.32	0.89
2.333	1.34	5.333	5.34	8.333	1.56	11.33	0.89
2.350	1.34	5.350	5.34	8.350	1.56	11.35	0.89
2.367	1.34	5.367	5.34	8.367	1.56	11.37	0.89
2.383	1.34	5.383	5.34	8.383	1.56	11.38	0.89
2.400	1.34	5.400	5.34	8.400	1.56	11.40	0.89
2.417	1.34	5.417	5.34	8.417	1.56	11.42	0.89
2.433	1.34	5.433	5.34	8.433	1.56	11.43	0.89
2.450	1.34	5.450	5.34	8.450	1.56	11.45	0.89
2.467	1.34	5.467	5.34	8.467	1.56	11.47	0.89
2.483	1.34	5.483	5.34	8.483	1.56	11.48	0.89
2.500	1.34	5.500	5.36	8.500	1.56	11.50	0.89
2.517	1.34	5.517	21.36	8.517	1.56	11.52	0.89
2.533	1.34	5.533	21.36	8.533	1.56	11.53	0.89
2.550	1.34	5.550	21.36	8.550	1.56	11.55	0.89
2.567	1.34	5.567	21.36	8.567	1.56	11.57	0.89
2.583	1.34	5.583	21.36	8.583	1.56	11.58	0.89
2.600	1.34	5.600	21.36	8.600	1.56	11.60	0.89
2.617	1.34	5.617	21.36	8.617	1.56	11.62	0.89
2.633	1.34	5.633	21.36	8.633	1.56	11.63	0.89
2.650	1.34	5.650	21.36	8.650	1.56	11.65	0.89
2.667	1.34	5.667	21.36	8.667	1.56	11.67	0.89
2.683	1.34	5.683	21.36	8.683	1.56	11.68	0.89
2.700	1.34	5.700	21.36	8.700	1.56	11.70	0.89
2.717	1.34	5.717	21.36	8.717	1.56	11.72	0.89
2.733	1.34	5.733	21.36	8.733	1.56	11.73	0.89
2.750	1.34	5.750	21.41	8.750	1.56	11.75	0.89
2.767	1.34	5.767	58.75	8.767	1.56	11.77	0.89
2.783	1.34	5.783	58.75	8.783	1.56	11.78	0.89
2.800	1.34	5.800	58.75	8.800	1.56	11.80	0.89
2.817	1.34	5.817	58.75	8.817	1.56	11.82	0.89
2.833	1.34	5.833	58.75	8.833	1.56	11.83	0.89
2.850	1.34	5.850	58.75	8.850	1.56	11.85	0.89
2.867	1.34	5.867	58.75	8.867	1.56	11.87	0.89
2.883	1.34	5.883	58.75	8.883	1.56	11.88	0.89
2.900	1.34	5.900	58.75	8.900	1.56	11.90	0.89
2.917	1.34	5.917	58.75	8.917	1.56	11.92	0.89
2.933	1.34	5.933	58.75	8.933	1.56	11.93	0.89
2.950	1.34	5.950	58.75	8.950	1.56	11.95	0.89
2.967	1.34	5.967	58.75	8.967	1.56	11.97	0.89
2.983	1.34	5.983	58.75	8.983	1.56	11.98	0.89
3.000	1.34	6.000	58.68	9.000	1.56	12.00	0.89

Unit Hyd Qpeak (cms)= 0.694

PEAK FLOW (cms)= 0.116 (i)
TIME TO PEAK (hrs)= 7.017
RUNOFF VOLUME (mm)= 7.270
TOTAL RAINFALL (mm)= 44.510
RUNOFF COEFFICIENT = 0.163

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

ADD HYD (0004)
1 + 2 = 3

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0010):	2.53	0.046	6.23	22.19
+ ID2= 2 (0011):	0.80	0.054	6.08	36.73
ID = 3 (0004):	3.33	0.099	6.12	25.68

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)
3 + 2 = 1

	AREA	QPEAK	TPEAK	R.V.

	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0004):	3.33	0.099	6.12	25.68
+ ID2= 2 (0027):	17.26	0.116	7.02	7.27
ID = 1 (0004):	20.59	0.171	6.72	10.25

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0004):	20.59	0.171	6.72	10.25
+ ID2= 2 (0003):	4.49	0.017	8.05	11.42
ID = 3 (0004):	25.08	0.185	6.73	10.46

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)				
3 + 2 = 1	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0004):	25.08	0.185	6.73	10.46
+ ID2= 2 (0009):	2.07	0.017	6.63	22.46
ID = 1 (0004):	27.15	0.202	6.73	11.37

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

FINISH

```
       V    V   I    SSSSS  U   U    A    L              (v 5.0.2027)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\07dfc862-8a47-49eb-a425-21f0a687e

Summary filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\07dfc862-8a47-49eb-a425-21f0a687e

DATE: 12/19/2018 TIME: 10:47:46

USER:

COMMENTS: _____

```
  ********************************************
  ** SIMULATION : Run 08                     **
  ********************************************
```

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\751c12f9
Ptotal= 58.27 mm	Comments: 5-Year 12-Hour SCS II Design Storm

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	1.46	3.25	2.33	6.25	10.49	9.25	2.04
0.50	1.46	3.50	2.33	6.50	10.49	9.50	2.04
0.75	1.46	3.75	2.33	6.75	4.66	9.75	2.04
1.00	1.46	4.00	2.33	7.00	4.66	10.00	2.04
1.25	1.46	4.25	3.50	7.25	3.50	10.25	1.17
1.50	1.46	4.50	3.50	7.50	3.50	10.50	1.17
1.75	1.46	4.75	4.66	7.75	3.50	10.75	1.17
2.00	1.46	5.00	4.66	8.00	3.50	11.00	1.17
2.25	1.75	5.25	6.99	8.25	2.04	11.25	1.17
2.50	1.75	5.50	6.99	8.50	2.04	11.50	1.17
2.75	1.75	5.75	27.97	8.75	2.04	11.75	1.17
3.00	1.75	6.00	76.92	9.00	2.04	12.00	1.17

CALIB NASHYD (0025)	Area (ha)= 1.48	Curve Number (CN)= 67.0
ID= 1 DT= 1.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.34	

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.46	3.017	2.33	6.017	10.49	9.02	2.04
0.033	1.46	3.033	2.33	6.033	10.49	9.03	2.04
0.050	1.46	3.050	2.33	6.050	10.49	9.05	2.04
0.067	1.46	3.067	2.33	6.067	10.49	9.07	2.04
0.083	1.46	3.083	2.33	6.083	10.49	9.08	2.04
0.100	1.46	3.100	2.33	6.100	10.49	9.10	2.04
0.117	1.46	3.117	2.33	6.117	10.49	9.12	2.04
0.133	1.46	3.133	2.33	6.133	10.49	9.13	2.04
0.150	1.46	3.150	2.33	6.150	10.49	9.15	2.04
0.167	1.46	3.167	2.33	6.167	10.49	9.17	2.04
0.183	1.46	3.183	2.33	6.183	10.49	9.18	2.04
0.200	1.46	3.200	2.33	6.200	10.49	9.20	2.04
0.217	1.46	3.217	2.33	6.217	10.49	9.22	2.04
0.233	1.46	3.233	2.33	6.233	10.49	9.23	2.04
0.250	1.46	3.250	2.33	6.250	10.49	9.25	2.04
0.267	1.46	3.267	2.33	6.267	10.49	9.27	2.04
0.283	1.46	3.283	2.33	6.283	10.49	9.28	2.04
0.300	1.46	3.300	2.33	6.300	10.49	9.30	2.04
0.317	1.46	3.317	2.33	6.317	10.49	9.32	2.04
0.333	1.46	3.333	2.33	6.333	10.49	9.33	2.04
0.350	1.46	3.350	2.33	6.350	10.49	9.35	2.04
0.367	1.46	3.367	2.33	6.367	10.49	9.37	2.04
0.383	1.46	3.383	2.33	6.383	10.49	9.38	2.04
0.400	1.46	3.400	2.33	6.400	10.49	9.40	2.04
0.417	1.46	3.417	2.33	6.417	10.49	9.42	2.04
0.433	1.46	3.433	2.33	6.433	10.49	9.43	2.04
0.450	1.46	3.450	2.33	6.450	10.49	9.45	2.04
0.467	1.46	3.467	2.33	6.467	10.49	9.47	2.04
0.483	1.46	3.483	2.33	6.483	10.49	9.48	2.04
0.500	1.46	3.500	2.33	6.500	10.48	9.50	2.04
0.517	1.46	3.517	2.33	6.517	4.66	9.52	2.04
0.533	1.46	3.533	2.33	6.533	4.66	9.53	2.04
0.550	1.46	3.550	2.33	6.550	4.66	9.55	2.04
0.567	1.46	3.567	2.33	6.567	4.66	9.57	2.04
0.583	1.46	3.583	2.33	6.583	4.66	9.58	2.04
0.600	1.46	3.600	2.33	6.600	4.66	9.60	2.04
0.617	1.46	3.617	2.33	6.617	4.66	9.62	2.04
0.633	1.46	3.633	2.33	6.633	4.66	9.63	2.04
0.650	1.46	3.650	2.33	6.650	4.66	9.65	2.04
0.667	1.46	3.667	2.33	6.667	4.66	9.67	2.04
0.683	1.46	3.683	2.33	6.683	4.66	9.68	2.04
0.700	1.46	3.700	2.33	6.700	4.66	9.70	2.04
0.717	1.46	3.717	2.33	6.717	4.66	9.72	2.04
0.733	1.46	3.733	2.33	6.733	4.66	9.73	2.04
0.750	1.46	3.750	2.33	6.750	4.66	9.75	2.04
0.767	1.46	3.767	2.33	6.767	4.66	9.77	2.04
0.783	1.46	3.783	2.33	6.783	4.66	9.78	2.04
0.800	1.46	3.800	2.33	6.800	4.66	9.80	2.04
0.817	1.46	3.817	2.33	6.817	4.66	9.82	2.04
0.833	1.46	3.833	2.33	6.833	4.66	9.83	2.04
0.850	1.46	3.850	2.33	6.850	4.66	9.85	2.04
0.867	1.46	3.867	2.33	6.867	4.66	9.87	2.04
0.883	1.46	3.883	2.33	6.883	4.66	9.88	2.04
0.900	1.46	3.900	2.33	6.900	4.66	9.90	2.04
0.917	1.46	3.917	2.33	6.917	4.66	9.92	2.04
0.933	1.46	3.933	2.33	6.933	4.66	9.93	2.04
0.950	1.46	3.950	2.33	6.950	4.66	9.95	2.04
0.967	1.46	3.967	2.33	6.967	4.66	9.97	2.04
0.983	1.46	3.983	2.33	6.983	4.66	9.98	2.04
1.000	1.46	4.000	2.33	7.000	4.66	10.00	2.04
1.017	1.46	4.017	3.50	7.017	3.50	10.02	1.17
1.033	1.46	4.033	3.50	7.033	3.50	10.03	1.17
1.050	1.46	4.050	3.50	7.050	3.50	10.05	1.17

1.067	1.46	4.067	3.50	7.067	3.50	10.07	1.17
1.083	1.46	4.083	3.50	7.083	3.50	10.08	1.17
1.100	1.46	4.100	3.50	7.100	3.50	10.10	1.17
1.117	1.46	4.117	3.50	7.117	3.50	10.12	1.17
1.133	1.46	4.133	3.50	7.133	3.50	10.13	1.17
1.150	1.46	4.150	3.50	7.150	3.50	10.15	1.17
1.167	1.46	4.167	3.50	7.167	3.50	10.17	1.17
1.183	1.46	4.183	3.50	7.183	3.50	10.18	1.17
1.200	1.46	4.200	3.50	7.200	3.50	10.20	1.17
1.217	1.46	4.217	3.50	7.217	3.50	10.22	1.17
1.233	1.46	4.233	3.50	7.233	3.50	10.23	1.17
1.250	1.46	4.250	3.50	7.250	3.50	10.25	1.17
1.267	1.46	4.267	3.50	7.267	3.50	10.27	1.17
1.283	1.46	4.283	3.50	7.283	3.50	10.28	1.17
1.300	1.46	4.300	3.50	7.300	3.50	10.30	1.17
1.317	1.46	4.317	3.50	7.317	3.50	10.32	1.17
1.333	1.46	4.333	3.50	7.333	3.50	10.33	1.17
1.350	1.46	4.350	3.50	7.350	3.50	10.35	1.17
1.367	1.46	4.367	3.50	7.367	3.50	10.37	1.17
1.383	1.46	4.383	3.50	7.383	3.50	10.38	1.17
1.400	1.46	4.400	3.50	7.400	3.50	10.40	1.17
1.417	1.46	4.417	3.50	7.417	3.50	10.42	1.17
1.433	1.46	4.433	3.50	7.433	3.50	10.43	1.17
1.450	1.46	4.450	3.50	7.450	3.50	10.45	1.17
1.467	1.46	4.467	3.50	7.467	3.50	10.47	1.17
1.483	1.46	4.483	3.50	7.483	3.50	10.48	1.17
1.500	1.46	4.500	3.50	7.500	3.50	10.50	1.17
1.517	1.46	4.517	4.66	7.517	3.50	10.52	1.17
1.533	1.46	4.533	4.66	7.533	3.50	10.53	1.17
1.550	1.46	4.550	4.66	7.550	3.50	10.55	1.17
1.567	1.46	4.567	4.66	7.567	3.50	10.57	1.17
1.583	1.46	4.583	4.66	7.583	3.50	10.58	1.17
1.600	1.46	4.600	4.66	7.600	3.50	10.60	1.17
1.617	1.46	4.617	4.66	7.617	3.50	10.62	1.17
1.633	1.46	4.633	4.66	7.633	3.50	10.63	1.17
1.650	1.46	4.650	4.66	7.650	3.50	10.65	1.17
1.667	1.46	4.667	4.66	7.667	3.50	10.67	1.17
1.683	1.46	4.683	4.66	7.683	3.50	10.68	1.17
1.700	1.46	4.700	4.66	7.700	3.50	10.70	1.17
1.717	1.46	4.717	4.66	7.717	3.50	10.72	1.17
1.733	1.46	4.733	4.66	7.733	3.50	10.73	1.17
1.750	1.46	4.750	4.66	7.750	3.50	10.75	1.17
1.767	1.46	4.767	4.66	7.767	3.50	10.77	1.17
1.783	1.46	4.783	4.66	7.783	3.50	10.78	1.17
1.800	1.46	4.800	4.66	7.800	3.50	10.80	1.17
1.817	1.46	4.817	4.66	7.817	3.50	10.82	1.17
1.833	1.46	4.833	4.66	7.833	3.50	10.83	1.17
1.850	1.46	4.850	4.66	7.850	3.50	10.85	1.17
1.867	1.46	4.867	4.66	7.867	3.50	10.87	1.17
1.883	1.46	4.883	4.66	7.883	3.50	10.88	1.17
1.900	1.46	4.900	4.66	7.900	3.50	10.90	1.17
1.917	1.46	4.917	4.66	7.917	3.50	10.92	1.17
1.933	1.46	4.933	4.66	7.933	3.50	10.93	1.17
1.950	1.46	4.950	4.66	7.950	3.50	10.95	1.17
1.967	1.46	4.967	4.66	7.967	3.50	10.97	1.17
1.983	1.46	4.983	4.66	7.983	3.50	10.98	1.17
2.000	1.46	5.000	4.66	8.000	3.49	11.00	1.17
2.017	1.75	5.017	6.99	8.017	2.04	11.02	1.17
2.033	1.75	5.033	6.99	8.033	2.04	11.03	1.17
2.050	1.75	5.050	6.99	8.050	2.04	11.05	1.17
2.067	1.75	5.067	6.99	8.067	2.04	11.07	1.17
2.083	1.75	5.083	6.99	8.083	2.04	11.08	1.17
2.100	1.75	5.100	6.99	8.100	2.04	11.10	1.17
2.117	1.75	5.117	6.99	8.117	2.04	11.12	1.17
2.133	1.75	5.133	6.99	8.133	2.04	11.13	1.17
2.150	1.75	5.150	6.99	8.150	2.04	11.15	1.17
2.167	1.75	5.167	6.99	8.167	2.04	11.17	1.17
2.183	1.75	5.183	6.99	8.183	2.04	11.18	1.17
2.200	1.75	5.200	6.99	8.200	2.04	11.20	1.17
2.217	1.75	5.217	6.99	8.217	2.04	11.22	1.17
2.233	1.75	5.233	6.99	8.233	2.04	11.23	1.17
2.250	1.75	5.250	6.99	8.250	2.04	11.25	1.17
2.267	1.75	5.267	6.99	8.267	2.04	11.27	1.17
2.283	1.75	5.283	6.99	8.283	2.04	11.28	1.17
2.300	1.75	5.300	6.99	8.300	2.04	11.30	1.17
2.317	1.75	5.317	6.99	8.317	2.04	11.32	1.17
2.333	1.75	5.333	6.99	8.333	2.04	11.33	1.17
2.350	1.75	5.350	6.99	8.350	2.04	11.35	1.17
2.367	1.75	5.367	6.99	8.367	2.04	11.37	1.17
2.383	1.75	5.383	6.99	8.383	2.04	11.38	1.17
2.400	1.75	5.400	6.99	8.400	2.04	11.40	1.17
2.417	1.75	5.417	6.99	8.417	2.04	11.42	1.17
2.433	1.75	5.433	6.99	8.433	2.04	11.43	1.17
2.450	1.75	5.450	6.99	8.450	2.04	11.45	1.17
2.467	1.75	5.467	6.99	8.467	2.04	11.47	1.17
2.483	1.75	5.483	6.99	8.483	2.04	11.48	1.17
2.500	1.75	5.500	7.01	8.500	2.04	11.50	1.17
2.517	1.75	5.517	27.97	8.517	2.04	11.52	1.17
2.533	1.75	5.533	27.97	8.533	2.04	11.53	1.17
2.550	1.75	5.550	27.97	8.550	2.04	11.55	1.17
2.567	1.75	5.567	27.97	8.567	2.04	11.57	1.17

2.583	1.75	5.583	27.97	8.583	2.04	11.58	1.17
2.600	1.75	5.600	27.97	8.600	2.04	11.60	1.17
2.617	1.75	5.617	27.97	8.617	2.04	11.62	1.17
2.633	1.75	5.633	27.97	8.633	2.04	11.63	1.17
2.650	1.75	5.650	27.97	8.650	2.04	11.65	1.17
2.667	1.75	5.667	27.97	8.667	2.04	11.67	1.17
2.683	1.75	5.683	27.97	8.683	2.04	11.68	1.17
2.700	1.75	5.700	27.97	8.700	2.04	11.70	1.17
2.717	1.75	5.717	27.97	8.717	2.04	11.72	1.17
2.733	1.75	5.733	27.97	8.733	2.04	11.73	1.17
2.750	1.75	5.750	28.03	8.750	2.04	11.75	1.17
2.767	1.75	5.767	76.92	8.767	2.04	11.77	1.17
2.783	1.75	5.783	76.92	8.783	2.04	11.78	1.17
2.800	1.75	5.800	76.92	8.800	2.04	11.80	1.17
2.817	1.75	5.817	76.92	8.817	2.04	11.82	1.17
2.833	1.75	5.833	76.92	8.833	2.04	11.83	1.17
2.850	1.75	5.850	76.92	8.850	2.04	11.85	1.17
2.867	1.75	5.867	76.92	8.867	2.04	11.87	1.17
2.883	1.75	5.883	76.92	8.883	2.04	11.88	1.17
2.900	1.75	5.900	76.92	8.900	2.04	11.90	1.17
2.917	1.75	5.917	76.92	8.917	2.04	11.92	1.17
2.933	1.75	5.933	76.92	8.933	2.04	11.93	1.17
2.950	1.75	5.950	76.92	8.950	2.04	11.95	1.17
2.967	1.75	5.967	76.92	8.967	2.04	11.97	1.17
2.983	1.75	5.983	76.92	8.983	2.04	11.98	1.17
3.000	1.75	6.000	76.82	9.000	2.04	12.00	1.17

Unit Hyd Qpeak (cms)= 0.166

PEAK FLOW (cms)= 0.047 (i)
TIME TO PEAK (hrs)= 6.250
RUNOFF VOLUME (mm)= 15.908
TOTAL RAINFALL (mm)= 58.270
RUNOFF COEFFICIENT = 0.273

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

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\751c12f9
Ptotal= 58.27 mm	Comments: 5-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.46	3.25	2.33	6.25	10.49	9.25	2.04
0.50	1.46	3.50	2.33	6.50	10.49	9.50	2.04
0.75	1.46	3.75	2.33	6.75	4.66	9.75	2.04
1.00	1.46	4.00	2.33	7.00	4.66	10.00	2.04
1.25	1.46	4.25	3.50	7.25	3.50	10.25	1.17
1.50	1.46	4.50	3.50	7.50	3.50	10.50	1.17
1.75	1.46	4.75	4.66	7.75	3.50	10.75	1.17
2.00	1.46	5.00	4.66	8.00	3.50	11.00	1.17
2.25	1.75	5.25	6.99	8.25	2.04	11.25	1.17
2.50	1.75	5.50	6.99	8.50	2.04	11.50	1.17
2.75	1.75	5.75	27.97	8.75	2.04	11.75	1.17
3.00	1.75	6.00	76.92	9.00	2.04	12.00	1.17

CALIB STANDHYD (0001)	Area (ha)= 3.01
ID= 1 DT= 1.0 min	Total Imp(%)= 57.00 Dir. Conn.(%)= 46.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.72	1.29
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.50	3.00
Length	(m)=	141.66	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.46	3.017	2.33	6.017	10.49	9.02	2.04
0.033	1.46	3.033	2.33	6.033	10.49	9.03	2.04
0.050	1.46	3.050	2.33	6.050	10.49	9.05	2.04
0.067	1.46	3.067	2.33	6.067	10.49	9.07	2.04
0.083	1.46	3.083	2.33	6.083	10.49	9.08	2.04
0.100	1.46	3.100	2.33	6.100	10.49	9.10	2.04
0.117	1.46	3.117	2.33	6.117	10.49	9.12	2.04
0.133	1.46	3.133	2.33	6.133	10.49	9.13	2.04
0.150	1.46	3.150	2.33	6.150	10.49	9.15	2.04
0.167	1.46	3.167	2.33	6.167	10.49	9.17	2.04
0.183	1.46	3.183	2.33	6.183	10.49	9.18	2.04

0.200	1.46	3.200	2.33	6.200	10.49	9.20	2.04
0.217	1.46	3.217	2.33	6.217	10.49	9.22	2.04
0.233	1.46	3.233	2.33	6.233	10.49	9.23	2.04
0.250	1.46	3.250	2.33	6.250	10.49	9.25	2.04
0.267	1.46	3.267	2.33	6.267	10.49	9.27	2.04
0.283	1.46	3.283	2.33	6.283	10.49	9.28	2.04
0.300	1.46	3.300	2.33	6.300	10.49	9.30	2.04
0.317	1.46	3.317	2.33	6.317	10.49	9.32	2.04
0.333	1.46	3.333	2.33	6.333	10.49	9.33	2.04
0.350	1.46	3.350	2.33	6.350	10.49	9.35	2.04
0.367	1.46	3.367	2.33	6.367	10.49	9.37	2.04
0.383	1.46	3.383	2.33	6.383	10.49	9.38	2.04
0.400	1.46	3.400	2.33	6.400	10.49	9.40	2.04
0.417	1.46	3.417	2.33	6.417	10.49	9.42	2.04
0.433	1.46	3.433	2.33	6.433	10.49	9.43	2.04
0.450	1.46	3.450	2.33	6.450	10.49	9.45	2.04
0.467	1.46	3.467	2.33	6.467	10.49	9.47	2.04
0.483	1.46	3.483	2.33	6.483	10.49	9.48	2.04
0.500	1.46	3.500	2.33	6.500	10.48	9.50	2.04
0.517	1.46	3.517	2.33	6.517	4.66	9.52	2.04
0.533	1.46	3.533	2.33	6.533	4.66	9.53	2.04
0.550	1.46	3.550	2.33	6.550	4.66	9.55	2.04
0.567	1.46	3.567	2.33	6.567	4.66	9.57	2.04
0.583	1.46	3.583	2.33	6.583	4.66	9.58	2.04
0.600	1.46	3.600	2.33	6.600	4.66	9.60	2.04
0.617	1.46	3.617	2.33	6.617	4.66	9.62	2.04
0.633	1.46	3.633	2.33	6.633	4.66	9.63	2.04
0.650	1.46	3.650	2.33	6.650	4.66	9.65	2.04
0.667	1.46	3.667	2.33	6.667	4.66	9.67	2.04
0.683	1.46	3.683	2.33	6.683	4.66	9.68	2.04
0.700	1.46	3.700	2.33	6.700	4.66	9.70	2.04
0.717	1.46	3.717	2.33	6.717	4.66	9.72	2.04
0.733	1.46	3.733	2.33	6.733	4.66	9.73	2.04
0.750	1.46	3.750	2.33	6.750	4.66	9.75	2.04
0.767	1.46	3.767	2.33	6.767	4.66	9.77	2.04
0.783	1.46	3.783	2.33	6.783	4.66	9.78	2.04
0.800	1.46	3.800	2.33	6.800	4.66	9.80	2.04
0.817	1.46	3.817	2.33	6.817	4.66	9.82	2.04
0.833	1.46	3.833	2.33	6.833	4.66	9.83	2.04
0.850	1.46	3.850	2.33	6.850	4.66	9.85	2.04
0.867	1.46	3.867	2.33	6.867	4.66	9.87	2.04
0.883	1.46	3.883	2.33	6.883	4.66	9.88	2.04
0.900	1.46	3.900	2.33	6.900	4.66	9.90	2.04
0.917	1.46	3.917	2.33	6.917	4.66	9.92	2.04
0.933	1.46	3.933	2.33	6.933	4.66	9.93	2.04
0.950	1.46	3.950	2.33	6.950	4.66	9.95	2.04
0.967	1.46	3.967	2.33	6.967	4.66	9.97	2.04
0.983	1.46	3.983	2.33	6.983	4.66	9.98	2.04
1.000	1.46	4.000	2.33	7.000	4.66	10.00	2.04
1.017	1.46	4.017	3.50	7.017	3.50	10.02	1.17
1.033	1.46	4.033	3.50	7.033	3.50	10.03	1.17
1.050	1.46	4.050	3.50	7.050	3.50	10.05	1.17
1.067	1.46	4.067	3.50	7.067	3.50	10.07	1.17
1.083	1.46	4.083	3.50	7.083	3.50	10.08	1.17
1.100	1.46	4.100	3.50	7.100	3.50	10.10	1.17
1.117	1.46	4.117	3.50	7.117	3.50	10.12	1.17
1.133	1.46	4.133	3.50	7.133	3.50	10.13	1.17
1.150	1.46	4.150	3.50	7.150	3.50	10.15	1.17
1.167	1.46	4.167	3.50	7.167	3.50	10.17	1.17
1.183	1.46	4.183	3.50	7.183	3.50	10.18	1.17
1.200	1.46	4.200	3.50	7.200	3.50	10.20	1.17
1.217	1.46	4.217	3.50	7.217	3.50	10.22	1.17
1.233	1.46	4.233	3.50	7.233	3.50	10.23	1.17
1.250	1.46	4.250	3.50	7.250	3.50	10.25	1.17
1.267	1.46	4.267	3.50	7.267	3.50	10.27	1.17
1.283	1.46	4.283	3.50	7.283	3.50	10.28	1.17
1.300	1.46	4.300	3.50	7.300	3.50	10.30	1.17
1.317	1.46	4.317	3.50	7.317	3.50	10.32	1.17
1.333	1.46	4.333	3.50	7.333	3.50	10.33	1.17
1.350	1.46	4.350	3.50	7.350	3.50	10.35	1.17
1.367	1.46	4.367	3.50	7.367	3.50	10.37	1.17
1.383	1.46	4.383	3.50	7.383	3.50	10.38	1.17
1.400	1.46	4.400	3.50	7.400	3.50	10.40	1.17
1.417	1.46	4.417	3.50	7.417	3.50	10.42	1.17
1.433	1.46	4.433	3.50	7.433	3.50	10.43	1.17
1.450	1.46	4.450	3.50	7.450	3.50	10.45	1.17
1.467	1.46	4.467	3.50	7.467	3.50	10.47	1.17
1.483	1.46	4.483	3.50	7.483	3.50	10.48	1.17
1.500	1.46	4.500	3.50	7.500	3.50	10.50	1.17
1.517	1.46	4.517	4.66	7.517	3.50	10.52	1.17
1.533	1.46	4.533	4.66	7.533	3.50	10.53	1.17
1.550	1.46	4.550	4.66	7.550	3.50	10.55	1.17
1.567	1.46	4.567	4.66	7.567	3.50	10.57	1.17
1.583	1.46	4.583	4.66	7.583	3.50	10.58	1.17
1.600	1.46	4.600	4.66	7.600	3.50	10.60	1.17
1.617	1.46	4.617	4.66	7.617	3.50	10.62	1.17
1.633	1.46	4.633	4.66	7.633	3.50	10.63	1.17
1.650	1.46	4.650	4.66	7.650	3.50	10.65	1.17
1.667	1.46	4.667	4.66	7.667	3.50	10.67	1.17
1.683	1.46	4.683	4.66	7.683	3.50	10.68	1.17
1.700	1.46	4.700	4.66	7.700	3.50	10.70	1.17

1.717	1.46	4.717	4.66	7.717	3.50	10.72	1.17
1.733	1.46	4.733	4.66	7.733	3.50	10.73	1.17
1.750	1.46	4.750	4.66	7.750	3.50	10.75	1.17
1.767	1.46	4.767	4.66	7.767	3.50	10.77	1.17
1.783	1.46	4.783	4.66	7.783	3.50	10.78	1.17
1.800	1.46	4.800	4.66	7.800	3.50	10.80	1.17
1.817	1.46	4.817	4.66	7.817	3.50	10.82	1.17
1.833	1.46	4.833	4.66	7.833	3.50	10.83	1.17
1.850	1.46	4.850	4.66	7.850	3.50	10.85	1.17
1.867	1.46	4.867	4.66	7.867	3.50	10.87	1.17
1.883	1.46	4.883	4.66	7.883	3.50	10.88	1.17
1.900	1.46	4.900	4.66	7.900	3.50	10.90	1.17
1.917	1.46	4.917	4.66	7.917	3.50	10.92	1.17
1.933	1.46	4.933	4.66	7.933	3.50	10.93	1.17
1.950	1.46	4.950	4.66	7.950	3.50	10.95	1.17
1.967	1.46	4.967	4.66	7.967	3.50	10.97	1.17
1.983	1.46	4.983	4.66	7.983	3.50	10.98	1.17
2.000	1.46	5.000	4.66	8.000	3.49	11.00	1.17
2.017	1.75	5.017	6.99	8.017	2.04	11.02	1.17
2.033	1.75	5.033	6.99	8.033	2.04	11.03	1.17
2.050	1.75	5.050	6.99	8.050	2.04	11.05	1.17
2.067	1.75	5.067	6.99	8.067	2.04	11.07	1.17
2.083	1.75	5.083	6.99	8.083	2.04	11.08	1.17
2.100	1.75	5.100	6.99	8.100	2.04	11.10	1.17
2.117	1.75	5.117	6.99	8.117	2.04	11.12	1.17
2.133	1.75	5.133	6.99	8.133	2.04	11.13	1.17
2.150	1.75	5.150	6.99	8.150	2.04	11.15	1.17
2.167	1.75	5.167	6.99	8.167	2.04	11.17	1.17
2.183	1.75	5.183	6.99	8.183	2.04	11.18	1.17
2.200	1.75	5.200	6.99	8.200	2.04	11.20	1.17
2.217	1.75	5.217	6.99	8.217	2.04	11.22	1.17
2.233	1.75	5.233	6.99	8.233	2.04	11.23	1.17
2.250	1.75	5.250	6.99	8.250	2.04	11.25	1.17
2.267	1.75	5.267	6.99	8.267	2.04	11.27	1.17
2.283	1.75	5.283	6.99	8.283	2.04	11.28	1.17
2.300	1.75	5.300	6.99	8.300	2.04	11.30	1.17
2.317	1.75	5.317	6.99	8.317	2.04	11.32	1.17
2.333	1.75	5.333	6.99	8.333	2.04	11.33	1.17
2.350	1.75	5.350	6.99	8.350	2.04	11.35	1.17
2.367	1.75	5.367	6.99	8.367	2.04	11.37	1.17
2.383	1.75	5.383	6.99	8.383	2.04	11.38	1.17
2.400	1.75	5.400	6.99	8.400	2.04	11.40	1.17
2.417	1.75	5.417	6.99	8.417	2.04	11.42	1.17
2.433	1.75	5.433	6.99	8.433	2.04	11.43	1.17
2.450	1.75	5.450	6.99	8.450	2.04	11.45	1.17
2.467	1.75	5.467	6.99	8.467	2.04	11.47	1.17
2.483	1.75	5.483	6.99	8.483	2.04	11.48	1.17
2.500	1.75	5.500	7.01	8.500	2.04	11.50	1.17
2.517	1.75	5.517	27.97	8.517	2.04	11.52	1.17
2.533	1.75	5.533	27.97	8.533	2.04	11.53	1.17
2.550	1.75	5.550	27.97	8.550	2.04	11.55	1.17
2.567	1.75	5.567	27.97	8.567	2.04	11.57	1.17
2.583	1.75	5.583	27.97	8.583	2.04	11.58	1.17
2.600	1.75	5.600	27.97	8.600	2.04	11.60	1.17
2.617	1.75	5.617	27.97	8.617	2.04	11.62	1.17
2.633	1.75	5.633	27.97	8.633	2.04	11.63	1.17
2.650	1.75	5.650	27.97	8.650	2.04	11.65	1.17
2.667	1.75	5.667	27.97	8.667	2.04	11.67	1.17
2.683	1.75	5.683	27.97	8.683	2.04	11.68	1.17
2.700	1.75	5.700	27.97	8.700	2.04	11.70	1.17
2.717	1.75	5.717	27.97	8.717	2.04	11.72	1.17
2.733	1.75	5.733	27.97	8.733	2.04	11.73	1.17
2.750	1.75	5.750	28.03	8.750	2.04	11.75	1.17
2.767	1.75	5.767	76.92	8.767	2.04	11.77	1.17
2.783	1.75	5.783	76.92	8.783	2.04	11.78	1.17
2.800	1.75	5.800	76.92	8.800	2.04	11.80	1.17
2.817	1.75	5.817	76.92	8.817	2.04	11.82	1.17
2.833	1.75	5.833	76.92	8.833	2.04	11.83	1.17
2.850	1.75	5.850	76.92	8.850	2.04	11.85	1.17
2.867	1.75	5.867	76.92	8.867	2.04	11.87	1.17
2.883	1.75	5.883	76.92	8.883	2.04	11.88	1.17
2.900	1.75	5.900	76.92	8.900	2.04	11.90	1.17
2.917	1.75	5.917	76.92	8.917	2.04	11.92	1.17
2.933	1.75	5.933	76.92	8.933	2.04	11.93	1.17
2.950	1.75	5.950	76.92	8.950	2.04	11.95	1.17
2.967	1.75	5.967	76.92	8.967	2.04	11.97	1.17
2.983	1.75	5.983	76.92	8.983	2.04	11.98	1.17
3.000	1.75	6.000	76.82	9.000	2.04	12.00	1.17

Max.Eff.Inten.(mm/hr)=	76.92	21.33	
over (min)	5.00	10.00	
Storage Coeff. (min)=	3.10 (ii)	9.85 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.30	0.11	
			TOTALS
PEAK FLOW (cms)=	0.29	0.05	0.338 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	57.27	10.44	31.98
TOTAL RAINFALL (mm)=	58.27	58.27	58.27
RUNOFF COEFFICIENT =	0.98	0.18	0.55

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0016)		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0001):		3.01	0.338	6.00	31.98
+ ID2= 2 (0025):		1.48	0.047	6.25	15.91
ID = 3 (0016):		4.49	0.365	6.00	26.68

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0003)					
IN= 2---> OUT= 1					
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)	
	0.0000	0.0000	0.0410	0.0864	
	0.0000	0.0281	0.0800	0.1533	
	0.0010	0.0321	0.0900	0.1746	
	0.0040	0.0479	0.1110	0.2118	
	0.0070	0.0518	0.1180	0.2246	

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0016)	4.490	0.365	6.00	26.68
OUTFLOW: ID= 1 (0003)	4.490	0.035	7.10	19.21

PEAK FLOW REDUCTION [Qout/Qin](%)= 9.62
TIME SHIFT OF PEAK FLOW (min)= 66.00
MAXIMUM STORAGE USED (ha.m.)= 0.0804

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\751c12f9
Ptotal= 58.27 mm	Comments: 5-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.46	3.25	2.33	6.25	10.49	9.25	2.04
0.50	1.46	3.50	2.33	6.50	10.49	9.50	2.04
0.75	1.46	3.75	2.33	6.75	4.66	9.75	2.04
1.00	1.46	4.00	2.33	7.00	4.66	10.00	2.04
1.25	1.46	4.25	3.50	7.25	3.50	10.25	1.17
1.50	1.46	4.50	3.50	7.50	3.50	10.50	1.17
1.75	1.46	4.75	4.66	7.75	3.50	10.75	1.17
2.00	1.46	5.00	4.66	8.00	3.50	11.00	1.17
2.25	1.75	5.25	6.99	8.25	2.04	11.25	1.17
2.50	1.75	5.50	6.99	8.50	2.04	11.50	1.17
2.75	1.75	5.75	27.97	8.75	2.04	11.75	1.17
3.00	1.75	6.00	76.92	9.00	2.04	12.00	1.17

CALIB			
NASHYD (0026)	Area (ha)= 0.27	Curve Number (CN)= 71.0	
ID= 1 DT= 1.0 min	Ia (mm)= 3.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.02		

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.46	3.017	2.33	6.017	10.49	9.02	2.04
0.033	1.46	3.033	2.33	6.033	10.49	9.03	2.04
0.050	1.46	3.050	2.33	6.050	10.49	9.05	2.04
0.067	1.46	3.067	2.33	6.067	10.49	9.07	2.04
0.083	1.46	3.083	2.33	6.083	10.49	9.08	2.04
0.100	1.46	3.100	2.33	6.100	10.49	9.10	2.04
0.117	1.46	3.117	2.33	6.117	10.49	9.12	2.04
0.133	1.46	3.133	2.33	6.133	10.49	9.13	2.04
0.150	1.46	3.150	2.33	6.150	10.49	9.15	2.04
0.167	1.46	3.167	2.33	6.167	10.49	9.17	2.04
0.183	1.46	3.183	2.33	6.183	10.49	9.18	2.04
0.200	1.46	3.200	2.33	6.200	10.49	9.20	2.04
0.217	1.46	3.217	2.33	6.217	10.49	9.22	2.04

0.233	1.46	3.233	2.33	6.233	10.49	9.23	2.04
0.250	1.46	3.250	2.33	6.250	10.49	9.25	2.04
0.267	1.46	3.267	2.33	6.267	10.49	9.27	2.04
0.283	1.46	3.283	2.33	6.283	10.49	9.28	2.04
0.300	1.46	3.300	2.33	6.300	10.49	9.30	2.04
0.317	1.46	3.317	2.33	6.317	10.49	9.32	2.04
0.333	1.46	3.333	2.33	6.333	10.49	9.33	2.04
0.350	1.46	3.350	2.33	6.350	10.49	9.35	2.04
0.367	1.46	3.367	2.33	6.367	10.49	9.37	2.04
0.383	1.46	3.383	2.33	6.383	10.49	9.38	2.04
0.400	1.46	3.400	2.33	6.400	10.49	9.40	2.04
0.417	1.46	3.417	2.33	6.417	10.49	9.42	2.04
0.433	1.46	3.433	2.33	6.433	10.49	9.43	2.04
0.450	1.46	3.450	2.33	6.450	10.49	9.45	2.04
0.467	1.46	3.467	2.33	6.467	10.49	9.47	2.04
0.483	1.46	3.483	2.33	6.483	10.49	9.48	2.04
0.500	1.46	3.500	2.33	6.500	10.48	9.50	2.04
0.517	1.46	3.517	2.33	6.517	4.66	9.52	2.04
0.533	1.46	3.533	2.33	6.533	4.66	9.53	2.04
0.550	1.46	3.550	2.33	6.550	4.66	9.55	2.04
0.567	1.46	3.567	2.33	6.567	4.66	9.57	2.04
0.583	1.46	3.583	2.33	6.583	4.66	9.58	2.04
0.600	1.46	3.600	2.33	6.600	4.66	9.60	2.04
0.617	1.46	3.617	2.33	6.617	4.66	9.62	2.04
0.633	1.46	3.633	2.33	6.633	4.66	9.63	2.04
0.650	1.46	3.650	2.33	6.650	4.66	9.65	2.04
0.667	1.46	3.667	2.33	6.667	4.66	9.67	2.04
0.683	1.46	3.683	2.33	6.683	4.66	9.68	2.04
0.700	1.46	3.700	2.33	6.700	4.66	9.70	2.04
0.717	1.46	3.717	2.33	6.717	4.66	9.72	2.04
0.733	1.46	3.733	2.33	6.733	4.66	9.73	2.04
0.750	1.46	3.750	2.33	6.750	4.66	9.75	2.04
0.767	1.46	3.767	2.33	6.767	4.66	9.77	2.04
0.783	1.46	3.783	2.33	6.783	4.66	9.78	2.04
0.800	1.46	3.800	2.33	6.800	4.66	9.80	2.04
0.817	1.46	3.817	2.33	6.817	4.66	9.82	2.04
0.833	1.46	3.833	2.33	6.833	4.66	9.83	2.04
0.850	1.46	3.850	2.33	6.850	4.66	9.85	2.04
0.867	1.46	3.867	2.33	6.867	4.66	9.87	2.04
0.883	1.46	3.883	2.33	6.883	4.66	9.88	2.04
0.900	1.46	3.900	2.33	6.900	4.66	9.90	2.04
0.917	1.46	3.917	2.33	6.917	4.66	9.92	2.04
0.933	1.46	3.933	2.33	6.933	4.66	9.93	2.04
0.950	1.46	3.950	2.33	6.950	4.66	9.95	2.04
0.967	1.46	3.967	2.33	6.967	4.66	9.97	2.04
0.983	1.46	3.983	2.33	6.983	4.66	9.98	2.04
1.000	1.46	4.000	2.33	7.000	4.66	10.00	2.04
1.017	1.46	4.017	3.50	7.017	3.50	10.02	1.17
1.033	1.46	4.033	3.50	7.033	3.50	10.03	1.17
1.050	1.46	4.050	3.50	7.050	3.50	10.05	1.17
1.067	1.46	4.067	3.50	7.067	3.50	10.07	1.17
1.083	1.46	4.083	3.50	7.083	3.50	10.08	1.17
1.100	1.46	4.100	3.50	7.100	3.50	10.10	1.17
1.117	1.46	4.117	3.50	7.117	3.50	10.12	1.17
1.133	1.46	4.133	3.50	7.133	3.50	10.13	1.17
1.150	1.46	4.150	3.50	7.150	3.50	10.15	1.17
1.167	1.46	4.167	3.50	7.167	3.50	10.17	1.17
1.183	1.46	4.183	3.50	7.183	3.50	10.18	1.17
1.200	1.46	4.200	3.50	7.200	3.50	10.20	1.17
1.217	1.46	4.217	3.50	7.217	3.50	10.22	1.17
1.233	1.46	4.233	3.50	7.233	3.50	10.23	1.17
1.250	1.46	4.250	3.50	7.250	3.50	10.25	1.17
1.267	1.46	4.267	3.50	7.267	3.50	10.27	1.17
1.283	1.46	4.283	3.50	7.283	3.50	10.28	1.17
1.300	1.46	4.300	3.50	7.300	3.50	10.30	1.17
1.317	1.46	4.317	3.50	7.317	3.50	10.32	1.17
1.333	1.46	4.333	3.50	7.333	3.50	10.33	1.17
1.350	1.46	4.350	3.50	7.350	3.50	10.35	1.17
1.367	1.46	4.367	3.50	7.367	3.50	10.37	1.17
1.383	1.46	4.383	3.50	7.383	3.50	10.38	1.17
1.400	1.46	4.400	3.50	7.400	3.50	10.40	1.17
1.417	1.46	4.417	3.50	7.417	3.50	10.42	1.17
1.433	1.46	4.433	3.50	7.433	3.50	10.43	1.17
1.450	1.46	4.450	3.50	7.450	3.50	10.45	1.17
1.467	1.46	4.467	3.50	7.467	3.50	10.47	1.17
1.483	1.46	4.483	3.50	7.483	3.50	10.48	1.17
1.500	1.46	4.500	3.50	7.500	3.50	10.50	1.17
1.517	1.46	4.517	4.66	7.517	3.50	10.52	1.17
1.533	1.46	4.533	4.66	7.533	3.50	10.53	1.17
1.550	1.46	4.550	4.66	7.550	3.50	10.55	1.17
1.567	1.46	4.567	4.66	7.567	3.50	10.57	1.17
1.583	1.46	4.583	4.66	7.583	3.50	10.58	1.17
1.600	1.46	4.600	4.66	7.600	3.50	10.60	1.17
1.617	1.46	4.617	4.66	7.617	3.50	10.62	1.17
1.633	1.46	4.633	4.66	7.633	3.50	10.63	1.17
1.650	1.46	4.650	4.66	7.650	3.50	10.65	1.17
1.667	1.46	4.667	4.66	7.667	3.50	10.67	1.17
1.683	1.46	4.683	4.66	7.683	3.50	10.68	1.17
1.700	1.46	4.700	4.66	7.700	3.50	10.70	1.17
1.717	1.46	4.717	4.66	7.717	3.50	10.72	1.17
1.733	1.46	4.733	4.66	7.733	3.50	10.73	1.17

1.750	1.46	4.750	4.66	7.750	3.50	10.75	1.17
1.767	1.46	4.767	4.66	7.767	3.50	10.77	1.17
1.783	1.46	4.783	4.66	7.783	3.50	10.78	1.17
1.800	1.46	4.800	4.66	7.800	3.50	10.80	1.17
1.817	1.46	4.817	4.66	7.817	3.50	10.82	1.17
1.833	1.46	4.833	4.66	7.833	3.50	10.83	1.17
1.850	1.46	4.850	4.66	7.850	3.50	10.85	1.17
1.867	1.46	4.867	4.66	7.867	3.50	10.87	1.17
1.883	1.46	4.883	4.66	7.883	3.50	10.88	1.17
1.900	1.46	4.900	4.66	7.900	3.50	10.90	1.17
1.917	1.46	4.917	4.66	7.917	3.50	10.92	1.17
1.933	1.46	4.933	4.66	7.933	3.50	10.93	1.17
1.950	1.46	4.950	4.66	7.950	3.50	10.95	1.17
1.967	1.46	4.967	4.66	7.967	3.50	10.97	1.17
1.983	1.46	4.983	4.66	7.983	3.50	10.98	1.17
2.000	1.46	5.000	4.66	8.000	3.49	11.00	1.17
2.017	1.75	5.017	6.99	8.017	2.04	11.02	1.17
2.033	1.75	5.033	6.99	8.033	2.04	11.03	1.17
2.050	1.75	5.050	6.99	8.050	2.04	11.05	1.17
2.067	1.75	5.067	6.99	8.067	2.04	11.07	1.17
2.083	1.75	5.083	6.99	8.083	2.04	11.08	1.17
2.100	1.75	5.100	6.99	8.100	2.04	11.10	1.17
2.117	1.75	5.117	6.99	8.117	2.04	11.12	1.17
2.133	1.75	5.133	6.99	8.133	2.04	11.13	1.17
2.150	1.75	5.150	6.99	8.150	2.04	11.15	1.17
2.167	1.75	5.167	6.99	8.167	2.04	11.17	1.17
2.183	1.75	5.183	6.99	8.183	2.04	11.18	1.17
2.200	1.75	5.200	6.99	8.200	2.04	11.20	1.17
2.217	1.75	5.217	6.99	8.217	2.04	11.22	1.17
2.233	1.75	5.233	6.99	8.233	2.04	11.23	1.17
2.250	1.75	5.250	6.99	8.250	2.04	11.25	1.17
2.267	1.75	5.267	6.99	8.267	2.04	11.27	1.17
2.283	1.75	5.283	6.99	8.283	2.04	11.28	1.17
2.300	1.75	5.300	6.99	8.300	2.04	11.30	1.17
2.317	1.75	5.317	6.99	8.317	2.04	11.32	1.17
2.333	1.75	5.333	6.99	8.333	2.04	11.33	1.17
2.350	1.75	5.350	6.99	8.350	2.04	11.35	1.17
2.367	1.75	5.367	6.99	8.367	2.04	11.37	1.17
2.383	1.75	5.383	6.99	8.383	2.04	11.38	1.17
2.400	1.75	5.400	6.99	8.400	2.04	11.40	1.17
2.417	1.75	5.417	6.99	8.417	2.04	11.42	1.17
2.433	1.75	5.433	6.99	8.433	2.04	11.43	1.17
2.450	1.75	5.450	6.99	8.450	2.04	11.45	1.17
2.467	1.75	5.467	6.99	8.467	2.04	11.47	1.17
2.483	1.75	5.483	6.99	8.483	2.04	11.48	1.17
2.500	1.75	5.500	7.01	8.500	2.04	11.50	1.17
2.517	1.75	5.517	27.97	8.517	2.04	11.52	1.17
2.533	1.75	5.533	27.97	8.533	2.04	11.53	1.17
2.550	1.75	5.550	27.97	8.550	2.04	11.55	1.17
2.567	1.75	5.567	27.97	8.567	2.04	11.57	1.17
2.583	1.75	5.583	27.97	8.583	2.04	11.58	1.17
2.600	1.75	5.600	27.97	8.600	2.04	11.60	1.17
2.617	1.75	5.617	27.97	8.617	2.04	11.62	1.17
2.633	1.75	5.633	27.97	8.633	2.04	11.63	1.17
2.650	1.75	5.650	27.97	8.650	2.04	11.65	1.17
2.667	1.75	5.667	27.97	8.667	2.04	11.67	1.17
2.683	1.75	5.683	27.97	8.683	2.04	11.68	1.17
2.700	1.75	5.700	27.97	8.700	2.04	11.70	1.17
2.717	1.75	5.717	27.97	8.717	2.04	11.72	1.17
2.733	1.75	5.733	27.97	8.733	2.04	11.73	1.17
2.750	1.75	5.750	28.03	8.750	2.04	11.75	1.17
2.767	1.75	5.767	76.92	8.767	2.04	11.77	1.17
2.783	1.75	5.783	76.92	8.783	2.04	11.78	1.17
2.800	1.75	5.800	76.92	8.800	2.04	11.80	1.17
2.817	1.75	5.817	76.92	8.817	2.04	11.82	1.17
2.833	1.75	5.833	76.92	8.833	2.04	11.83	1.17
2.850	1.75	5.850	76.92	8.850	2.04	11.85	1.17
2.867	1.75	5.867	76.92	8.867	2.04	11.87	1.17
2.883	1.75	5.883	76.92	8.883	2.04	11.88	1.17
2.900	1.75	5.900	76.92	8.900	2.04	11.90	1.17
2.917	1.75	5.917	76.92	8.917	2.04	11.92	1.17
2.933	1.75	5.933	76.92	8.933	2.04	11.93	1.17
2.950	1.75	5.950	76.92	8.950	2.04	11.95	1.17
2.967	1.75	5.967	76.92	8.967	2.04	11.97	1.17
2.983	1.75	5.983	76.92	8.983	2.04	11.98	1.17
3.000	1.75	6.000	76.82	9.000	2.04	12.00	1.17

Unit Hyd Qpeak (cms)= 0.516

PEAK FLOW (cms)= 0.025 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 18.711
TOTAL RAINFALL (mm)= 58.270
RUNOFF COEFFICIENT = 0.321

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

| READ STORM | Filename: C:\Users\noconnor.SKAENG\AppD

		ata\Local\Temp\
		79084dd1-c78d-40ca-a50a-120316a195ef\751c12f9
Ptotal= 58.27 mm	Comments: 5-Year 12-Hour SCS II Design Storm	

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.46	3.25	2.33	6.25	10.49	9.25	2.04
0.50	1.46	3.50	2.33	6.50	10.49	9.50	2.04
0.75	1.46	3.75	2.33	6.75	4.66	9.75	2.04
1.00	1.46	4.00	2.33	7.00	4.66	10.00	2.04
1.25	1.46	4.25	3.50	7.25	3.50	10.25	1.17
1.50	1.46	4.50	3.50	7.50	3.50	10.50	1.17
1.75	1.46	4.75	4.66	7.75	3.50	10.75	1.17
2.00	1.46	5.00	4.66	8.00	3.50	11.00	1.17
2.25	1.75	5.25	6.99	8.25	2.04	11.25	1.17
2.50	1.75	5.50	6.99	8.50	2.04	11.50	1.17
2.75	1.75	5.75	27.97	8.75	2.04	11.75	1.17
3.00	1.75	6.00	76.92	9.00	2.04	12.00	1.17

CALIB STANDHYD (0007)	Area (ha)= 1.80
ID= 1 DT= 1.0 min	Total Imp(%)= 59.00 Dir. Conn.(%)= 48.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.06	0.74
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	109.54	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.46	3.017	2.33	6.017	10.49	9.02	2.04
0.033	1.46	3.033	2.33	6.033	10.49	9.03	2.04
0.050	1.46	3.050	2.33	6.050	10.49	9.05	2.04
0.067	1.46	3.067	2.33	6.067	10.49	9.07	2.04
0.083	1.46	3.083	2.33	6.083	10.49	9.08	2.04
0.100	1.46	3.100	2.33	6.100	10.49	9.10	2.04
0.117	1.46	3.117	2.33	6.117	10.49	9.12	2.04
0.133	1.46	3.133	2.33	6.133	10.49	9.13	2.04
0.150	1.46	3.150	2.33	6.150	10.49	9.15	2.04
0.167	1.46	3.167	2.33	6.167	10.49	9.17	2.04
0.183	1.46	3.183	2.33	6.183	10.49	9.18	2.04
0.200	1.46	3.200	2.33	6.200	10.49	9.20	2.04
0.217	1.46	3.217	2.33	6.217	10.49	9.22	2.04
0.233	1.46	3.233	2.33	6.233	10.49	9.23	2.04
0.250	1.46	3.250	2.33	6.250	10.49	9.25	2.04
0.267	1.46	3.267	2.33	6.267	10.49	9.27	2.04
0.283	1.46	3.283	2.33	6.283	10.49	9.28	2.04
0.300	1.46	3.300	2.33	6.300	10.49	9.30	2.04
0.317	1.46	3.317	2.33	6.317	10.49	9.32	2.04
0.333	1.46	3.333	2.33	6.333	10.49	9.33	2.04
0.350	1.46	3.350	2.33	6.350	10.49	9.35	2.04
0.367	1.46	3.367	2.33	6.367	10.49	9.37	2.04
0.383	1.46	3.383	2.33	6.383	10.49	9.38	2.04
0.400	1.46	3.400	2.33	6.400	10.49	9.40	2.04
0.417	1.46	3.417	2.33	6.417	10.49	9.42	2.04
0.433	1.46	3.433	2.33	6.433	10.49	9.43	2.04
0.450	1.46	3.450	2.33	6.450	10.49	9.45	2.04
0.467	1.46	3.467	2.33	6.467	10.49	9.47	2.04
0.483	1.46	3.483	2.33	6.483	10.49	9.48	2.04
0.500	1.46	3.500	2.33	6.500	10.48	9.50	2.04
0.517	1.46	3.517	2.33	6.517	4.66	9.52	2.04
0.533	1.46	3.533	2.33	6.533	4.66	9.53	2.04
0.550	1.46	3.550	2.33	6.550	4.66	9.55	2.04
0.567	1.46	3.567	2.33	6.567	4.66	9.57	2.04
0.583	1.46	3.583	2.33	6.583	4.66	9.58	2.04
0.600	1.46	3.600	2.33	6.600	4.66	9.60	2.04
0.617	1.46	3.617	2.33	6.617	4.66	9.62	2.04
0.633	1.46	3.633	2.33	6.633	4.66	9.63	2.04
0.650	1.46	3.650	2.33	6.650	4.66	9.65	2.04
0.667	1.46	3.667	2.33	6.667	4.66	9.67	2.04
0.683	1.46	3.683	2.33	6.683	4.66	9.68	2.04
0.700	1.46	3.700	2.33	6.700	4.66	9.70	2.04
0.717	1.46	3.717	2.33	6.717	4.66	9.72	2.04
0.733	1.46	3.733	2.33	6.733	4.66	9.73	2.04
0.750	1.46	3.750	2.33	6.750	4.66	9.75	2.04
0.767	1.46	3.767	2.33	6.767	4.66	9.77	2.04
0.783	1.46	3.783	2.33	6.783	4.66	9.78	2.04
0.800	1.46	3.800	2.33	6.800	4.66	9.80	2.04
0.817	1.46	3.817	2.33	6.817	4.66	9.82	2.04
0.833	1.46	3.833	2.33	6.833	4.66	9.83	2.04
0.850	1.46	3.850	2.33	6.850	4.66	9.85	2.04
0.867	1.46	3.867	2.33	6.867	4.66	9.87	2.04

0.883	1.46	3.883	2.33	6.883	4.66	9.88	2.04
0.900	1.46	3.900	2.33	6.900	4.66	9.90	2.04
0.917	1.46	3.917	2.33	6.917	4.66	9.92	2.04
0.933	1.46	3.933	2.33	6.933	4.66	9.93	2.04
0.950	1.46	3.950	2.33	6.950	4.66	9.95	2.04
0.967	1.46	3.967	2.33	6.967	4.66	9.97	2.04
0.983	1.46	3.983	2.33	6.983	4.66	9.98	2.04
1.000	1.46	4.000	2.33	7.000	4.66	10.00	2.04
1.017	1.46	4.017	3.50	7.017	3.50	10.02	1.17
1.033	1.46	4.033	3.50	7.033	3.50	10.03	1.17
1.050	1.46	4.050	3.50	7.050	3.50	10.05	1.17
1.067	1.46	4.067	3.50	7.067	3.50	10.07	1.17
1.083	1.46	4.083	3.50	7.083	3.50	10.08	1.17
1.100	1.46	4.100	3.50	7.100	3.50	10.10	1.17
1.117	1.46	4.117	3.50	7.117	3.50	10.12	1.17
1.133	1.46	4.133	3.50	7.133	3.50	10.13	1.17
1.150	1.46	4.150	3.50	7.150	3.50	10.15	1.17
1.167	1.46	4.167	3.50	7.167	3.50	10.17	1.17
1.183	1.46	4.183	3.50	7.183	3.50	10.18	1.17
1.200	1.46	4.200	3.50	7.200	3.50	10.20	1.17
1.217	1.46	4.217	3.50	7.217	3.50	10.22	1.17
1.233	1.46	4.233	3.50	7.233	3.50	10.23	1.17
1.250	1.46	4.250	3.50	7.250	3.50	10.25	1.17
1.267	1.46	4.267	3.50	7.267	3.50	10.27	1.17
1.283	1.46	4.283	3.50	7.283	3.50	10.28	1.17
1.300	1.46	4.300	3.50	7.300	3.50	10.30	1.17
1.317	1.46	4.317	3.50	7.317	3.50	10.32	1.17
1.333	1.46	4.333	3.50	7.333	3.50	10.33	1.17
1.350	1.46	4.350	3.50	7.350	3.50	10.35	1.17
1.367	1.46	4.367	3.50	7.367	3.50	10.37	1.17
1.383	1.46	4.383	3.50	7.383	3.50	10.38	1.17
1.400	1.46	4.400	3.50	7.400	3.50	10.40	1.17
1.417	1.46	4.417	3.50	7.417	3.50	10.42	1.17
1.433	1.46	4.433	3.50	7.433	3.50	10.43	1.17
1.450	1.46	4.450	3.50	7.450	3.50	10.45	1.17
1.467	1.46	4.467	3.50	7.467	3.50	10.47	1.17
1.483	1.46	4.483	3.50	7.483	3.50	10.48	1.17
1.500	1.46	4.500	3.50	7.500	3.50	10.50	1.17
1.517	1.46	4.517	4.66	7.517	3.50	10.52	1.17
1.533	1.46	4.533	4.66	7.533	3.50	10.53	1.17
1.550	1.46	4.550	4.66	7.550	3.50	10.55	1.17
1.567	1.46	4.567	4.66	7.567	3.50	10.57	1.17
1.583	1.46	4.583	4.66	7.583	3.50	10.58	1.17
1.600	1.46	4.600	4.66	7.600	3.50	10.60	1.17
1.617	1.46	4.617	4.66	7.617	3.50	10.62	1.17
1.633	1.46	4.633	4.66	7.633	3.50	10.63	1.17
1.650	1.46	4.650	4.66	7.650	3.50	10.65	1.17
1.667	1.46	4.667	4.66	7.667	3.50	10.67	1.17
1.683	1.46	4.683	4.66	7.683	3.50	10.68	1.17
1.700	1.46	4.700	4.66	7.700	3.50	10.70	1.17
1.717	1.46	4.717	4.66	7.717	3.50	10.72	1.17
1.733	1.46	4.733	4.66	7.733	3.50	10.73	1.17
1.750	1.46	4.750	4.66	7.750	3.50	10.75	1.17
1.767	1.46	4.767	4.66	7.767	3.50	10.77	1.17
1.783	1.46	4.783	4.66	7.783	3.50	10.78	1.17
1.800	1.46	4.800	4.66	7.800	3.50	10.80	1.17
1.817	1.46	4.817	4.66	7.817	3.50	10.82	1.17
1.833	1.46	4.833	4.66	7.833	3.50	10.83	1.17
1.850	1.46	4.850	4.66	7.850	3.50	10.85	1.17
1.867	1.46	4.867	4.66	7.867	3.50	10.87	1.17
1.883	1.46	4.883	4.66	7.883	3.50	10.88	1.17
1.900	1.46	4.900	4.66	7.900	3.50	10.90	1.17
1.917	1.46	4.917	4.66	7.917	3.50	10.92	1.17
1.933	1.46	4.933	4.66	7.933	3.50	10.93	1.17
1.950	1.46	4.950	4.66	7.950	3.50	10.95	1.17
1.967	1.46	4.967	4.66	7.967	3.50	10.97	1.17
1.983	1.46	4.983	4.66	7.983	3.50	10.98	1.17
2.000	1.46	5.000	4.66	8.000	3.49	11.00	1.17
2.017	1.75	5.017	6.99	8.017	2.04	11.02	1.17
2.033	1.75	5.033	6.99	8.033	2.04	11.03	1.17
2.050	1.75	5.050	6.99	8.050	2.04	11.05	1.17
2.067	1.75	5.067	6.99	8.067	2.04	11.07	1.17
2.083	1.75	5.083	6.99	8.083	2.04	11.08	1.17
2.100	1.75	5.100	6.99	8.100	2.04	11.10	1.17
2.117	1.75	5.117	6.99	8.117	2.04	11.12	1.17
2.133	1.75	5.133	6.99	8.133	2.04	11.13	1.17
2.150	1.75	5.150	6.99	8.150	2.04	11.15	1.17
2.167	1.75	5.167	6.99	8.167	2.04	11.17	1.17
2.183	1.75	5.183	6.99	8.183	2.04	11.18	1.17
2.200	1.75	5.200	6.99	8.200	2.04	11.20	1.17
2.217	1.75	5.217	6.99	8.217	2.04	11.22	1.17
2.233	1.75	5.233	6.99	8.233	2.04	11.23	1.17
2.250	1.75	5.250	6.99	8.250	2.04	11.25	1.17
2.267	1.75	5.267	6.99	8.267	2.04	11.27	1.17
2.283	1.75	5.283	6.99	8.283	2.04	11.28	1.17
2.300	1.75	5.300	6.99	8.300	2.04	11.30	1.17
2.317	1.75	5.317	6.99	8.317	2.04	11.32	1.17
2.333	1.75	5.333	6.99	8.333	2.04	11.33	1.17
2.350	1.75	5.350	6.99	8.350	2.04	11.35	1.17
2.367	1.75	5.367	6.99	8.367	2.04	11.37	1.17
2.383	1.75	5.383	6.99	8.383	2.04	11.38	1.17

2.400	1.75	5.400	6.99	8.400	2.04	11.40	1.17
2.417	1.75	5.417	6.99	8.417	2.04	11.42	1.17
2.433	1.75	5.433	6.99	8.433	2.04	11.43	1.17
2.450	1.75	5.450	6.99	8.450	2.04	11.45	1.17
2.467	1.75	5.467	6.99	8.467	2.04	11.47	1.17
2.483	1.75	5.483	6.99	8.483	2.04	11.48	1.17
2.500	1.75	5.500	7.01	8.500	2.04	11.50	1.17
2.517	1.75	5.517	27.97	8.517	2.04	11.52	1.17
2.533	1.75	5.533	27.97	8.533	2.04	11.53	1.17
2.550	1.75	5.550	27.97	8.550	2.04	11.55	1.17
2.567	1.75	5.567	27.97	8.567	2.04	11.57	1.17
2.583	1.75	5.583	27.97	8.583	2.04	11.58	1.17
2.600	1.75	5.600	27.97	8.600	2.04	11.60	1.17
2.617	1.75	5.617	27.97	8.617	2.04	11.62	1.17
2.633	1.75	5.633	27.97	8.633	2.04	11.63	1.17
2.650	1.75	5.650	27.97	8.650	2.04	11.65	1.17
2.667	1.75	5.667	27.97	8.667	2.04	11.67	1.17
2.683	1.75	5.683	27.97	8.683	2.04	11.68	1.17
2.700	1.75	5.700	27.97	8.700	2.04	11.70	1.17
2.717	1.75	5.717	27.97	8.717	2.04	11.72	1.17
2.733	1.75	5.733	27.97	8.733	2.04	11.73	1.17
2.750	1.75	5.750	28.03	8.750	2.04	11.75	1.17
2.767	1.75	5.767	76.92	8.767	2.04	11.77	1.17
2.783	1.75	5.783	76.92	8.783	2.04	11.78	1.17
2.800	1.75	5.800	76.92	8.800	2.04	11.80	1.17
2.817	1.75	5.817	76.92	8.817	2.04	11.82	1.17
2.833	1.75	5.833	76.92	8.833	2.04	11.83	1.17
2.850	1.75	5.850	76.92	8.850	2.04	11.85	1.17
2.867	1.75	5.867	76.92	8.867	2.04	11.87	1.17
2.883	1.75	5.883	76.92	8.883	2.04	11.88	1.17
2.900	1.75	5.900	76.92	8.900	2.04	11.90	1.17
2.917	1.75	5.917	76.92	8.917	2.04	11.92	1.17
2.933	1.75	5.933	76.92	8.933	2.04	11.93	1.17
2.950	1.75	5.950	76.92	8.950	2.04	11.95	1.17
2.967	1.75	5.967	76.92	8.967	2.04	11.97	1.17
2.983	1.75	5.983	76.92	8.983	2.04	11.98	1.17
3.000	1.75	6.000	76.82	9.000	2.04	12.00	1.17

Max.Eff.Inten.(mm/hr)=		76.92	21.75	
over (min)		5.00	11.00	
Storage Coeff. (min)=		3.00 (ii)	10.36 (ii)	
Unit Hyd. Tpeak (min)=		5.00	11.00	
Unit Hyd. peak (cms)=		0.31	0.11	
				TOTALS
PEAK FLOW	(cms)=	0.18	0.03	0.208 (iii)
TIME TO PEAK	(hrs)=	6.00	6.08	6.00
RUNOFF VOLUME	(mm)=	57.27	10.53	32.96
TOTAL RAINFALL	(mm)=	58.27	58.27	58.27
RUNOFF COEFFICIENT	=	0.98	0.18	0.57

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0018)		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0026):		0.27	0.025	6.00	18.71
+ ID2= 2 (0007):		1.80	0.208	6.00	32.96
ID = 3 (0018):		2.07	0.233	6.00	31.10

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0009)					
IN= 2---> OUT= 1					
DT= 1.0 min	OUTFLOW	STORAGE		OUTFLOW	STORAGE
	(cms)	(ha.m.)		(cms)	(ha.m.)
	0.0000	0.0000		0.0330	0.0298
	0.0020	0.0000		0.0480	0.0300
	0.0190	0.0288		0.5150	0.0368
	0.0250	0.0292		0.5380	0.0368

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0018)	2.070	0.233	6.00	31.10
OUTFLOW: ID= 1 (0009)	2.070	0.096	6.12	31.10

PEAK FLOW REDUCTION [Qout/Qin](%)= 41.22
TIME SHIFT OF PEAK FLOW (min)= 7.00
MAXIMUM STORAGE USED (ha.m.)= 0.0307

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\751c12f9
Ptotal= 58.27 mm	Comments: 5-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.46	3.25	2.33	6.25	10.49	9.25	2.04
0.50	1.46	3.50	2.33	6.50	10.49	9.50	2.04
0.75	1.46	3.75	2.33	6.75	4.66	9.75	2.04
1.00	1.46	4.00	2.33	7.00	4.66	10.00	2.04
1.25	1.46	4.25	3.50	7.25	3.50	10.25	1.17
1.50	1.46	4.50	3.50	7.50	3.50	10.50	1.17
1.75	1.46	4.75	4.66	7.75	3.50	10.75	1.17
2.00	1.46	5.00	4.66	8.00	3.50	11.00	1.17
2.25	1.75	5.25	6.99	8.25	2.04	11.25	1.17
2.50	1.75	5.50	6.99	8.50	2.04	11.50	1.17
2.75	1.75	5.75	27.97	8.75	2.04	11.75	1.17
3.00	1.75	6.00	76.92	9.00	2.04	12.00	1.17

CALIB STANDHYD (0006) ID= 1 DT= 1.0 min	Area (ha)= 0.80 Total Imp(%)= 87.00 Dir. Conn.(%)= 82.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.70	0.10
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	73.03	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.46	3.017	2.33	6.017	10.49	9.02	2.04
0.033	1.46	3.033	2.33	6.033	10.49	9.03	2.04
0.050	1.46	3.050	2.33	6.050	10.49	9.05	2.04
0.067	1.46	3.067	2.33	6.067	10.49	9.07	2.04
0.083	1.46	3.083	2.33	6.083	10.49	9.08	2.04
0.100	1.46	3.100	2.33	6.100	10.49	9.10	2.04
0.117	1.46	3.117	2.33	6.117	10.49	9.12	2.04
0.133	1.46	3.133	2.33	6.133	10.49	9.13	2.04
0.150	1.46	3.150	2.33	6.150	10.49	9.15	2.04
0.167	1.46	3.167	2.33	6.167	10.49	9.17	2.04
0.183	1.46	3.183	2.33	6.183	10.49	9.18	2.04
0.200	1.46	3.200	2.33	6.200	10.49	9.20	2.04
0.217	1.46	3.217	2.33	6.217	10.49	9.22	2.04
0.233	1.46	3.233	2.33	6.233	10.49	9.23	2.04
0.250	1.46	3.250	2.33	6.250	10.49	9.25	2.04
0.267	1.46	3.267	2.33	6.267	10.49	9.27	2.04
0.283	1.46	3.283	2.33	6.283	10.49	9.28	2.04
0.300	1.46	3.300	2.33	6.300	10.49	9.30	2.04
0.317	1.46	3.317	2.33	6.317	10.49	9.32	2.04
0.333	1.46	3.333	2.33	6.333	10.49	9.33	2.04
0.350	1.46	3.350	2.33	6.350	10.49	9.35	2.04
0.367	1.46	3.367	2.33	6.367	10.49	9.37	2.04
0.383	1.46	3.383	2.33	6.383	10.49	9.38	2.04
0.400	1.46	3.400	2.33	6.400	10.49	9.40	2.04
0.417	1.46	3.417	2.33	6.417	10.49	9.42	2.04
0.433	1.46	3.433	2.33	6.433	10.49	9.43	2.04
0.450	1.46	3.450	2.33	6.450	10.49	9.45	2.04
0.467	1.46	3.467	2.33	6.467	10.49	9.47	2.04
0.483	1.46	3.483	2.33	6.483	10.49	9.48	2.04
0.500	1.46	3.500	2.33	6.500	10.48	9.50	2.04
0.517	1.46	3.517	2.33	6.517	4.66	9.52	2.04
0.533	1.46	3.533	2.33	6.533	4.66	9.53	2.04
0.550	1.46	3.550	2.33	6.550	4.66	9.55	2.04
0.567	1.46	3.567	2.33	6.567	4.66	9.57	2.04
0.583	1.46	3.583	2.33	6.583	4.66	9.58	2.04
0.600	1.46	3.600	2.33	6.600	4.66	9.60	2.04
0.617	1.46	3.617	2.33	6.617	4.66	9.62	2.04
0.633	1.46	3.633	2.33	6.633	4.66	9.63	2.04
0.650	1.46	3.650	2.33	6.650	4.66	9.65	2.04
0.667	1.46	3.667	2.33	6.667	4.66	9.67	2.04
0.683	1.46	3.683	2.33	6.683	4.66	9.68	2.04
0.700	1.46	3.700	2.33	6.700	4.66	9.70	2.04
0.717	1.46	3.717	2.33	6.717	4.66	9.72	2.04
0.733	1.46	3.733	2.33	6.733	4.66	9.73	2.04
0.750	1.46	3.750	2.33	6.750	4.66	9.75	2.04
0.767	1.46	3.767	2.33	6.767	4.66	9.77	2.04
0.783	1.46	3.783	2.33	6.783	4.66	9.78	2.04
0.800	1.46	3.800	2.33	6.800	4.66	9.80	2.04
0.817	1.46	3.817	2.33	6.817	4.66	9.82	2.04

0.833	1.46	3.833	2.33	6.833	4.66	9.83	2.04
0.850	1.46	3.850	2.33	6.850	4.66	9.85	2.04
0.867	1.46	3.867	2.33	6.867	4.66	9.87	2.04
0.883	1.46	3.883	2.33	6.883	4.66	9.88	2.04
0.900	1.46	3.900	2.33	6.900	4.66	9.90	2.04
0.917	1.46	3.917	2.33	6.917	4.66	9.92	2.04
0.933	1.46	3.933	2.33	6.933	4.66	9.93	2.04
0.950	1.46	3.950	2.33	6.950	4.66	9.95	2.04
0.967	1.46	3.967	2.33	6.967	4.66	9.97	2.04
0.983	1.46	3.983	2.33	6.983	4.66	9.98	2.04
1.000	1.46	4.000	2.33	7.000	4.66	10.00	2.04
1.017	1.46	4.017	3.50	7.017	3.50	10.02	1.17
1.033	1.46	4.033	3.50	7.033	3.50	10.03	1.17
1.050	1.46	4.050	3.50	7.050	3.50	10.05	1.17
1.067	1.46	4.067	3.50	7.067	3.50	10.07	1.17
1.083	1.46	4.083	3.50	7.083	3.50	10.08	1.17
1.100	1.46	4.100	3.50	7.100	3.50	10.10	1.17
1.117	1.46	4.117	3.50	7.117	3.50	10.12	1.17
1.133	1.46	4.133	3.50	7.133	3.50	10.13	1.17
1.150	1.46	4.150	3.50	7.150	3.50	10.15	1.17
1.167	1.46	4.167	3.50	7.167	3.50	10.17	1.17
1.183	1.46	4.183	3.50	7.183	3.50	10.18	1.17
1.200	1.46	4.200	3.50	7.200	3.50	10.20	1.17
1.217	1.46	4.217	3.50	7.217	3.50	10.22	1.17
1.233	1.46	4.233	3.50	7.233	3.50	10.23	1.17
1.250	1.46	4.250	3.50	7.250	3.50	10.25	1.17
1.267	1.46	4.267	3.50	7.267	3.50	10.27	1.17
1.283	1.46	4.283	3.50	7.283	3.50	10.28	1.17
1.300	1.46	4.300	3.50	7.300	3.50	10.30	1.17
1.317	1.46	4.317	3.50	7.317	3.50	10.32	1.17
1.333	1.46	4.333	3.50	7.333	3.50	10.33	1.17
1.350	1.46	4.350	3.50	7.350	3.50	10.35	1.17
1.367	1.46	4.367	3.50	7.367	3.50	10.37	1.17
1.383	1.46	4.383	3.50	7.383	3.50	10.38	1.17
1.400	1.46	4.400	3.50	7.400	3.50	10.40	1.17
1.417	1.46	4.417	3.50	7.417	3.50	10.42	1.17
1.433	1.46	4.433	3.50	7.433	3.50	10.43	1.17
1.450	1.46	4.450	3.50	7.450	3.50	10.45	1.17
1.467	1.46	4.467	3.50	7.467	3.50	10.47	1.17
1.483	1.46	4.483	3.50	7.483	3.50	10.48	1.17
1.500	1.46	4.500	3.50	7.500	3.50	10.50	1.17
1.517	1.46	4.517	4.66	7.517	3.50	10.52	1.17
1.533	1.46	4.533	4.66	7.533	3.50	10.53	1.17
1.550	1.46	4.550	4.66	7.550	3.50	10.55	1.17
1.567	1.46	4.567	4.66	7.567	3.50	10.57	1.17
1.583	1.46	4.583	4.66	7.583	3.50	10.58	1.17
1.600	1.46	4.600	4.66	7.600	3.50	10.60	1.17
1.617	1.46	4.617	4.66	7.617	3.50	10.62	1.17
1.633	1.46	4.633	4.66	7.633	3.50	10.63	1.17
1.650	1.46	4.650	4.66	7.650	3.50	10.65	1.17
1.667	1.46	4.667	4.66	7.667	3.50	10.67	1.17
1.683	1.46	4.683	4.66	7.683	3.50	10.68	1.17
1.700	1.46	4.700	4.66	7.700	3.50	10.70	1.17
1.717	1.46	4.717	4.66	7.717	3.50	10.72	1.17
1.733	1.46	4.733	4.66	7.733	3.50	10.73	1.17
1.750	1.46	4.750	4.66	7.750	3.50	10.75	1.17
1.767	1.46	4.767	4.66	7.767	3.50	10.77	1.17
1.783	1.46	4.783	4.66	7.783	3.50	10.78	1.17
1.800	1.46	4.800	4.66	7.800	3.50	10.80	1.17
1.817	1.46	4.817	4.66	7.817	3.50	10.82	1.17
1.833	1.46	4.833	4.66	7.833	3.50	10.83	1.17
1.850	1.46	4.850	4.66	7.850	3.50	10.85	1.17
1.867	1.46	4.867	4.66	7.867	3.50	10.87	1.17
1.883	1.46	4.883	4.66	7.883	3.50	10.88	1.17
1.900	1.46	4.900	4.66	7.900	3.50	10.90	1.17
1.917	1.46	4.917	4.66	7.917	3.50	10.92	1.17
1.933	1.46	4.933	4.66	7.933	3.50	10.93	1.17
1.950	1.46	4.950	4.66	7.950	3.50	10.95	1.17
1.967	1.46	4.967	4.66	7.967	3.50	10.97	1.17
1.983	1.46	4.983	4.66	7.983	3.50	10.98	1.17
2.000	1.46	5.000	4.66	8.000	3.49	11.00	1.17
2.017	1.75	5.017	6.99	8.017	2.04	11.02	1.17
2.033	1.75	5.033	6.99	8.033	2.04	11.03	1.17
2.050	1.75	5.050	6.99	8.050	2.04	11.05	1.17
2.067	1.75	5.067	6.99	8.067	2.04	11.07	1.17
2.083	1.75	5.083	6.99	8.083	2.04	11.08	1.17
2.100	1.75	5.100	6.99	8.100	2.04	11.10	1.17
2.117	1.75	5.117	6.99	8.117	2.04	11.12	1.17
2.133	1.75	5.133	6.99	8.133	2.04	11.13	1.17
2.150	1.75	5.150	6.99	8.150	2.04	11.15	1.17
2.167	1.75	5.167	6.99	8.167	2.04	11.17	1.17
2.183	1.75	5.183	6.99	8.183	2.04	11.18	1.17
2.200	1.75	5.200	6.99	8.200	2.04	11.20	1.17
2.217	1.75	5.217	6.99	8.217	2.04	11.22	1.17
2.233	1.75	5.233	6.99	8.233	2.04	11.23	1.17
2.250	1.75	5.250	6.99	8.250	2.04	11.25	1.17
2.267	1.75	5.267	6.99	8.267	2.04	11.27	1.17
2.283	1.75	5.283	6.99	8.283	2.04	11.28	1.17
2.300	1.75	5.300	6.99	8.300	2.04	11.30	1.17
2.317	1.75	5.317	6.99	8.317	2.04	11.32	1.17
2.333	1.75	5.333	6.99	8.333	2.04	11.33	1.17

2.350	1.75	5.350	6.99	8.350	2.04	11.35	1.17
2.367	1.75	5.367	6.99	8.367	2.04	11.37	1.17
2.383	1.75	5.383	6.99	8.383	2.04	11.38	1.17
2.400	1.75	5.400	6.99	8.400	2.04	11.40	1.17
2.417	1.75	5.417	6.99	8.417	2.04	11.42	1.17
2.433	1.75	5.433	6.99	8.433	2.04	11.43	1.17
2.450	1.75	5.450	6.99	8.450	2.04	11.45	1.17
2.467	1.75	5.467	6.99	8.467	2.04	11.47	1.17
2.483	1.75	5.483	6.99	8.483	2.04	11.48	1.17
2.500	1.75	5.500	7.01	8.500	2.04	11.50	1.17
2.517	1.75	5.517	27.97	8.517	2.04	11.52	1.17
2.533	1.75	5.533	27.97	8.533	2.04	11.53	1.17
2.550	1.75	5.550	27.97	8.550	2.04	11.55	1.17
2.567	1.75	5.567	27.97	8.567	2.04	11.57	1.17
2.583	1.75	5.583	27.97	8.583	2.04	11.58	1.17
2.600	1.75	5.600	27.97	8.600	2.04	11.60	1.17
2.617	1.75	5.617	27.97	8.617	2.04	11.62	1.17
2.633	1.75	5.633	27.97	8.633	2.04	11.63	1.17
2.650	1.75	5.650	27.97	8.650	2.04	11.65	1.17
2.667	1.75	5.667	27.97	8.667	2.04	11.67	1.17
2.683	1.75	5.683	27.97	8.683	2.04	11.68	1.17
2.700	1.75	5.700	27.97	8.700	2.04	11.70	1.17
2.717	1.75	5.717	27.97	8.717	2.04	11.72	1.17
2.733	1.75	5.733	27.97	8.733	2.04	11.73	1.17
2.750	1.75	5.750	28.03	8.750	2.04	11.75	1.17
2.767	1.75	5.767	76.92	8.767	2.04	11.77	1.17
2.783	1.75	5.783	76.92	8.783	2.04	11.78	1.17
2.800	1.75	5.800	76.92	8.800	2.04	11.80	1.17
2.817	1.75	5.817	76.92	8.817	2.04	11.82	1.17
2.833	1.75	5.833	76.92	8.833	2.04	11.83	1.17
2.850	1.75	5.850	76.92	8.850	2.04	11.85	1.17
2.867	1.75	5.867	76.92	8.867	2.04	11.87	1.17
2.883	1.75	5.883	76.92	8.883	2.04	11.88	1.17
2.900	1.75	5.900	76.92	8.900	2.04	11.90	1.17
2.917	1.75	5.917	76.92	8.917	2.04	11.92	1.17
2.933	1.75	5.933	76.92	8.933	2.04	11.93	1.17
2.950	1.75	5.950	76.92	8.950	2.04	11.95	1.17
2.967	1.75	5.967	76.92	8.967	2.04	11.97	1.17
2.983	1.75	5.983	76.92	8.983	2.04	11.98	1.17
3.000	1.75	6.000	76.82	9.000	2.04	12.00	1.17

Max.Eff.Inten.(mm/hr)=	76.92	25.73		
over (min)	5.00	7.00		
Storage Coeff. (min)=	2.35 (ii)	6.10 (ii)		
Unit Hyd. Tpeak (min)=	5.00	7.00		
Unit Hyd. peak (cms)=	0.35	0.18		
			TOTALS	
PEAK FLOW (cms)=	0.14	0.01	0.146 (iii)	
TIME TO PEAK (hrs)=	6.00	6.03	6.00	
RUNOFF VOLUME (mm)=	57.27	11.42	49.01	
TOTAL RAINFALL (mm)=	58.27	58.27	58.27	
RUNOFF COEFFICIENT =	0.98	0.20	0.84	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0011)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0810	0.0180
0.0010	0.0005	0.0910	0.0205
0.0060	0.0056	0.1120	0.0249
0.0100	0.0061	0.1190	0.0264
0.0430	0.0101	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0006)	0.800	0.146	6.00	49.01
OUTFLOW: ID= 1 (0011)	0.800	0.070	6.08	48.86

PEAK FLOW REDUCTION [Qout/Qin](%)= 47.91
TIME SHIFT OF PEAK FLOW (min)= 5.00
MAXIMUM STORAGE USED (ha.m.)= 0.0157

READ STORM
Ptotal= 58.27 mm

Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\751c12f9
Comments: 5-Year 12-Hour SCS II Design Storm

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

0.25	1.46	3.25	2.33	6.25	10.49	9.25	2.04
0.50	1.46	3.50	2.33	6.50	10.49	9.50	2.04
0.75	1.46	3.75	2.33	6.75	4.66	9.75	2.04
1.00	1.46	4.00	2.33	7.00	4.66	10.00	2.04
1.25	1.46	4.25	3.50	7.25	3.50	10.25	1.17
1.50	1.46	4.50	3.50	7.50	3.50	10.50	1.17
1.75	1.46	4.75	4.66	7.75	3.50	10.75	1.17
2.00	1.46	5.00	4.66	8.00	3.50	11.00	1.17
2.25	1.75	5.25	6.99	8.25	2.04	11.25	1.17
2.50	1.75	5.50	6.99	8.50	2.04	11.50	1.17
2.75	1.75	5.75	27.97	8.75	2.04	11.75	1.17
3.00	1.75	6.00	76.92	9.00	2.04	12.00	1.17

CALIB STANDHYD (0008)	Area (ha)= 2.53
ID= 1 DT= 1.0 min	Total Imp(%)= 52.00 Dir. Conn.(%)= 44.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.32	1.21
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	129.87	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.46	3.017	2.33	6.017	10.49	9.02	2.04
0.033	1.46	3.033	2.33	6.033	10.49	9.03	2.04
0.050	1.46	3.050	2.33	6.050	10.49	9.05	2.04
0.067	1.46	3.067	2.33	6.067	10.49	9.07	2.04
0.083	1.46	3.083	2.33	6.083	10.49	9.08	2.04
0.100	1.46	3.100	2.33	6.100	10.49	9.10	2.04
0.117	1.46	3.117	2.33	6.117	10.49	9.12	2.04
0.133	1.46	3.133	2.33	6.133	10.49	9.13	2.04
0.150	1.46	3.150	2.33	6.150	10.49	9.15	2.04
0.167	1.46	3.167	2.33	6.167	10.49	9.17	2.04
0.183	1.46	3.183	2.33	6.183	10.49	9.18	2.04
0.200	1.46	3.200	2.33	6.200	10.49	9.20	2.04
0.217	1.46	3.217	2.33	6.217	10.49	9.22	2.04
0.233	1.46	3.233	2.33	6.233	10.49	9.23	2.04
0.250	1.46	3.250	2.33	6.250	10.49	9.25	2.04
0.267	1.46	3.267	2.33	6.267	10.49	9.27	2.04
0.283	1.46	3.283	2.33	6.283	10.49	9.28	2.04
0.300	1.46	3.300	2.33	6.300	10.49	9.30	2.04
0.317	1.46	3.317	2.33	6.317	10.49	9.32	2.04
0.333	1.46	3.333	2.33	6.333	10.49	9.33	2.04
0.350	1.46	3.350	2.33	6.350	10.49	9.35	2.04
0.367	1.46	3.367	2.33	6.367	10.49	9.37	2.04
0.383	1.46	3.383	2.33	6.383	10.49	9.38	2.04
0.400	1.46	3.400	2.33	6.400	10.49	9.40	2.04
0.417	1.46	3.417	2.33	6.417	10.49	9.42	2.04
0.433	1.46	3.433	2.33	6.433	10.49	9.43	2.04
0.450	1.46	3.450	2.33	6.450	10.49	9.45	2.04
0.467	1.46	3.467	2.33	6.467	10.49	9.47	2.04
0.483	1.46	3.483	2.33	6.483	10.49	9.48	2.04
0.500	1.46	3.500	2.33	6.500	10.48	9.50	2.04
0.517	1.46	3.517	2.33	6.517	4.66	9.52	2.04
0.533	1.46	3.533	2.33	6.533	4.66	9.53	2.04
0.550	1.46	3.550	2.33	6.550	4.66	9.55	2.04
0.567	1.46	3.567	2.33	6.567	4.66	9.57	2.04
0.583	1.46	3.583	2.33	6.583	4.66	9.58	2.04
0.600	1.46	3.600	2.33	6.600	4.66	9.60	2.04
0.617	1.46	3.617	2.33	6.617	4.66	9.62	2.04
0.633	1.46	3.633	2.33	6.633	4.66	9.63	2.04
0.650	1.46	3.650	2.33	6.650	4.66	9.65	2.04
0.667	1.46	3.667	2.33	6.667	4.66	9.67	2.04
0.683	1.46	3.683	2.33	6.683	4.66	9.68	2.04
0.700	1.46	3.700	2.33	6.700	4.66	9.70	2.04
0.717	1.46	3.717	2.33	6.717	4.66	9.72	2.04
0.733	1.46	3.733	2.33	6.733	4.66	9.73	2.04
0.750	1.46	3.750	2.33	6.750	4.66	9.75	2.04
0.767	1.46	3.767	2.33	6.767	4.66	9.77	2.04
0.783	1.46	3.783	2.33	6.783	4.66	9.78	2.04
0.800	1.46	3.800	2.33	6.800	4.66	9.80	2.04
0.817	1.46	3.817	2.33	6.817	4.66	9.82	2.04
0.833	1.46	3.833	2.33	6.833	4.66	9.83	2.04
0.850	1.46	3.850	2.33	6.850	4.66	9.85	2.04
0.867	1.46	3.867	2.33	6.867	4.66	9.87	2.04
0.883	1.46	3.883	2.33	6.883	4.66	9.88	2.04
0.900	1.46	3.900	2.33	6.900	4.66	9.90	2.04
0.917	1.46	3.917	2.33	6.917	4.66	9.92	2.04
0.933	1.46	3.933	2.33	6.933	4.66	9.93	2.04
0.950	1.46	3.950	2.33	6.950	4.66	9.95	2.04
0.967	1.46	3.967	2.33	6.967	4.66	9.97	2.04

0.983	1.46	3.983	2.33	6.983	4.66	9.98	2.04
1.000	1.46	4.000	2.33	7.000	4.66	10.00	2.04
1.017	1.46	4.017	3.50	7.017	3.50	10.02	1.17
1.033	1.46	4.033	3.50	7.033	3.50	10.03	1.17
1.050	1.46	4.050	3.50	7.050	3.50	10.05	1.17
1.067	1.46	4.067	3.50	7.067	3.50	10.07	1.17
1.083	1.46	4.083	3.50	7.083	3.50	10.08	1.17
1.100	1.46	4.100	3.50	7.100	3.50	10.10	1.17
1.117	1.46	4.117	3.50	7.117	3.50	10.12	1.17
1.133	1.46	4.133	3.50	7.133	3.50	10.13	1.17
1.150	1.46	4.150	3.50	7.150	3.50	10.15	1.17
1.167	1.46	4.167	3.50	7.167	3.50	10.17	1.17
1.183	1.46	4.183	3.50	7.183	3.50	10.18	1.17
1.200	1.46	4.200	3.50	7.200	3.50	10.20	1.17
1.217	1.46	4.217	3.50	7.217	3.50	10.22	1.17
1.233	1.46	4.233	3.50	7.233	3.50	10.23	1.17
1.250	1.46	4.250	3.50	7.250	3.50	10.25	1.17
1.267	1.46	4.267	3.50	7.267	3.50	10.27	1.17
1.283	1.46	4.283	3.50	7.283	3.50	10.28	1.17
1.300	1.46	4.300	3.50	7.300	3.50	10.30	1.17
1.317	1.46	4.317	3.50	7.317	3.50	10.32	1.17
1.333	1.46	4.333	3.50	7.333	3.50	10.33	1.17
1.350	1.46	4.350	3.50	7.350	3.50	10.35	1.17
1.367	1.46	4.367	3.50	7.367	3.50	10.37	1.17
1.383	1.46	4.383	3.50	7.383	3.50	10.38	1.17
1.400	1.46	4.400	3.50	7.400	3.50	10.40	1.17
1.417	1.46	4.417	3.50	7.417	3.50	10.42	1.17
1.433	1.46	4.433	3.50	7.433	3.50	10.43	1.17
1.450	1.46	4.450	3.50	7.450	3.50	10.45	1.17
1.467	1.46	4.467	3.50	7.467	3.50	10.47	1.17
1.483	1.46	4.483	3.50	7.483	3.50	10.48	1.17
1.500	1.46	4.500	3.50	7.500	3.50	10.50	1.17
1.517	1.46	4.517	4.66	7.517	3.50	10.52	1.17
1.533	1.46	4.533	4.66	7.533	3.50	10.53	1.17
1.550	1.46	4.550	4.66	7.550	3.50	10.55	1.17
1.567	1.46	4.567	4.66	7.567	3.50	10.57	1.17
1.583	1.46	4.583	4.66	7.583	3.50	10.58	1.17
1.600	1.46	4.600	4.66	7.600	3.50	10.60	1.17
1.617	1.46	4.617	4.66	7.617	3.50	10.62	1.17
1.633	1.46	4.633	4.66	7.633	3.50	10.63	1.17
1.650	1.46	4.650	4.66	7.650	3.50	10.65	1.17
1.667	1.46	4.667	4.66	7.667	3.50	10.67	1.17
1.683	1.46	4.683	4.66	7.683	3.50	10.68	1.17
1.700	1.46	4.700	4.66	7.700	3.50	10.70	1.17
1.717	1.46	4.717	4.66	7.717	3.50	10.72	1.17
1.733	1.46	4.733	4.66	7.733	3.50	10.73	1.17
1.750	1.46	4.750	4.66	7.750	3.50	10.75	1.17
1.767	1.46	4.767	4.66	7.767	3.50	10.77	1.17
1.783	1.46	4.783	4.66	7.783	3.50	10.78	1.17
1.800	1.46	4.800	4.66	7.800	3.50	10.80	1.17
1.817	1.46	4.817	4.66	7.817	3.50	10.82	1.17
1.833	1.46	4.833	4.66	7.833	3.50	10.83	1.17
1.850	1.46	4.850	4.66	7.850	3.50	10.85	1.17
1.867	1.46	4.867	4.66	7.867	3.50	10.87	1.17
1.883	1.46	4.883	4.66	7.883	3.50	10.88	1.17
1.900	1.46	4.900	4.66	7.900	3.50	10.90	1.17
1.917	1.46	4.917	4.66	7.917	3.50	10.92	1.17
1.933	1.46	4.933	4.66	7.933	3.50	10.93	1.17
1.950	1.46	4.950	4.66	7.950	3.50	10.95	1.17
1.967	1.46	4.967	4.66	7.967	3.50	10.97	1.17
1.983	1.46	4.983	4.66	7.983	3.50	10.98	1.17
2.000	1.46	5.000	4.66	8.000	3.49	11.00	1.17
2.017	1.75	5.017	6.99	8.017	2.04	11.02	1.17
2.033	1.75	5.033	6.99	8.033	2.04	11.03	1.17
2.050	1.75	5.050	6.99	8.050	2.04	11.05	1.17
2.067	1.75	5.067	6.99	8.067	2.04	11.07	1.17
2.083	1.75	5.083	6.99	8.083	2.04	11.08	1.17
2.100	1.75	5.100	6.99	8.100	2.04	11.10	1.17
2.117	1.75	5.117	6.99	8.117	2.04	11.12	1.17
2.133	1.75	5.133	6.99	8.133	2.04	11.13	1.17
2.150	1.75	5.150	6.99	8.150	2.04	11.15	1.17
2.167	1.75	5.167	6.99	8.167	2.04	11.17	1.17
2.183	1.75	5.183	6.99	8.183	2.04	11.18	1.17
2.200	1.75	5.200	6.99	8.200	2.04	11.20	1.17
2.217	1.75	5.217	6.99	8.217	2.04	11.22	1.17
2.233	1.75	5.233	6.99	8.233	2.04	11.23	1.17
2.250	1.75	5.250	6.99	8.250	2.04	11.25	1.17
2.267	1.75	5.267	6.99	8.267	2.04	11.27	1.17
2.283	1.75	5.283	6.99	8.283	2.04	11.28	1.17
2.300	1.75	5.300	6.99	8.300	2.04	11.30	1.17
2.317	1.75	5.317	6.99	8.317	2.04	11.32	1.17
2.333	1.75	5.333	6.99	8.333	2.04	11.33	1.17
2.350	1.75	5.350	6.99	8.350	2.04	11.35	1.17
2.367	1.75	5.367	6.99	8.367	2.04	11.37	1.17
2.383	1.75	5.383	6.99	8.383	2.04	11.38	1.17
2.400	1.75	5.400	6.99	8.400	2.04	11.40	1.17
2.417	1.75	5.417	6.99	8.417	2.04	11.42	1.17
2.433	1.75	5.433	6.99	8.433	2.04	11.43	1.17
2.450	1.75	5.450	6.99	8.450	2.04	11.45	1.17
2.467	1.75	5.467	6.99	8.467	2.04	11.47	1.17
2.483	1.75	5.483	6.99	8.483	2.04	11.48	1.17

2.500	1.75	5.500	7.01	8.500	2.04	11.50	1.17
2.517	1.75	5.517	27.97	8.517	2.04	11.52	1.17
2.533	1.75	5.533	27.97	8.533	2.04	11.53	1.17
2.550	1.75	5.550	27.97	8.550	2.04	11.55	1.17
2.567	1.75	5.567	27.97	8.567	2.04	11.57	1.17
2.583	1.75	5.583	27.97	8.583	2.04	11.58	1.17
2.600	1.75	5.600	27.97	8.600	2.04	11.60	1.17
2.617	1.75	5.617	27.97	8.617	2.04	11.62	1.17
2.633	1.75	5.633	27.97	8.633	2.04	11.63	1.17
2.650	1.75	5.650	27.97	8.650	2.04	11.65	1.17
2.667	1.75	5.667	27.97	8.667	2.04	11.67	1.17
2.683	1.75	5.683	27.97	8.683	2.04	11.68	1.17
2.700	1.75	5.700	27.97	8.700	2.04	11.70	1.17
2.717	1.75	5.717	27.97	8.717	2.04	11.72	1.17
2.733	1.75	5.733	27.97	8.733	2.04	11.73	1.17
2.750	1.75	5.750	28.03	8.750	2.04	11.75	1.17
2.767	1.75	5.767	76.92	8.767	2.04	11.77	1.17
2.783	1.75	5.783	76.92	8.783	2.04	11.78	1.17
2.800	1.75	5.800	76.92	8.800	2.04	11.80	1.17
2.817	1.75	5.817	76.92	8.817	2.04	11.82	1.17
2.833	1.75	5.833	76.92	8.833	2.04	11.83	1.17
2.850	1.75	5.850	76.92	8.850	2.04	11.85	1.17
2.867	1.75	5.867	76.92	8.867	2.04	11.87	1.17
2.883	1.75	5.883	76.92	8.883	2.04	11.88	1.17
2.900	1.75	5.900	76.92	8.900	2.04	11.90	1.17
2.917	1.75	5.917	76.92	8.917	2.04	11.92	1.17
2.933	1.75	5.933	76.92	8.933	2.04	11.93	1.17
2.950	1.75	5.950	76.92	8.950	2.04	11.95	1.17
2.967	1.75	5.967	76.92	8.967	2.04	11.97	1.17
2.983	1.75	5.983	76.92	8.983	2.04	11.98	1.17
3.000	1.75	6.000	76.82	9.000	2.04	12.00	1.17

Max.Eff.Inten.(mm/hr)=	76.92	18.49	
over (min)	5.00	12.00	
Storage Coeff. (min)=	3.32 (ii)	11.44 (ii)	
Unit Hyd. Tpeak (min)=	5.00	12.00	
Unit Hyd. peak (cms)=	0.29	0.10	
			TOTALS
PEAK FLOW (cms)=	0.23	0.04	0.266 (iii)
TIME TO PEAK (hrs)=	6.00	6.10	6.00
RUNOFF VOLUME (mm)=	57.27	9.73	30.65
TOTAL RAINFALL (mm)=	58.27	58.27	58.27
RUNOFF COEFFICIENT =	0.98	0.17	0.53

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0010) IN= 2---> OUT= 1 DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0810	0.0465
	0.0010	0.0012	0.0910	0.0530
	0.0060	0.0145	0.1120	0.0643
	0.0100	0.0157	0.1190	0.0683
	0.0430	0.0262	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0008)	2.530	0.266	6.00	30.65
OUTFLOW: ID= 1 (0010)	2.530	0.067	6.25	30.52

PEAK FLOW REDUCTION [Qout/Qin](%)= 25.07
TIME SHIFT OF PEAK FLOW (min)= 15.00
MAXIMUM STORAGE USED (ha.m.)= 0.0388

READ STORM Ptotal= 58.27 mm	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\751c12f9 Comments: 5-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.46	3.25	2.33	6.25	10.49	9.25	2.04
0.50	1.46	3.50	2.33	6.50	10.49	9.50	2.04
0.75	1.46	3.75	2.33	6.75	4.66	9.75	2.04
1.00	1.46	4.00	2.33	7.00	4.66	10.00	2.04
1.25	1.46	4.25	3.50	7.25	3.50	10.25	1.17
1.50	1.46	4.50	3.50	7.50	3.50	10.50	1.17
1.75	1.46	4.75	4.66	7.75	3.50	10.75	1.17
2.00	1.46	5.00	4.66	8.00	3.50	11.00	1.17
2.25	1.75	5.25	6.99	8.25	2.04	11.25	1.17

2.50	1.75	5.50	6.99	8.50	2.04	11.50	1.17
2.75	1.75	5.75	27.97	8.75	2.04	11.75	1.17
3.00	1.75	6.00	76.92	9.00	2.04	12.00	1.17

CALIB NASHYD (0027)	Area (ha)= 17.26	Curve Number (CN)= 60.0
ID= 1 DT= 1.0 min	Ia (mm)= 5.60	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.95	

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.46	3.017	2.33	6.017	10.49	9.02	2.04
0.033	1.46	3.033	2.33	6.033	10.49	9.03	2.04
0.050	1.46	3.050	2.33	6.050	10.49	9.05	2.04
0.067	1.46	3.067	2.33	6.067	10.49	9.07	2.04
0.083	1.46	3.083	2.33	6.083	10.49	9.08	2.04
0.100	1.46	3.100	2.33	6.100	10.49	9.10	2.04
0.117	1.46	3.117	2.33	6.117	10.49	9.12	2.04
0.133	1.46	3.133	2.33	6.133	10.49	9.13	2.04
0.150	1.46	3.150	2.33	6.150	10.49	9.15	2.04
0.167	1.46	3.167	2.33	6.167	10.49	9.17	2.04
0.183	1.46	3.183	2.33	6.183	10.49	9.18	2.04
0.200	1.46	3.200	2.33	6.200	10.49	9.20	2.04
0.217	1.46	3.217	2.33	6.217	10.49	9.22	2.04
0.233	1.46	3.233	2.33	6.233	10.49	9.23	2.04
0.250	1.46	3.250	2.33	6.250	10.49	9.25	2.04
0.267	1.46	3.267	2.33	6.267	10.49	9.27	2.04
0.283	1.46	3.283	2.33	6.283	10.49	9.28	2.04
0.300	1.46	3.300	2.33	6.300	10.49	9.30	2.04
0.317	1.46	3.317	2.33	6.317	10.49	9.32	2.04
0.333	1.46	3.333	2.33	6.333	10.49	9.33	2.04
0.350	1.46	3.350	2.33	6.350	10.49	9.35	2.04
0.367	1.46	3.367	2.33	6.367	10.49	9.37	2.04
0.383	1.46	3.383	2.33	6.383	10.49	9.38	2.04
0.400	1.46	3.400	2.33	6.400	10.49	9.40	2.04
0.417	1.46	3.417	2.33	6.417	10.49	9.42	2.04
0.433	1.46	3.433	2.33	6.433	10.49	9.43	2.04
0.450	1.46	3.450	2.33	6.450	10.49	9.45	2.04
0.467	1.46	3.467	2.33	6.467	10.49	9.47	2.04
0.483	1.46	3.483	2.33	6.483	10.49	9.48	2.04
0.500	1.46	3.500	2.33	6.500	10.48	9.50	2.04
0.517	1.46	3.517	2.33	6.517	4.66	9.52	2.04
0.533	1.46	3.533	2.33	6.533	4.66	9.53	2.04
0.550	1.46	3.550	2.33	6.550	4.66	9.55	2.04
0.567	1.46	3.567	2.33	6.567	4.66	9.57	2.04
0.583	1.46	3.583	2.33	6.583	4.66	9.58	2.04
0.600	1.46	3.600	2.33	6.600	4.66	9.60	2.04
0.617	1.46	3.617	2.33	6.617	4.66	9.62	2.04
0.633	1.46	3.633	2.33	6.633	4.66	9.63	2.04
0.650	1.46	3.650	2.33	6.650	4.66	9.65	2.04
0.667	1.46	3.667	2.33	6.667	4.66	9.67	2.04
0.683	1.46	3.683	2.33	6.683	4.66	9.68	2.04
0.700	1.46	3.700	2.33	6.700	4.66	9.70	2.04
0.717	1.46	3.717	2.33	6.717	4.66	9.72	2.04
0.733	1.46	3.733	2.33	6.733	4.66	9.73	2.04
0.750	1.46	3.750	2.33	6.750	4.66	9.75	2.04
0.767	1.46	3.767	2.33	6.767	4.66	9.77	2.04
0.783	1.46	3.783	2.33	6.783	4.66	9.78	2.04
0.800	1.46	3.800	2.33	6.800	4.66	9.80	2.04
0.817	1.46	3.817	2.33	6.817	4.66	9.82	2.04
0.833	1.46	3.833	2.33	6.833	4.66	9.83	2.04
0.850	1.46	3.850	2.33	6.850	4.66	9.85	2.04
0.867	1.46	3.867	2.33	6.867	4.66	9.87	2.04
0.883	1.46	3.883	2.33	6.883	4.66	9.88	2.04
0.900	1.46	3.900	2.33	6.900	4.66	9.90	2.04
0.917	1.46	3.917	2.33	6.917	4.66	9.92	2.04
0.933	1.46	3.933	2.33	6.933	4.66	9.93	2.04
0.950	1.46	3.950	2.33	6.950	4.66	9.95	2.04
0.967	1.46	3.967	2.33	6.967	4.66	9.97	2.04
0.983	1.46	3.983	2.33	6.983	4.66	9.98	2.04
1.000	1.46	4.000	2.33	7.000	4.66	10.00	2.04
1.017	1.46	4.017	3.50	7.017	3.50	10.02	1.17
1.033	1.46	4.033	3.50	7.033	3.50	10.03	1.17
1.050	1.46	4.050	3.50	7.050	3.50	10.05	1.17
1.067	1.46	4.067	3.50	7.067	3.50	10.07	1.17
1.083	1.46	4.083	3.50	7.083	3.50	10.08	1.17
1.100	1.46	4.100	3.50	7.100	3.50	10.10	1.17
1.117	1.46	4.117	3.50	7.117	3.50	10.12	1.17
1.133	1.46	4.133	3.50	7.133	3.50	10.13	1.17
1.150	1.46	4.150	3.50	7.150	3.50	10.15	1.17
1.167	1.46	4.167	3.50	7.167	3.50	10.17	1.17
1.183	1.46	4.183	3.50	7.183	3.50	10.18	1.17
1.200	1.46	4.200	3.50	7.200	3.50	10.20	1.17
1.217	1.46	4.217	3.50	7.217	3.50	10.22	1.17

1.233	1.46	4.233	3.50	7.233	3.50	10.23	1.17
1.250	1.46	4.250	3.50	7.250	3.50	10.25	1.17
1.267	1.46	4.267	3.50	7.267	3.50	10.27	1.17
1.283	1.46	4.283	3.50	7.283	3.50	10.28	1.17
1.300	1.46	4.300	3.50	7.300	3.50	10.30	1.17
1.317	1.46	4.317	3.50	7.317	3.50	10.32	1.17
1.333	1.46	4.333	3.50	7.333	3.50	10.33	1.17
1.350	1.46	4.350	3.50	7.350	3.50	10.35	1.17
1.367	1.46	4.367	3.50	7.367	3.50	10.37	1.17
1.383	1.46	4.383	3.50	7.383	3.50	10.38	1.17
1.400	1.46	4.400	3.50	7.400	3.50	10.40	1.17
1.417	1.46	4.417	3.50	7.417	3.50	10.42	1.17
1.433	1.46	4.433	3.50	7.433	3.50	10.43	1.17
1.450	1.46	4.450	3.50	7.450	3.50	10.45	1.17
1.467	1.46	4.467	3.50	7.467	3.50	10.47	1.17
1.483	1.46	4.483	3.50	7.483	3.50	10.48	1.17
1.500	1.46	4.500	3.50	7.500	3.50	10.50	1.17
1.517	1.46	4.517	4.66	7.517	3.50	10.52	1.17
1.533	1.46	4.533	4.66	7.533	3.50	10.53	1.17
1.550	1.46	4.550	4.66	7.550	3.50	10.55	1.17
1.567	1.46	4.567	4.66	7.567	3.50	10.57	1.17
1.583	1.46	4.583	4.66	7.583	3.50	10.58	1.17
1.600	1.46	4.600	4.66	7.600	3.50	10.60	1.17
1.617	1.46	4.617	4.66	7.617	3.50	10.62	1.17
1.633	1.46	4.633	4.66	7.633	3.50	10.63	1.17
1.650	1.46	4.650	4.66	7.650	3.50	10.65	1.17
1.667	1.46	4.667	4.66	7.667	3.50	10.67	1.17
1.683	1.46	4.683	4.66	7.683	3.50	10.68	1.17
1.700	1.46	4.700	4.66	7.700	3.50	10.70	1.17
1.717	1.46	4.717	4.66	7.717	3.50	10.72	1.17
1.733	1.46	4.733	4.66	7.733	3.50	10.73	1.17
1.750	1.46	4.750	4.66	7.750	3.50	10.75	1.17
1.767	1.46	4.767	4.66	7.767	3.50	10.77	1.17
1.783	1.46	4.783	4.66	7.783	3.50	10.78	1.17
1.800	1.46	4.800	4.66	7.800	3.50	10.80	1.17
1.817	1.46	4.817	4.66	7.817	3.50	10.82	1.17
1.833	1.46	4.833	4.66	7.833	3.50	10.83	1.17
1.850	1.46	4.850	4.66	7.850	3.50	10.85	1.17
1.867	1.46	4.867	4.66	7.867	3.50	10.87	1.17
1.883	1.46	4.883	4.66	7.883	3.50	10.88	1.17
1.900	1.46	4.900	4.66	7.900	3.50	10.90	1.17
1.917	1.46	4.917	4.66	7.917	3.50	10.92	1.17
1.933	1.46	4.933	4.66	7.933	3.50	10.93	1.17
1.950	1.46	4.950	4.66	7.950	3.50	10.95	1.17
1.967	1.46	4.967	4.66	7.967	3.50	10.97	1.17
1.983	1.46	4.983	4.66	7.983	3.50	10.98	1.17
2.000	1.46	5.000	4.66	8.000	3.49	11.00	1.17
2.017	1.75	5.017	6.99	8.017	2.04	11.02	1.17
2.033	1.75	5.033	6.99	8.033	2.04	11.03	1.17
2.050	1.75	5.050	6.99	8.050	2.04	11.05	1.17
2.067	1.75	5.067	6.99	8.067	2.04	11.07	1.17
2.083	1.75	5.083	6.99	8.083	2.04	11.08	1.17
2.100	1.75	5.100	6.99	8.100	2.04	11.10	1.17
2.117	1.75	5.117	6.99	8.117	2.04	11.12	1.17
2.133	1.75	5.133	6.99	8.133	2.04	11.13	1.17
2.150	1.75	5.150	6.99	8.150	2.04	11.15	1.17
2.167	1.75	5.167	6.99	8.167	2.04	11.17	1.17
2.183	1.75	5.183	6.99	8.183	2.04	11.18	1.17
2.200	1.75	5.200	6.99	8.200	2.04	11.20	1.17
2.217	1.75	5.217	6.99	8.217	2.04	11.22	1.17
2.233	1.75	5.233	6.99	8.233	2.04	11.23	1.17
2.250	1.75	5.250	6.99	8.250	2.04	11.25	1.17
2.267	1.75	5.267	6.99	8.267	2.04	11.27	1.17
2.283	1.75	5.283	6.99	8.283	2.04	11.28	1.17
2.300	1.75	5.300	6.99	8.300	2.04	11.30	1.17
2.317	1.75	5.317	6.99	8.317	2.04	11.32	1.17
2.333	1.75	5.333	6.99	8.333	2.04	11.33	1.17
2.350	1.75	5.350	6.99	8.350	2.04	11.35	1.17
2.367	1.75	5.367	6.99	8.367	2.04	11.37	1.17
2.383	1.75	5.383	6.99	8.383	2.04	11.38	1.17
2.400	1.75	5.400	6.99	8.400	2.04	11.40	1.17
2.417	1.75	5.417	6.99	8.417	2.04	11.42	1.17
2.433	1.75	5.433	6.99	8.433	2.04	11.43	1.17
2.450	1.75	5.450	6.99	8.450	2.04	11.45	1.17
2.467	1.75	5.467	6.99	8.467	2.04	11.47	1.17
2.483	1.75	5.483	6.99	8.483	2.04	11.48	1.17
2.500	1.75	5.500	7.01	8.500	2.04	11.50	1.17
2.517	1.75	5.517	27.97	8.517	2.04	11.52	1.17
2.533	1.75	5.533	27.97	8.533	2.04	11.53	1.17
2.550	1.75	5.550	27.97	8.550	2.04	11.55	1.17
2.567	1.75	5.567	27.97	8.567	2.04	11.57	1.17
2.583	1.75	5.583	27.97	8.583	2.04	11.58	1.17
2.600	1.75	5.600	27.97	8.600	2.04	11.60	1.17
2.617	1.75	5.617	27.97	8.617	2.04	11.62	1.17
2.633	1.75	5.633	27.97	8.633	2.04	11.63	1.17
2.650	1.75	5.650	27.97	8.650	2.04	11.65	1.17
2.667	1.75	5.667	27.97	8.667	2.04	11.67	1.17
2.683	1.75	5.683	27.97	8.683	2.04	11.68	1.17
2.700	1.75	5.700	27.97	8.700	2.04	11.70	1.17
2.717	1.75	5.717	27.97	8.717	2.04	11.72	1.17
2.733	1.75	5.733	27.97	8.733	2.04	11.73	1.17

2.750	1.75	5.750	28.03	8.750	2.04	11.75	1.17
2.767	1.75	5.767	76.92	8.767	2.04	11.77	1.17
2.783	1.75	5.783	76.92	8.783	2.04	11.78	1.17
2.800	1.75	5.800	76.92	8.800	2.04	11.80	1.17
2.817	1.75	5.817	76.92	8.817	2.04	11.82	1.17
2.833	1.75	5.833	76.92	8.833	2.04	11.83	1.17
2.850	1.75	5.850	76.92	8.850	2.04	11.85	1.17
2.867	1.75	5.867	76.92	8.867	2.04	11.87	1.17
2.883	1.75	5.883	76.92	8.883	2.04	11.88	1.17
2.900	1.75	5.900	76.92	8.900	2.04	11.90	1.17
2.917	1.75	5.917	76.92	8.917	2.04	11.92	1.17
2.933	1.75	5.933	76.92	8.933	2.04	11.93	1.17
2.950	1.75	5.950	76.92	8.950	2.04	11.95	1.17
2.967	1.75	5.967	76.92	8.967	2.04	11.97	1.17
2.983	1.75	5.983	76.92	8.983	2.04	11.98	1.17
3.000	1.75	6.000	76.82	9.000	2.04	12.00	1.17

Unit Hyd Qpeak (cms)= 0.694

PEAK FLOW (cms)= 0.203 (i)
TIME TO PEAK (hrs)= 7.000
RUNOFF VOLUME (mm)= 12.495
TOTAL RAINFALL (mm)= 58.270
RUNOFF COEFFICIENT = 0.214

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

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0010):	2.53	0.067	6.25	30.52
	+ ID2= 2 (0011):	0.80	0.070	6.08	48.86
	ID = 3 (0004):	3.33	0.134	6.12	34.93

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
	ID1= 3 (0004):	3.33	0.134	6.12	34.93
	+ ID2= 2 (0027):	17.26	0.203	7.00	12.49
	ID = 1 (0004):	20.59	0.282	6.75	16.12

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0004):	20.59	0.282	6.75	16.12
	+ ID2= 2 (0003):	4.49	0.035	7.10	19.21
	ID = 3 (0004):	25.08	0.316	6.78	16.68

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
	ID1= 3 (0004):	25.08	0.316	6.78	16.68
	+ ID2= 2 (0009):	2.07	0.096	6.12	31.10
	ID = 1 (0004):	27.15	0.344	6.65	17.78

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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      V    V   I    SSSSS  U   U    A    L              (v 5.0.2027)
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
       V  V    I      SS   U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\844ae7a7-7fda-4743-a706-e52d384fc
Summary filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\844ae7a7-7fda-4743-a706-e52d384fc

DATE: 12/19/2018 TIME: 10:47:46

USER:

COMMENTS: _____

** SIMULATION : Run 09 **

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\f24b7e6f
Ptotal= 68.87 mm	Comments: 10-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.72	3.25	2.75	6.25	12.40	9.25	2.41
0.50	1.72	3.50	2.75	6.50	12.40	9.50	2.41
0.75	1.72	3.75	2.75	6.75	5.51	9.75	2.41
1.00	1.72	4.00	2.75	7.00	5.51	10.00	2.41
1.25	1.72	4.25	4.13	7.25	4.13	10.25	1.38
1.50	1.72	4.50	4.13	7.50	4.13	10.50	1.38
1.75	1.72	4.75	5.51	7.75	4.13	10.75	1.38
2.00	1.72	5.00	5.51	8.00	4.13	11.00	1.38
2.25	2.07	5.25	8.26	8.25	2.41	11.25	1.38
2.50	2.07	5.50	8.26	8.50	2.41	11.50	1.38
2.75	2.07	5.75	33.06	8.75	2.41	11.75	1.38
3.00	2.07	6.00	90.91	9.00	2.41	12.00	1.38

CALIB NASHYD (0025)	Area (ha)= 1.48	Curve Number (CN)= 67.0
ID= 1 DT= 1.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.34	

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.72	3.017	2.75	6.017	12.40	9.02	2.41
0.033	1.72	3.033	2.75	6.033	12.40	9.03	2.41
0.050	1.72	3.050	2.75	6.050	12.40	9.05	2.41
0.067	1.72	3.067	2.75	6.067	12.40	9.07	2.41
0.083	1.72	3.083	2.75	6.083	12.40	9.08	2.41
0.100	1.72	3.100	2.75	6.100	12.40	9.10	2.41
0.117	1.72	3.117	2.75	6.117	12.40	9.12	2.41
0.133	1.72	3.133	2.75	6.133	12.40	9.13	2.41
0.150	1.72	3.150	2.75	6.150	12.40	9.15	2.41
0.167	1.72	3.167	2.75	6.167	12.40	9.17	2.41
0.183	1.72	3.183	2.75	6.183	12.40	9.18	2.41
0.200	1.72	3.200	2.75	6.200	12.40	9.20	2.41
0.217	1.72	3.217	2.75	6.217	12.40	9.22	2.41
0.233	1.72	3.233	2.75	6.233	12.40	9.23	2.41
0.250	1.72	3.250	2.75	6.250	12.40	9.25	2.41
0.267	1.72	3.267	2.75	6.267	12.40	9.27	2.41
0.283	1.72	3.283	2.75	6.283	12.40	9.28	2.41
0.300	1.72	3.300	2.75	6.300	12.40	9.30	2.41
0.317	1.72	3.317	2.75	6.317	12.40	9.32	2.41
0.333	1.72	3.333	2.75	6.333	12.40	9.33	2.41
0.350	1.72	3.350	2.75	6.350	12.40	9.35	2.41
0.367	1.72	3.367	2.75	6.367	12.40	9.37	2.41

0.383	1.72	3.383	2.75	6.383	12.40	9.38	2.41
0.400	1.72	3.400	2.75	6.400	12.40	9.40	2.41
0.417	1.72	3.417	2.75	6.417	12.40	9.42	2.41
0.433	1.72	3.433	2.75	6.433	12.40	9.43	2.41
0.450	1.72	3.450	2.75	6.450	12.40	9.45	2.41
0.467	1.72	3.467	2.75	6.467	12.40	9.47	2.41
0.483	1.72	3.483	2.75	6.483	12.40	9.48	2.41
0.500	1.72	3.500	2.75	6.500	12.39	9.50	2.41
0.517	1.72	3.517	2.75	6.517	5.51	9.52	2.41
0.533	1.72	3.533	2.75	6.533	5.51	9.53	2.41
0.550	1.72	3.550	2.75	6.550	5.51	9.55	2.41
0.567	1.72	3.567	2.75	6.567	5.51	9.57	2.41
0.583	1.72	3.583	2.75	6.583	5.51	9.58	2.41
0.600	1.72	3.600	2.75	6.600	5.51	9.60	2.41
0.617	1.72	3.617	2.75	6.617	5.51	9.62	2.41
0.633	1.72	3.633	2.75	6.633	5.51	9.63	2.41
0.650	1.72	3.650	2.75	6.650	5.51	9.65	2.41
0.667	1.72	3.667	2.75	6.667	5.51	9.67	2.41
0.683	1.72	3.683	2.75	6.683	5.51	9.68	2.41
0.700	1.72	3.700	2.75	6.700	5.51	9.70	2.41
0.717	1.72	3.717	2.75	6.717	5.51	9.72	2.41
0.733	1.72	3.733	2.75	6.733	5.51	9.73	2.41
0.750	1.72	3.750	2.75	6.750	5.51	9.75	2.41
0.767	1.72	3.767	2.75	6.767	5.51	9.77	2.41
0.783	1.72	3.783	2.75	6.783	5.51	9.78	2.41
0.800	1.72	3.800	2.75	6.800	5.51	9.80	2.41
0.817	1.72	3.817	2.75	6.817	5.51	9.82	2.41
0.833	1.72	3.833	2.75	6.833	5.51	9.83	2.41
0.850	1.72	3.850	2.75	6.850	5.51	9.85	2.41
0.867	1.72	3.867	2.75	6.867	5.51	9.87	2.41
0.883	1.72	3.883	2.75	6.883	5.51	9.88	2.41
0.900	1.72	3.900	2.75	6.900	5.51	9.90	2.41
0.917	1.72	3.917	2.75	6.917	5.51	9.92	2.41
0.933	1.72	3.933	2.75	6.933	5.51	9.93	2.41
0.950	1.72	3.950	2.75	6.950	5.51	9.95	2.41
0.967	1.72	3.967	2.75	6.967	5.51	9.97	2.41
0.983	1.72	3.983	2.75	6.983	5.51	9.98	2.41
1.000	1.72	4.000	2.75	7.000	5.51	10.00	2.41
1.017	1.72	4.017	4.13	7.017	4.13	10.02	1.38
1.033	1.72	4.033	4.13	7.033	4.13	10.03	1.38
1.050	1.72	4.050	4.13	7.050	4.13	10.05	1.38
1.067	1.72	4.067	4.13	7.067	4.13	10.07	1.38
1.083	1.72	4.083	4.13	7.083	4.13	10.08	1.38
1.100	1.72	4.100	4.13	7.100	4.13	10.10	1.38
1.117	1.72	4.117	4.13	7.117	4.13	10.12	1.38
1.133	1.72	4.133	4.13	7.133	4.13	10.13	1.38
1.150	1.72	4.150	4.13	7.150	4.13	10.15	1.38
1.167	1.72	4.167	4.13	7.167	4.13	10.17	1.38
1.183	1.72	4.183	4.13	7.183	4.13	10.18	1.38
1.200	1.72	4.200	4.13	7.200	4.13	10.20	1.38
1.217	1.72	4.217	4.13	7.217	4.13	10.22	1.38
1.233	1.72	4.233	4.13	7.233	4.13	10.23	1.38
1.250	1.72	4.250	4.13	7.250	4.13	10.25	1.38
1.267	1.72	4.267	4.13	7.267	4.13	10.27	1.38
1.283	1.72	4.283	4.13	7.283	4.13	10.28	1.38
1.300	1.72	4.300	4.13	7.300	4.13	10.30	1.38
1.317	1.72	4.317	4.13	7.317	4.13	10.32	1.38
1.333	1.72	4.333	4.13	7.333	4.13	10.33	1.38
1.350	1.72	4.350	4.13	7.350	4.13	10.35	1.38
1.367	1.72	4.367	4.13	7.367	4.13	10.37	1.38
1.383	1.72	4.383	4.13	7.383	4.13	10.38	1.38
1.400	1.72	4.400	4.13	7.400	4.13	10.40	1.38
1.417	1.72	4.417	4.13	7.417	4.13	10.42	1.38
1.433	1.72	4.433	4.13	7.433	4.13	10.43	1.38
1.450	1.72	4.450	4.13	7.450	4.13	10.45	1.38
1.467	1.72	4.467	4.13	7.467	4.13	10.47	1.38
1.483	1.72	4.483	4.13	7.483	4.13	10.48	1.38
1.500	1.72	4.500	4.13	7.500	4.13	10.50	1.38
1.517	1.72	4.517	5.51	7.517	4.13	10.52	1.38
1.533	1.72	4.533	5.51	7.533	4.13	10.53	1.38
1.550	1.72	4.550	5.51	7.550	4.13	10.55	1.38
1.567	1.72	4.567	5.51	7.567	4.13	10.57	1.38
1.583	1.72	4.583	5.51	7.583	4.13	10.58	1.38
1.600	1.72	4.600	5.51	7.600	4.13	10.60	1.38
1.617	1.72	4.617	5.51	7.617	4.13	10.62	1.38
1.633	1.72	4.633	5.51	7.633	4.13	10.63	1.38
1.650	1.72	4.650	5.51	7.650	4.13	10.65	1.38
1.667	1.72	4.667	5.51	7.667	4.13	10.67	1.38
1.683	1.72	4.683	5.51	7.683	4.13	10.68	1.38
1.700	1.72	4.700	5.51	7.700	4.13	10.70	1.38
1.717	1.72	4.717	5.51	7.717	4.13	10.72	1.38
1.733	1.72	4.733	5.51	7.733	4.13	10.73	1.38
1.750	1.72	4.750	5.51	7.750	4.13	10.75	1.38
1.767	1.72	4.767	5.51	7.767	4.13	10.77	1.38
1.783	1.72	4.783	5.51	7.783	4.13	10.78	1.38
1.800	1.72	4.800	5.51	7.800	4.13	10.80	1.38
1.817	1.72	4.817	5.51	7.817	4.13	10.82	1.38
1.833	1.72	4.833	5.51	7.833	4.13	10.83	1.38
1.850	1.72	4.850	5.51	7.850	4.13	10.85	1.38
1.867	1.72	4.867	5.51	7.867	4.13	10.87	1.38
1.883	1.72	4.883	5.51	7.883	4.13	10.88	1.38

1.900	1.72	4.900	5.51	7.900	4.13	10.90	1.38
1.917	1.72	4.917	5.51	7.917	4.13	10.92	1.38
1.933	1.72	4.933	5.51	7.933	4.13	10.93	1.38
1.950	1.72	4.950	5.51	7.950	4.13	10.95	1.38
1.967	1.72	4.967	5.51	7.967	4.13	10.97	1.38
1.983	1.72	4.983	5.51	7.983	4.13	10.98	1.38
2.000	1.72	5.000	5.51	8.000	4.12	11.00	1.38
2.017	2.07	5.017	8.26	8.017	2.41	11.02	1.38
2.033	2.07	5.033	8.26	8.033	2.41	11.03	1.38
2.050	2.07	5.050	8.26	8.050	2.41	11.05	1.38
2.067	2.07	5.067	8.26	8.067	2.41	11.07	1.38
2.083	2.07	5.083	8.26	8.083	2.41	11.08	1.38
2.100	2.07	5.100	8.26	8.100	2.41	11.10	1.38
2.117	2.07	5.117	8.26	8.117	2.41	11.12	1.38
2.133	2.07	5.133	8.26	8.133	2.41	11.13	1.38
2.150	2.07	5.150	8.26	8.150	2.41	11.15	1.38
2.167	2.07	5.167	8.26	8.167	2.41	11.17	1.38
2.183	2.07	5.183	8.26	8.183	2.41	11.18	1.38
2.200	2.07	5.200	8.26	8.200	2.41	11.20	1.38
2.217	2.07	5.217	8.26	8.217	2.41	11.22	1.38
2.233	2.07	5.233	8.26	8.233	2.41	11.23	1.38
2.250	2.07	5.250	8.26	8.250	2.41	11.25	1.38
2.267	2.07	5.267	8.26	8.267	2.41	11.27	1.38
2.283	2.07	5.283	8.26	8.283	2.41	11.28	1.38
2.300	2.07	5.300	8.26	8.300	2.41	11.30	1.38
2.317	2.07	5.317	8.26	8.317	2.41	11.32	1.38
2.333	2.07	5.333	8.26	8.333	2.41	11.33	1.38
2.350	2.07	5.350	8.26	8.350	2.41	11.35	1.38
2.367	2.07	5.367	8.26	8.367	2.41	11.37	1.38
2.383	2.07	5.383	8.26	8.383	2.41	11.38	1.38
2.400	2.07	5.400	8.26	8.400	2.41	11.40	1.38
2.417	2.07	5.417	8.26	8.417	2.41	11.42	1.38
2.433	2.07	5.433	8.26	8.433	2.41	11.43	1.38
2.450	2.07	5.450	8.26	8.450	2.41	11.45	1.38
2.467	2.07	5.467	8.26	8.467	2.41	11.47	1.38
2.483	2.07	5.483	8.26	8.483	2.41	11.48	1.38
2.500	2.07	5.500	8.28	8.500	2.41	11.50	1.38
2.517	2.07	5.517	33.06	8.517	2.41	11.52	1.38
2.533	2.07	5.533	33.06	8.533	2.41	11.53	1.38
2.550	2.07	5.550	33.06	8.550	2.41	11.55	1.38
2.567	2.07	5.567	33.06	8.567	2.41	11.57	1.38
2.583	2.07	5.583	33.06	8.583	2.41	11.58	1.38
2.600	2.07	5.600	33.06	8.600	2.41	11.60	1.38
2.617	2.07	5.617	33.06	8.617	2.41	11.62	1.38
2.633	2.07	5.633	33.06	8.633	2.41	11.63	1.38
2.650	2.07	5.650	33.06	8.650	2.41	11.65	1.38
2.667	2.07	5.667	33.06	8.667	2.41	11.67	1.38
2.683	2.07	5.683	33.06	8.683	2.41	11.68	1.38
2.700	2.07	5.700	33.06	8.700	2.41	11.70	1.38
2.717	2.07	5.717	33.06	8.717	2.41	11.72	1.38
2.733	2.07	5.733	33.06	8.733	2.41	11.73	1.38
2.750	2.07	5.750	33.13	8.750	2.41	11.75	1.38
2.767	2.07	5.767	90.91	8.767	2.41	11.77	1.38
2.783	2.07	5.783	90.91	8.783	2.41	11.78	1.38
2.800	2.07	5.800	90.91	8.800	2.41	11.80	1.38
2.817	2.07	5.817	90.91	8.817	2.41	11.82	1.38
2.833	2.07	5.833	90.91	8.833	2.41	11.83	1.38
2.850	2.07	5.850	90.91	8.850	2.41	11.85	1.38
2.867	2.07	5.867	90.91	8.867	2.41	11.87	1.38
2.883	2.07	5.883	90.91	8.883	2.41	11.88	1.38
2.900	2.07	5.900	90.91	8.900	2.41	11.90	1.38
2.917	2.07	5.917	90.91	8.917	2.41	11.92	1.38
2.933	2.07	5.933	90.91	8.933	2.41	11.93	1.38
2.950	2.07	5.950	90.91	8.950	2.41	11.95	1.38
2.967	2.07	5.967	90.91	8.967	2.41	11.97	1.38
2.983	2.07	5.983	90.91	8.983	2.41	11.98	1.38
3.000	2.07	6.000	90.80	9.000	2.41	12.00	1.38

Unit Hyd Qpeak (cms)= 0.166

PEAK FLOW (cms)= 0.064 (i)
TIME TO PEAK (hrs)= 6.250
RUNOFF VOLUME (mm)= 21.585
TOTAL RAINFALL (mm)= 68.867
RUNOFF COEFFICIENT = 0.313

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

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\f24b7e6f
Ptotal= 68.87 mm	Comments: 10-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.72	3.25	2.75	6.25	12.40	9.25	2.41
0.50	1.72	3.50	2.75	6.50	12.40	9.50	2.41
0.75	1.72	3.75	2.75	6.75	5.51	9.75	2.41

1.00	1.72	4.00	2.75	7.00	5.51	10.00	2.41
1.25	1.72	4.25	4.13	7.25	4.13	10.25	1.38
1.50	1.72	4.50	4.13	7.50	4.13	10.50	1.38
1.75	1.72	4.75	5.51	7.75	4.13	10.75	1.38
2.00	1.72	5.00	5.51	8.00	4.13	11.00	1.38
2.25	2.07	5.25	8.26	8.25	2.41	11.25	1.38
2.50	2.07	5.50	8.26	8.50	2.41	11.50	1.38
2.75	2.07	5.75	33.06	8.75	2.41	11.75	1.38
3.00	2.07	6.00	90.91	9.00	2.41	12.00	1.38

CALIB STANDHYD (0001)	Area (ha)= 3.01
ID= 1 DT= 1.0 min	Total Imp(%)= 57.00 Dir. Conn.(%)= 46.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.72	1.29
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.50	3.00
Length	(m)=	141.66	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.72	3.017	2.75	6.017	12.40	9.02	2.41
0.033	1.72	3.033	2.75	6.033	12.40	9.03	2.41
0.050	1.72	3.050	2.75	6.050	12.40	9.05	2.41
0.067	1.72	3.067	2.75	6.067	12.40	9.07	2.41
0.083	1.72	3.083	2.75	6.083	12.40	9.08	2.41
0.100	1.72	3.100	2.75	6.100	12.40	9.10	2.41
0.117	1.72	3.117	2.75	6.117	12.40	9.12	2.41
0.133	1.72	3.133	2.75	6.133	12.40	9.13	2.41
0.150	1.72	3.150	2.75	6.150	12.40	9.15	2.41
0.167	1.72	3.167	2.75	6.167	12.40	9.17	2.41
0.183	1.72	3.183	2.75	6.183	12.40	9.18	2.41
0.200	1.72	3.200	2.75	6.200	12.40	9.20	2.41
0.217	1.72	3.217	2.75	6.217	12.40	9.22	2.41
0.233	1.72	3.233	2.75	6.233	12.40	9.23	2.41
0.250	1.72	3.250	2.75	6.250	12.40	9.25	2.41
0.267	1.72	3.267	2.75	6.267	12.40	9.27	2.41
0.283	1.72	3.283	2.75	6.283	12.40	9.28	2.41
0.300	1.72	3.300	2.75	6.300	12.40	9.30	2.41
0.317	1.72	3.317	2.75	6.317	12.40	9.32	2.41
0.333	1.72	3.333	2.75	6.333	12.40	9.33	2.41
0.350	1.72	3.350	2.75	6.350	12.40	9.35	2.41
0.367	1.72	3.367	2.75	6.367	12.40	9.37	2.41
0.383	1.72	3.383	2.75	6.383	12.40	9.38	2.41
0.400	1.72	3.400	2.75	6.400	12.40	9.40	2.41
0.417	1.72	3.417	2.75	6.417	12.40	9.42	2.41
0.433	1.72	3.433	2.75	6.433	12.40	9.43	2.41
0.450	1.72	3.450	2.75	6.450	12.40	9.45	2.41
0.467	1.72	3.467	2.75	6.467	12.40	9.47	2.41
0.483	1.72	3.483	2.75	6.483	12.40	9.48	2.41
0.500	1.72	3.500	2.75	6.500	12.39	9.50	2.41
0.517	1.72	3.517	2.75	6.517	5.51	9.52	2.41
0.533	1.72	3.533	2.75	6.533	5.51	9.53	2.41
0.550	1.72	3.550	2.75	6.550	5.51	9.55	2.41
0.567	1.72	3.567	2.75	6.567	5.51	9.57	2.41
0.583	1.72	3.583	2.75	6.583	5.51	9.58	2.41
0.600	1.72	3.600	2.75	6.600	5.51	9.60	2.41
0.617	1.72	3.617	2.75	6.617	5.51	9.62	2.41
0.633	1.72	3.633	2.75	6.633	5.51	9.63	2.41
0.650	1.72	3.650	2.75	6.650	5.51	9.65	2.41
0.667	1.72	3.667	2.75	6.667	5.51	9.67	2.41
0.683	1.72	3.683	2.75	6.683	5.51	9.68	2.41
0.700	1.72	3.700	2.75	6.700	5.51	9.70	2.41
0.717	1.72	3.717	2.75	6.717	5.51	9.72	2.41
0.733	1.72	3.733	2.75	6.733	5.51	9.73	2.41
0.750	1.72	3.750	2.75	6.750	5.51	9.75	2.41
0.767	1.72	3.767	2.75	6.767	5.51	9.77	2.41
0.783	1.72	3.783	2.75	6.783	5.51	9.78	2.41
0.800	1.72	3.800	2.75	6.800	5.51	9.80	2.41
0.817	1.72	3.817	2.75	6.817	5.51	9.82	2.41
0.833	1.72	3.833	2.75	6.833	5.51	9.83	2.41
0.850	1.72	3.850	2.75	6.850	5.51	9.85	2.41
0.867	1.72	3.867	2.75	6.867	5.51	9.87	2.41
0.883	1.72	3.883	2.75	6.883	5.51	9.88	2.41
0.900	1.72	3.900	2.75	6.900	5.51	9.90	2.41
0.917	1.72	3.917	2.75	6.917	5.51	9.92	2.41
0.933	1.72	3.933	2.75	6.933	5.51	9.93	2.41
0.950	1.72	3.950	2.75	6.950	5.51	9.95	2.41
0.967	1.72	3.967	2.75	6.967	5.51	9.97	2.41
0.983	1.72	3.983	2.75	6.983	5.51	9.98	2.41
1.000	1.72	4.000	2.75	7.000	5.51	10.00	2.41
1.017	1.72	4.017	4.13	7.017	4.13	10.02	1.38

1.033	1.72	4.033	4.13	7.033	4.13	10.03	1.38
1.050	1.72	4.050	4.13	7.050	4.13	10.05	1.38
1.067	1.72	4.067	4.13	7.067	4.13	10.07	1.38
1.083	1.72	4.083	4.13	7.083	4.13	10.08	1.38
1.100	1.72	4.100	4.13	7.100	4.13	10.10	1.38
1.117	1.72	4.117	4.13	7.117	4.13	10.12	1.38
1.133	1.72	4.133	4.13	7.133	4.13	10.13	1.38
1.150	1.72	4.150	4.13	7.150	4.13	10.15	1.38
1.167	1.72	4.167	4.13	7.167	4.13	10.17	1.38
1.183	1.72	4.183	4.13	7.183	4.13	10.18	1.38
1.200	1.72	4.200	4.13	7.200	4.13	10.20	1.38
1.217	1.72	4.217	4.13	7.217	4.13	10.22	1.38
1.233	1.72	4.233	4.13	7.233	4.13	10.23	1.38
1.250	1.72	4.250	4.13	7.250	4.13	10.25	1.38
1.267	1.72	4.267	4.13	7.267	4.13	10.27	1.38
1.283	1.72	4.283	4.13	7.283	4.13	10.28	1.38
1.300	1.72	4.300	4.13	7.300	4.13	10.30	1.38
1.317	1.72	4.317	4.13	7.317	4.13	10.32	1.38
1.333	1.72	4.333	4.13	7.333	4.13	10.33	1.38
1.350	1.72	4.350	4.13	7.350	4.13	10.35	1.38
1.367	1.72	4.367	4.13	7.367	4.13	10.37	1.38
1.383	1.72	4.383	4.13	7.383	4.13	10.38	1.38
1.400	1.72	4.400	4.13	7.400	4.13	10.40	1.38
1.417	1.72	4.417	4.13	7.417	4.13	10.42	1.38
1.433	1.72	4.433	4.13	7.433	4.13	10.43	1.38
1.450	1.72	4.450	4.13	7.450	4.13	10.45	1.38
1.467	1.72	4.467	4.13	7.467	4.13	10.47	1.38
1.483	1.72	4.483	4.13	7.483	4.13	10.48	1.38
1.500	1.72	4.500	4.13	7.500	4.13	10.50	1.38
1.517	1.72	4.517	5.51	7.517	4.13	10.52	1.38
1.533	1.72	4.533	5.51	7.533	4.13	10.53	1.38
1.550	1.72	4.550	5.51	7.550	4.13	10.55	1.38
1.567	1.72	4.567	5.51	7.567	4.13	10.57	1.38
1.583	1.72	4.583	5.51	7.583	4.13	10.58	1.38
1.600	1.72	4.600	5.51	7.600	4.13	10.60	1.38
1.617	1.72	4.617	5.51	7.617	4.13	10.62	1.38
1.633	1.72	4.633	5.51	7.633	4.13	10.63	1.38
1.650	1.72	4.650	5.51	7.650	4.13	10.65	1.38
1.667	1.72	4.667	5.51	7.667	4.13	10.67	1.38
1.683	1.72	4.683	5.51	7.683	4.13	10.68	1.38
1.700	1.72	4.700	5.51	7.700	4.13	10.70	1.38
1.717	1.72	4.717	5.51	7.717	4.13	10.72	1.38
1.733	1.72	4.733	5.51	7.733	4.13	10.73	1.38
1.750	1.72	4.750	5.51	7.750	4.13	10.75	1.38
1.767	1.72	4.767	5.51	7.767	4.13	10.77	1.38
1.783	1.72	4.783	5.51	7.783	4.13	10.78	1.38
1.800	1.72	4.800	5.51	7.800	4.13	10.80	1.38
1.817	1.72	4.817	5.51	7.817	4.13	10.82	1.38
1.833	1.72	4.833	5.51	7.833	4.13	10.83	1.38
1.850	1.72	4.850	5.51	7.850	4.13	10.85	1.38
1.867	1.72	4.867	5.51	7.867	4.13	10.87	1.38
1.883	1.72	4.883	5.51	7.883	4.13	10.88	1.38
1.900	1.72	4.900	5.51	7.900	4.13	10.90	1.38
1.917	1.72	4.917	5.51	7.917	4.13	10.92	1.38
1.933	1.72	4.933	5.51	7.933	4.13	10.93	1.38
1.950	1.72	4.950	5.51	7.950	4.13	10.95	1.38
1.967	1.72	4.967	5.51	7.967	4.13	10.97	1.38
1.983	1.72	4.983	5.51	7.983	4.13	10.98	1.38
2.000	1.72	5.000	5.51	8.000	4.12	11.00	1.38
2.017	2.07	5.017	8.26	8.017	2.41	11.02	1.38
2.033	2.07	5.033	8.26	8.033	2.41	11.03	1.38
2.050	2.07	5.050	8.26	8.050	2.41	11.05	1.38
2.067	2.07	5.067	8.26	8.067	2.41	11.07	1.38
2.083	2.07	5.083	8.26	8.083	2.41	11.08	1.38
2.100	2.07	5.100	8.26	8.100	2.41	11.10	1.38
2.117	2.07	5.117	8.26	8.117	2.41	11.12	1.38
2.133	2.07	5.133	8.26	8.133	2.41	11.13	1.38
2.150	2.07	5.150	8.26	8.150	2.41	11.15	1.38
2.167	2.07	5.167	8.26	8.167	2.41	11.17	1.38
2.183	2.07	5.183	8.26	8.183	2.41	11.18	1.38
2.200	2.07	5.200	8.26	8.200	2.41	11.20	1.38
2.217	2.07	5.217	8.26	8.217	2.41	11.22	1.38
2.233	2.07	5.233	8.26	8.233	2.41	11.23	1.38
2.250	2.07	5.250	8.26	8.250	2.41	11.25	1.38
2.267	2.07	5.267	8.26	8.267	2.41	11.27	1.38
2.283	2.07	5.283	8.26	8.283	2.41	11.28	1.38
2.300	2.07	5.300	8.26	8.300	2.41	11.30	1.38
2.317	2.07	5.317	8.26	8.317	2.41	11.32	1.38
2.333	2.07	5.333	8.26	8.333	2.41	11.33	1.38
2.350	2.07	5.350	8.26	8.350	2.41	11.35	1.38
2.367	2.07	5.367	8.26	8.367	2.41	11.37	1.38
2.383	2.07	5.383	8.26	8.383	2.41	11.38	1.38
2.400	2.07	5.400	8.26	8.400	2.41	11.40	1.38
2.417	2.07	5.417	8.26	8.417	2.41	11.42	1.38
2.433	2.07	5.433	8.26	8.433	2.41	11.43	1.38
2.450	2.07	5.450	8.26	8.450	2.41	11.45	1.38
2.467	2.07	5.467	8.26	8.467	2.41	11.47	1.38
2.483	2.07	5.483	8.26	8.483	2.41	11.48	1.38
2.500	2.07	5.500	8.28	8.500	2.41	11.50	1.38
2.517	2.07	5.517	33.06	8.517	2.41	11.52	1.38
2.533	2.07	5.533	33.06	8.533	2.41	11.53	1.38

2.550	2.07	5.550	33.06	8.550	2.41	11.55	1.38
2.567	2.07	5.567	33.06	8.567	2.41	11.57	1.38
2.583	2.07	5.583	33.06	8.583	2.41	11.58	1.38
2.600	2.07	5.600	33.06	8.600	2.41	11.60	1.38
2.617	2.07	5.617	33.06	8.617	2.41	11.62	1.38
2.633	2.07	5.633	33.06	8.633	2.41	11.63	1.38
2.650	2.07	5.650	33.06	8.650	2.41	11.65	1.38
2.667	2.07	5.667	33.06	8.667	2.41	11.67	1.38
2.683	2.07	5.683	33.06	8.683	2.41	11.68	1.38
2.700	2.07	5.700	33.06	8.700	2.41	11.70	1.38
2.717	2.07	5.717	33.06	8.717	2.41	11.72	1.38
2.733	2.07	5.733	33.06	8.733	2.41	11.73	1.38
2.750	2.07	5.750	33.13	8.750	2.41	11.75	1.38
2.767	2.07	5.767	90.91	8.767	2.41	11.77	1.38
2.783	2.07	5.783	90.91	8.783	2.41	11.78	1.38
2.800	2.07	5.800	90.91	8.800	2.41	11.80	1.38
2.817	2.07	5.817	90.91	8.817	2.41	11.82	1.38
2.833	2.07	5.833	90.91	8.833	2.41	11.83	1.38
2.850	2.07	5.850	90.91	8.850	2.41	11.85	1.38
2.867	2.07	5.867	90.91	8.867	2.41	11.87	1.38
2.883	2.07	5.883	90.91	8.883	2.41	11.88	1.38
2.900	2.07	5.900	90.91	8.900	2.41	11.90	1.38
2.917	2.07	5.917	90.91	8.917	2.41	11.92	1.38
2.933	2.07	5.933	90.91	8.933	2.41	11.93	1.38
2.950	2.07	5.950	90.91	8.950	2.41	11.95	1.38
2.967	2.07	5.967	90.91	8.967	2.41	11.97	1.38
2.983	2.07	5.983	90.91	8.983	2.41	11.98	1.38
3.000	2.07	6.000	90.80	9.000	2.41	12.00	1.38

Max.Eff.Inten.(mm/hr)=	90.91	29.35	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.90 (ii)	9.22 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.31	0.12	
			TOTALS
PEAK FLOW (cms)=	0.35	0.07	0.412 (iii)
TIME TO PEAK (hrs)=	6.00	6.07	6.00
RUNOFF VOLUME (mm)=	67.86	14.37	38.98
TOTAL RAINFALL (mm)=	68.87	68.87	68.87
RUNOFF COEFFICIENT =	0.99	0.21	0.57

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0016)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0001):		3.01	0.412	6.00	38.98
+ ID2= 2 (0025):		1.48	0.064	6.25	21.58
ID = 3 (0016):		4.49	0.449	6.00	33.24

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0003)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0410	0.0864
	0.0000	0.0281	0.0800	0.1533
	0.0010	0.0321	0.0900	0.1746
	0.0040	0.0479	0.1110	0.2118
	0.0070	0.0518	0.1180	0.2246

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0016)	4.490	0.449	6.00	33.24
OUTFLOW: ID= 1 (0003)	4.490	0.047	7.07	25.68

PEAK FLOW REDUCTION [Qout/Qin](%)= 10.53
TIME SHIFT OF PEAK FLOW (min)= 64.00
MAXIMUM STORAGE USED (ha.m.)= 0.0972

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\f24b7e6f
Ptotal= 68.87 mm	Comments: 10-Year 12-Hour SCS II Design Storm

TIME	RAIN	TIME	RAIN	TIME	RAIN	TIME	RAIN

hrs	mm/hr	hrs	mm/hr	hrs	mm/hr	hrs	mm/hr
0.25	1.72	3.25	2.75	6.25	12.40	9.25	2.41
0.50	1.72	3.50	2.75	6.50	12.40	9.50	2.41
0.75	1.72	3.75	2.75	6.75	5.51	9.75	2.41
1.00	1.72	4.00	2.75	7.00	5.51	10.00	2.41
1.25	1.72	4.25	4.13	7.25	4.13	10.25	1.38
1.50	1.72	4.50	4.13	7.50	4.13	10.50	1.38
1.75	1.72	4.75	5.51	7.75	4.13	10.75	1.38
2.00	1.72	5.00	5.51	8.00	4.13	11.00	1.38
2.25	2.07	5.25	8.26	8.25	2.41	11.25	1.38
2.50	2.07	5.50	8.26	8.50	2.41	11.50	1.38
2.75	2.07	5.75	33.06	8.75	2.41	11.75	1.38
3.00	2.07	6.00	90.91	9.00	2.41	12.00	1.38

CALIB NASHYD (0026)			
ID= 1 DT= 1.0 min	Area (ha)= 0.27	Curve Number (CN)= 71.0	
	Ia (mm)= 3.00	# of Linear Res.(N)= 3.00	
	U.H. Tp(hrs)= 0.02		

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.72	3.017	2.75	6.017	12.40	9.02	2.41
0.033	1.72	3.033	2.75	6.033	12.40	9.03	2.41
0.050	1.72	3.050	2.75	6.050	12.40	9.05	2.41
0.067	1.72	3.067	2.75	6.067	12.40	9.07	2.41
0.083	1.72	3.083	2.75	6.083	12.40	9.08	2.41
0.100	1.72	3.100	2.75	6.100	12.40	9.10	2.41
0.117	1.72	3.117	2.75	6.117	12.40	9.12	2.41
0.133	1.72	3.133	2.75	6.133	12.40	9.13	2.41
0.150	1.72	3.150	2.75	6.150	12.40	9.15	2.41
0.167	1.72	3.167	2.75	6.167	12.40	9.17	2.41
0.183	1.72	3.183	2.75	6.183	12.40	9.18	2.41
0.200	1.72	3.200	2.75	6.200	12.40	9.20	2.41
0.217	1.72	3.217	2.75	6.217	12.40	9.22	2.41
0.233	1.72	3.233	2.75	6.233	12.40	9.23	2.41
0.250	1.72	3.250	2.75	6.250	12.40	9.25	2.41
0.267	1.72	3.267	2.75	6.267	12.40	9.27	2.41
0.283	1.72	3.283	2.75	6.283	12.40	9.28	2.41
0.300	1.72	3.300	2.75	6.300	12.40	9.30	2.41
0.317	1.72	3.317	2.75	6.317	12.40	9.32	2.41
0.333	1.72	3.333	2.75	6.333	12.40	9.33	2.41
0.350	1.72	3.350	2.75	6.350	12.40	9.35	2.41
0.367	1.72	3.367	2.75	6.367	12.40	9.37	2.41
0.383	1.72	3.383	2.75	6.383	12.40	9.38	2.41
0.400	1.72	3.400	2.75	6.400	12.40	9.40	2.41
0.417	1.72	3.417	2.75	6.417	12.40	9.42	2.41
0.433	1.72	3.433	2.75	6.433	12.40	9.43	2.41
0.450	1.72	3.450	2.75	6.450	12.40	9.45	2.41
0.467	1.72	3.467	2.75	6.467	12.40	9.47	2.41
0.483	1.72	3.483	2.75	6.483	12.40	9.48	2.41
0.500	1.72	3.500	2.75	6.500	12.39	9.50	2.41
0.517	1.72	3.517	2.75	6.517	5.51	9.52	2.41
0.533	1.72	3.533	2.75	6.533	5.51	9.53	2.41
0.550	1.72	3.550	2.75	6.550	5.51	9.55	2.41
0.567	1.72	3.567	2.75	6.567	5.51	9.57	2.41
0.583	1.72	3.583	2.75	6.583	5.51	9.58	2.41
0.600	1.72	3.600	2.75	6.600	5.51	9.60	2.41
0.617	1.72	3.617	2.75	6.617	5.51	9.62	2.41
0.633	1.72	3.633	2.75	6.633	5.51	9.63	2.41
0.650	1.72	3.650	2.75	6.650	5.51	9.65	2.41
0.667	1.72	3.667	2.75	6.667	5.51	9.67	2.41
0.683	1.72	3.683	2.75	6.683	5.51	9.68	2.41
0.700	1.72	3.700	2.75	6.700	5.51	9.70	2.41
0.717	1.72	3.717	2.75	6.717	5.51	9.72	2.41
0.733	1.72	3.733	2.75	6.733	5.51	9.73	2.41
0.750	1.72	3.750	2.75	6.750	5.51	9.75	2.41
0.767	1.72	3.767	2.75	6.767	5.51	9.77	2.41
0.783	1.72	3.783	2.75	6.783	5.51	9.78	2.41
0.800	1.72	3.800	2.75	6.800	5.51	9.80	2.41
0.817	1.72	3.817	2.75	6.817	5.51	9.82	2.41
0.833	1.72	3.833	2.75	6.833	5.51	9.83	2.41
0.850	1.72	3.850	2.75	6.850	5.51	9.85	2.41
0.867	1.72	3.867	2.75	6.867	5.51	9.87	2.41
0.883	1.72	3.883	2.75	6.883	5.51	9.88	2.41
0.900	1.72	3.900	2.75	6.900	5.51	9.90	2.41
0.917	1.72	3.917	2.75	6.917	5.51	9.92	2.41
0.933	1.72	3.933	2.75	6.933	5.51	9.93	2.41
0.950	1.72	3.950	2.75	6.950	5.51	9.95	2.41
0.967	1.72	3.967	2.75	6.967	5.51	9.97	2.41
0.983	1.72	3.983	2.75	6.983	5.51	9.98	2.41
1.000	1.72	4.000	2.75	7.000	5.51	10.00	2.41
1.017	1.72	4.017	4.13	7.017	4.13	10.02	1.38
1.033	1.72	4.033	4.13	7.033	4.13	10.03	1.38
1.050	1.72	4.050	4.13	7.050	4.13	10.05	1.38

1.067	1.72	4.067	4.13	7.067	4.13	10.07	1.38
1.083	1.72	4.083	4.13	7.083	4.13	10.08	1.38
1.100	1.72	4.100	4.13	7.100	4.13	10.10	1.38
1.117	1.72	4.117	4.13	7.117	4.13	10.12	1.38
1.133	1.72	4.133	4.13	7.133	4.13	10.13	1.38
1.150	1.72	4.150	4.13	7.150	4.13	10.15	1.38
1.167	1.72	4.167	4.13	7.167	4.13	10.17	1.38
1.183	1.72	4.183	4.13	7.183	4.13	10.18	1.38
1.200	1.72	4.200	4.13	7.200	4.13	10.20	1.38
1.217	1.72	4.217	4.13	7.217	4.13	10.22	1.38
1.233	1.72	4.233	4.13	7.233	4.13	10.23	1.38
1.250	1.72	4.250	4.13	7.250	4.13	10.25	1.38
1.267	1.72	4.267	4.13	7.267	4.13	10.27	1.38
1.283	1.72	4.283	4.13	7.283	4.13	10.28	1.38
1.300	1.72	4.300	4.13	7.300	4.13	10.30	1.38
1.317	1.72	4.317	4.13	7.317	4.13	10.32	1.38
1.333	1.72	4.333	4.13	7.333	4.13	10.33	1.38
1.350	1.72	4.350	4.13	7.350	4.13	10.35	1.38
1.367	1.72	4.367	4.13	7.367	4.13	10.37	1.38
1.383	1.72	4.383	4.13	7.383	4.13	10.38	1.38
1.400	1.72	4.400	4.13	7.400	4.13	10.40	1.38
1.417	1.72	4.417	4.13	7.417	4.13	10.42	1.38
1.433	1.72	4.433	4.13	7.433	4.13	10.43	1.38
1.450	1.72	4.450	4.13	7.450	4.13	10.45	1.38
1.467	1.72	4.467	4.13	7.467	4.13	10.47	1.38
1.483	1.72	4.483	4.13	7.483	4.13	10.48	1.38
1.500	1.72	4.500	4.13	7.500	4.13	10.50	1.38
1.517	1.72	4.517	5.51	7.517	4.13	10.52	1.38
1.533	1.72	4.533	5.51	7.533	4.13	10.53	1.38
1.550	1.72	4.550	5.51	7.550	4.13	10.55	1.38
1.567	1.72	4.567	5.51	7.567	4.13	10.57	1.38
1.583	1.72	4.583	5.51	7.583	4.13	10.58	1.38
1.600	1.72	4.600	5.51	7.600	4.13	10.60	1.38
1.617	1.72	4.617	5.51	7.617	4.13	10.62	1.38
1.633	1.72	4.633	5.51	7.633	4.13	10.63	1.38
1.650	1.72	4.650	5.51	7.650	4.13	10.65	1.38
1.667	1.72	4.667	5.51	7.667	4.13	10.67	1.38
1.683	1.72	4.683	5.51	7.683	4.13	10.68	1.38
1.700	1.72	4.700	5.51	7.700	4.13	10.70	1.38
1.717	1.72	4.717	5.51	7.717	4.13	10.72	1.38
1.733	1.72	4.733	5.51	7.733	4.13	10.73	1.38
1.750	1.72	4.750	5.51	7.750	4.13	10.75	1.38
1.767	1.72	4.767	5.51	7.767	4.13	10.77	1.38
1.783	1.72	4.783	5.51	7.783	4.13	10.78	1.38
1.800	1.72	4.800	5.51	7.800	4.13	10.80	1.38
1.817	1.72	4.817	5.51	7.817	4.13	10.82	1.38
1.833	1.72	4.833	5.51	7.833	4.13	10.83	1.38
1.850	1.72	4.850	5.51	7.850	4.13	10.85	1.38
1.867	1.72	4.867	5.51	7.867	4.13	10.87	1.38
1.883	1.72	4.883	5.51	7.883	4.13	10.88	1.38
1.900	1.72	4.900	5.51	7.900	4.13	10.90	1.38
1.917	1.72	4.917	5.51	7.917	4.13	10.92	1.38
1.933	1.72	4.933	5.51	7.933	4.13	10.93	1.38
1.950	1.72	4.950	5.51	7.950	4.13	10.95	1.38
1.967	1.72	4.967	5.51	7.967	4.13	10.97	1.38
1.983	1.72	4.983	5.51	7.983	4.13	10.98	1.38
2.000	1.72	5.000	5.51	8.000	4.12	11.00	1.38
2.017	2.07	5.017	8.26	8.017	2.41	11.02	1.38
2.033	2.07	5.033	8.26	8.033	2.41	11.03	1.38
2.050	2.07	5.050	8.26	8.050	2.41	11.05	1.38
2.067	2.07	5.067	8.26	8.067	2.41	11.07	1.38
2.083	2.07	5.083	8.26	8.083	2.41	11.08	1.38
2.100	2.07	5.100	8.26	8.100	2.41	11.10	1.38
2.117	2.07	5.117	8.26	8.117	2.41	11.12	1.38
2.133	2.07	5.133	8.26	8.133	2.41	11.13	1.38
2.150	2.07	5.150	8.26	8.150	2.41	11.15	1.38
2.167	2.07	5.167	8.26	8.167	2.41	11.17	1.38
2.183	2.07	5.183	8.26	8.183	2.41	11.18	1.38
2.200	2.07	5.200	8.26	8.200	2.41	11.20	1.38
2.217	2.07	5.217	8.26	8.217	2.41	11.22	1.38
2.233	2.07	5.233	8.26	8.233	2.41	11.23	1.38
2.250	2.07	5.250	8.26	8.250	2.41	11.25	1.38
2.267	2.07	5.267	8.26	8.267	2.41	11.27	1.38
2.283	2.07	5.283	8.26	8.283	2.41	11.28	1.38
2.300	2.07	5.300	8.26	8.300	2.41	11.30	1.38
2.317	2.07	5.317	8.26	8.317	2.41	11.32	1.38
2.333	2.07	5.333	8.26	8.333	2.41	11.33	1.38
2.350	2.07	5.350	8.26	8.350	2.41	11.35	1.38
2.367	2.07	5.367	8.26	8.367	2.41	11.37	1.38
2.383	2.07	5.383	8.26	8.383	2.41	11.38	1.38
2.400	2.07	5.400	8.26	8.400	2.41	11.40	1.38
2.417	2.07	5.417	8.26	8.417	2.41	11.42	1.38
2.433	2.07	5.433	8.26	8.433	2.41	11.43	1.38
2.450	2.07	5.450	8.26	8.450	2.41	11.45	1.38
2.467	2.07	5.467	8.26	8.467	2.41	11.47	1.38
2.483	2.07	5.483	8.26	8.483	2.41	11.48	1.38
2.500	2.07	5.500	8.28	8.500	2.41	11.50	1.38
2.517	2.07	5.517	33.06	8.517	2.41	11.52	1.38
2.533	2.07	5.533	33.06	8.533	2.41	11.53	1.38
2.550	2.07	5.550	33.06	8.550	2.41	11.55	1.38
2.567	2.07	5.567	33.06	8.567	2.41	11.57	1.38

2.583	2.07	5.583	33.06	8.583	2.41	11.58	1.38
2.600	2.07	5.600	33.06	8.600	2.41	11.60	1.38
2.617	2.07	5.617	33.06	8.617	2.41	11.62	1.38
2.633	2.07	5.633	33.06	8.633	2.41	11.63	1.38
2.650	2.07	5.650	33.06	8.650	2.41	11.65	1.38
2.667	2.07	5.667	33.06	8.667	2.41	11.67	1.38
2.683	2.07	5.683	33.06	8.683	2.41	11.68	1.38
2.700	2.07	5.700	33.06	8.700	2.41	11.70	1.38
2.717	2.07	5.717	33.06	8.717	2.41	11.72	1.38
2.733	2.07	5.733	33.06	8.733	2.41	11.73	1.38
2.750	2.07	5.750	33.13	8.750	2.41	11.75	1.38
2.767	2.07	5.767	90.91	8.767	2.41	11.77	1.38
2.783	2.07	5.783	90.91	8.783	2.41	11.78	1.38
2.800	2.07	5.800	90.91	8.800	2.41	11.80	1.38
2.817	2.07	5.817	90.91	8.817	2.41	11.82	1.38
2.833	2.07	5.833	90.91	8.833	2.41	11.83	1.38
2.850	2.07	5.850	90.91	8.850	2.41	11.85	1.38
2.867	2.07	5.867	90.91	8.867	2.41	11.87	1.38
2.883	2.07	5.883	90.91	8.883	2.41	11.88	1.38
2.900	2.07	5.900	90.91	8.900	2.41	11.90	1.38
2.917	2.07	5.917	90.91	8.917	2.41	11.92	1.38
2.933	2.07	5.933	90.91	8.933	2.41	11.93	1.38
2.950	2.07	5.950	90.91	8.950	2.41	11.95	1.38
2.967	2.07	5.967	90.91	8.967	2.41	11.97	1.38
2.983	2.07	5.983	90.91	8.983	2.41	11.98	1.38
3.000	2.07	6.000	90.80	9.000	2.41	12.00	1.38

Unit Hyd Qpeak (cms)= 0.516

PEAK FLOW (cms)= 0.033 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 24.914
TOTAL RAINFALL (mm)= 68.867
RUNOFF COEFFICIENT = 0.362

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

READ STORM | Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\f24b7e6f
Ptotal= 68.87 mm | Comments: 10-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.72	3.25	2.75	6.25	12.40	9.25	2.41
0.50	1.72	3.50	2.75	6.50	12.40	9.50	2.41
0.75	1.72	3.75	2.75	6.75	5.51	9.75	2.41
1.00	1.72	4.00	2.75	7.00	5.51	10.00	2.41
1.25	1.72	4.25	4.13	7.25	4.13	10.25	1.38
1.50	1.72	4.50	4.13	7.50	4.13	10.50	1.38
1.75	1.72	4.75	5.51	7.75	4.13	10.75	1.38
2.00	1.72	5.00	5.51	8.00	4.13	11.00	1.38
2.25	2.07	5.25	8.26	8.25	2.41	11.25	1.38
2.50	2.07	5.50	8.26	8.50	2.41	11.50	1.38
2.75	2.07	5.75	33.06	8.75	2.41	11.75	1.38
3.00	2.07	6.00	90.91	9.00	2.41	12.00	1.38

CALIB | STANDHYD (0007) | ID= 1 DT= 1.0 min | Area (ha)= 1.80 Total Imp(%)= 59.00 Dir. Conn.(%)= 48.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.06	0.74
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	109.54	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.72	3.017	2.75	6.017	12.40	9.02	2.41
0.033	1.72	3.033	2.75	6.033	12.40	9.03	2.41
0.050	1.72	3.050	2.75	6.050	12.40	9.05	2.41
0.067	1.72	3.067	2.75	6.067	12.40	9.07	2.41
0.083	1.72	3.083	2.75	6.083	12.40	9.08	2.41
0.100	1.72	3.100	2.75	6.100	12.40	9.10	2.41
0.117	1.72	3.117	2.75	6.117	12.40	9.12	2.41
0.133	1.72	3.133	2.75	6.133	12.40	9.13	2.41
0.150	1.72	3.150	2.75	6.150	12.40	9.15	2.41
0.167	1.72	3.167	2.75	6.167	12.40	9.17	2.41
0.183	1.72	3.183	2.75	6.183	12.40	9.18	2.41

0.200	1.72	3.200	2.75	6.200	12.40	9.20	2.41
0.217	1.72	3.217	2.75	6.217	12.40	9.22	2.41
0.233	1.72	3.233	2.75	6.233	12.40	9.23	2.41
0.250	1.72	3.250	2.75	6.250	12.40	9.25	2.41
0.267	1.72	3.267	2.75	6.267	12.40	9.27	2.41
0.283	1.72	3.283	2.75	6.283	12.40	9.28	2.41
0.300	1.72	3.300	2.75	6.300	12.40	9.30	2.41
0.317	1.72	3.317	2.75	6.317	12.40	9.32	2.41
0.333	1.72	3.333	2.75	6.333	12.40	9.33	2.41
0.350	1.72	3.350	2.75	6.350	12.40	9.35	2.41
0.367	1.72	3.367	2.75	6.367	12.40	9.37	2.41
0.383	1.72	3.383	2.75	6.383	12.40	9.38	2.41
0.400	1.72	3.400	2.75	6.400	12.40	9.40	2.41
0.417	1.72	3.417	2.75	6.417	12.40	9.42	2.41
0.433	1.72	3.433	2.75	6.433	12.40	9.43	2.41
0.450	1.72	3.450	2.75	6.450	12.40	9.45	2.41
0.467	1.72	3.467	2.75	6.467	12.40	9.47	2.41
0.483	1.72	3.483	2.75	6.483	12.40	9.48	2.41
0.500	1.72	3.500	2.75	6.500	12.39	9.50	2.41
0.517	1.72	3.517	2.75	6.517	5.51	9.52	2.41
0.533	1.72	3.533	2.75	6.533	5.51	9.53	2.41
0.550	1.72	3.550	2.75	6.550	5.51	9.55	2.41
0.567	1.72	3.567	2.75	6.567	5.51	9.57	2.41
0.583	1.72	3.583	2.75	6.583	5.51	9.58	2.41
0.600	1.72	3.600	2.75	6.600	5.51	9.60	2.41
0.617	1.72	3.617	2.75	6.617	5.51	9.62	2.41
0.633	1.72	3.633	2.75	6.633	5.51	9.63	2.41
0.650	1.72	3.650	2.75	6.650	5.51	9.65	2.41
0.667	1.72	3.667	2.75	6.667	5.51	9.67	2.41
0.683	1.72	3.683	2.75	6.683	5.51	9.68	2.41
0.700	1.72	3.700	2.75	6.700	5.51	9.70	2.41
0.717	1.72	3.717	2.75	6.717	5.51	9.72	2.41
0.733	1.72	3.733	2.75	6.733	5.51	9.73	2.41
0.750	1.72	3.750	2.75	6.750	5.51	9.75	2.41
0.767	1.72	3.767	2.75	6.767	5.51	9.77	2.41
0.783	1.72	3.783	2.75	6.783	5.51	9.78	2.41
0.800	1.72	3.800	2.75	6.800	5.51	9.80	2.41
0.817	1.72	3.817	2.75	6.817	5.51	9.82	2.41
0.833	1.72	3.833	2.75	6.833	5.51	9.83	2.41
0.850	1.72	3.850	2.75	6.850	5.51	9.85	2.41
0.867	1.72	3.867	2.75	6.867	5.51	9.87	2.41
0.883	1.72	3.883	2.75	6.883	5.51	9.88	2.41
0.900	1.72	3.900	2.75	6.900	5.51	9.90	2.41
0.917	1.72	3.917	2.75	6.917	5.51	9.92	2.41
0.933	1.72	3.933	2.75	6.933	5.51	9.93	2.41
0.950	1.72	3.950	2.75	6.950	5.51	9.95	2.41
0.967	1.72	3.967	2.75	6.967	5.51	9.97	2.41
0.983	1.72	3.983	2.75	6.983	5.51	9.98	2.41
1.000	1.72	4.000	2.75	7.000	5.51	10.00	2.41
1.017	1.72	4.017	4.13	7.017	4.13	10.02	1.38
1.033	1.72	4.033	4.13	7.033	4.13	10.03	1.38
1.050	1.72	4.050	4.13	7.050	4.13	10.05	1.38
1.067	1.72	4.067	4.13	7.067	4.13	10.07	1.38
1.083	1.72	4.083	4.13	7.083	4.13	10.08	1.38
1.100	1.72	4.100	4.13	7.100	4.13	10.10	1.38
1.117	1.72	4.117	4.13	7.117	4.13	10.12	1.38
1.133	1.72	4.133	4.13	7.133	4.13	10.13	1.38
1.150	1.72	4.150	4.13	7.150	4.13	10.15	1.38
1.167	1.72	4.167	4.13	7.167	4.13	10.17	1.38
1.183	1.72	4.183	4.13	7.183	4.13	10.18	1.38
1.200	1.72	4.200	4.13	7.200	4.13	10.20	1.38
1.217	1.72	4.217	4.13	7.217	4.13	10.22	1.38
1.233	1.72	4.233	4.13	7.233	4.13	10.23	1.38
1.250	1.72	4.250	4.13	7.250	4.13	10.25	1.38
1.267	1.72	4.267	4.13	7.267	4.13	10.27	1.38
1.283	1.72	4.283	4.13	7.283	4.13	10.28	1.38
1.300	1.72	4.300	4.13	7.300	4.13	10.30	1.38
1.317	1.72	4.317	4.13	7.317	4.13	10.32	1.38
1.333	1.72	4.333	4.13	7.333	4.13	10.33	1.38
1.350	1.72	4.350	4.13	7.350	4.13	10.35	1.38
1.367	1.72	4.367	4.13	7.367	4.13	10.37	1.38
1.383	1.72	4.383	4.13	7.383	4.13	10.38	1.38
1.400	1.72	4.400	4.13	7.400	4.13	10.40	1.38
1.417	1.72	4.417	4.13	7.417	4.13	10.42	1.38
1.433	1.72	4.433	4.13	7.433	4.13	10.43	1.38
1.450	1.72	4.450	4.13	7.450	4.13	10.45	1.38
1.467	1.72	4.467	4.13	7.467	4.13	10.47	1.38
1.483	1.72	4.483	4.13	7.483	4.13	10.48	1.38
1.500	1.72	4.500	4.13	7.500	4.13	10.50	1.38
1.517	1.72	4.517	5.51	7.517	4.13	10.52	1.38
1.533	1.72	4.533	5.51	7.533	4.13	10.53	1.38
1.550	1.72	4.550	5.51	7.550	4.13	10.55	1.38
1.567	1.72	4.567	5.51	7.567	4.13	10.57	1.38
1.583	1.72	4.583	5.51	7.583	4.13	10.58	1.38
1.600	1.72	4.600	5.51	7.600	4.13	10.60	1.38
1.617	1.72	4.617	5.51	7.617	4.13	10.62	1.38
1.633	1.72	4.633	5.51	7.633	4.13	10.63	1.38
1.650	1.72	4.650	5.51	7.650	4.13	10.65	1.38
1.667	1.72	4.667	5.51	7.667	4.13	10.67	1.38
1.683	1.72	4.683	5.51	7.683	4.13	10.68	1.38
1.700	1.72	4.700	5.51	7.700	4.13	10.70	1.38

1.717	1.72	4.717	5.51	7.717	4.13	10.72	1.38
1.733	1.72	4.733	5.51	7.733	4.13	10.73	1.38
1.750	1.72	4.750	5.51	7.750	4.13	10.75	1.38
1.767	1.72	4.767	5.51	7.767	4.13	10.77	1.38
1.783	1.72	4.783	5.51	7.783	4.13	10.78	1.38
1.800	1.72	4.800	5.51	7.800	4.13	10.80	1.38
1.817	1.72	4.817	5.51	7.817	4.13	10.82	1.38
1.833	1.72	4.833	5.51	7.833	4.13	10.83	1.38
1.850	1.72	4.850	5.51	7.850	4.13	10.85	1.38
1.867	1.72	4.867	5.51	7.867	4.13	10.87	1.38
1.883	1.72	4.883	5.51	7.883	4.13	10.88	1.38
1.900	1.72	4.900	5.51	7.900	4.13	10.90	1.38
1.917	1.72	4.917	5.51	7.917	4.13	10.92	1.38
1.933	1.72	4.933	5.51	7.933	4.13	10.93	1.38
1.950	1.72	4.950	5.51	7.950	4.13	10.95	1.38
1.967	1.72	4.967	5.51	7.967	4.13	10.97	1.38
1.983	1.72	4.983	5.51	7.983	4.13	10.98	1.38
2.000	1.72	5.000	5.51	8.000	4.12	11.00	1.38
2.017	2.07	5.017	8.26	8.017	2.41	11.02	1.38
2.033	2.07	5.033	8.26	8.033	2.41	11.03	1.38
2.050	2.07	5.050	8.26	8.050	2.41	11.05	1.38
2.067	2.07	5.067	8.26	8.067	2.41	11.07	1.38
2.083	2.07	5.083	8.26	8.083	2.41	11.08	1.38
2.100	2.07	5.100	8.26	8.100	2.41	11.10	1.38
2.117	2.07	5.117	8.26	8.117	2.41	11.12	1.38
2.133	2.07	5.133	8.26	8.133	2.41	11.13	1.38
2.150	2.07	5.150	8.26	8.150	2.41	11.15	1.38
2.167	2.07	5.167	8.26	8.167	2.41	11.17	1.38
2.183	2.07	5.183	8.26	8.183	2.41	11.18	1.38
2.200	2.07	5.200	8.26	8.200	2.41	11.20	1.38
2.217	2.07	5.217	8.26	8.217	2.41	11.22	1.38
2.233	2.07	5.233	8.26	8.233	2.41	11.23	1.38
2.250	2.07	5.250	8.26	8.250	2.41	11.25	1.38
2.267	2.07	5.267	8.26	8.267	2.41	11.27	1.38
2.283	2.07	5.283	8.26	8.283	2.41	11.28	1.38
2.300	2.07	5.300	8.26	8.300	2.41	11.30	1.38
2.317	2.07	5.317	8.26	8.317	2.41	11.32	1.38
2.333	2.07	5.333	8.26	8.333	2.41	11.33	1.38
2.350	2.07	5.350	8.26	8.350	2.41	11.35	1.38
2.367	2.07	5.367	8.26	8.367	2.41	11.37	1.38
2.383	2.07	5.383	8.26	8.383	2.41	11.38	1.38
2.400	2.07	5.400	8.26	8.400	2.41	11.40	1.38
2.417	2.07	5.417	8.26	8.417	2.41	11.42	1.38
2.433	2.07	5.433	8.26	8.433	2.41	11.43	1.38
2.450	2.07	5.450	8.26	8.450	2.41	11.45	1.38
2.467	2.07	5.467	8.26	8.467	2.41	11.47	1.38
2.483	2.07	5.483	8.26	8.483	2.41	11.48	1.38
2.500	2.07	5.500	8.28	8.500	2.41	11.50	1.38
2.517	2.07	5.517	33.06	8.517	2.41	11.52	1.38
2.533	2.07	5.533	33.06	8.533	2.41	11.53	1.38
2.550	2.07	5.550	33.06	8.550	2.41	11.55	1.38
2.567	2.07	5.567	33.06	8.567	2.41	11.57	1.38
2.583	2.07	5.583	33.06	8.583	2.41	11.58	1.38
2.600	2.07	5.600	33.06	8.600	2.41	11.60	1.38
2.617	2.07	5.617	33.06	8.617	2.41	11.62	1.38
2.633	2.07	5.633	33.06	8.633	2.41	11.63	1.38
2.650	2.07	5.650	33.06	8.650	2.41	11.65	1.38
2.667	2.07	5.667	33.06	8.667	2.41	11.67	1.38
2.683	2.07	5.683	33.06	8.683	2.41	11.68	1.38
2.700	2.07	5.700	33.06	8.700	2.41	11.70	1.38
2.717	2.07	5.717	33.06	8.717	2.41	11.72	1.38
2.733	2.07	5.733	33.06	8.733	2.41	11.73	1.38
2.750	2.07	5.750	33.13	8.750	2.41	11.75	1.38
2.767	2.07	5.767	90.91	8.767	2.41	11.77	1.38
2.783	2.07	5.783	90.91	8.783	2.41	11.78	1.38
2.800	2.07	5.800	90.91	8.800	2.41	11.80	1.38
2.817	2.07	5.817	90.91	8.817	2.41	11.82	1.38
2.833	2.07	5.833	90.91	8.833	2.41	11.83	1.38
2.850	2.07	5.850	90.91	8.850	2.41	11.85	1.38
2.867	2.07	5.867	90.91	8.867	2.41	11.87	1.38
2.883	2.07	5.883	90.91	8.883	2.41	11.88	1.38
2.900	2.07	5.900	90.91	8.900	2.41	11.90	1.38
2.917	2.07	5.917	90.91	8.917	2.41	11.92	1.38
2.933	2.07	5.933	90.91	8.933	2.41	11.93	1.38
2.950	2.07	5.950	90.91	8.950	2.41	11.95	1.38
2.967	2.07	5.967	90.91	8.967	2.41	11.97	1.38
2.983	2.07	5.983	90.91	8.983	2.41	11.98	1.38
3.000	2.07	6.000	90.80	9.000	2.41	12.00	1.38

Max.Eff.Inten.(mm/hr)=	90.91	29.90	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.80 (ii)	9.69 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.12	
			TOTALS
PEAK FLOW (cms)=	0.22	0.04	0.254 (iii)
TIME TO PEAK (hrs)=	6.00	6.08	6.00
RUNOFF VOLUME (mm)=	67.86	14.50	40.11
TOTAL RAINFALL (mm)=	68.87	68.87	68.87
RUNOFF COEFFICIENT =	0.99	0.21	0.58

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0018)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0026):		0.27	0.033	6.00	24.91
+ ID2= 2 (0007):		1.80	0.254	6.00	40.11
ID = 3 (0018):		2.07	0.287	6.00	38.13

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0009)					
IN= 2---> OUT= 1					
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)	
	0.0000	0.0000	0.0330	0.0298	
	0.0020	0.0000	0.0480	0.0300	
	0.0190	0.0288	0.5150	0.0368	
	0.0250	0.0292	0.5380	0.0368	

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0018)	2.070	0.287	6.00	38.13
OUTFLOW: ID= 1 (0009)	2.070	0.220	6.05	38.13

PEAK FLOW REDUCTION [Qout/Qin](%)= 76.61
TIME SHIFT OF PEAK FLOW (min)= 3.00
MAXIMUM STORAGE USED (ha.m.)= 0.0325

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\f24b7e6f
Ptotal= 68.87 mm	Comments: 10-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.72	3.25	2.75	6.25	12.40	9.25	2.41
0.50	1.72	3.50	2.75	6.50	12.40	9.50	2.41
0.75	1.72	3.75	2.75	6.75	5.51	9.75	2.41
1.00	1.72	4.00	2.75	7.00	5.51	10.00	2.41
1.25	1.72	4.25	4.13	7.25	4.13	10.25	1.38
1.50	1.72	4.50	4.13	7.50	4.13	10.50	1.38
1.75	1.72	4.75	5.51	7.75	4.13	10.75	1.38
2.00	1.72	5.00	5.51	8.00	4.13	11.00	1.38
2.25	2.07	5.25	8.26	8.25	2.41	11.25	1.38
2.50	2.07	5.50	8.26	8.50	2.41	11.50	1.38
2.75	2.07	5.75	33.06	8.75	2.41	11.75	1.38
3.00	2.07	6.00	90.91	9.00	2.41	12.00	1.38

CALIB	Area (ha)= 0.80
STANDHYD (0006)	Total Imp(%)= 87.00 Dir. Conn.(%)= 82.00
ID= 1 DT= 1.0 min	

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.70	0.10
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	73.03	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.72	3.017	2.75	6.017	12.40	9.02	2.41
0.033	1.72	3.033	2.75	6.033	12.40	9.03	2.41
0.050	1.72	3.050	2.75	6.050	12.40	9.05	2.41
0.067	1.72	3.067	2.75	6.067	12.40	9.07	2.41
0.083	1.72	3.083	2.75	6.083	12.40	9.08	2.41
0.100	1.72	3.100	2.75	6.100	12.40	9.10	2.41
0.117	1.72	3.117	2.75	6.117	12.40	9.12	2.41
0.133	1.72	3.133	2.75	6.133	12.40	9.13	2.41

0.150	1.72	3.150	2.75	6.150	12.40	9.15	2.41
0.167	1.72	3.167	2.75	6.167	12.40	9.17	2.41
0.183	1.72	3.183	2.75	6.183	12.40	9.18	2.41
0.200	1.72	3.200	2.75	6.200	12.40	9.20	2.41
0.217	1.72	3.217	2.75	6.217	12.40	9.22	2.41
0.233	1.72	3.233	2.75	6.233	12.40	9.23	2.41
0.250	1.72	3.250	2.75	6.250	12.40	9.25	2.41
0.267	1.72	3.267	2.75	6.267	12.40	9.27	2.41
0.283	1.72	3.283	2.75	6.283	12.40	9.28	2.41
0.300	1.72	3.300	2.75	6.300	12.40	9.30	2.41
0.317	1.72	3.317	2.75	6.317	12.40	9.32	2.41
0.333	1.72	3.333	2.75	6.333	12.40	9.33	2.41
0.350	1.72	3.350	2.75	6.350	12.40	9.35	2.41
0.367	1.72	3.367	2.75	6.367	12.40	9.37	2.41
0.383	1.72	3.383	2.75	6.383	12.40	9.38	2.41
0.400	1.72	3.400	2.75	6.400	12.40	9.40	2.41
0.417	1.72	3.417	2.75	6.417	12.40	9.42	2.41
0.433	1.72	3.433	2.75	6.433	12.40	9.43	2.41
0.450	1.72	3.450	2.75	6.450	12.40	9.45	2.41
0.467	1.72	3.467	2.75	6.467	12.40	9.47	2.41
0.483	1.72	3.483	2.75	6.483	12.40	9.48	2.41
0.500	1.72	3.500	2.75	6.500	12.39	9.50	2.41
0.517	1.72	3.517	2.75	6.517	5.51	9.52	2.41
0.533	1.72	3.533	2.75	6.533	5.51	9.53	2.41
0.550	1.72	3.550	2.75	6.550	5.51	9.55	2.41
0.567	1.72	3.567	2.75	6.567	5.51	9.57	2.41
0.583	1.72	3.583	2.75	6.583	5.51	9.58	2.41
0.600	1.72	3.600	2.75	6.600	5.51	9.60	2.41
0.617	1.72	3.617	2.75	6.617	5.51	9.62	2.41
0.633	1.72	3.633	2.75	6.633	5.51	9.63	2.41
0.650	1.72	3.650	2.75	6.650	5.51	9.65	2.41
0.667	1.72	3.667	2.75	6.667	5.51	9.67	2.41
0.683	1.72	3.683	2.75	6.683	5.51	9.68	2.41
0.700	1.72	3.700	2.75	6.700	5.51	9.70	2.41
0.717	1.72	3.717	2.75	6.717	5.51	9.72	2.41
0.733	1.72	3.733	2.75	6.733	5.51	9.73	2.41
0.750	1.72	3.750	2.75	6.750	5.51	9.75	2.41
0.767	1.72	3.767	2.75	6.767	5.51	9.77	2.41
0.783	1.72	3.783	2.75	6.783	5.51	9.78	2.41
0.800	1.72	3.800	2.75	6.800	5.51	9.80	2.41
0.817	1.72	3.817	2.75	6.817	5.51	9.82	2.41
0.833	1.72	3.833	2.75	6.833	5.51	9.83	2.41
0.850	1.72	3.850	2.75	6.850	5.51	9.85	2.41
0.867	1.72	3.867	2.75	6.867	5.51	9.87	2.41
0.883	1.72	3.883	2.75	6.883	5.51	9.88	2.41
0.900	1.72	3.900	2.75	6.900	5.51	9.90	2.41
0.917	1.72	3.917	2.75	6.917	5.51	9.92	2.41
0.933	1.72	3.933	2.75	6.933	5.51	9.93	2.41
0.950	1.72	3.950	2.75	6.950	5.51	9.95	2.41
0.967	1.72	3.967	2.75	6.967	5.51	9.97	2.41
0.983	1.72	3.983	2.75	6.983	5.51	9.98	2.41
1.000	1.72	4.000	2.75	7.000	5.51	10.00	2.41
1.017	1.72	4.017	4.13	7.017	4.13	10.02	1.38
1.033	1.72	4.033	4.13	7.033	4.13	10.03	1.38
1.050	1.72	4.050	4.13	7.050	4.13	10.05	1.38
1.067	1.72	4.067	4.13	7.067	4.13	10.07	1.38
1.083	1.72	4.083	4.13	7.083	4.13	10.08	1.38
1.100	1.72	4.100	4.13	7.100	4.13	10.10	1.38
1.117	1.72	4.117	4.13	7.117	4.13	10.12	1.38
1.133	1.72	4.133	4.13	7.133	4.13	10.13	1.38
1.150	1.72	4.150	4.13	7.150	4.13	10.15	1.38
1.167	1.72	4.167	4.13	7.167	4.13	10.17	1.38
1.183	1.72	4.183	4.13	7.183	4.13	10.18	1.38
1.200	1.72	4.200	4.13	7.200	4.13	10.20	1.38
1.217	1.72	4.217	4.13	7.217	4.13	10.22	1.38
1.233	1.72	4.233	4.13	7.233	4.13	10.23	1.38
1.250	1.72	4.250	4.13	7.250	4.13	10.25	1.38
1.267	1.72	4.267	4.13	7.267	4.13	10.27	1.38
1.283	1.72	4.283	4.13	7.283	4.13	10.28	1.38
1.300	1.72	4.300	4.13	7.300	4.13	10.30	1.38
1.317	1.72	4.317	4.13	7.317	4.13	10.32	1.38
1.333	1.72	4.333	4.13	7.333	4.13	10.33	1.38
1.350	1.72	4.350	4.13	7.350	4.13	10.35	1.38
1.367	1.72	4.367	4.13	7.367	4.13	10.37	1.38
1.383	1.72	4.383	4.13	7.383	4.13	10.38	1.38
1.400	1.72	4.400	4.13	7.400	4.13	10.40	1.38
1.417	1.72	4.417	4.13	7.417	4.13	10.42	1.38
1.433	1.72	4.433	4.13	7.433	4.13	10.43	1.38
1.450	1.72	4.450	4.13	7.450	4.13	10.45	1.38
1.467	1.72	4.467	4.13	7.467	4.13	10.47	1.38
1.483	1.72	4.483	4.13	7.483	4.13	10.48	1.38
1.500	1.72	4.500	4.13	7.500	4.13	10.50	1.38
1.517	1.72	4.517	5.51	7.517	4.13	10.52	1.38
1.533	1.72	4.533	5.51	7.533	4.13	10.53	1.38
1.550	1.72	4.550	5.51	7.550	4.13	10.55	1.38
1.567	1.72	4.567	5.51	7.567	4.13	10.57	1.38
1.583	1.72	4.583	5.51	7.583	4.13	10.58	1.38
1.600	1.72	4.600	5.51	7.600	4.13	10.60	1.38
1.617	1.72	4.617	5.51	7.617	4.13	10.62	1.38
1.633	1.72	4.633	5.51	7.633	4.13	10.63	1.38
1.650	1.72	4.650	5.51	7.650	4.13	10.65	1.38

1.667	1.72	4.667	5.51	7.667	4.13	10.67	1.38
1.683	1.72	4.683	5.51	7.683	4.13	10.68	1.38
1.700	1.72	4.700	5.51	7.700	4.13	10.70	1.38
1.717	1.72	4.717	5.51	7.717	4.13	10.72	1.38
1.733	1.72	4.733	5.51	7.733	4.13	10.73	1.38
1.750	1.72	4.750	5.51	7.750	4.13	10.75	1.38
1.767	1.72	4.767	5.51	7.767	4.13	10.77	1.38
1.783	1.72	4.783	5.51	7.783	4.13	10.78	1.38
1.800	1.72	4.800	5.51	7.800	4.13	10.80	1.38
1.817	1.72	4.817	5.51	7.817	4.13	10.82	1.38
1.833	1.72	4.833	5.51	7.833	4.13	10.83	1.38
1.850	1.72	4.850	5.51	7.850	4.13	10.85	1.38
1.867	1.72	4.867	5.51	7.867	4.13	10.87	1.38
1.883	1.72	4.883	5.51	7.883	4.13	10.88	1.38
1.900	1.72	4.900	5.51	7.900	4.13	10.90	1.38
1.917	1.72	4.917	5.51	7.917	4.13	10.92	1.38
1.933	1.72	4.933	5.51	7.933	4.13	10.93	1.38
1.950	1.72	4.950	5.51	7.950	4.13	10.95	1.38
1.967	1.72	4.967	5.51	7.967	4.13	10.97	1.38
1.983	1.72	4.983	5.51	7.983	4.13	10.98	1.38
2.000	1.72	5.000	5.51	8.000	4.12	11.00	1.38
2.017	2.07	5.017	8.26	8.017	2.41	11.02	1.38
2.033	2.07	5.033	8.26	8.033	2.41	11.03	1.38
2.050	2.07	5.050	8.26	8.050	2.41	11.05	1.38
2.067	2.07	5.067	8.26	8.067	2.41	11.07	1.38
2.083	2.07	5.083	8.26	8.083	2.41	11.08	1.38
2.100	2.07	5.100	8.26	8.100	2.41	11.10	1.38
2.117	2.07	5.117	8.26	8.117	2.41	11.12	1.38
2.133	2.07	5.133	8.26	8.133	2.41	11.13	1.38
2.150	2.07	5.150	8.26	8.150	2.41	11.15	1.38
2.167	2.07	5.167	8.26	8.167	2.41	11.17	1.38
2.183	2.07	5.183	8.26	8.183	2.41	11.18	1.38
2.200	2.07	5.200	8.26	8.200	2.41	11.20	1.38
2.217	2.07	5.217	8.26	8.217	2.41	11.22	1.38
2.233	2.07	5.233	8.26	8.233	2.41	11.23	1.38
2.250	2.07	5.250	8.26	8.250	2.41	11.25	1.38
2.267	2.07	5.267	8.26	8.267	2.41	11.27	1.38
2.283	2.07	5.283	8.26	8.283	2.41	11.28	1.38
2.300	2.07	5.300	8.26	8.300	2.41	11.30	1.38
2.317	2.07	5.317	8.26	8.317	2.41	11.32	1.38
2.333	2.07	5.333	8.26	8.333	2.41	11.33	1.38
2.350	2.07	5.350	8.26	8.350	2.41	11.35	1.38
2.367	2.07	5.367	8.26	8.367	2.41	11.37	1.38
2.383	2.07	5.383	8.26	8.383	2.41	11.38	1.38
2.400	2.07	5.400	8.26	8.400	2.41	11.40	1.38
2.417	2.07	5.417	8.26	8.417	2.41	11.42	1.38
2.433	2.07	5.433	8.26	8.433	2.41	11.43	1.38
2.450	2.07	5.450	8.26	8.450	2.41	11.45	1.38
2.467	2.07	5.467	8.26	8.467	2.41	11.47	1.38
2.483	2.07	5.483	8.26	8.483	2.41	11.48	1.38
2.500	2.07	5.500	8.28	8.500	2.41	11.50	1.38
2.517	2.07	5.517	33.06	8.517	2.41	11.52	1.38
2.533	2.07	5.533	33.06	8.533	2.41	11.53	1.38
2.550	2.07	5.550	33.06	8.550	2.41	11.55	1.38
2.567	2.07	5.567	33.06	8.567	2.41	11.57	1.38
2.583	2.07	5.583	33.06	8.583	2.41	11.58	1.38
2.600	2.07	5.600	33.06	8.600	2.41	11.60	1.38
2.617	2.07	5.617	33.06	8.617	2.41	11.62	1.38
2.633	2.07	5.633	33.06	8.633	2.41	11.63	1.38
2.650	2.07	5.650	33.06	8.650	2.41	11.65	1.38
2.667	2.07	5.667	33.06	8.667	2.41	11.67	1.38
2.683	2.07	5.683	33.06	8.683	2.41	11.68	1.38
2.700	2.07	5.700	33.06	8.700	2.41	11.70	1.38
2.717	2.07	5.717	33.06	8.717	2.41	11.72	1.38
2.733	2.07	5.733	33.06	8.733	2.41	11.73	1.38
2.750	2.07	5.750	33.13	8.750	2.41	11.75	1.38
2.767	2.07	5.767	90.91	8.767	2.41	11.77	1.38
2.783	2.07	5.783	90.91	8.783	2.41	11.78	1.38
2.800	2.07	5.800	90.91	8.800	2.41	11.80	1.38
2.817	2.07	5.817	90.91	8.817	2.41	11.82	1.38
2.833	2.07	5.833	90.91	8.833	2.41	11.83	1.38
2.850	2.07	5.850	90.91	8.850	2.41	11.85	1.38
2.867	2.07	5.867	90.91	8.867	2.41	11.87	1.38
2.883	2.07	5.883	90.91	8.883	2.41	11.88	1.38
2.900	2.07	5.900	90.91	8.900	2.41	11.90	1.38
2.917	2.07	5.917	90.91	8.917	2.41	11.92	1.38
2.933	2.07	5.933	90.91	8.933	2.41	11.93	1.38
2.950	2.07	5.950	90.91	8.950	2.41	11.95	1.38
2.967	2.07	5.967	90.91	8.967	2.41	11.97	1.38
2.983	2.07	5.983	90.91	8.983	2.41	11.98	1.38
3.000	2.07	6.000	90.80	9.000	2.41	12.00	1.38

Max.Eff.Inten.(mm/hr)=	90.91	35.22	
over (min)	5.00	6.00	
Storage Coeff. (min)=	2.20 (ii)	5.71 (ii)	
Unit Hyd. Tpeak (min)=	5.00	6.00	
Unit Hyd. peak (cms)=	0.36	0.19	
			TOTALS
PEAK FLOW (cms)=	0.17	0.01	0.174 (iii)
TIME TO PEAK (hrs)=	6.00	6.02	6.00
RUNOFF VOLUME (mm)=	67.87	15.65	58.46

TOTAL RAINFALL (mm)=	68.87	68.87	68.87
RUNOFF COEFFICIENT =	0.99	0.23	0.85

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0011)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0810	0.0180
0.0010	0.0005	0.0910	0.0205
0.0060	0.0056	0.1120	0.0249
0.0100	0.0061	0.1190	0.0264
0.0430	0.0101	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0006)	0.800	0.174	6.00	58.46
OUTFLOW: ID= 1 (0011)	0.800	0.082	6.08	58.31

PEAK FLOW REDUCTION [Qout/Qin](%)= 47.21
TIME SHIFT OF PEAK FLOW (min)= 5.00
MAXIMUM STORAGE USED (ha.m.)= 0.0183

READ STORM
Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\f24b7e6f
Ptotal= 68.87 mm
Comments: 10-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.72	3.25	2.75	6.25	12.40	9.25	2.41
0.50	1.72	3.50	2.75	6.50	12.40	9.50	2.41
0.75	1.72	3.75	2.75	6.75	5.51	9.75	2.41
1.00	1.72	4.00	2.75	7.00	5.51	10.00	2.41
1.25	1.72	4.25	4.13	7.25	4.13	10.25	1.38
1.50	1.72	4.50	4.13	7.50	4.13	10.50	1.38
1.75	1.72	4.75	5.51	7.75	4.13	10.75	1.38
2.00	1.72	5.00	5.51	8.00	4.13	11.00	1.38
2.25	2.07	5.25	8.26	8.25	2.41	11.25	1.38
2.50	2.07	5.50	8.26	8.50	2.41	11.50	1.38
2.75	2.07	5.75	33.06	8.75	2.41	11.75	1.38
3.00	2.07	6.00	90.91	9.00	2.41	12.00	1.38

CALIB
STANDHYD (0008)
ID= 1 DT= 1.0 min
Area (ha)= 2.53
Total Imp(%)= 52.00 Dir. Conn.(%)= 44.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.32	1.21
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	129.87	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.72	3.017	2.75	6.017	12.40	9.02	2.41
0.033	1.72	3.033	2.75	6.033	12.40	9.03	2.41
0.050	1.72	3.050	2.75	6.050	12.40	9.05	2.41
0.067	1.72	3.067	2.75	6.067	12.40	9.07	2.41
0.083	1.72	3.083	2.75	6.083	12.40	9.08	2.41
0.100	1.72	3.100	2.75	6.100	12.40	9.10	2.41
0.117	1.72	3.117	2.75	6.117	12.40	9.12	2.41
0.133	1.72	3.133	2.75	6.133	12.40	9.13	2.41
0.150	1.72	3.150	2.75	6.150	12.40	9.15	2.41
0.167	1.72	3.167	2.75	6.167	12.40	9.17	2.41
0.183	1.72	3.183	2.75	6.183	12.40	9.18	2.41
0.200	1.72	3.200	2.75	6.200	12.40	9.20	2.41
0.217	1.72	3.217	2.75	6.217	12.40	9.22	2.41
0.233	1.72	3.233	2.75	6.233	12.40	9.23	2.41
0.250	1.72	3.250	2.75	6.250	12.40	9.25	2.41
0.267	1.72	3.267	2.75	6.267	12.40	9.27	2.41
0.283	1.72	3.283	2.75	6.283	12.40	9.28	2.41

0.300	1.72	3.300	2.75	6.300	12.40	9.30	2.41
0.317	1.72	3.317	2.75	6.317	12.40	9.32	2.41
0.333	1.72	3.333	2.75	6.333	12.40	9.33	2.41
0.350	1.72	3.350	2.75	6.350	12.40	9.35	2.41
0.367	1.72	3.367	2.75	6.367	12.40	9.37	2.41
0.383	1.72	3.383	2.75	6.383	12.40	9.38	2.41
0.400	1.72	3.400	2.75	6.400	12.40	9.40	2.41
0.417	1.72	3.417	2.75	6.417	12.40	9.42	2.41
0.433	1.72	3.433	2.75	6.433	12.40	9.43	2.41
0.450	1.72	3.450	2.75	6.450	12.40	9.45	2.41
0.467	1.72	3.467	2.75	6.467	12.40	9.47	2.41
0.483	1.72	3.483	2.75	6.483	12.40	9.48	2.41
0.500	1.72	3.500	2.75	6.500	12.39	9.50	2.41
0.517	1.72	3.517	2.75	6.517	5.51	9.52	2.41
0.533	1.72	3.533	2.75	6.533	5.51	9.53	2.41
0.550	1.72	3.550	2.75	6.550	5.51	9.55	2.41
0.567	1.72	3.567	2.75	6.567	5.51	9.57	2.41
0.583	1.72	3.583	2.75	6.583	5.51	9.58	2.41
0.600	1.72	3.600	2.75	6.600	5.51	9.60	2.41
0.617	1.72	3.617	2.75	6.617	5.51	9.62	2.41
0.633	1.72	3.633	2.75	6.633	5.51	9.63	2.41
0.650	1.72	3.650	2.75	6.650	5.51	9.65	2.41
0.667	1.72	3.667	2.75	6.667	5.51	9.67	2.41
0.683	1.72	3.683	2.75	6.683	5.51	9.68	2.41
0.700	1.72	3.700	2.75	6.700	5.51	9.70	2.41
0.717	1.72	3.717	2.75	6.717	5.51	9.72	2.41
0.733	1.72	3.733	2.75	6.733	5.51	9.73	2.41
0.750	1.72	3.750	2.75	6.750	5.51	9.75	2.41
0.767	1.72	3.767	2.75	6.767	5.51	9.77	2.41
0.783	1.72	3.783	2.75	6.783	5.51	9.78	2.41
0.800	1.72	3.800	2.75	6.800	5.51	9.80	2.41
0.817	1.72	3.817	2.75	6.817	5.51	9.82	2.41
0.833	1.72	3.833	2.75	6.833	5.51	9.83	2.41
0.850	1.72	3.850	2.75	6.850	5.51	9.85	2.41
0.867	1.72	3.867	2.75	6.867	5.51	9.87	2.41
0.883	1.72	3.883	2.75	6.883	5.51	9.88	2.41
0.900	1.72	3.900	2.75	6.900	5.51	9.90	2.41
0.917	1.72	3.917	2.75	6.917	5.51	9.92	2.41
0.933	1.72	3.933	2.75	6.933	5.51	9.93	2.41
0.950	1.72	3.950	2.75	6.950	5.51	9.95	2.41
0.967	1.72	3.967	2.75	6.967	5.51	9.97	2.41
0.983	1.72	3.983	2.75	6.983	5.51	9.98	2.41
1.000	1.72	4.000	2.75	7.000	5.51	10.00	2.41
1.017	1.72	4.017	4.13	7.017	4.13	10.02	1.38
1.033	1.72	4.033	4.13	7.033	4.13	10.03	1.38
1.050	1.72	4.050	4.13	7.050	4.13	10.05	1.38
1.067	1.72	4.067	4.13	7.067	4.13	10.07	1.38
1.083	1.72	4.083	4.13	7.083	4.13	10.08	1.38
1.100	1.72	4.100	4.13	7.100	4.13	10.10	1.38
1.117	1.72	4.117	4.13	7.117	4.13	10.12	1.38
1.133	1.72	4.133	4.13	7.133	4.13	10.13	1.38
1.150	1.72	4.150	4.13	7.150	4.13	10.15	1.38
1.167	1.72	4.167	4.13	7.167	4.13	10.17	1.38
1.183	1.72	4.183	4.13	7.183	4.13	10.18	1.38
1.200	1.72	4.200	4.13	7.200	4.13	10.20	1.38
1.217	1.72	4.217	4.13	7.217	4.13	10.22	1.38
1.233	1.72	4.233	4.13	7.233	4.13	10.23	1.38
1.250	1.72	4.250	4.13	7.250	4.13	10.25	1.38
1.267	1.72	4.267	4.13	7.267	4.13	10.27	1.38
1.283	1.72	4.283	4.13	7.283	4.13	10.28	1.38
1.300	1.72	4.300	4.13	7.300	4.13	10.30	1.38
1.317	1.72	4.317	4.13	7.317	4.13	10.32	1.38
1.333	1.72	4.333	4.13	7.333	4.13	10.33	1.38
1.350	1.72	4.350	4.13	7.350	4.13	10.35	1.38
1.367	1.72	4.367	4.13	7.367	4.13	10.37	1.38
1.383	1.72	4.383	4.13	7.383	4.13	10.38	1.38
1.400	1.72	4.400	4.13	7.400	4.13	10.40	1.38
1.417	1.72	4.417	4.13	7.417	4.13	10.42	1.38
1.433	1.72	4.433	4.13	7.433	4.13	10.43	1.38
1.450	1.72	4.450	4.13	7.450	4.13	10.45	1.38
1.467	1.72	4.467	4.13	7.467	4.13	10.47	1.38
1.483	1.72	4.483	4.13	7.483	4.13	10.48	1.38
1.500	1.72	4.500	4.13	7.500	4.13	10.50	1.38
1.517	1.72	4.517	5.51	7.517	4.13	10.52	1.38
1.533	1.72	4.533	5.51	7.533	4.13	10.53	1.38
1.550	1.72	4.550	5.51	7.550	4.13	10.55	1.38
1.567	1.72	4.567	5.51	7.567	4.13	10.57	1.38
1.583	1.72	4.583	5.51	7.583	4.13	10.58	1.38
1.600	1.72	4.600	5.51	7.600	4.13	10.60	1.38
1.617	1.72	4.617	5.51	7.617	4.13	10.62	1.38
1.633	1.72	4.633	5.51	7.633	4.13	10.63	1.38
1.650	1.72	4.650	5.51	7.650	4.13	10.65	1.38
1.667	1.72	4.667	5.51	7.667	4.13	10.67	1.38
1.683	1.72	4.683	5.51	7.683	4.13	10.68	1.38
1.700	1.72	4.700	5.51	7.700	4.13	10.70	1.38
1.717	1.72	4.717	5.51	7.717	4.13	10.72	1.38
1.733	1.72	4.733	5.51	7.733	4.13	10.73	1.38
1.750	1.72	4.750	5.51	7.750	4.13	10.75	1.38
1.767	1.72	4.767	5.51	7.767	4.13	10.77	1.38
1.783	1.72	4.783	5.51	7.783	4.13	10.78	1.38
1.800	1.72	4.800	5.51	7.800	4.13	10.80	1.38

1.817	1.72	4.817	5.51	7.817	4.13	10.82	1.38
1.833	1.72	4.833	5.51	7.833	4.13	10.83	1.38
1.850	1.72	4.850	5.51	7.850	4.13	10.85	1.38
1.867	1.72	4.867	5.51	7.867	4.13	10.87	1.38
1.883	1.72	4.883	5.51	7.883	4.13	10.88	1.38
1.900	1.72	4.900	5.51	7.900	4.13	10.90	1.38
1.917	1.72	4.917	5.51	7.917	4.13	10.92	1.38
1.933	1.72	4.933	5.51	7.933	4.13	10.93	1.38
1.950	1.72	4.950	5.51	7.950	4.13	10.95	1.38
1.967	1.72	4.967	5.51	7.967	4.13	10.97	1.38
1.983	1.72	4.983	5.51	7.983	4.13	10.98	1.38
2.000	1.72	5.000	5.51	8.000	4.12	11.00	1.38
2.017	2.07	5.017	8.26	8.017	2.41	11.02	1.38
2.033	2.07	5.033	8.26	8.033	2.41	11.03	1.38
2.050	2.07	5.050	8.26	8.050	2.41	11.05	1.38
2.067	2.07	5.067	8.26	8.067	2.41	11.07	1.38
2.083	2.07	5.083	8.26	8.083	2.41	11.08	1.38
2.100	2.07	5.100	8.26	8.100	2.41	11.10	1.38
2.117	2.07	5.117	8.26	8.117	2.41	11.12	1.38
2.133	2.07	5.133	8.26	8.133	2.41	11.13	1.38
2.150	2.07	5.150	8.26	8.150	2.41	11.15	1.38
2.167	2.07	5.167	8.26	8.167	2.41	11.17	1.38
2.183	2.07	5.183	8.26	8.183	2.41	11.18	1.38
2.200	2.07	5.200	8.26	8.200	2.41	11.20	1.38
2.217	2.07	5.217	8.26	8.217	2.41	11.22	1.38
2.233	2.07	5.233	8.26	8.233	2.41	11.23	1.38
2.250	2.07	5.250	8.26	8.250	2.41	11.25	1.38
2.267	2.07	5.267	8.26	8.267	2.41	11.27	1.38
2.283	2.07	5.283	8.26	8.283	2.41	11.28	1.38
2.300	2.07	5.300	8.26	8.300	2.41	11.30	1.38
2.317	2.07	5.317	8.26	8.317	2.41	11.32	1.38
2.333	2.07	5.333	8.26	8.333	2.41	11.33	1.38
2.350	2.07	5.350	8.26	8.350	2.41	11.35	1.38
2.367	2.07	5.367	8.26	8.367	2.41	11.37	1.38
2.383	2.07	5.383	8.26	8.383	2.41	11.38	1.38
2.400	2.07	5.400	8.26	8.400	2.41	11.40	1.38
2.417	2.07	5.417	8.26	8.417	2.41	11.42	1.38
2.433	2.07	5.433	8.26	8.433	2.41	11.43	1.38
2.450	2.07	5.450	8.26	8.450	2.41	11.45	1.38
2.467	2.07	5.467	8.26	8.467	2.41	11.47	1.38
2.483	2.07	5.483	8.26	8.483	2.41	11.48	1.38
2.500	2.07	5.500	8.28	8.500	2.41	11.50	1.38
2.517	2.07	5.517	33.06	8.517	2.41	11.52	1.38
2.533	2.07	5.533	33.06	8.533	2.41	11.53	1.38
2.550	2.07	5.550	33.06	8.550	2.41	11.55	1.38
2.567	2.07	5.567	33.06	8.567	2.41	11.57	1.38
2.583	2.07	5.583	33.06	8.583	2.41	11.58	1.38
2.600	2.07	5.600	33.06	8.600	2.41	11.60	1.38
2.617	2.07	5.617	33.06	8.617	2.41	11.62	1.38
2.633	2.07	5.633	33.06	8.633	2.41	11.63	1.38
2.650	2.07	5.650	33.06	8.650	2.41	11.65	1.38
2.667	2.07	5.667	33.06	8.667	2.41	11.67	1.38
2.683	2.07	5.683	33.06	8.683	2.41	11.68	1.38
2.700	2.07	5.700	33.06	8.700	2.41	11.70	1.38
2.717	2.07	5.717	33.06	8.717	2.41	11.72	1.38
2.733	2.07	5.733	33.06	8.733	2.41	11.73	1.38
2.750	2.07	5.750	33.13	8.750	2.41	11.75	1.38
2.767	2.07	5.767	90.91	8.767	2.41	11.77	1.38
2.783	2.07	5.783	90.91	8.783	2.41	11.78	1.38
2.800	2.07	5.800	90.91	8.800	2.41	11.80	1.38
2.817	2.07	5.817	90.91	8.817	2.41	11.82	1.38
2.833	2.07	5.833	90.91	8.833	2.41	11.83	1.38
2.850	2.07	5.850	90.91	8.850	2.41	11.85	1.38
2.867	2.07	5.867	90.91	8.867	2.41	11.87	1.38
2.883	2.07	5.883	90.91	8.883	2.41	11.88	1.38
2.900	2.07	5.900	90.91	8.900	2.41	11.90	1.38
2.917	2.07	5.917	90.91	8.917	2.41	11.92	1.38
2.933	2.07	5.933	90.91	8.933	2.41	11.93	1.38
2.950	2.07	5.950	90.91	8.950	2.41	11.95	1.38
2.967	2.07	5.967	90.91	8.967	2.41	11.97	1.38
2.983	2.07	5.983	90.91	8.983	2.41	11.98	1.38
3.000	2.07	6.000	90.80	9.000	2.41	12.00	1.38

Max.Eff.Inten.(mm/hr)=	90.91	25.53	
over (min)	5.00	11.00	
Storage Coeff. (min)=	3.10 (ii)	10.70 (ii)	
Unit Hyd. Tpeak (min)=	5.00	11.00	
Unit Hyd. peak (cms)=	0.30	0.10	
			TOTALS
PEAK FLOW (cms)=	0.28	0.06	0.325 (iii)
TIME TO PEAK (hrs)=	6.00	6.10	6.00
RUNOFF VOLUME (mm)=	67.86	13.45	37.39
TOTAL RAINFALL (mm)=	68.87	68.87	68.87
RUNOFF COEFFICIENT =	0.99	0.20	0.54

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0010) IN= 2---> OUT= 1 DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0810	0.0465
	0.0010	0.0012	0.0910	0.0530
	0.0060	0.0145	0.1120	0.0643
	0.0100	0.0157	0.1190	0.0683
	0.0430	0.0262	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0008)	2.530	0.325	6.00	37.39
OUTFLOW: ID= 1 (0010)	2.530	0.081	6.25	37.27

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.95
TIME SHIFT OF PEAK FLOW (min)= 15.00
MAXIMUM STORAGE USED (ha.m.)= 0.0466

READ STORM Ptotal= 68.87 mm	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\f24b7e6f Comments: 10-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	1.72	3.25	2.75	6.25	12.40	9.25	2.41
0.50	1.72	3.50	2.75	6.50	12.40	9.50	2.41
0.75	1.72	3.75	2.75	6.75	5.51	9.75	2.41
1.00	1.72	4.00	2.75	7.00	5.51	10.00	2.41
1.25	1.72	4.25	4.13	7.25	4.13	10.25	1.38
1.50	1.72	4.50	4.13	7.50	4.13	10.50	1.38
1.75	1.72	4.75	5.51	7.75	4.13	10.75	1.38
2.00	1.72	5.00	5.51	8.00	4.13	11.00	1.38
2.25	2.07	5.25	8.26	8.25	2.41	11.25	1.38
2.50	2.07	5.50	8.26	8.50	2.41	11.50	1.38
2.75	2.07	5.75	33.06	8.75	2.41	11.75	1.38
3.00	2.07	6.00	90.91	9.00	2.41	12.00	1.38

CALIB NASHYD (0027) ID= 1 DT= 1.0 min	Area (ha)= 17.26 Curve Number (CN)= 60.0 Ia (mm)= 5.60 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.95

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	1.72	3.017	2.75	6.017	12.40	9.02	2.41
0.033	1.72	3.033	2.75	6.033	12.40	9.03	2.41
0.050	1.72	3.050	2.75	6.050	12.40	9.05	2.41
0.067	1.72	3.067	2.75	6.067	12.40	9.07	2.41
0.083	1.72	3.083	2.75	6.083	12.40	9.08	2.41
0.100	1.72	3.100	2.75	6.100	12.40	9.10	2.41
0.117	1.72	3.117	2.75	6.117	12.40	9.12	2.41
0.133	1.72	3.133	2.75	6.133	12.40	9.13	2.41
0.150	1.72	3.150	2.75	6.150	12.40	9.15	2.41
0.167	1.72	3.167	2.75	6.167	12.40	9.17	2.41
0.183	1.72	3.183	2.75	6.183	12.40	9.18	2.41
0.200	1.72	3.200	2.75	6.200	12.40	9.20	2.41
0.217	1.72	3.217	2.75	6.217	12.40	9.22	2.41
0.233	1.72	3.233	2.75	6.233	12.40	9.23	2.41
0.250	1.72	3.250	2.75	6.250	12.40	9.25	2.41
0.267	1.72	3.267	2.75	6.267	12.40	9.27	2.41
0.283	1.72	3.283	2.75	6.283	12.40	9.28	2.41
0.300	1.72	3.300	2.75	6.300	12.40	9.30	2.41
0.317	1.72	3.317	2.75	6.317	12.40	9.32	2.41
0.333	1.72	3.333	2.75	6.333	12.40	9.33	2.41
0.350	1.72	3.350	2.75	6.350	12.40	9.35	2.41
0.367	1.72	3.367	2.75	6.367	12.40	9.37	2.41
0.383	1.72	3.383	2.75	6.383	12.40	9.38	2.41
0.400	1.72	3.400	2.75	6.400	12.40	9.40	2.41
0.417	1.72	3.417	2.75	6.417	12.40	9.42	2.41
0.433	1.72	3.433	2.75	6.433	12.40	9.43	2.41
0.450	1.72	3.450	2.75	6.450	12.40	9.45	2.41
0.467	1.72	3.467	2.75	6.467	12.40	9.47	2.41
0.483	1.72	3.483	2.75	6.483	12.40	9.48	2.41
0.500	1.72	3.500	2.75	6.500	12.39	9.50	2.41
0.517	1.72	3.517	2.75	6.517	5.51	9.52	2.41
0.533	1.72	3.533	2.75	6.533	5.51	9.53	2.41

0.550	1.72	3.550	2.75	6.550	5.51	9.55	2.41
0.567	1.72	3.567	2.75	6.567	5.51	9.57	2.41
0.583	1.72	3.583	2.75	6.583	5.51	9.58	2.41
0.600	1.72	3.600	2.75	6.600	5.51	9.60	2.41
0.617	1.72	3.617	2.75	6.617	5.51	9.62	2.41
0.633	1.72	3.633	2.75	6.633	5.51	9.63	2.41
0.650	1.72	3.650	2.75	6.650	5.51	9.65	2.41
0.667	1.72	3.667	2.75	6.667	5.51	9.67	2.41
0.683	1.72	3.683	2.75	6.683	5.51	9.68	2.41
0.700	1.72	3.700	2.75	6.700	5.51	9.70	2.41
0.717	1.72	3.717	2.75	6.717	5.51	9.72	2.41
0.733	1.72	3.733	2.75	6.733	5.51	9.73	2.41
0.750	1.72	3.750	2.75	6.750	5.51	9.75	2.41
0.767	1.72	3.767	2.75	6.767	5.51	9.77	2.41
0.783	1.72	3.783	2.75	6.783	5.51	9.78	2.41
0.800	1.72	3.800	2.75	6.800	5.51	9.80	2.41
0.817	1.72	3.817	2.75	6.817	5.51	9.82	2.41
0.833	1.72	3.833	2.75	6.833	5.51	9.83	2.41
0.850	1.72	3.850	2.75	6.850	5.51	9.85	2.41
0.867	1.72	3.867	2.75	6.867	5.51	9.87	2.41
0.883	1.72	3.883	2.75	6.883	5.51	9.88	2.41
0.900	1.72	3.900	2.75	6.900	5.51	9.90	2.41
0.917	1.72	3.917	2.75	6.917	5.51	9.92	2.41
0.933	1.72	3.933	2.75	6.933	5.51	9.93	2.41
0.950	1.72	3.950	2.75	6.950	5.51	9.95	2.41
0.967	1.72	3.967	2.75	6.967	5.51	9.97	2.41
0.983	1.72	3.983	2.75	6.983	5.51	9.98	2.41
1.000	1.72	4.000	2.75	7.000	5.51	10.00	2.41
1.017	1.72	4.017	4.13	7.017	4.13	10.02	1.38
1.033	1.72	4.033	4.13	7.033	4.13	10.03	1.38
1.050	1.72	4.050	4.13	7.050	4.13	10.05	1.38
1.067	1.72	4.067	4.13	7.067	4.13	10.07	1.38
1.083	1.72	4.083	4.13	7.083	4.13	10.08	1.38
1.100	1.72	4.100	4.13	7.100	4.13	10.10	1.38
1.117	1.72	4.117	4.13	7.117	4.13	10.12	1.38
1.133	1.72	4.133	4.13	7.133	4.13	10.13	1.38
1.150	1.72	4.150	4.13	7.150	4.13	10.15	1.38
1.167	1.72	4.167	4.13	7.167	4.13	10.17	1.38
1.183	1.72	4.183	4.13	7.183	4.13	10.18	1.38
1.200	1.72	4.200	4.13	7.200	4.13	10.20	1.38
1.217	1.72	4.217	4.13	7.217	4.13	10.22	1.38
1.233	1.72	4.233	4.13	7.233	4.13	10.23	1.38
1.250	1.72	4.250	4.13	7.250	4.13	10.25	1.38
1.267	1.72	4.267	4.13	7.267	4.13	10.27	1.38
1.283	1.72	4.283	4.13	7.283	4.13	10.28	1.38
1.300	1.72	4.300	4.13	7.300	4.13	10.30	1.38
1.317	1.72	4.317	4.13	7.317	4.13	10.32	1.38
1.333	1.72	4.333	4.13	7.333	4.13	10.33	1.38
1.350	1.72	4.350	4.13	7.350	4.13	10.35	1.38
1.367	1.72	4.367	4.13	7.367	4.13	10.37	1.38
1.383	1.72	4.383	4.13	7.383	4.13	10.38	1.38
1.400	1.72	4.400	4.13	7.400	4.13	10.40	1.38
1.417	1.72	4.417	4.13	7.417	4.13	10.42	1.38
1.433	1.72	4.433	4.13	7.433	4.13	10.43	1.38
1.450	1.72	4.450	4.13	7.450	4.13	10.45	1.38
1.467	1.72	4.467	4.13	7.467	4.13	10.47	1.38
1.483	1.72	4.483	4.13	7.483	4.13	10.48	1.38
1.500	1.72	4.500	4.13	7.500	4.13	10.50	1.38
1.517	1.72	4.517	5.51	7.517	4.13	10.52	1.38
1.533	1.72	4.533	5.51	7.533	4.13	10.53	1.38
1.550	1.72	4.550	5.51	7.550	4.13	10.55	1.38
1.567	1.72	4.567	5.51	7.567	4.13	10.57	1.38
1.583	1.72	4.583	5.51	7.583	4.13	10.58	1.38
1.600	1.72	4.600	5.51	7.600	4.13	10.60	1.38
1.617	1.72	4.617	5.51	7.617	4.13	10.62	1.38
1.633	1.72	4.633	5.51	7.633	4.13	10.63	1.38
1.650	1.72	4.650	5.51	7.650	4.13	10.65	1.38
1.667	1.72	4.667	5.51	7.667	4.13	10.67	1.38
1.683	1.72	4.683	5.51	7.683	4.13	10.68	1.38
1.700	1.72	4.700	5.51	7.700	4.13	10.70	1.38
1.717	1.72	4.717	5.51	7.717	4.13	10.72	1.38
1.733	1.72	4.733	5.51	7.733	4.13	10.73	1.38
1.750	1.72	4.750	5.51	7.750	4.13	10.75	1.38
1.767	1.72	4.767	5.51	7.767	4.13	10.77	1.38
1.783	1.72	4.783	5.51	7.783	4.13	10.78	1.38
1.800	1.72	4.800	5.51	7.800	4.13	10.80	1.38
1.817	1.72	4.817	5.51	7.817	4.13	10.82	1.38
1.833	1.72	4.833	5.51	7.833	4.13	10.83	1.38
1.850	1.72	4.850	5.51	7.850	4.13	10.85	1.38
1.867	1.72	4.867	5.51	7.867	4.13	10.87	1.38
1.883	1.72	4.883	5.51	7.883	4.13	10.88	1.38
1.900	1.72	4.900	5.51	7.900	4.13	10.90	1.38
1.917	1.72	4.917	5.51	7.917	4.13	10.92	1.38
1.933	1.72	4.933	5.51	7.933	4.13	10.93	1.38
1.950	1.72	4.950	5.51	7.950	4.13	10.95	1.38
1.967	1.72	4.967	5.51	7.967	4.13	10.97	1.38
1.983	1.72	4.983	5.51	7.983	4.13	10.98	1.38
2.000	1.72	5.000	5.51	8.000	4.12	11.00	1.38
2.017	2.07	5.017	8.26	8.017	2.41	11.02	1.38
2.033	2.07	5.033	8.26	8.033	2.41	11.03	1.38
2.050	2.07	5.050	8.26	8.050	2.41	11.05	1.38

2.067	2.07	5.067	8.26	8.067	2.41	11.07	1.38
2.083	2.07	5.083	8.26	8.083	2.41	11.08	1.38
2.100	2.07	5.100	8.26	8.100	2.41	11.10	1.38
2.117	2.07	5.117	8.26	8.117	2.41	11.12	1.38
2.133	2.07	5.133	8.26	8.133	2.41	11.13	1.38
2.150	2.07	5.150	8.26	8.150	2.41	11.15	1.38
2.167	2.07	5.167	8.26	8.167	2.41	11.17	1.38
2.183	2.07	5.183	8.26	8.183	2.41	11.18	1.38
2.200	2.07	5.200	8.26	8.200	2.41	11.20	1.38
2.217	2.07	5.217	8.26	8.217	2.41	11.22	1.38
2.233	2.07	5.233	8.26	8.233	2.41	11.23	1.38
2.250	2.07	5.250	8.26	8.250	2.41	11.25	1.38
2.267	2.07	5.267	8.26	8.267	2.41	11.27	1.38
2.283	2.07	5.283	8.26	8.283	2.41	11.28	1.38
2.300	2.07	5.300	8.26	8.300	2.41	11.30	1.38
2.317	2.07	5.317	8.26	8.317	2.41	11.32	1.38
2.333	2.07	5.333	8.26	8.333	2.41	11.33	1.38
2.350	2.07	5.350	8.26	8.350	2.41	11.35	1.38
2.367	2.07	5.367	8.26	8.367	2.41	11.37	1.38
2.383	2.07	5.383	8.26	8.383	2.41	11.38	1.38
2.400	2.07	5.400	8.26	8.400	2.41	11.40	1.38
2.417	2.07	5.417	8.26	8.417	2.41	11.42	1.38
2.433	2.07	5.433	8.26	8.433	2.41	11.43	1.38
2.450	2.07	5.450	8.26	8.450	2.41	11.45	1.38
2.467	2.07	5.467	8.26	8.467	2.41	11.47	1.38
2.483	2.07	5.483	8.26	8.483	2.41	11.48	1.38
2.500	2.07	5.500	8.28	8.500	2.41	11.50	1.38
2.517	2.07	5.517	33.06	8.517	2.41	11.52	1.38
2.533	2.07	5.533	33.06	8.533	2.41	11.53	1.38
2.550	2.07	5.550	33.06	8.550	2.41	11.55	1.38
2.567	2.07	5.567	33.06	8.567	2.41	11.57	1.38
2.583	2.07	5.583	33.06	8.583	2.41	11.58	1.38
2.600	2.07	5.600	33.06	8.600	2.41	11.60	1.38
2.617	2.07	5.617	33.06	8.617	2.41	11.62	1.38
2.633	2.07	5.633	33.06	8.633	2.41	11.63	1.38
2.650	2.07	5.650	33.06	8.650	2.41	11.65	1.38
2.667	2.07	5.667	33.06	8.667	2.41	11.67	1.38
2.683	2.07	5.683	33.06	8.683	2.41	11.68	1.38
2.700	2.07	5.700	33.06	8.700	2.41	11.70	1.38
2.717	2.07	5.717	33.06	8.717	2.41	11.72	1.38
2.733	2.07	5.733	33.06	8.733	2.41	11.73	1.38
2.750	2.07	5.750	33.13	8.750	2.41	11.75	1.38
2.767	2.07	5.767	90.91	8.767	2.41	11.77	1.38
2.783	2.07	5.783	90.91	8.783	2.41	11.78	1.38
2.800	2.07	5.800	90.91	8.800	2.41	11.80	1.38
2.817	2.07	5.817	90.91	8.817	2.41	11.82	1.38
2.833	2.07	5.833	90.91	8.833	2.41	11.83	1.38
2.850	2.07	5.850	90.91	8.850	2.41	11.85	1.38
2.867	2.07	5.867	90.91	8.867	2.41	11.87	1.38
2.883	2.07	5.883	90.91	8.883	2.41	11.88	1.38
2.900	2.07	5.900	90.91	8.900	2.41	11.90	1.38
2.917	2.07	5.917	90.91	8.917	2.41	11.92	1.38
2.933	2.07	5.933	90.91	8.933	2.41	11.93	1.38
2.950	2.07	5.950	90.91	8.950	2.41	11.95	1.38
2.967	2.07	5.967	90.91	8.967	2.41	11.97	1.38
2.983	2.07	5.983	90.91	8.983	2.41	11.98	1.38
3.000	2.07	6.000	90.80	9.000	2.41	12.00	1.38

Unit Hyd Qpeak (cms)= 0.694

PEAK FLOW (cms)= 0.282 (i)
TIME TO PEAK (hrs)= 6.983
RUNOFF VOLUME (mm)= 17.207
TOTAL RAINFALL (mm)= 68.867
RUNOFF COEFFICIENT = 0.250

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

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):		2.53	0.081	6.25	37.27
+ ID2= 2 (0011):		0.80	0.082	6.08	58.31
ID = 3 (0004):		3.33	0.160	6.12	42.32

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0004):		3.33	0.160	6.12	42.32
+ ID2= 2 (0027):		17.26	0.282	6.98	17.21
ID = 1 (0004):		20.59	0.381	6.75	21.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0004):	20.59	0.381	6.75	21.27
	+ ID2= 2 (0003):	4.49	0.047	7.07	25.68
	ID = 3 (0004):	25.08	0.427	6.77	22.06

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
	ID1= 3 (0004):	25.08	0.427	6.77	22.06
	+ ID2= 2 (0009):	2.07	0.220	6.05	38.13
	ID = 1 (0004):	27.15	0.475	6.07	23.29

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

```
       V    V   I    SSSSS  U   U    A    L              (v 5.0.2027)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\8b6d118f-61c8-49bb-90f2-133ab2d7f

Summary filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\8b6d118f-61c8-49bb-90f2-133ab2d7f

DATE: 12/19/2018 TIME: 10:47:47

USER:

COMMENTS: _____

****
** SIMULATION : Run 10 **
****

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\c37e24c1
Ptotal= 79.86 mm	Comments: 25-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.00	3.25	3.19	6.25	14.37	9.25	2.80
0.50	2.00	3.50	3.19	6.50	14.37	9.50	2.80
0.75	2.00	3.75	3.19	6.75	6.39	9.75	2.80
1.00	2.00	4.00	3.19	7.00	6.39	10.00	2.80
1.25	2.00	4.25	4.79	7.25	4.79	10.25	1.60
1.50	2.00	4.50	4.79	7.50	4.79	10.50	1.60
1.75	2.00	4.75	6.39	7.75	4.79	10.75	1.60
2.00	2.00	5.00	6.39	8.00	4.79	11.00	1.60

2.25	2.40	5.25	9.58	8.25	2.80	11.25	1.60
2.50	2.40	5.50	9.58	8.50	2.80	11.50	1.60
2.75	2.40	5.75	38.33	8.75	2.80	11.75	1.60
3.00	2.40	6.00	105.42	9.00	2.80	12.00	1.60

CALIB NASHYD (0025)	Area (ha)= 1.48	Curve Number (CN)= 67.0
ID= 1 DT= 1.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.34	

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.00	3.017	3.19	6.017	14.37	9.02	2.80
0.033	2.00	3.033	3.19	6.033	14.37	9.03	2.80
0.050	2.00	3.050	3.19	6.050	14.37	9.05	2.80
0.067	2.00	3.067	3.19	6.067	14.37	9.07	2.80
0.083	2.00	3.083	3.19	6.083	14.37	9.08	2.80
0.100	2.00	3.100	3.19	6.100	14.37	9.10	2.80
0.117	2.00	3.117	3.19	6.117	14.37	9.12	2.80
0.133	2.00	3.133	3.19	6.133	14.37	9.13	2.80
0.150	2.00	3.150	3.19	6.150	14.37	9.15	2.80
0.167	2.00	3.167	3.19	6.167	14.37	9.17	2.80
0.183	2.00	3.183	3.19	6.183	14.37	9.18	2.80
0.200	2.00	3.200	3.19	6.200	14.37	9.20	2.80
0.217	2.00	3.217	3.19	6.217	14.37	9.22	2.80
0.233	2.00	3.233	3.19	6.233	14.37	9.23	2.80
0.250	2.00	3.250	3.19	6.250	14.37	9.25	2.80
0.267	2.00	3.267	3.19	6.267	14.37	9.27	2.80
0.283	2.00	3.283	3.19	6.283	14.37	9.28	2.80
0.300	2.00	3.300	3.19	6.300	14.37	9.30	2.80
0.317	2.00	3.317	3.19	6.317	14.37	9.32	2.80
0.333	2.00	3.333	3.19	6.333	14.37	9.33	2.80
0.350	2.00	3.350	3.19	6.350	14.37	9.35	2.80
0.367	2.00	3.367	3.19	6.367	14.37	9.37	2.80
0.383	2.00	3.383	3.19	6.383	14.37	9.38	2.80
0.400	2.00	3.400	3.19	6.400	14.37	9.40	2.80
0.417	2.00	3.417	3.19	6.417	14.37	9.42	2.80
0.433	2.00	3.433	3.19	6.433	14.37	9.43	2.80
0.450	2.00	3.450	3.19	6.450	14.37	9.45	2.80
0.467	2.00	3.467	3.19	6.467	14.37	9.47	2.80
0.483	2.00	3.483	3.19	6.483	14.37	9.48	2.80
0.500	2.00	3.500	3.19	6.500	14.36	9.50	2.80
0.517	2.00	3.517	3.19	6.517	6.39	9.52	2.80
0.533	2.00	3.533	3.19	6.533	6.39	9.53	2.80
0.550	2.00	3.550	3.19	6.550	6.39	9.55	2.80
0.567	2.00	3.567	3.19	6.567	6.39	9.57	2.80
0.583	2.00	3.583	3.19	6.583	6.39	9.58	2.80
0.600	2.00	3.600	3.19	6.600	6.39	9.60	2.80
0.617	2.00	3.617	3.19	6.617	6.39	9.62	2.80
0.633	2.00	3.633	3.19	6.633	6.39	9.63	2.80
0.650	2.00	3.650	3.19	6.650	6.39	9.65	2.80
0.667	2.00	3.667	3.19	6.667	6.39	9.67	2.80
0.683	2.00	3.683	3.19	6.683	6.39	9.68	2.80
0.700	2.00	3.700	3.19	6.700	6.39	9.70	2.80
0.717	2.00	3.717	3.19	6.717	6.39	9.72	2.80
0.733	2.00	3.733	3.19	6.733	6.39	9.73	2.80
0.750	2.00	3.750	3.19	6.750	6.39	9.75	2.80
0.767	2.00	3.767	3.19	6.767	6.39	9.77	2.80
0.783	2.00	3.783	3.19	6.783	6.39	9.78	2.80
0.800	2.00	3.800	3.19	6.800	6.39	9.80	2.80
0.817	2.00	3.817	3.19	6.817	6.39	9.82	2.80
0.833	2.00	3.833	3.19	6.833	6.39	9.83	2.80
0.850	2.00	3.850	3.19	6.850	6.39	9.85	2.80
0.867	2.00	3.867	3.19	6.867	6.39	9.87	2.80
0.883	2.00	3.883	3.19	6.883	6.39	9.88	2.80
0.900	2.00	3.900	3.19	6.900	6.39	9.90	2.80
0.917	2.00	3.917	3.19	6.917	6.39	9.92	2.80
0.933	2.00	3.933	3.19	6.933	6.39	9.93	2.80
0.950	2.00	3.950	3.19	6.950	6.39	9.95	2.80
0.967	2.00	3.967	3.19	6.967	6.39	9.97	2.80
0.983	2.00	3.983	3.19	6.983	6.39	9.98	2.80
1.000	2.00	4.000	3.19	7.000	6.39	10.00	2.79
1.017	2.00	4.017	4.79	7.017	4.79	10.02	1.60
1.033	2.00	4.033	4.79	7.033	4.79	10.03	1.60
1.050	2.00	4.050	4.79	7.050	4.79	10.05	1.60
1.067	2.00	4.067	4.79	7.067	4.79	10.07	1.60
1.083	2.00	4.083	4.79	7.083	4.79	10.08	1.60
1.100	2.00	4.100	4.79	7.100	4.79	10.10	1.60
1.117	2.00	4.117	4.79	7.117	4.79	10.12	1.60
1.133	2.00	4.133	4.79	7.133	4.79	10.13	1.60
1.150	2.00	4.150	4.79	7.150	4.79	10.15	1.60
1.167	2.00	4.167	4.79	7.167	4.79	10.17	1.60
1.183	2.00	4.183	4.79	7.183	4.79	10.18	1.60
1.200	2.00	4.200	4.79	7.200	4.79	10.20	1.60

1.217	2.00	4.217	4.79	7.217	4.79	10.22	1.60
1.233	2.00	4.233	4.79	7.233	4.79	10.23	1.60
1.250	2.00	4.250	4.79	7.250	4.79	10.25	1.60
1.267	2.00	4.267	4.79	7.267	4.79	10.27	1.60
1.283	2.00	4.283	4.79	7.283	4.79	10.28	1.60
1.300	2.00	4.300	4.79	7.300	4.79	10.30	1.60
1.317	2.00	4.317	4.79	7.317	4.79	10.32	1.60
1.333	2.00	4.333	4.79	7.333	4.79	10.33	1.60
1.350	2.00	4.350	4.79	7.350	4.79	10.35	1.60
1.367	2.00	4.367	4.79	7.367	4.79	10.37	1.60
1.383	2.00	4.383	4.79	7.383	4.79	10.38	1.60
1.400	2.00	4.400	4.79	7.400	4.79	10.40	1.60
1.417	2.00	4.417	4.79	7.417	4.79	10.42	1.60
1.433	2.00	4.433	4.79	7.433	4.79	10.43	1.60
1.450	2.00	4.450	4.79	7.450	4.79	10.45	1.60
1.467	2.00	4.467	4.79	7.467	4.79	10.47	1.60
1.483	2.00	4.483	4.79	7.483	4.79	10.48	1.60
1.500	2.00	4.500	4.79	7.500	4.79	10.50	1.60
1.517	2.00	4.517	6.39	7.517	4.79	10.52	1.60
1.533	2.00	4.533	6.39	7.533	4.79	10.53	1.60
1.550	2.00	4.550	6.39	7.550	4.79	10.55	1.60
1.567	2.00	4.567	6.39	7.567	4.79	10.57	1.60
1.583	2.00	4.583	6.39	7.583	4.79	10.58	1.60
1.600	2.00	4.600	6.39	7.600	4.79	10.60	1.60
1.617	2.00	4.617	6.39	7.617	4.79	10.62	1.60
1.633	2.00	4.633	6.39	7.633	4.79	10.63	1.60
1.650	2.00	4.650	6.39	7.650	4.79	10.65	1.60
1.667	2.00	4.667	6.39	7.667	4.79	10.67	1.60
1.683	2.00	4.683	6.39	7.683	4.79	10.68	1.60
1.700	2.00	4.700	6.39	7.700	4.79	10.70	1.60
1.717	2.00	4.717	6.39	7.717	4.79	10.72	1.60
1.733	2.00	4.733	6.39	7.733	4.79	10.73	1.60
1.750	2.00	4.750	6.39	7.750	4.79	10.75	1.60
1.767	2.00	4.767	6.39	7.767	4.79	10.77	1.60
1.783	2.00	4.783	6.39	7.783	4.79	10.78	1.60
1.800	2.00	4.800	6.39	7.800	4.79	10.80	1.60
1.817	2.00	4.817	6.39	7.817	4.79	10.82	1.60
1.833	2.00	4.833	6.39	7.833	4.79	10.83	1.60
1.850	2.00	4.850	6.39	7.850	4.79	10.85	1.60
1.867	2.00	4.867	6.39	7.867	4.79	10.87	1.60
1.883	2.00	4.883	6.39	7.883	4.79	10.88	1.60
1.900	2.00	4.900	6.39	7.900	4.79	10.90	1.60
1.917	2.00	4.917	6.39	7.917	4.79	10.92	1.60
1.933	2.00	4.933	6.39	7.933	4.79	10.93	1.60
1.950	2.00	4.950	6.39	7.950	4.79	10.95	1.60
1.967	2.00	4.967	6.39	7.967	4.79	10.97	1.60
1.983	2.00	4.983	6.39	7.983	4.79	10.98	1.60
2.000	2.00	5.000	6.39	8.000	4.79	11.00	1.60
2.017	2.40	5.017	9.58	8.017	2.80	11.02	1.60
2.033	2.40	5.033	9.58	8.033	2.80	11.03	1.60
2.050	2.40	5.050	9.58	8.050	2.80	11.05	1.60
2.067	2.40	5.067	9.58	8.067	2.80	11.07	1.60
2.083	2.40	5.083	9.58	8.083	2.80	11.08	1.60
2.100	2.40	5.100	9.58	8.100	2.80	11.10	1.60
2.117	2.40	5.117	9.58	8.117	2.80	11.12	1.60
2.133	2.40	5.133	9.58	8.133	2.80	11.13	1.60
2.150	2.40	5.150	9.58	8.150	2.80	11.15	1.60
2.167	2.40	5.167	9.58	8.167	2.80	11.17	1.60
2.183	2.40	5.183	9.58	8.183	2.80	11.18	1.60
2.200	2.40	5.200	9.58	8.200	2.80	11.20	1.60
2.217	2.40	5.217	9.58	8.217	2.80	11.22	1.60
2.233	2.40	5.233	9.58	8.233	2.80	11.23	1.60
2.250	2.40	5.250	9.58	8.250	2.80	11.25	1.60
2.267	2.40	5.267	9.58	8.267	2.80	11.27	1.60
2.283	2.40	5.283	9.58	8.283	2.80	11.28	1.60
2.300	2.40	5.300	9.58	8.300	2.80	11.30	1.60
2.317	2.40	5.317	9.58	8.317	2.80	11.32	1.60
2.333	2.40	5.333	9.58	8.333	2.80	11.33	1.60
2.350	2.40	5.350	9.58	8.350	2.80	11.35	1.60
2.367	2.40	5.367	9.58	8.367	2.80	11.37	1.60
2.383	2.40	5.383	9.58	8.383	2.80	11.38	1.60
2.400	2.40	5.400	9.58	8.400	2.80	11.40	1.60
2.417	2.40	5.417	9.58	8.417	2.80	11.42	1.60
2.433	2.40	5.433	9.58	8.433	2.80	11.43	1.60
2.450	2.40	5.450	9.58	8.450	2.80	11.45	1.60
2.467	2.40	5.467	9.58	8.467	2.80	11.47	1.60
2.483	2.40	5.483	9.58	8.483	2.80	11.48	1.60
2.500	2.40	5.500	9.61	8.500	2.80	11.50	1.60
2.517	2.40	5.517	38.33	8.517	2.80	11.52	1.60
2.533	2.40	5.533	38.33	8.533	2.80	11.53	1.60
2.550	2.40	5.550	38.33	8.550	2.80	11.55	1.60
2.567	2.40	5.567	38.33	8.567	2.80	11.57	1.60
2.583	2.40	5.583	38.33	8.583	2.80	11.58	1.60
2.600	2.40	5.600	38.33	8.600	2.80	11.60	1.60
2.617	2.40	5.617	38.33	8.617	2.80	11.62	1.60
2.633	2.40	5.633	38.33	8.633	2.80	11.63	1.60
2.650	2.40	5.650	38.33	8.650	2.80	11.65	1.60
2.667	2.40	5.667	38.33	8.667	2.80	11.67	1.60
2.683	2.40	5.683	38.33	8.683	2.80	11.68	1.60
2.700	2.40	5.700	38.33	8.700	2.80	11.70	1.60
2.717	2.40	5.717	38.33	8.717	2.80	11.72	1.60

2.733	2.40	5.733	38.33	8.733	2.80	11.73	1.60
2.750	2.40	5.750	38.41	8.750	2.80	11.75	1.60
2.767	2.40	5.767	105.42	8.767	2.80	11.77	1.60
2.783	2.40	5.783	105.42	8.783	2.80	11.78	1.60
2.800	2.40	5.800	105.42	8.800	2.80	11.80	1.60
2.817	2.40	5.817	105.42	8.817	2.80	11.82	1.60
2.833	2.40	5.833	105.42	8.833	2.80	11.83	1.60
2.850	2.40	5.850	105.42	8.850	2.80	11.85	1.60
2.867	2.40	5.867	105.42	8.867	2.80	11.87	1.60
2.883	2.40	5.883	105.42	8.883	2.80	11.88	1.60
2.900	2.40	5.900	105.42	8.900	2.80	11.90	1.60
2.917	2.40	5.917	105.42	8.917	2.80	11.92	1.60
2.933	2.40	5.933	105.42	8.933	2.80	11.93	1.60
2.950	2.40	5.950	105.42	8.950	2.80	11.95	1.60
2.967	2.40	5.967	105.42	8.967	2.80	11.97	1.60
2.983	2.40	5.983	105.42	8.983	2.80	11.98	1.60
3.000	2.40	6.000	105.29	9.000	2.80	12.00	1.60

Unit Hyd Qpeak (cms)= 0.166

PEAK FLOW (cms)= 0.084 (i)
TIME TO PEAK (hrs)= 6.250
RUNOFF VOLUME (mm)= 28.024
TOTAL RAINFALL (mm)= 79.859
RUNOFF COEFFICIENT = 0.351

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

READ STORM | Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\c37e24c1
Ptotal= 79.86 mm | Comments: 25-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.00	3.25	3.19	6.25	14.37	9.25	2.80
0.50	2.00	3.50	3.19	6.50	14.37	9.50	2.80
0.75	2.00	3.75	3.19	6.75	6.39	9.75	2.80
1.00	2.00	4.00	3.19	7.00	6.39	10.00	2.80
1.25	2.00	4.25	4.79	7.25	4.79	10.25	1.60
1.50	2.00	4.50	4.79	7.50	4.79	10.50	1.60
1.75	2.00	4.75	6.39	7.75	4.79	10.75	1.60
2.00	2.00	5.00	6.39	8.00	4.79	11.00	1.60
2.25	2.40	5.25	9.58	8.25	2.80	11.25	1.60
2.50	2.40	5.50	9.58	8.50	2.80	11.50	1.60
2.75	2.40	5.75	38.33	8.75	2.80	11.75	1.60
3.00	2.40	6.00	105.42	9.00	2.80	12.00	1.60

CALIB | STANDHYD (0001) | ID= 1 DT= 1.0 min | Area (ha)= 3.01 | Total Imp(%)= 57.00 | Dir. Conn.(%)= 46.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.72	1.29
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.50	3.00
Length	(m)=	141.66	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.00	3.017	3.19	6.017	14.37	9.02	2.80
0.033	2.00	3.033	3.19	6.033	14.37	9.03	2.80
0.050	2.00	3.050	3.19	6.050	14.37	9.05	2.80
0.067	2.00	3.067	3.19	6.067	14.37	9.07	2.80
0.083	2.00	3.083	3.19	6.083	14.37	9.08	2.80
0.100	2.00	3.100	3.19	6.100	14.37	9.10	2.80
0.117	2.00	3.117	3.19	6.117	14.37	9.12	2.80
0.133	2.00	3.133	3.19	6.133	14.37	9.13	2.80
0.150	2.00	3.150	3.19	6.150	14.37	9.15	2.80
0.167	2.00	3.167	3.19	6.167	14.37	9.17	2.80
0.183	2.00	3.183	3.19	6.183	14.37	9.18	2.80
0.200	2.00	3.200	3.19	6.200	14.37	9.20	2.80
0.217	2.00	3.217	3.19	6.217	14.37	9.22	2.80
0.233	2.00	3.233	3.19	6.233	14.37	9.23	2.80
0.250	2.00	3.250	3.19	6.250	14.37	9.25	2.80
0.267	2.00	3.267	3.19	6.267	14.37	9.27	2.80
0.283	2.00	3.283	3.19	6.283	14.37	9.28	2.80
0.300	2.00	3.300	3.19	6.300	14.37	9.30	2.80
0.317	2.00	3.317	3.19	6.317	14.37	9.32	2.80
0.333	2.00	3.333	3.19	6.333	14.37	9.33	2.80

0.350	2.00	3.350	3.19	6.350	14.37	9.35	2.80
0.367	2.00	3.367	3.19	6.367	14.37	9.37	2.80
0.383	2.00	3.383	3.19	6.383	14.37	9.38	2.80
0.400	2.00	3.400	3.19	6.400	14.37	9.40	2.80
0.417	2.00	3.417	3.19	6.417	14.37	9.42	2.80
0.433	2.00	3.433	3.19	6.433	14.37	9.43	2.80
0.450	2.00	3.450	3.19	6.450	14.37	9.45	2.80
0.467	2.00	3.467	3.19	6.467	14.37	9.47	2.80
0.483	2.00	3.483	3.19	6.483	14.37	9.48	2.80
0.500	2.00	3.500	3.19	6.500	14.36	9.50	2.80
0.517	2.00	3.517	3.19	6.517	6.39	9.52	2.80
0.533	2.00	3.533	3.19	6.533	6.39	9.53	2.80
0.550	2.00	3.550	3.19	6.550	6.39	9.55	2.80
0.567	2.00	3.567	3.19	6.567	6.39	9.57	2.80
0.583	2.00	3.583	3.19	6.583	6.39	9.58	2.80
0.600	2.00	3.600	3.19	6.600	6.39	9.60	2.80
0.617	2.00	3.617	3.19	6.617	6.39	9.62	2.80
0.633	2.00	3.633	3.19	6.633	6.39	9.63	2.80
0.650	2.00	3.650	3.19	6.650	6.39	9.65	2.80
0.667	2.00	3.667	3.19	6.667	6.39	9.67	2.80
0.683	2.00	3.683	3.19	6.683	6.39	9.68	2.80
0.700	2.00	3.700	3.19	6.700	6.39	9.70	2.80
0.717	2.00	3.717	3.19	6.717	6.39	9.72	2.80
0.733	2.00	3.733	3.19	6.733	6.39	9.73	2.80
0.750	2.00	3.750	3.19	6.750	6.39	9.75	2.80
0.767	2.00	3.767	3.19	6.767	6.39	9.77	2.80
0.783	2.00	3.783	3.19	6.783	6.39	9.78	2.80
0.800	2.00	3.800	3.19	6.800	6.39	9.80	2.80
0.817	2.00	3.817	3.19	6.817	6.39	9.82	2.80
0.833	2.00	3.833	3.19	6.833	6.39	9.83	2.80
0.850	2.00	3.850	3.19	6.850	6.39	9.85	2.80
0.867	2.00	3.867	3.19	6.867	6.39	9.87	2.80
0.883	2.00	3.883	3.19	6.883	6.39	9.88	2.80
0.900	2.00	3.900	3.19	6.900	6.39	9.90	2.80
0.917	2.00	3.917	3.19	6.917	6.39	9.92	2.80
0.933	2.00	3.933	3.19	6.933	6.39	9.93	2.80
0.950	2.00	3.950	3.19	6.950	6.39	9.95	2.80
0.967	2.00	3.967	3.19	6.967	6.39	9.97	2.80
0.983	2.00	3.983	3.19	6.983	6.39	9.98	2.80
1.000	2.00	4.000	3.19	7.000	6.39	10.00	2.79
1.017	2.00	4.017	4.79	7.017	4.79	10.02	1.60
1.033	2.00	4.033	4.79	7.033	4.79	10.03	1.60
1.050	2.00	4.050	4.79	7.050	4.79	10.05	1.60
1.067	2.00	4.067	4.79	7.067	4.79	10.07	1.60
1.083	2.00	4.083	4.79	7.083	4.79	10.08	1.60
1.100	2.00	4.100	4.79	7.100	4.79	10.10	1.60
1.117	2.00	4.117	4.79	7.117	4.79	10.12	1.60
1.133	2.00	4.133	4.79	7.133	4.79	10.13	1.60
1.150	2.00	4.150	4.79	7.150	4.79	10.15	1.60
1.167	2.00	4.167	4.79	7.167	4.79	10.17	1.60
1.183	2.00	4.183	4.79	7.183	4.79	10.18	1.60
1.200	2.00	4.200	4.79	7.200	4.79	10.20	1.60
1.217	2.00	4.217	4.79	7.217	4.79	10.22	1.60
1.233	2.00	4.233	4.79	7.233	4.79	10.23	1.60
1.250	2.00	4.250	4.79	7.250	4.79	10.25	1.60
1.267	2.00	4.267	4.79	7.267	4.79	10.27	1.60
1.283	2.00	4.283	4.79	7.283	4.79	10.28	1.60
1.300	2.00	4.300	4.79	7.300	4.79	10.30	1.60
1.317	2.00	4.317	4.79	7.317	4.79	10.32	1.60
1.333	2.00	4.333	4.79	7.333	4.79	10.33	1.60
1.350	2.00	4.350	4.79	7.350	4.79	10.35	1.60
1.367	2.00	4.367	4.79	7.367	4.79	10.37	1.60
1.383	2.00	4.383	4.79	7.383	4.79	10.38	1.60
1.400	2.00	4.400	4.79	7.400	4.79	10.40	1.60
1.417	2.00	4.417	4.79	7.417	4.79	10.42	1.60
1.433	2.00	4.433	4.79	7.433	4.79	10.43	1.60
1.450	2.00	4.450	4.79	7.450	4.79	10.45	1.60
1.467	2.00	4.467	4.79	7.467	4.79	10.47	1.60
1.483	2.00	4.483	4.79	7.483	4.79	10.48	1.60
1.500	2.00	4.500	4.79	7.500	4.79	10.50	1.60
1.517	2.00	4.517	6.39	7.517	4.79	10.52	1.60
1.533	2.00	4.533	6.39	7.533	4.79	10.53	1.60
1.550	2.00	4.550	6.39	7.550	4.79	10.55	1.60
1.567	2.00	4.567	6.39	7.567	4.79	10.57	1.60
1.583	2.00	4.583	6.39	7.583	4.79	10.58	1.60
1.600	2.00	4.600	6.39	7.600	4.79	10.60	1.60
1.617	2.00	4.617	6.39	7.617	4.79	10.62	1.60
1.633	2.00	4.633	6.39	7.633	4.79	10.63	1.60
1.650	2.00	4.650	6.39	7.650	4.79	10.65	1.60
1.667	2.00	4.667	6.39	7.667	4.79	10.67	1.60
1.683	2.00	4.683	6.39	7.683	4.79	10.68	1.60
1.700	2.00	4.700	6.39	7.700	4.79	10.70	1.60
1.717	2.00	4.717	6.39	7.717	4.79	10.72	1.60
1.733	2.00	4.733	6.39	7.733	4.79	10.73	1.60
1.750	2.00	4.750	6.39	7.750	4.79	10.75	1.60
1.767	2.00	4.767	6.39	7.767	4.79	10.77	1.60
1.783	2.00	4.783	6.39	7.783	4.79	10.78	1.60
1.800	2.00	4.800	6.39	7.800	4.79	10.80	1.60
1.817	2.00	4.817	6.39	7.817	4.79	10.82	1.60
1.833	2.00	4.833	6.39	7.833	4.79	10.83	1.60
1.850	2.00	4.850	6.39	7.850	4.79	10.85	1.60

1.867	2.00	4.867	6.39	7.867	4.79	10.87	1.60
1.883	2.00	4.883	6.39	7.883	4.79	10.88	1.60
1.900	2.00	4.900	6.39	7.900	4.79	10.90	1.60
1.917	2.00	4.917	6.39	7.917	4.79	10.92	1.60
1.933	2.00	4.933	6.39	7.933	4.79	10.93	1.60
1.950	2.00	4.950	6.39	7.950	4.79	10.95	1.60
1.967	2.00	4.967	6.39	7.967	4.79	10.97	1.60
1.983	2.00	4.983	6.39	7.983	4.79	10.98	1.60
2.000	2.00	5.000	6.39	8.000	4.79	11.00	1.60
2.017	2.40	5.017	9.58	8.017	2.80	11.02	1.60
2.033	2.40	5.033	9.58	8.033	2.80	11.03	1.60
2.050	2.40	5.050	9.58	8.050	2.80	11.05	1.60
2.067	2.40	5.067	9.58	8.067	2.80	11.07	1.60
2.083	2.40	5.083	9.58	8.083	2.80	11.08	1.60
2.100	2.40	5.100	9.58	8.100	2.80	11.10	1.60
2.117	2.40	5.117	9.58	8.117	2.80	11.12	1.60
2.133	2.40	5.133	9.58	8.133	2.80	11.13	1.60
2.150	2.40	5.150	9.58	8.150	2.80	11.15	1.60
2.167	2.40	5.167	9.58	8.167	2.80	11.17	1.60
2.183	2.40	5.183	9.58	8.183	2.80	11.18	1.60
2.200	2.40	5.200	9.58	8.200	2.80	11.20	1.60
2.217	2.40	5.217	9.58	8.217	2.80	11.22	1.60
2.233	2.40	5.233	9.58	8.233	2.80	11.23	1.60
2.250	2.40	5.250	9.58	8.250	2.80	11.25	1.60
2.267	2.40	5.267	9.58	8.267	2.80	11.27	1.60
2.283	2.40	5.283	9.58	8.283	2.80	11.28	1.60
2.300	2.40	5.300	9.58	8.300	2.80	11.30	1.60
2.317	2.40	5.317	9.58	8.317	2.80	11.32	1.60
2.333	2.40	5.333	9.58	8.333	2.80	11.33	1.60
2.350	2.40	5.350	9.58	8.350	2.80	11.35	1.60
2.367	2.40	5.367	9.58	8.367	2.80	11.37	1.60
2.383	2.40	5.383	9.58	8.383	2.80	11.38	1.60
2.400	2.40	5.400	9.58	8.400	2.80	11.40	1.60
2.417	2.40	5.417	9.58	8.417	2.80	11.42	1.60
2.433	2.40	5.433	9.58	8.433	2.80	11.43	1.60
2.450	2.40	5.450	9.58	8.450	2.80	11.45	1.60
2.467	2.40	5.467	9.58	8.467	2.80	11.47	1.60
2.483	2.40	5.483	9.58	8.483	2.80	11.48	1.60
2.500	2.40	5.500	9.61	8.500	2.80	11.50	1.60
2.517	2.40	5.517	38.33	8.517	2.80	11.52	1.60
2.533	2.40	5.533	38.33	8.533	2.80	11.53	1.60
2.550	2.40	5.550	38.33	8.550	2.80	11.55	1.60
2.567	2.40	5.567	38.33	8.567	2.80	11.57	1.60
2.583	2.40	5.583	38.33	8.583	2.80	11.58	1.60
2.600	2.40	5.600	38.33	8.600	2.80	11.60	1.60
2.617	2.40	5.617	38.33	8.617	2.80	11.62	1.60
2.633	2.40	5.633	38.33	8.633	2.80	11.63	1.60
2.650	2.40	5.650	38.33	8.650	2.80	11.65	1.60
2.667	2.40	5.667	38.33	8.667	2.80	11.67	1.60
2.683	2.40	5.683	38.33	8.683	2.80	11.68	1.60
2.700	2.40	5.700	38.33	8.700	2.80	11.70	1.60
2.717	2.40	5.717	38.33	8.717	2.80	11.72	1.60
2.733	2.40	5.733	38.33	8.733	2.80	11.73	1.60
2.750	2.40	5.750	38.41	8.750	2.80	11.75	1.60
2.767	2.40	5.767	105.42	8.767	2.80	11.77	1.60
2.783	2.40	5.783	105.42	8.783	2.80	11.78	1.60
2.800	2.40	5.800	105.42	8.800	2.80	11.80	1.60
2.817	2.40	5.817	105.42	8.817	2.80	11.82	1.60
2.833	2.40	5.833	105.42	8.833	2.80	11.83	1.60
2.850	2.40	5.850	105.42	8.850	2.80	11.85	1.60
2.867	2.40	5.867	105.42	8.867	2.80	11.87	1.60
2.883	2.40	5.883	105.42	8.883	2.80	11.88	1.60
2.900	2.40	5.900	105.42	8.900	2.80	11.90	1.60
2.917	2.40	5.917	105.42	8.917	2.80	11.92	1.60
2.933	2.40	5.933	105.42	8.933	2.80	11.93	1.60
2.950	2.40	5.950	105.42	8.950	2.80	11.95	1.60
2.967	2.40	5.967	105.42	8.967	2.80	11.97	1.60
2.983	2.40	5.983	105.42	8.983	2.80	11.98	1.60
3.000	2.40	6.000	105.29	9.000	2.80	12.00	1.60

Max.Eff.Inten.(mm/hr)=	105.42	38.66	
over (min)	5.00	9.00	
Storage Coeff. (min)=	2.73 (ii)	8.69 (ii)	
Unit Hyd. Tpeak (min)=	5.00	9.00	
Unit Hyd. peak (cms)=	0.32	0.13	
			TOTALS
PEAK FLOW (cms)=	0.40	0.10	0.495 (iii)
TIME TO PEAK (hrs)=	6.00	6.07	6.00
RUNOFF VOLUME (mm)=	78.85	18.94	46.50
TOTAL RAINFALL (mm)=	79.86	79.86	79.86
RUNOFF COEFFICIENT =	0.99	0.24	0.58

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0016)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0001):		3.01	0.495	6.00	46.50
+ ID2= 2 (0025):		1.48	0.084	6.25	28.02
ID = 3 (0016):		4.49	0.545	6.00	40.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0003)		OUTFLOW	STORAGE		OUTFLOW	STORAGE
IN= 2---> OUT= 1		(cms)	(ha.m.)		(cms)	(ha.m.)
DT= 1.0 min		0.0000	0.0000		0.0410	0.0864
		0.0000	0.0281		0.0800	0.1533
		0.0010	0.0321		0.0900	0.1746
		0.0040	0.0479		0.1110	0.2118
		0.0070	0.0518		0.1180	0.2246

	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
INFLOW : ID= 2 (0016)	4.490	0.545	6.00	40.41
OUTFLOW: ID= 1 (0003)	4.490	0.059	7.07	32.75

PEAK FLOW REDUCTION [Qout/Qin](%)= 10.76
TIME SHIFT OF PEAK FLOW (min)= 64.00
MAXIMUM STORAGE USED (ha.m.)= 0.1167

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\c37e24c1
Ptotal= 79.86 mm	Comments: 25-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.00	3.25	3.19	6.25	14.37	9.25	2.80
0.50	2.00	3.50	3.19	6.50	14.37	9.50	2.80
0.75	2.00	3.75	3.19	6.75	6.39	9.75	2.80
1.00	2.00	4.00	3.19	7.00	6.39	10.00	2.80
1.25	2.00	4.25	4.79	7.25	4.79	10.25	1.60
1.50	2.00	4.50	4.79	7.50	4.79	10.50	1.60
1.75	2.00	4.75	6.39	7.75	4.79	10.75	1.60
2.00	2.00	5.00	6.39	8.00	4.79	11.00	1.60
2.25	2.40	5.25	9.58	8.25	2.80	11.25	1.60
2.50	2.40	5.50	9.58	8.50	2.80	11.50	1.60
2.75	2.40	5.75	38.33	8.75	2.80	11.75	1.60
3.00	2.40	6.00	105.42	9.00	2.80	12.00	1.60

CALIB			
NASHYD (0026)	Area (ha)=	0.27	Curve Number (CN)= 71.0
ID= 1 DT= 1.0 min	Ia (mm)=	3.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)=	0.02	

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.00	3.017	3.19	6.017	14.37	9.02	2.80
0.033	2.00	3.033	3.19	6.033	14.37	9.03	2.80
0.050	2.00	3.050	3.19	6.050	14.37	9.05	2.80
0.067	2.00	3.067	3.19	6.067	14.37	9.07	2.80
0.083	2.00	3.083	3.19	6.083	14.37	9.08	2.80
0.100	2.00	3.100	3.19	6.100	14.37	9.10	2.80
0.117	2.00	3.117	3.19	6.117	14.37	9.12	2.80
0.133	2.00	3.133	3.19	6.133	14.37	9.13	2.80
0.150	2.00	3.150	3.19	6.150	14.37	9.15	2.80
0.167	2.00	3.167	3.19	6.167	14.37	9.17	2.80
0.183	2.00	3.183	3.19	6.183	14.37	9.18	2.80
0.200	2.00	3.200	3.19	6.200	14.37	9.20	2.80
0.217	2.00	3.217	3.19	6.217	14.37	9.22	2.80
0.233	2.00	3.233	3.19	6.233	14.37	9.23	2.80
0.250	2.00	3.250	3.19	6.250	14.37	9.25	2.80
0.267	2.00	3.267	3.19	6.267	14.37	9.27	2.80
0.283	2.00	3.283	3.19	6.283	14.37	9.28	2.80
0.300	2.00	3.300	3.19	6.300	14.37	9.30	2.80
0.317	2.00	3.317	3.19	6.317	14.37	9.32	2.80
0.333	2.00	3.333	3.19	6.333	14.37	9.33	2.80
0.350	2.00	3.350	3.19	6.350	14.37	9.35	2.80
0.367	2.00	3.367	3.19	6.367	14.37	9.37	2.80

0.383	2.00	3.383	3.19	6.383	14.37	9.38	2.80
0.400	2.00	3.400	3.19	6.400	14.37	9.40	2.80
0.417	2.00	3.417	3.19	6.417	14.37	9.42	2.80
0.433	2.00	3.433	3.19	6.433	14.37	9.43	2.80
0.450	2.00	3.450	3.19	6.450	14.37	9.45	2.80
0.467	2.00	3.467	3.19	6.467	14.37	9.47	2.80
0.483	2.00	3.483	3.19	6.483	14.37	9.48	2.80
0.500	2.00	3.500	3.19	6.500	14.36	9.50	2.80
0.517	2.00	3.517	3.19	6.517	6.39	9.52	2.80
0.533	2.00	3.533	3.19	6.533	6.39	9.53	2.80
0.550	2.00	3.550	3.19	6.550	6.39	9.55	2.80
0.567	2.00	3.567	3.19	6.567	6.39	9.57	2.80
0.583	2.00	3.583	3.19	6.583	6.39	9.58	2.80
0.600	2.00	3.600	3.19	6.600	6.39	9.60	2.80
0.617	2.00	3.617	3.19	6.617	6.39	9.62	2.80
0.633	2.00	3.633	3.19	6.633	6.39	9.63	2.80
0.650	2.00	3.650	3.19	6.650	6.39	9.65	2.80
0.667	2.00	3.667	3.19	6.667	6.39	9.67	2.80
0.683	2.00	3.683	3.19	6.683	6.39	9.68	2.80
0.700	2.00	3.700	3.19	6.700	6.39	9.70	2.80
0.717	2.00	3.717	3.19	6.717	6.39	9.72	2.80
0.733	2.00	3.733	3.19	6.733	6.39	9.73	2.80
0.750	2.00	3.750	3.19	6.750	6.39	9.75	2.80
0.767	2.00	3.767	3.19	6.767	6.39	9.77	2.80
0.783	2.00	3.783	3.19	6.783	6.39	9.78	2.80
0.800	2.00	3.800	3.19	6.800	6.39	9.80	2.80
0.817	2.00	3.817	3.19	6.817	6.39	9.82	2.80
0.833	2.00	3.833	3.19	6.833	6.39	9.83	2.80
0.850	2.00	3.850	3.19	6.850	6.39	9.85	2.80
0.867	2.00	3.867	3.19	6.867	6.39	9.87	2.80
0.883	2.00	3.883	3.19	6.883	6.39	9.88	2.80
0.900	2.00	3.900	3.19	6.900	6.39	9.90	2.80
0.917	2.00	3.917	3.19	6.917	6.39	9.92	2.80
0.933	2.00	3.933	3.19	6.933	6.39	9.93	2.80
0.950	2.00	3.950	3.19	6.950	6.39	9.95	2.80
0.967	2.00	3.967	3.19	6.967	6.39	9.97	2.80
0.983	2.00	3.983	3.19	6.983	6.39	9.98	2.80
1.000	2.00	4.000	3.19	7.000	6.39	10.00	2.79
1.017	2.00	4.017	4.79	7.017	4.79	10.02	1.60
1.033	2.00	4.033	4.79	7.033	4.79	10.03	1.60
1.050	2.00	4.050	4.79	7.050	4.79	10.05	1.60
1.067	2.00	4.067	4.79	7.067	4.79	10.07	1.60
1.083	2.00	4.083	4.79	7.083	4.79	10.08	1.60
1.100	2.00	4.100	4.79	7.100	4.79	10.10	1.60
1.117	2.00	4.117	4.79	7.117	4.79	10.12	1.60
1.133	2.00	4.133	4.79	7.133	4.79	10.13	1.60
1.150	2.00	4.150	4.79	7.150	4.79	10.15	1.60
1.167	2.00	4.167	4.79	7.167	4.79	10.17	1.60
1.183	2.00	4.183	4.79	7.183	4.79	10.18	1.60
1.200	2.00	4.200	4.79	7.200	4.79	10.20	1.60
1.217	2.00	4.217	4.79	7.217	4.79	10.22	1.60
1.233	2.00	4.233	4.79	7.233	4.79	10.23	1.60
1.250	2.00	4.250	4.79	7.250	4.79	10.25	1.60
1.267	2.00	4.267	4.79	7.267	4.79	10.27	1.60
1.283	2.00	4.283	4.79	7.283	4.79	10.28	1.60
1.300	2.00	4.300	4.79	7.300	4.79	10.30	1.60
1.317	2.00	4.317	4.79	7.317	4.79	10.32	1.60
1.333	2.00	4.333	4.79	7.333	4.79	10.33	1.60
1.350	2.00	4.350	4.79	7.350	4.79	10.35	1.60
1.367	2.00	4.367	4.79	7.367	4.79	10.37	1.60
1.383	2.00	4.383	4.79	7.383	4.79	10.38	1.60
1.400	2.00	4.400	4.79	7.400	4.79	10.40	1.60
1.417	2.00	4.417	4.79	7.417	4.79	10.42	1.60
1.433	2.00	4.433	4.79	7.433	4.79	10.43	1.60
1.450	2.00	4.450	4.79	7.450	4.79	10.45	1.60
1.467	2.00	4.467	4.79	7.467	4.79	10.47	1.60
1.483	2.00	4.483	4.79	7.483	4.79	10.48	1.60
1.500	2.00	4.500	4.79	7.500	4.79	10.50	1.60
1.517	2.00	4.517	6.39	7.517	4.79	10.52	1.60
1.533	2.00	4.533	6.39	7.533	4.79	10.53	1.60
1.550	2.00	4.550	6.39	7.550	4.79	10.55	1.60
1.567	2.00	4.567	6.39	7.567	4.79	10.57	1.60
1.583	2.00	4.583	6.39	7.583	4.79	10.58	1.60
1.600	2.00	4.600	6.39	7.600	4.79	10.60	1.60
1.617	2.00	4.617	6.39	7.617	4.79	10.62	1.60
1.633	2.00	4.633	6.39	7.633	4.79	10.63	1.60
1.650	2.00	4.650	6.39	7.650	4.79	10.65	1.60
1.667	2.00	4.667	6.39	7.667	4.79	10.67	1.60
1.683	2.00	4.683	6.39	7.683	4.79	10.68	1.60
1.700	2.00	4.700	6.39	7.700	4.79	10.70	1.60
1.717	2.00	4.717	6.39	7.717	4.79	10.72	1.60
1.733	2.00	4.733	6.39	7.733	4.79	10.73	1.60
1.750	2.00	4.750	6.39	7.750	4.79	10.75	1.60
1.767	2.00	4.767	6.39	7.767	4.79	10.77	1.60
1.783	2.00	4.783	6.39	7.783	4.79	10.78	1.60
1.800	2.00	4.800	6.39	7.800	4.79	10.80	1.60
1.817	2.00	4.817	6.39	7.817	4.79	10.82	1.60
1.833	2.00	4.833	6.39	7.833	4.79	10.83	1.60
1.850	2.00	4.850	6.39	7.850	4.79	10.85	1.60
1.867	2.00	4.867	6.39	7.867	4.79	10.87	1.60
1.883	2.00	4.883	6.39	7.883	4.79	10.88	1.60

1.900	2.00	4.900	6.39	7.900	4.79	10.90	1.60
1.917	2.00	4.917	6.39	7.917	4.79	10.92	1.60
1.933	2.00	4.933	6.39	7.933	4.79	10.93	1.60
1.950	2.00	4.950	6.39	7.950	4.79	10.95	1.60
1.967	2.00	4.967	6.39	7.967	4.79	10.97	1.60
1.983	2.00	4.983	6.39	7.983	4.79	10.98	1.60
2.000	2.00	5.000	6.39	8.000	4.79	11.00	1.60
2.017	2.40	5.017	9.58	8.017	2.80	11.02	1.60
2.033	2.40	5.033	9.58	8.033	2.80	11.03	1.60
2.050	2.40	5.050	9.58	8.050	2.80	11.05	1.60
2.067	2.40	5.067	9.58	8.067	2.80	11.07	1.60
2.083	2.40	5.083	9.58	8.083	2.80	11.08	1.60
2.100	2.40	5.100	9.58	8.100	2.80	11.10	1.60
2.117	2.40	5.117	9.58	8.117	2.80	11.12	1.60
2.133	2.40	5.133	9.58	8.133	2.80	11.13	1.60
2.150	2.40	5.150	9.58	8.150	2.80	11.15	1.60
2.167	2.40	5.167	9.58	8.167	2.80	11.17	1.60
2.183	2.40	5.183	9.58	8.183	2.80	11.18	1.60
2.200	2.40	5.200	9.58	8.200	2.80	11.20	1.60
2.217	2.40	5.217	9.58	8.217	2.80	11.22	1.60
2.233	2.40	5.233	9.58	8.233	2.80	11.23	1.60
2.250	2.40	5.250	9.58	8.250	2.80	11.25	1.60
2.267	2.40	5.267	9.58	8.267	2.80	11.27	1.60
2.283	2.40	5.283	9.58	8.283	2.80	11.28	1.60
2.300	2.40	5.300	9.58	8.300	2.80	11.30	1.60
2.317	2.40	5.317	9.58	8.317	2.80	11.32	1.60
2.333	2.40	5.333	9.58	8.333	2.80	11.33	1.60
2.350	2.40	5.350	9.58	8.350	2.80	11.35	1.60
2.367	2.40	5.367	9.58	8.367	2.80	11.37	1.60
2.383	2.40	5.383	9.58	8.383	2.80	11.38	1.60
2.400	2.40	5.400	9.58	8.400	2.80	11.40	1.60
2.417	2.40	5.417	9.58	8.417	2.80	11.42	1.60
2.433	2.40	5.433	9.58	8.433	2.80	11.43	1.60
2.450	2.40	5.450	9.58	8.450	2.80	11.45	1.60
2.467	2.40	5.467	9.58	8.467	2.80	11.47	1.60
2.483	2.40	5.483	9.58	8.483	2.80	11.48	1.60
2.500	2.40	5.500	9.61	8.500	2.80	11.50	1.60
2.517	2.40	5.517	38.33	8.517	2.80	11.52	1.60
2.533	2.40	5.533	38.33	8.533	2.80	11.53	1.60
2.550	2.40	5.550	38.33	8.550	2.80	11.55	1.60
2.567	2.40	5.567	38.33	8.567	2.80	11.57	1.60
2.583	2.40	5.583	38.33	8.583	2.80	11.58	1.60
2.600	2.40	5.600	38.33	8.600	2.80	11.60	1.60
2.617	2.40	5.617	38.33	8.617	2.80	11.62	1.60
2.633	2.40	5.633	38.33	8.633	2.80	11.63	1.60
2.650	2.40	5.650	38.33	8.650	2.80	11.65	1.60
2.667	2.40	5.667	38.33	8.667	2.80	11.67	1.60
2.683	2.40	5.683	38.33	8.683	2.80	11.68	1.60
2.700	2.40	5.700	38.33	8.700	2.80	11.70	1.60
2.717	2.40	5.717	38.33	8.717	2.80	11.72	1.60
2.733	2.40	5.733	38.33	8.733	2.80	11.73	1.60
2.750	2.40	5.750	38.41	8.750	2.80	11.75	1.60
2.767	2.40	5.767	105.42	8.767	2.80	11.77	1.60
2.783	2.40	5.783	105.42	8.783	2.80	11.78	1.60
2.800	2.40	5.800	105.42	8.800	2.80	11.80	1.60
2.817	2.40	5.817	105.42	8.817	2.80	11.82	1.60
2.833	2.40	5.833	105.42	8.833	2.80	11.83	1.60
2.850	2.40	5.850	105.42	8.850	2.80	11.85	1.60
2.867	2.40	5.867	105.42	8.867	2.80	11.87	1.60
2.883	2.40	5.883	105.42	8.883	2.80	11.88	1.60
2.900	2.40	5.900	105.42	8.900	2.80	11.90	1.60
2.917	2.40	5.917	105.42	8.917	2.80	11.92	1.60
2.933	2.40	5.933	105.42	8.933	2.80	11.93	1.60
2.950	2.40	5.950	105.42	8.950	2.80	11.95	1.60
2.967	2.40	5.967	105.42	8.967	2.80	11.97	1.60
2.983	2.40	5.983	105.42	8.983	2.80	11.98	1.60
3.000	2.40	6.000	105.29	9.000	2.80	12.00	1.60

Unit Hyd Qpeak (cms)= 0.516

PEAK FLOW (cms)= 0.042 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 31.859
TOTAL RAINFALL (mm)= 79.859
RUNOFF COEFFICIENT = 0.399

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

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\c37e24c1
Ptotal= 79.86 mm	Comments: 25-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.00	3.25	3.19	6.25	14.37	9.25	2.80
0.50	2.00	3.50	3.19	6.50	14.37	9.50	2.80
0.75	2.00	3.75	3.19	6.75	6.39	9.75	2.80

1.00	2.00	4.00	3.19	7.00	6.39	10.00	2.80
1.25	2.00	4.25	4.79	7.25	4.79	10.25	1.60
1.50	2.00	4.50	4.79	7.50	4.79	10.50	1.60
1.75	2.00	4.75	6.39	7.75	4.79	10.75	1.60
2.00	2.00	5.00	6.39	8.00	4.79	11.00	1.60
2.25	2.40	5.25	9.58	8.25	2.80	11.25	1.60
2.50	2.40	5.50	9.58	8.50	2.80	11.50	1.60
2.75	2.40	5.75	38.33	8.75	2.80	11.75	1.60
3.00	2.40	6.00	105.42	9.00	2.80	12.00	1.60

CALIB STANDHYD (0007)	Area (ha)= 1.80
ID= 1 DT= 1.0 min	Total Imp(%)= 59.00 Dir. Conn.(%)= 48.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.06	0.74
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	109.54	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.00	3.017	3.19	6.017	14.37	9.02	2.80
0.033	2.00	3.033	3.19	6.033	14.37	9.03	2.80
0.050	2.00	3.050	3.19	6.050	14.37	9.05	2.80
0.067	2.00	3.067	3.19	6.067	14.37	9.07	2.80
0.083	2.00	3.083	3.19	6.083	14.37	9.08	2.80
0.100	2.00	3.100	3.19	6.100	14.37	9.10	2.80
0.117	2.00	3.117	3.19	6.117	14.37	9.12	2.80
0.133	2.00	3.133	3.19	6.133	14.37	9.13	2.80
0.150	2.00	3.150	3.19	6.150	14.37	9.15	2.80
0.167	2.00	3.167	3.19	6.167	14.37	9.17	2.80
0.183	2.00	3.183	3.19	6.183	14.37	9.18	2.80
0.200	2.00	3.200	3.19	6.200	14.37	9.20	2.80
0.217	2.00	3.217	3.19	6.217	14.37	9.22	2.80
0.233	2.00	3.233	3.19	6.233	14.37	9.23	2.80
0.250	2.00	3.250	3.19	6.250	14.37	9.25	2.80
0.267	2.00	3.267	3.19	6.267	14.37	9.27	2.80
0.283	2.00	3.283	3.19	6.283	14.37	9.28	2.80
0.300	2.00	3.300	3.19	6.300	14.37	9.30	2.80
0.317	2.00	3.317	3.19	6.317	14.37	9.32	2.80
0.333	2.00	3.333	3.19	6.333	14.37	9.33	2.80
0.350	2.00	3.350	3.19	6.350	14.37	9.35	2.80
0.367	2.00	3.367	3.19	6.367	14.37	9.37	2.80
0.383	2.00	3.383	3.19	6.383	14.37	9.38	2.80
0.400	2.00	3.400	3.19	6.400	14.37	9.40	2.80
0.417	2.00	3.417	3.19	6.417	14.37	9.42	2.80
0.433	2.00	3.433	3.19	6.433	14.37	9.43	2.80
0.450	2.00	3.450	3.19	6.450	14.37	9.45	2.80
0.467	2.00	3.467	3.19	6.467	14.37	9.47	2.80
0.483	2.00	3.483	3.19	6.483	14.37	9.48	2.80
0.500	2.00	3.500	3.19	6.500	14.36	9.50	2.80
0.517	2.00	3.517	3.19	6.517	6.39	9.52	2.80
0.533	2.00	3.533	3.19	6.533	6.39	9.53	2.80
0.550	2.00	3.550	3.19	6.550	6.39	9.55	2.80
0.567	2.00	3.567	3.19	6.567	6.39	9.57	2.80
0.583	2.00	3.583	3.19	6.583	6.39	9.58	2.80
0.600	2.00	3.600	3.19	6.600	6.39	9.60	2.80
0.617	2.00	3.617	3.19	6.617	6.39	9.62	2.80
0.633	2.00	3.633	3.19	6.633	6.39	9.63	2.80
0.650	2.00	3.650	3.19	6.650	6.39	9.65	2.80
0.667	2.00	3.667	3.19	6.667	6.39	9.67	2.80
0.683	2.00	3.683	3.19	6.683	6.39	9.68	2.80
0.700	2.00	3.700	3.19	6.700	6.39	9.70	2.80
0.717	2.00	3.717	3.19	6.717	6.39	9.72	2.80
0.733	2.00	3.733	3.19	6.733	6.39	9.73	2.80
0.750	2.00	3.750	3.19	6.750	6.39	9.75	2.80
0.767	2.00	3.767	3.19	6.767	6.39	9.77	2.80
0.783	2.00	3.783	3.19	6.783	6.39	9.78	2.80
0.800	2.00	3.800	3.19	6.800	6.39	9.80	2.80
0.817	2.00	3.817	3.19	6.817	6.39	9.82	2.80
0.833	2.00	3.833	3.19	6.833	6.39	9.83	2.80
0.850	2.00	3.850	3.19	6.850	6.39	9.85	2.80
0.867	2.00	3.867	3.19	6.867	6.39	9.87	2.80
0.883	2.00	3.883	3.19	6.883	6.39	9.88	2.80
0.900	2.00	3.900	3.19	6.900	6.39	9.90	2.80
0.917	2.00	3.917	3.19	6.917	6.39	9.92	2.80
0.933	2.00	3.933	3.19	6.933	6.39	9.93	2.80
0.950	2.00	3.950	3.19	6.950	6.39	9.95	2.80
0.967	2.00	3.967	3.19	6.967	6.39	9.97	2.80
0.983	2.00	3.983	3.19	6.983	6.39	9.98	2.80
1.000	2.00	4.000	3.19	7.000	6.39	10.00	2.79
1.017	2.00	4.017	4.79	7.017	4.79	10.02	1.60

1.033	2.00	4.033	4.79	7.033	4.79	10.03	1.60
1.050	2.00	4.050	4.79	7.050	4.79	10.05	1.60
1.067	2.00	4.067	4.79	7.067	4.79	10.07	1.60
1.083	2.00	4.083	4.79	7.083	4.79	10.08	1.60
1.100	2.00	4.100	4.79	7.100	4.79	10.10	1.60
1.117	2.00	4.117	4.79	7.117	4.79	10.12	1.60
1.133	2.00	4.133	4.79	7.133	4.79	10.13	1.60
1.150	2.00	4.150	4.79	7.150	4.79	10.15	1.60
1.167	2.00	4.167	4.79	7.167	4.79	10.17	1.60
1.183	2.00	4.183	4.79	7.183	4.79	10.18	1.60
1.200	2.00	4.200	4.79	7.200	4.79	10.20	1.60
1.217	2.00	4.217	4.79	7.217	4.79	10.22	1.60
1.233	2.00	4.233	4.79	7.233	4.79	10.23	1.60
1.250	2.00	4.250	4.79	7.250	4.79	10.25	1.60
1.267	2.00	4.267	4.79	7.267	4.79	10.27	1.60
1.283	2.00	4.283	4.79	7.283	4.79	10.28	1.60
1.300	2.00	4.300	4.79	7.300	4.79	10.30	1.60
1.317	2.00	4.317	4.79	7.317	4.79	10.32	1.60
1.333	2.00	4.333	4.79	7.333	4.79	10.33	1.60
1.350	2.00	4.350	4.79	7.350	4.79	10.35	1.60
1.367	2.00	4.367	4.79	7.367	4.79	10.37	1.60
1.383	2.00	4.383	4.79	7.383	4.79	10.38	1.60
1.400	2.00	4.400	4.79	7.400	4.79	10.40	1.60
1.417	2.00	4.417	4.79	7.417	4.79	10.42	1.60
1.433	2.00	4.433	4.79	7.433	4.79	10.43	1.60
1.450	2.00	4.450	4.79	7.450	4.79	10.45	1.60
1.467	2.00	4.467	4.79	7.467	4.79	10.47	1.60
1.483	2.00	4.483	4.79	7.483	4.79	10.48	1.60
1.500	2.00	4.500	4.79	7.500	4.79	10.50	1.60
1.517	2.00	4.517	6.39	7.517	4.79	10.52	1.60
1.533	2.00	4.533	6.39	7.533	4.79	10.53	1.60
1.550	2.00	4.550	6.39	7.550	4.79	10.55	1.60
1.567	2.00	4.567	6.39	7.567	4.79	10.57	1.60
1.583	2.00	4.583	6.39	7.583	4.79	10.58	1.60
1.600	2.00	4.600	6.39	7.600	4.79	10.60	1.60
1.617	2.00	4.617	6.39	7.617	4.79	10.62	1.60
1.633	2.00	4.633	6.39	7.633	4.79	10.63	1.60
1.650	2.00	4.650	6.39	7.650	4.79	10.65	1.60
1.667	2.00	4.667	6.39	7.667	4.79	10.67	1.60
1.683	2.00	4.683	6.39	7.683	4.79	10.68	1.60
1.700	2.00	4.700	6.39	7.700	4.79	10.70	1.60
1.717	2.00	4.717	6.39	7.717	4.79	10.72	1.60
1.733	2.00	4.733	6.39	7.733	4.79	10.73	1.60
1.750	2.00	4.750	6.39	7.750	4.79	10.75	1.60
1.767	2.00	4.767	6.39	7.767	4.79	10.77	1.60
1.783	2.00	4.783	6.39	7.783	4.79	10.78	1.60
1.800	2.00	4.800	6.39	7.800	4.79	10.80	1.60
1.817	2.00	4.817	6.39	7.817	4.79	10.82	1.60
1.833	2.00	4.833	6.39	7.833	4.79	10.83	1.60
1.850	2.00	4.850	6.39	7.850	4.79	10.85	1.60
1.867	2.00	4.867	6.39	7.867	4.79	10.87	1.60
1.883	2.00	4.883	6.39	7.883	4.79	10.88	1.60
1.900	2.00	4.900	6.39	7.900	4.79	10.90	1.60
1.917	2.00	4.917	6.39	7.917	4.79	10.92	1.60
1.933	2.00	4.933	6.39	7.933	4.79	10.93	1.60
1.950	2.00	4.950	6.39	7.950	4.79	10.95	1.60
1.967	2.00	4.967	6.39	7.967	4.79	10.97	1.60
1.983	2.00	4.983	6.39	7.983	4.79	10.98	1.60
2.000	2.00	5.000	6.39	8.000	4.79	11.00	1.60
2.017	2.40	5.017	9.58	8.017	2.80	11.02	1.60
2.033	2.40	5.033	9.58	8.033	2.80	11.03	1.60
2.050	2.40	5.050	9.58	8.050	2.80	11.05	1.60
2.067	2.40	5.067	9.58	8.067	2.80	11.07	1.60
2.083	2.40	5.083	9.58	8.083	2.80	11.08	1.60
2.100	2.40	5.100	9.58	8.100	2.80	11.10	1.60
2.117	2.40	5.117	9.58	8.117	2.80	11.12	1.60
2.133	2.40	5.133	9.58	8.133	2.80	11.13	1.60
2.150	2.40	5.150	9.58	8.150	2.80	11.15	1.60
2.167	2.40	5.167	9.58	8.167	2.80	11.17	1.60
2.183	2.40	5.183	9.58	8.183	2.80	11.18	1.60
2.200	2.40	5.200	9.58	8.200	2.80	11.20	1.60
2.217	2.40	5.217	9.58	8.217	2.80	11.22	1.60
2.233	2.40	5.233	9.58	8.233	2.80	11.23	1.60
2.250	2.40	5.250	9.58	8.250	2.80	11.25	1.60
2.267	2.40	5.267	9.58	8.267	2.80	11.27	1.60
2.283	2.40	5.283	9.58	8.283	2.80	11.28	1.60
2.300	2.40	5.300	9.58	8.300	2.80	11.30	1.60
2.317	2.40	5.317	9.58	8.317	2.80	11.32	1.60
2.333	2.40	5.333	9.58	8.333	2.80	11.33	1.60
2.350	2.40	5.350	9.58	8.350	2.80	11.35	1.60
2.367	2.40	5.367	9.58	8.367	2.80	11.37	1.60
2.383	2.40	5.383	9.58	8.383	2.80	11.38	1.60
2.400	2.40	5.400	9.58	8.400	2.80	11.40	1.60
2.417	2.40	5.417	9.58	8.417	2.80	11.42	1.60
2.433	2.40	5.433	9.58	8.433	2.80	11.43	1.60
2.450	2.40	5.450	9.58	8.450	2.80	11.45	1.60
2.467	2.40	5.467	9.58	8.467	2.80	11.47	1.60
2.483	2.40	5.483	9.58	8.483	2.80	11.48	1.60
2.500	2.40	5.500	9.61	8.500	2.80	11.50	1.60
2.517	2.40	5.517	38.33	8.517	2.80	11.52	1.60
2.533	2.40	5.533	38.33	8.533	2.80	11.53	1.60

2.550	2.40	5.550	38.33	8.550	2.80	11.55	1.60
2.567	2.40	5.567	38.33	8.567	2.80	11.57	1.60
2.583	2.40	5.583	38.33	8.583	2.80	11.58	1.60
2.600	2.40	5.600	38.33	8.600	2.80	11.60	1.60
2.617	2.40	5.617	38.33	8.617	2.80	11.62	1.60
2.633	2.40	5.633	38.33	8.633	2.80	11.63	1.60
2.650	2.40	5.650	38.33	8.650	2.80	11.65	1.60
2.667	2.40	5.667	38.33	8.667	2.80	11.67	1.60
2.683	2.40	5.683	38.33	8.683	2.80	11.68	1.60
2.700	2.40	5.700	38.33	8.700	2.80	11.70	1.60
2.717	2.40	5.717	38.33	8.717	2.80	11.72	1.60
2.733	2.40	5.733	38.33	8.733	2.80	11.73	1.60
2.750	2.40	5.750	38.41	8.750	2.80	11.75	1.60
2.767	2.40	5.767	105.42	8.767	2.80	11.77	1.60
2.783	2.40	5.783	105.42	8.783	2.80	11.78	1.60
2.800	2.40	5.800	105.42	8.800	2.80	11.80	1.60
2.817	2.40	5.817	105.42	8.817	2.80	11.82	1.60
2.833	2.40	5.833	105.42	8.833	2.80	11.83	1.60
2.850	2.40	5.850	105.42	8.850	2.80	11.85	1.60
2.867	2.40	5.867	105.42	8.867	2.80	11.87	1.60
2.883	2.40	5.883	105.42	8.883	2.80	11.88	1.60
2.900	2.40	5.900	105.42	8.900	2.80	11.90	1.60
2.917	2.40	5.917	105.42	8.917	2.80	11.92	1.60
2.933	2.40	5.933	105.42	8.933	2.80	11.93	1.60
2.950	2.40	5.950	105.42	8.950	2.80	11.95	1.60
2.967	2.40	5.967	105.42	8.967	2.80	11.97	1.60
2.983	2.40	5.983	105.42	8.983	2.80	11.98	1.60
3.000	2.40	6.000	105.29	9.000	2.80	12.00	1.60

Max.Eff.Inten.(mm/hr)=	105.42	39.37	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.64 (ii)	9.13 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.33	0.12	
			TOTALS
PEAK FLOW (cms)=	0.25	0.06	0.302 (iii)
TIME TO PEAK (hrs)=	6.00	6.07	6.00
RUNOFF VOLUME (mm)=	78.85	19.10	47.78
TOTAL RAINFALL (mm)=	79.86	79.86	79.86
RUNOFF COEFFICIENT =	0.99	0.24	0.60

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0018) 1 + 2 = 3	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
ID1= 1 (0026):	0.27	0.042	6.00	31.86
+ ID2= 2 (0007):	1.80	0.302	6.00	47.78
ID = 3 (0018):	2.07	0.344	6.00	45.70

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0009) IN= 2---> OUT= 1 DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0330	0.0298
	0.0020	0.0000	0.0480	0.0300
	0.0190	0.0288	0.5150	0.0368
	0.0250	0.0292	0.5380	0.0368

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0018)	2.070	0.344	6.00	45.70
OUTFLOW: ID= 1 (0009)	2.070	0.308	6.03	45.70

PEAK FLOW REDUCTION [Qout/Qin](%)= 89.50
TIME SHIFT OF PEAK FLOW (min)= 2.00
MAXIMUM STORAGE USED (ha.m.)= 0.0338

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\c37e24c1
Ptotal= 79.86 mm	Comments: 25-Year 12-Hour SCS II Design Storm

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

0.25	2.00	3.25	3.19	6.25	14.37	9.25	2.80
0.50	2.00	3.50	3.19	6.50	14.37	9.50	2.80
0.75	2.00	3.75	3.19	6.75	6.39	9.75	2.80
1.00	2.00	4.00	3.19	7.00	6.39	10.00	2.80
1.25	2.00	4.25	4.79	7.25	4.79	10.25	1.60
1.50	2.00	4.50	4.79	7.50	4.79	10.50	1.60
1.75	2.00	4.75	6.39	7.75	4.79	10.75	1.60
2.00	2.00	5.00	6.39	8.00	4.79	11.00	1.60
2.25	2.40	5.25	9.58	8.25	2.80	11.25	1.60
2.50	2.40	5.50	9.58	8.50	2.80	11.50	1.60
2.75	2.40	5.75	38.33	8.75	2.80	11.75	1.60
3.00	2.40	6.00	105.42	9.00	2.80	12.00	1.60

CALIB
STANDHYD (0006)
ID= 1 DT= 1.0 min

Area (ha)= 0.80
Total Imp(%)= 87.00 Dir. Conn.(%)= 82.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.70	0.10
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	73.03	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.00	3.017	3.19	6.017	14.37	9.02	2.80
0.033	2.00	3.033	3.19	6.033	14.37	9.03	2.80
0.050	2.00	3.050	3.19	6.050	14.37	9.05	2.80
0.067	2.00	3.067	3.19	6.067	14.37	9.07	2.80
0.083	2.00	3.083	3.19	6.083	14.37	9.08	2.80
0.100	2.00	3.100	3.19	6.100	14.37	9.10	2.80
0.117	2.00	3.117	3.19	6.117	14.37	9.12	2.80
0.133	2.00	3.133	3.19	6.133	14.37	9.13	2.80
0.150	2.00	3.150	3.19	6.150	14.37	9.15	2.80
0.167	2.00	3.167	3.19	6.167	14.37	9.17	2.80
0.183	2.00	3.183	3.19	6.183	14.37	9.18	2.80
0.200	2.00	3.200	3.19	6.200	14.37	9.20	2.80
0.217	2.00	3.217	3.19	6.217	14.37	9.22	2.80
0.233	2.00	3.233	3.19	6.233	14.37	9.23	2.80
0.250	2.00	3.250	3.19	6.250	14.37	9.25	2.80
0.267	2.00	3.267	3.19	6.267	14.37	9.27	2.80
0.283	2.00	3.283	3.19	6.283	14.37	9.28	2.80
0.300	2.00	3.300	3.19	6.300	14.37	9.30	2.80
0.317	2.00	3.317	3.19	6.317	14.37	9.32	2.80
0.333	2.00	3.333	3.19	6.333	14.37	9.33	2.80
0.350	2.00	3.350	3.19	6.350	14.37	9.35	2.80
0.367	2.00	3.367	3.19	6.367	14.37	9.37	2.80
0.383	2.00	3.383	3.19	6.383	14.37	9.38	2.80
0.400	2.00	3.400	3.19	6.400	14.37	9.40	2.80
0.417	2.00	3.417	3.19	6.417	14.37	9.42	2.80
0.433	2.00	3.433	3.19	6.433	14.37	9.43	2.80
0.450	2.00	3.450	3.19	6.450	14.37	9.45	2.80
0.467	2.00	3.467	3.19	6.467	14.37	9.47	2.80
0.483	2.00	3.483	3.19	6.483	14.37	9.48	2.80
0.500	2.00	3.500	3.19	6.500	14.36	9.50	2.80
0.517	2.00	3.517	3.19	6.517	6.39	9.52	2.80
0.533	2.00	3.533	3.19	6.533	6.39	9.53	2.80
0.550	2.00	3.550	3.19	6.550	6.39	9.55	2.80
0.567	2.00	3.567	3.19	6.567	6.39	9.57	2.80
0.583	2.00	3.583	3.19	6.583	6.39	9.58	2.80
0.600	2.00	3.600	3.19	6.600	6.39	9.60	2.80
0.617	2.00	3.617	3.19	6.617	6.39	9.62	2.80
0.633	2.00	3.633	3.19	6.633	6.39	9.63	2.80
0.650	2.00	3.650	3.19	6.650	6.39	9.65	2.80
0.667	2.00	3.667	3.19	6.667	6.39	9.67	2.80
0.683	2.00	3.683	3.19	6.683	6.39	9.68	2.80
0.700	2.00	3.700	3.19	6.700	6.39	9.70	2.80
0.717	2.00	3.717	3.19	6.717	6.39	9.72	2.80
0.733	2.00	3.733	3.19	6.733	6.39	9.73	2.80
0.750	2.00	3.750	3.19	6.750	6.39	9.75	2.80
0.767	2.00	3.767	3.19	6.767	6.39	9.77	2.80
0.783	2.00	3.783	3.19	6.783	6.39	9.78	2.80
0.800	2.00	3.800	3.19	6.800	6.39	9.80	2.80
0.817	2.00	3.817	3.19	6.817	6.39	9.82	2.80
0.833	2.00	3.833	3.19	6.833	6.39	9.83	2.80
0.850	2.00	3.850	3.19	6.850	6.39	9.85	2.80
0.867	2.00	3.867	3.19	6.867	6.39	9.87	2.80
0.883	2.00	3.883	3.19	6.883	6.39	9.88	2.80
0.900	2.00	3.900	3.19	6.900	6.39	9.90	2.80
0.917	2.00	3.917	3.19	6.917	6.39	9.92	2.80
0.933	2.00	3.933	3.19	6.933	6.39	9.93	2.80
0.950	2.00	3.950	3.19	6.950	6.39	9.95	2.80
0.967	2.00	3.967	3.19	6.967	6.39	9.97	2.80

0.983	2.00	3.983	3.19	6.983	6.39	9.98	2.80
1.000	2.00	4.000	3.19	7.000	6.39	10.00	2.79
1.017	2.00	4.017	4.79	7.017	4.79	10.02	1.60
1.033	2.00	4.033	4.79	7.033	4.79	10.03	1.60
1.050	2.00	4.050	4.79	7.050	4.79	10.05	1.60
1.067	2.00	4.067	4.79	7.067	4.79	10.07	1.60
1.083	2.00	4.083	4.79	7.083	4.79	10.08	1.60
1.100	2.00	4.100	4.79	7.100	4.79	10.10	1.60
1.117	2.00	4.117	4.79	7.117	4.79	10.12	1.60
1.133	2.00	4.133	4.79	7.133	4.79	10.13	1.60
1.150	2.00	4.150	4.79	7.150	4.79	10.15	1.60
1.167	2.00	4.167	4.79	7.167	4.79	10.17	1.60
1.183	2.00	4.183	4.79	7.183	4.79	10.18	1.60
1.200	2.00	4.200	4.79	7.200	4.79	10.20	1.60
1.217	2.00	4.217	4.79	7.217	4.79	10.22	1.60
1.233	2.00	4.233	4.79	7.233	4.79	10.23	1.60
1.250	2.00	4.250	4.79	7.250	4.79	10.25	1.60
1.267	2.00	4.267	4.79	7.267	4.79	10.27	1.60
1.283	2.00	4.283	4.79	7.283	4.79	10.28	1.60
1.300	2.00	4.300	4.79	7.300	4.79	10.30	1.60
1.317	2.00	4.317	4.79	7.317	4.79	10.32	1.60
1.333	2.00	4.333	4.79	7.333	4.79	10.33	1.60
1.350	2.00	4.350	4.79	7.350	4.79	10.35	1.60
1.367	2.00	4.367	4.79	7.367	4.79	10.37	1.60
1.383	2.00	4.383	4.79	7.383	4.79	10.38	1.60
1.400	2.00	4.400	4.79	7.400	4.79	10.40	1.60
1.417	2.00	4.417	4.79	7.417	4.79	10.42	1.60
1.433	2.00	4.433	4.79	7.433	4.79	10.43	1.60
1.450	2.00	4.450	4.79	7.450	4.79	10.45	1.60
1.467	2.00	4.467	4.79	7.467	4.79	10.47	1.60
1.483	2.00	4.483	4.79	7.483	4.79	10.48	1.60
1.500	2.00	4.500	4.79	7.500	4.79	10.50	1.60
1.517	2.00	4.517	6.39	7.517	4.79	10.52	1.60
1.533	2.00	4.533	6.39	7.533	4.79	10.53	1.60
1.550	2.00	4.550	6.39	7.550	4.79	10.55	1.60
1.567	2.00	4.567	6.39	7.567	4.79	10.57	1.60
1.583	2.00	4.583	6.39	7.583	4.79	10.58	1.60
1.600	2.00	4.600	6.39	7.600	4.79	10.60	1.60
1.617	2.00	4.617	6.39	7.617	4.79	10.62	1.60
1.633	2.00	4.633	6.39	7.633	4.79	10.63	1.60
1.650	2.00	4.650	6.39	7.650	4.79	10.65	1.60
1.667	2.00	4.667	6.39	7.667	4.79	10.67	1.60
1.683	2.00	4.683	6.39	7.683	4.79	10.68	1.60
1.700	2.00	4.700	6.39	7.700	4.79	10.70	1.60
1.717	2.00	4.717	6.39	7.717	4.79	10.72	1.60
1.733	2.00	4.733	6.39	7.733	4.79	10.73	1.60
1.750	2.00	4.750	6.39	7.750	4.79	10.75	1.60
1.767	2.00	4.767	6.39	7.767	4.79	10.77	1.60
1.783	2.00	4.783	6.39	7.783	4.79	10.78	1.60
1.800	2.00	4.800	6.39	7.800	4.79	10.80	1.60
1.817	2.00	4.817	6.39	7.817	4.79	10.82	1.60
1.833	2.00	4.833	6.39	7.833	4.79	10.83	1.60
1.850	2.00	4.850	6.39	7.850	4.79	10.85	1.60
1.867	2.00	4.867	6.39	7.867	4.79	10.87	1.60
1.883	2.00	4.883	6.39	7.883	4.79	10.88	1.60
1.900	2.00	4.900	6.39	7.900	4.79	10.90	1.60
1.917	2.00	4.917	6.39	7.917	4.79	10.92	1.60
1.933	2.00	4.933	6.39	7.933	4.79	10.93	1.60
1.950	2.00	4.950	6.39	7.950	4.79	10.95	1.60
1.967	2.00	4.967	6.39	7.967	4.79	10.97	1.60
1.983	2.00	4.983	6.39	7.983	4.79	10.98	1.60
2.000	2.00	5.000	6.39	8.000	4.79	11.00	1.60
2.017	2.40	5.017	9.58	8.017	2.80	11.02	1.60
2.033	2.40	5.033	9.58	8.033	2.80	11.03	1.60
2.050	2.40	5.050	9.58	8.050	2.80	11.05	1.60
2.067	2.40	5.067	9.58	8.067	2.80	11.07	1.60
2.083	2.40	5.083	9.58	8.083	2.80	11.08	1.60
2.100	2.40	5.100	9.58	8.100	2.80	11.10	1.60
2.117	2.40	5.117	9.58	8.117	2.80	11.12	1.60
2.133	2.40	5.133	9.58	8.133	2.80	11.13	1.60
2.150	2.40	5.150	9.58	8.150	2.80	11.15	1.60
2.167	2.40	5.167	9.58	8.167	2.80	11.17	1.60
2.183	2.40	5.183	9.58	8.183	2.80	11.18	1.60
2.200	2.40	5.200	9.58	8.200	2.80	11.20	1.60
2.217	2.40	5.217	9.58	8.217	2.80	11.22	1.60
2.233	2.40	5.233	9.58	8.233	2.80	11.23	1.60
2.250	2.40	5.250	9.58	8.250	2.80	11.25	1.60
2.267	2.40	5.267	9.58	8.267	2.80	11.27	1.60
2.283	2.40	5.283	9.58	8.283	2.80	11.28	1.60
2.300	2.40	5.300	9.58	8.300	2.80	11.30	1.60
2.317	2.40	5.317	9.58	8.317	2.80	11.32	1.60
2.333	2.40	5.333	9.58	8.333	2.80	11.33	1.60
2.350	2.40	5.350	9.58	8.350	2.80	11.35	1.60
2.367	2.40	5.367	9.58	8.367	2.80	11.37	1.60
2.383	2.40	5.383	9.58	8.383	2.80	11.38	1.60
2.400	2.40	5.400	9.58	8.400	2.80	11.40	1.60
2.417	2.40	5.417	9.58	8.417	2.80	11.42	1.60
2.433	2.40	5.433	9.58	8.433	2.80	11.43	1.60
2.450	2.40	5.450	9.58	8.450	2.80	11.45	1.60
2.467	2.40	5.467	9.58	8.467	2.80	11.47	1.60
2.483	2.40	5.483	9.58	8.483	2.80	11.48	1.60

2.500	2.40	5.500	9.61	8.500	2.80	11.50	1.60
2.517	2.40	5.517	38.33	8.517	2.80	11.52	1.60
2.533	2.40	5.533	38.33	8.533	2.80	11.53	1.60
2.550	2.40	5.550	38.33	8.550	2.80	11.55	1.60
2.567	2.40	5.567	38.33	8.567	2.80	11.57	1.60
2.583	2.40	5.583	38.33	8.583	2.80	11.58	1.60
2.600	2.40	5.600	38.33	8.600	2.80	11.60	1.60
2.617	2.40	5.617	38.33	8.617	2.80	11.62	1.60
2.633	2.40	5.633	38.33	8.633	2.80	11.63	1.60
2.650	2.40	5.650	38.33	8.650	2.80	11.65	1.60
2.667	2.40	5.667	38.33	8.667	2.80	11.67	1.60
2.683	2.40	5.683	38.33	8.683	2.80	11.68	1.60
2.700	2.40	5.700	38.33	8.700	2.80	11.70	1.60
2.717	2.40	5.717	38.33	8.717	2.80	11.72	1.60
2.733	2.40	5.733	38.33	8.733	2.80	11.73	1.60
2.750	2.40	5.750	38.41	8.750	2.80	11.75	1.60
2.767	2.40	5.767	105.42	8.767	2.80	11.77	1.60
2.783	2.40	5.783	105.42	8.783	2.80	11.78	1.60
2.800	2.40	5.800	105.42	8.800	2.80	11.80	1.60
2.817	2.40	5.817	105.42	8.817	2.80	11.82	1.60
2.833	2.40	5.833	105.42	8.833	2.80	11.83	1.60
2.850	2.40	5.850	105.42	8.850	2.80	11.85	1.60
2.867	2.40	5.867	105.42	8.867	2.80	11.87	1.60
2.883	2.40	5.883	105.42	8.883	2.80	11.88	1.60
2.900	2.40	5.900	105.42	8.900	2.80	11.90	1.60
2.917	2.40	5.917	105.42	8.917	2.80	11.92	1.60
2.933	2.40	5.933	105.42	8.933	2.80	11.93	1.60
2.950	2.40	5.950	105.42	8.950	2.80	11.95	1.60
2.967	2.40	5.967	105.42	8.967	2.80	11.97	1.60
2.983	2.40	5.983	105.42	8.983	2.80	11.98	1.60
3.000	2.40	6.000	105.29	9.000	2.80	12.00	1.60

Max.Eff.Inten.(mm/hr)=		105.42	46.19	
over (min)		5.00	6.00	
Storage Coeff. (min)=		2.07 (ii)	5.38 (ii)	
Unit Hyd. Tpeak (min)=		5.00	6.00	
Unit Hyd. peak (cms)=		0.37	0.20	
				TOTALS
PEAK FLOW	(cms)=	0.19	0.01	0.203 (iii)
TIME TO PEAK	(hrs)=	6.00	6.02	6.00
RUNOFF VOLUME	(mm)=	78.86	20.53	68.36
TOTAL RAINFALL	(mm)=	79.86	79.86	79.86
RUNOFF COEFFICIENT	=	0.99	0.26	0.86

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0011)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0810	0.0180
	0.0010	0.0005	0.0910	0.0205
	0.0060	0.0056	0.1120	0.0249
	0.0100	0.0061	0.1190	0.0264
	0.0430	0.0101	0.0000	0.0000

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0006)		0.800	0.203	6.00	68.36
OUTFLOW: ID= 1 (0011)		0.800	0.093	6.08	68.20

PEAK FLOW REDUCTION [Qout/Qin](%)= 45.82
TIME SHIFT OF PEAK FLOW (min)= 5.00
MAXIMUM STORAGE USED (ha.m.)= 0.0210

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\c37e24c1
Ptotal= 79.86 mm	Comments: 25-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.00	3.25	3.19	6.25	14.37	9.25	2.80
0.50	2.00	3.50	3.19	6.50	14.37	9.50	2.80
0.75	2.00	3.75	3.19	6.75	6.39	9.75	2.80
1.00	2.00	4.00	3.19	7.00	6.39	10.00	2.80
1.25	2.00	4.25	4.79	7.25	4.79	10.25	1.60
1.50	2.00	4.50	4.79	7.50	4.79	10.50	1.60
1.75	2.00	4.75	6.39	7.75	4.79	10.75	1.60
2.00	2.00	5.00	6.39	8.00	4.79	11.00	1.60
2.25	2.40	5.25	9.58	8.25	2.80	11.25	1.60

2.50	2.40	5.50	9.58	8.50	2.80	11.50	1.60
2.75	2.40	5.75	38.33	8.75	2.80	11.75	1.60
3.00	2.40	6.00	105.42	9.00	2.80	12.00	1.60

CALIB		
STANDHYD (0008)	Area (ha)=	2.53
ID= 1 DT= 1.0 min	Total Imp(%)=	52.00 Dir. Conn.(%)= 44.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.32	1.21
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	129.87	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.00	3.017	3.19	6.017	14.37	9.02	2.80
0.033	2.00	3.033	3.19	6.033	14.37	9.03	2.80
0.050	2.00	3.050	3.19	6.050	14.37	9.05	2.80
0.067	2.00	3.067	3.19	6.067	14.37	9.07	2.80
0.083	2.00	3.083	3.19	6.083	14.37	9.08	2.80
0.100	2.00	3.100	3.19	6.100	14.37	9.10	2.80
0.117	2.00	3.117	3.19	6.117	14.37	9.12	2.80
0.133	2.00	3.133	3.19	6.133	14.37	9.13	2.80
0.150	2.00	3.150	3.19	6.150	14.37	9.15	2.80
0.167	2.00	3.167	3.19	6.167	14.37	9.17	2.80
0.183	2.00	3.183	3.19	6.183	14.37	9.18	2.80
0.200	2.00	3.200	3.19	6.200	14.37	9.20	2.80
0.217	2.00	3.217	3.19	6.217	14.37	9.22	2.80
0.233	2.00	3.233	3.19	6.233	14.37	9.23	2.80
0.250	2.00	3.250	3.19	6.250	14.37	9.25	2.80
0.267	2.00	3.267	3.19	6.267	14.37	9.27	2.80
0.283	2.00	3.283	3.19	6.283	14.37	9.28	2.80
0.300	2.00	3.300	3.19	6.300	14.37	9.30	2.80
0.317	2.00	3.317	3.19	6.317	14.37	9.32	2.80
0.333	2.00	3.333	3.19	6.333	14.37	9.33	2.80
0.350	2.00	3.350	3.19	6.350	14.37	9.35	2.80
0.367	2.00	3.367	3.19	6.367	14.37	9.37	2.80
0.383	2.00	3.383	3.19	6.383	14.37	9.38	2.80
0.400	2.00	3.400	3.19	6.400	14.37	9.40	2.80
0.417	2.00	3.417	3.19	6.417	14.37	9.42	2.80
0.433	2.00	3.433	3.19	6.433	14.37	9.43	2.80
0.450	2.00	3.450	3.19	6.450	14.37	9.45	2.80
0.467	2.00	3.467	3.19	6.467	14.37	9.47	2.80
0.483	2.00	3.483	3.19	6.483	14.37	9.48	2.80
0.500	2.00	3.500	3.19	6.500	14.36	9.50	2.80
0.517	2.00	3.517	3.19	6.517	6.39	9.52	2.80
0.533	2.00	3.533	3.19	6.533	6.39	9.53	2.80
0.550	2.00	3.550	3.19	6.550	6.39	9.55	2.80
0.567	2.00	3.567	3.19	6.567	6.39	9.57	2.80
0.583	2.00	3.583	3.19	6.583	6.39	9.58	2.80
0.600	2.00	3.600	3.19	6.600	6.39	9.60	2.80
0.617	2.00	3.617	3.19	6.617	6.39	9.62	2.80
0.633	2.00	3.633	3.19	6.633	6.39	9.63	2.80
0.650	2.00	3.650	3.19	6.650	6.39	9.65	2.80
0.667	2.00	3.667	3.19	6.667	6.39	9.67	2.80
0.683	2.00	3.683	3.19	6.683	6.39	9.68	2.80
0.700	2.00	3.700	3.19	6.700	6.39	9.70	2.80
0.717	2.00	3.717	3.19	6.717	6.39	9.72	2.80
0.733	2.00	3.733	3.19	6.733	6.39	9.73	2.80
0.750	2.00	3.750	3.19	6.750	6.39	9.75	2.80
0.767	2.00	3.767	3.19	6.767	6.39	9.77	2.80
0.783	2.00	3.783	3.19	6.783	6.39	9.78	2.80
0.800	2.00	3.800	3.19	6.800	6.39	9.80	2.80
0.817	2.00	3.817	3.19	6.817	6.39	9.82	2.80
0.833	2.00	3.833	3.19	6.833	6.39	9.83	2.80
0.850	2.00	3.850	3.19	6.850	6.39	9.85	2.80
0.867	2.00	3.867	3.19	6.867	6.39	9.87	2.80
0.883	2.00	3.883	3.19	6.883	6.39	9.88	2.80
0.900	2.00	3.900	3.19	6.900	6.39	9.90	2.80
0.917	2.00	3.917	3.19	6.917	6.39	9.92	2.80
0.933	2.00	3.933	3.19	6.933	6.39	9.93	2.80
0.950	2.00	3.950	3.19	6.950	6.39	9.95	2.80
0.967	2.00	3.967	3.19	6.967	6.39	9.97	2.80
0.983	2.00	3.983	3.19	6.983	6.39	9.98	2.80
1.000	2.00	4.000	3.19	7.000	6.39	10.00	2.79
1.017	2.00	4.017	4.79	7.017	4.79	10.02	1.60
1.033	2.00	4.033	4.79	7.033	4.79	10.03	1.60
1.050	2.00	4.050	4.79	7.050	4.79	10.05	1.60
1.067	2.00	4.067	4.79	7.067	4.79	10.07	1.60
1.083	2.00	4.083	4.79	7.083	4.79	10.08	1.60
1.100	2.00	4.100	4.79	7.100	4.79	10.10	1.60
1.117	2.00	4.117	4.79	7.117	4.79	10.12	1.60

1.133	2.00	4.133	4.79	7.133	4.79	10.13	1.60
1.150	2.00	4.150	4.79	7.150	4.79	10.15	1.60
1.167	2.00	4.167	4.79	7.167	4.79	10.17	1.60
1.183	2.00	4.183	4.79	7.183	4.79	10.18	1.60
1.200	2.00	4.200	4.79	7.200	4.79	10.20	1.60
1.217	2.00	4.217	4.79	7.217	4.79	10.22	1.60
1.233	2.00	4.233	4.79	7.233	4.79	10.23	1.60
1.250	2.00	4.250	4.79	7.250	4.79	10.25	1.60
1.267	2.00	4.267	4.79	7.267	4.79	10.27	1.60
1.283	2.00	4.283	4.79	7.283	4.79	10.28	1.60
1.300	2.00	4.300	4.79	7.300	4.79	10.30	1.60
1.317	2.00	4.317	4.79	7.317	4.79	10.32	1.60
1.333	2.00	4.333	4.79	7.333	4.79	10.33	1.60
1.350	2.00	4.350	4.79	7.350	4.79	10.35	1.60
1.367	2.00	4.367	4.79	7.367	4.79	10.37	1.60
1.383	2.00	4.383	4.79	7.383	4.79	10.38	1.60
1.400	2.00	4.400	4.79	7.400	4.79	10.40	1.60
1.417	2.00	4.417	4.79	7.417	4.79	10.42	1.60
1.433	2.00	4.433	4.79	7.433	4.79	10.43	1.60
1.450	2.00	4.450	4.79	7.450	4.79	10.45	1.60
1.467	2.00	4.467	4.79	7.467	4.79	10.47	1.60
1.483	2.00	4.483	4.79	7.483	4.79	10.48	1.60
1.500	2.00	4.500	4.79	7.500	4.79	10.50	1.60
1.517	2.00	4.517	6.39	7.517	4.79	10.52	1.60
1.533	2.00	4.533	6.39	7.533	4.79	10.53	1.60
1.550	2.00	4.550	6.39	7.550	4.79	10.55	1.60
1.567	2.00	4.567	6.39	7.567	4.79	10.57	1.60
1.583	2.00	4.583	6.39	7.583	4.79	10.58	1.60
1.600	2.00	4.600	6.39	7.600	4.79	10.60	1.60
1.617	2.00	4.617	6.39	7.617	4.79	10.62	1.60
1.633	2.00	4.633	6.39	7.633	4.79	10.63	1.60
1.650	2.00	4.650	6.39	7.650	4.79	10.65	1.60
1.667	2.00	4.667	6.39	7.667	4.79	10.67	1.60
1.683	2.00	4.683	6.39	7.683	4.79	10.68	1.60
1.700	2.00	4.700	6.39	7.700	4.79	10.70	1.60
1.717	2.00	4.717	6.39	7.717	4.79	10.72	1.60
1.733	2.00	4.733	6.39	7.733	4.79	10.73	1.60
1.750	2.00	4.750	6.39	7.750	4.79	10.75	1.60
1.767	2.00	4.767	6.39	7.767	4.79	10.77	1.60
1.783	2.00	4.783	6.39	7.783	4.79	10.78	1.60
1.800	2.00	4.800	6.39	7.800	4.79	10.80	1.60
1.817	2.00	4.817	6.39	7.817	4.79	10.82	1.60
1.833	2.00	4.833	6.39	7.833	4.79	10.83	1.60
1.850	2.00	4.850	6.39	7.850	4.79	10.85	1.60
1.867	2.00	4.867	6.39	7.867	4.79	10.87	1.60
1.883	2.00	4.883	6.39	7.883	4.79	10.88	1.60
1.900	2.00	4.900	6.39	7.900	4.79	10.90	1.60
1.917	2.00	4.917	6.39	7.917	4.79	10.92	1.60
1.933	2.00	4.933	6.39	7.933	4.79	10.93	1.60
1.950	2.00	4.950	6.39	7.950	4.79	10.95	1.60
1.967	2.00	4.967	6.39	7.967	4.79	10.97	1.60
1.983	2.00	4.983	6.39	7.983	4.79	10.98	1.60
2.000	2.00	5.000	6.39	8.000	4.79	11.00	1.60
2.017	2.40	5.017	9.58	8.017	2.80	11.02	1.60
2.033	2.40	5.033	9.58	8.033	2.80	11.03	1.60
2.050	2.40	5.050	9.58	8.050	2.80	11.05	1.60
2.067	2.40	5.067	9.58	8.067	2.80	11.07	1.60
2.083	2.40	5.083	9.58	8.083	2.80	11.08	1.60
2.100	2.40	5.100	9.58	8.100	2.80	11.10	1.60
2.117	2.40	5.117	9.58	8.117	2.80	11.12	1.60
2.133	2.40	5.133	9.58	8.133	2.80	11.13	1.60
2.150	2.40	5.150	9.58	8.150	2.80	11.15	1.60
2.167	2.40	5.167	9.58	8.167	2.80	11.17	1.60
2.183	2.40	5.183	9.58	8.183	2.80	11.18	1.60
2.200	2.40	5.200	9.58	8.200	2.80	11.20	1.60
2.217	2.40	5.217	9.58	8.217	2.80	11.22	1.60
2.233	2.40	5.233	9.58	8.233	2.80	11.23	1.60
2.250	2.40	5.250	9.58	8.250	2.80	11.25	1.60
2.267	2.40	5.267	9.58	8.267	2.80	11.27	1.60
2.283	2.40	5.283	9.58	8.283	2.80	11.28	1.60
2.300	2.40	5.300	9.58	8.300	2.80	11.30	1.60
2.317	2.40	5.317	9.58	8.317	2.80	11.32	1.60
2.333	2.40	5.333	9.58	8.333	2.80	11.33	1.60
2.350	2.40	5.350	9.58	8.350	2.80	11.35	1.60
2.367	2.40	5.367	9.58	8.367	2.80	11.37	1.60
2.383	2.40	5.383	9.58	8.383	2.80	11.38	1.60
2.400	2.40	5.400	9.58	8.400	2.80	11.40	1.60
2.417	2.40	5.417	9.58	8.417	2.80	11.42	1.60
2.433	2.40	5.433	9.58	8.433	2.80	11.43	1.60
2.450	2.40	5.450	9.58	8.450	2.80	11.45	1.60
2.467	2.40	5.467	9.58	8.467	2.80	11.47	1.60
2.483	2.40	5.483	9.58	8.483	2.80	11.48	1.60
2.500	2.40	5.500	9.61	8.500	2.80	11.50	1.60
2.517	2.40	5.517	38.33	8.517	2.80	11.52	1.60
2.533	2.40	5.533	38.33	8.533	2.80	11.53	1.60
2.550	2.40	5.550	38.33	8.550	2.80	11.55	1.60
2.567	2.40	5.567	38.33	8.567	2.80	11.57	1.60
2.583	2.40	5.583	38.33	8.583	2.80	11.58	1.60
2.600	2.40	5.600	38.33	8.600	2.80	11.60	1.60
2.617	2.40	5.617	38.33	8.617	2.80	11.62	1.60
2.633	2.40	5.633	38.33	8.633	2.80	11.63	1.60

2.650	2.40	5.650	38.33	8.650	2.80	11.65	1.60
2.667	2.40	5.667	38.33	8.667	2.80	11.67	1.60
2.683	2.40	5.683	38.33	8.683	2.80	11.68	1.60
2.700	2.40	5.700	38.33	8.700	2.80	11.70	1.60
2.717	2.40	5.717	38.33	8.717	2.80	11.72	1.60
2.733	2.40	5.733	38.33	8.733	2.80	11.73	1.60
2.750	2.40	5.750	38.41	8.750	2.80	11.75	1.60
2.767	2.40	5.767	105.42	8.767	2.80	11.77	1.60
2.783	2.40	5.783	105.42	8.783	2.80	11.78	1.60
2.800	2.40	5.800	105.42	8.800	2.80	11.80	1.60
2.817	2.40	5.817	105.42	8.817	2.80	11.82	1.60
2.833	2.40	5.833	105.42	8.833	2.80	11.83	1.60
2.850	2.40	5.850	105.42	8.850	2.80	11.85	1.60
2.867	2.40	5.867	105.42	8.867	2.80	11.87	1.60
2.883	2.40	5.883	105.42	8.883	2.80	11.88	1.60
2.900	2.40	5.900	105.42	8.900	2.80	11.90	1.60
2.917	2.40	5.917	105.42	8.917	2.80	11.92	1.60
2.933	2.40	5.933	105.42	8.933	2.80	11.93	1.60
2.950	2.40	5.950	105.42	8.950	2.80	11.95	1.60
2.967	2.40	5.967	105.42	8.967	2.80	11.97	1.60
2.983	2.40	5.983	105.42	8.983	2.80	11.98	1.60
3.000	2.40	6.000	105.29	9.000	2.80	12.00	1.60

Max.Eff.Inten.(mm/hr)=	105.42	33.74		
over (min)	5.00	11.00		
Storage Coeff. (min)=	2.93 (ii)	10.08 (ii)		
Unit Hyd. Tpeak (min)=	5.00	11.00		
Unit Hyd. peak (cms)=	0.31	0.11		
			TOTALS	
PEAK FLOW (cms)=	0.32	0.08	0.388 (iii)	
TIME TO PEAK (hrs)=	6.00	6.08	6.00	
RUNOFF VOLUME (mm)=	78.86	17.79	44.66	
TOTAL RAINFALL (mm)=	79.86	79.86	79.86	
RUNOFF COEFFICIENT =	0.99	0.22	0.56	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0010) IN= 2---> OUT= 1 DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0810	0.0465
	0.0010	0.0012	0.0910	0.0530
	0.0060	0.0145	0.1120	0.0643
	0.0100	0.0157	0.1190	0.0683
	0.0430	0.0262	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0008)	2.530	0.388	6.00	44.66
OUTFLOW: ID= 1 (0010)	2.530	0.095	6.27	44.54

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.36
TIME SHIFT OF PEAK FLOW (min)= 16.00
MAXIMUM STORAGE USED (ha.m.)= 0.0549

READ STORM Ptotal= 79.86 mm	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\c37e24c1 Comments: 25-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.00	3.25	3.19	6.25	14.37	9.25	2.80
0.50	2.00	3.50	3.19	6.50	14.37	9.50	2.80
0.75	2.00	3.75	3.19	6.75	6.39	9.75	2.80
1.00	2.00	4.00	3.19	7.00	6.39	10.00	2.80
1.25	2.00	4.25	4.79	7.25	4.79	10.25	1.60
1.50	2.00	4.50	4.79	7.50	4.79	10.50	1.60
1.75	2.00	4.75	6.39	7.75	4.79	10.75	1.60
2.00	2.00	5.00	6.39	8.00	4.79	11.00	1.60
2.25	2.40	5.25	9.58	8.25	2.80	11.25	1.60
2.50	2.40	5.50	9.58	8.50	2.80	11.50	1.60
2.75	2.40	5.75	38.33	8.75	2.80	11.75	1.60
3.00	2.40	6.00	105.42	9.00	2.80	12.00	1.60

CALIB NASHYD (0027)	Area (ha)= 17.26 Curve Number (CN)= 60.0

|ID= 1 DT= 1.0 min | Ia (mm)= 5.60 # of Linear Res.(N)= 3.00
---------- U.H. Tp(hrs)= 0.95

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.00	3.017	3.19	6.017	14.37	9.02	2.80
0.033	2.00	3.033	3.19	6.033	14.37	9.03	2.80
0.050	2.00	3.050	3.19	6.050	14.37	9.05	2.80
0.067	2.00	3.067	3.19	6.067	14.37	9.07	2.80
0.083	2.00	3.083	3.19	6.083	14.37	9.08	2.80
0.100	2.00	3.100	3.19	6.100	14.37	9.10	2.80
0.117	2.00	3.117	3.19	6.117	14.37	9.12	2.80
0.133	2.00	3.133	3.19	6.133	14.37	9.13	2.80
0.150	2.00	3.150	3.19	6.150	14.37	9.15	2.80
0.167	2.00	3.167	3.19	6.167	14.37	9.17	2.80
0.183	2.00	3.183	3.19	6.183	14.37	9.18	2.80
0.200	2.00	3.200	3.19	6.200	14.37	9.20	2.80
0.217	2.00	3.217	3.19	6.217	14.37	9.22	2.80
0.233	2.00	3.233	3.19	6.233	14.37	9.23	2.80
0.250	2.00	3.250	3.19	6.250	14.37	9.25	2.80
0.267	2.00	3.267	3.19	6.267	14.37	9.27	2.80
0.283	2.00	3.283	3.19	6.283	14.37	9.28	2.80
0.300	2.00	3.300	3.19	6.300	14.37	9.30	2.80
0.317	2.00	3.317	3.19	6.317	14.37	9.32	2.80
0.333	2.00	3.333	3.19	6.333	14.37	9.33	2.80
0.350	2.00	3.350	3.19	6.350	14.37	9.35	2.80
0.367	2.00	3.367	3.19	6.367	14.37	9.37	2.80
0.383	2.00	3.383	3.19	6.383	14.37	9.38	2.80
0.400	2.00	3.400	3.19	6.400	14.37	9.40	2.80
0.417	2.00	3.417	3.19	6.417	14.37	9.42	2.80
0.433	2.00	3.433	3.19	6.433	14.37	9.43	2.80
0.450	2.00	3.450	3.19	6.450	14.37	9.45	2.80
0.467	2.00	3.467	3.19	6.467	14.37	9.47	2.80
0.483	2.00	3.483	3.19	6.483	14.37	9.48	2.80
0.500	2.00	3.500	3.19	6.500	14.36	9.50	2.80
0.517	2.00	3.517	3.19	6.517	6.39	9.52	2.80
0.533	2.00	3.533	3.19	6.533	6.39	9.53	2.80
0.550	2.00	3.550	3.19	6.550	6.39	9.55	2.80
0.567	2.00	3.567	3.19	6.567	6.39	9.57	2.80
0.583	2.00	3.583	3.19	6.583	6.39	9.58	2.80
0.600	2.00	3.600	3.19	6.600	6.39	9.60	2.80
0.617	2.00	3.617	3.19	6.617	6.39	9.62	2.80
0.633	2.00	3.633	3.19	6.633	6.39	9.63	2.80
0.650	2.00	3.650	3.19	6.650	6.39	9.65	2.80
0.667	2.00	3.667	3.19	6.667	6.39	9.67	2.80
0.683	2.00	3.683	3.19	6.683	6.39	9.68	2.80
0.700	2.00	3.700	3.19	6.700	6.39	9.70	2.80
0.717	2.00	3.717	3.19	6.717	6.39	9.72	2.80
0.733	2.00	3.733	3.19	6.733	6.39	9.73	2.80
0.750	2.00	3.750	3.19	6.750	6.39	9.75	2.80
0.767	2.00	3.767	3.19	6.767	6.39	9.77	2.80
0.783	2.00	3.783	3.19	6.783	6.39	9.78	2.80
0.800	2.00	3.800	3.19	6.800	6.39	9.80	2.80
0.817	2.00	3.817	3.19	6.817	6.39	9.82	2.80
0.833	2.00	3.833	3.19	6.833	6.39	9.83	2.80
0.850	2.00	3.850	3.19	6.850	6.39	9.85	2.80
0.867	2.00	3.867	3.19	6.867	6.39	9.87	2.80
0.883	2.00	3.883	3.19	6.883	6.39	9.88	2.80
0.900	2.00	3.900	3.19	6.900	6.39	9.90	2.80
0.917	2.00	3.917	3.19	6.917	6.39	9.92	2.80
0.933	2.00	3.933	3.19	6.933	6.39	9.93	2.80
0.950	2.00	3.950	3.19	6.950	6.39	9.95	2.80
0.967	2.00	3.967	3.19	6.967	6.39	9.97	2.80
0.983	2.00	3.983	3.19	6.983	6.39	9.98	2.80
1.000	2.00	4.000	3.19	7.000	6.39	10.00	2.79
1.017	2.00	4.017	4.79	7.017	4.79	10.02	1.60
1.033	2.00	4.033	4.79	7.033	4.79	10.03	1.60
1.050	2.00	4.050	4.79	7.050	4.79	10.05	1.60
1.067	2.00	4.067	4.79	7.067	4.79	10.07	1.60
1.083	2.00	4.083	4.79	7.083	4.79	10.08	1.60
1.100	2.00	4.100	4.79	7.100	4.79	10.10	1.60
1.117	2.00	4.117	4.79	7.117	4.79	10.12	1.60
1.133	2.00	4.133	4.79	7.133	4.79	10.13	1.60
1.150	2.00	4.150	4.79	7.150	4.79	10.15	1.60
1.167	2.00	4.167	4.79	7.167	4.79	10.17	1.60
1.183	2.00	4.183	4.79	7.183	4.79	10.18	1.60
1.200	2.00	4.200	4.79	7.200	4.79	10.20	1.60
1.217	2.00	4.217	4.79	7.217	4.79	10.22	1.60
1.233	2.00	4.233	4.79	7.233	4.79	10.23	1.60
1.250	2.00	4.250	4.79	7.250	4.79	10.25	1.60
1.267	2.00	4.267	4.79	7.267	4.79	10.27	1.60
1.283	2.00	4.283	4.79	7.283	4.79	10.28	1.60
1.300	2.00	4.300	4.79	7.300	4.79	10.30	1.60
1.317	2.00	4.317	4.79	7.317	4.79	10.32	1.60
1.333	2.00	4.333	4.79	7.333	4.79	10.33	1.60
1.350	2.00	4.350	4.79	7.350	4.79	10.35	1.60
1.367	2.00	4.367	4.79	7.367	4.79	10.37	1.60

1.383	2.00	4.383	4.79	7.383	4.79	10.38	1.60
1.400	2.00	4.400	4.79	7.400	4.79	10.40	1.60
1.417	2.00	4.417	4.79	7.417	4.79	10.42	1.60
1.433	2.00	4.433	4.79	7.433	4.79	10.43	1.60
1.450	2.00	4.450	4.79	7.450	4.79	10.45	1.60
1.467	2.00	4.467	4.79	7.467	4.79	10.47	1.60
1.483	2.00	4.483	4.79	7.483	4.79	10.48	1.60
1.500	2.00	4.500	4.79	7.500	4.79	10.50	1.60
1.517	2.00	4.517	6.39	7.517	4.79	10.52	1.60
1.533	2.00	4.533	6.39	7.533	4.79	10.53	1.60
1.550	2.00	4.550	6.39	7.550	4.79	10.55	1.60
1.567	2.00	4.567	6.39	7.567	4.79	10.57	1.60
1.583	2.00	4.583	6.39	7.583	4.79	10.58	1.60
1.600	2.00	4.600	6.39	7.600	4.79	10.60	1.60
1.617	2.00	4.617	6.39	7.617	4.79	10.62	1.60
1.633	2.00	4.633	6.39	7.633	4.79	10.63	1.60
1.650	2.00	4.650	6.39	7.650	4.79	10.65	1.60
1.667	2.00	4.667	6.39	7.667	4.79	10.67	1.60
1.683	2.00	4.683	6.39	7.683	4.79	10.68	1.60
1.700	2.00	4.700	6.39	7.700	4.79	10.70	1.60
1.717	2.00	4.717	6.39	7.717	4.79	10.72	1.60
1.733	2.00	4.733	6.39	7.733	4.79	10.73	1.60
1.750	2.00	4.750	6.39	7.750	4.79	10.75	1.60
1.767	2.00	4.767	6.39	7.767	4.79	10.77	1.60
1.783	2.00	4.783	6.39	7.783	4.79	10.78	1.60
1.800	2.00	4.800	6.39	7.800	4.79	10.80	1.60
1.817	2.00	4.817	6.39	7.817	4.79	10.82	1.60
1.833	2.00	4.833	6.39	7.833	4.79	10.83	1.60
1.850	2.00	4.850	6.39	7.850	4.79	10.85	1.60
1.867	2.00	4.867	6.39	7.867	4.79	10.87	1.60
1.883	2.00	4.883	6.39	7.883	4.79	10.88	1.60
1.900	2.00	4.900	6.39	7.900	4.79	10.90	1.60
1.917	2.00	4.917	6.39	7.917	4.79	10.92	1.60
1.933	2.00	4.933	6.39	7.933	4.79	10.93	1.60
1.950	2.00	4.950	6.39	7.950	4.79	10.95	1.60
1.967	2.00	4.967	6.39	7.967	4.79	10.97	1.60
1.983	2.00	4.983	6.39	7.983	4.79	10.98	1.60
2.000	2.00	5.000	6.39	8.000	4.79	11.00	1.60
2.017	2.40	5.017	9.58	8.017	2.80	11.02	1.60
2.033	2.40	5.033	9.58	8.033	2.80	11.03	1.60
2.050	2.40	5.050	9.58	8.050	2.80	11.05	1.60
2.067	2.40	5.067	9.58	8.067	2.80	11.07	1.60
2.083	2.40	5.083	9.58	8.083	2.80	11.08	1.60
2.100	2.40	5.100	9.58	8.100	2.80	11.10	1.60
2.117	2.40	5.117	9.58	8.117	2.80	11.12	1.60
2.133	2.40	5.133	9.58	8.133	2.80	11.13	1.60
2.150	2.40	5.150	9.58	8.150	2.80	11.15	1.60
2.167	2.40	5.167	9.58	8.167	2.80	11.17	1.60
2.183	2.40	5.183	9.58	8.183	2.80	11.18	1.60
2.200	2.40	5.200	9.58	8.200	2.80	11.20	1.60
2.217	2.40	5.217	9.58	8.217	2.80	11.22	1.60
2.233	2.40	5.233	9.58	8.233	2.80	11.23	1.60
2.250	2.40	5.250	9.58	8.250	2.80	11.25	1.60
2.267	2.40	5.267	9.58	8.267	2.80	11.27	1.60
2.283	2.40	5.283	9.58	8.283	2.80	11.28	1.60
2.300	2.40	5.300	9.58	8.300	2.80	11.30	1.60
2.317	2.40	5.317	9.58	8.317	2.80	11.32	1.60
2.333	2.40	5.333	9.58	8.333	2.80	11.33	1.60
2.350	2.40	5.350	9.58	8.350	2.80	11.35	1.60
2.367	2.40	5.367	9.58	8.367	2.80	11.37	1.60
2.383	2.40	5.383	9.58	8.383	2.80	11.38	1.60
2.400	2.40	5.400	9.58	8.400	2.80	11.40	1.60
2.417	2.40	5.417	9.58	8.417	2.80	11.42	1.60
2.433	2.40	5.433	9.58	8.433	2.80	11.43	1.60
2.450	2.40	5.450	9.58	8.450	2.80	11.45	1.60
2.467	2.40	5.467	9.58	8.467	2.80	11.47	1.60
2.483	2.40	5.483	9.58	8.483	2.80	11.48	1.60
2.500	2.40	5.500	9.61	8.500	2.80	11.50	1.60
2.517	2.40	5.517	38.33	8.517	2.80	11.52	1.60
2.533	2.40	5.533	38.33	8.533	2.80	11.53	1.60
2.550	2.40	5.550	38.33	8.550	2.80	11.55	1.60
2.567	2.40	5.567	38.33	8.567	2.80	11.57	1.60
2.583	2.40	5.583	38.33	8.583	2.80	11.58	1.60
2.600	2.40	5.600	38.33	8.600	2.80	11.60	1.60
2.617	2.40	5.617	38.33	8.617	2.80	11.62	1.60
2.633	2.40	5.633	38.33	8.633	2.80	11.63	1.60
2.650	2.40	5.650	38.33	8.650	2.80	11.65	1.60
2.667	2.40	5.667	38.33	8.667	2.80	11.67	1.60
2.683	2.40	5.683	38.33	8.683	2.80	11.68	1.60
2.700	2.40	5.700	38.33	8.700	2.80	11.70	1.60
2.717	2.40	5.717	38.33	8.717	2.80	11.72	1.60
2.733	2.40	5.733	38.33	8.733	2.80	11.73	1.60
2.750	2.40	5.750	38.41	8.750	2.80	11.75	1.60
2.767	2.40	5.767	105.42	8.767	2.80	11.77	1.60
2.783	2.40	5.783	105.42	8.783	2.80	11.78	1.60
2.800	2.40	5.800	105.42	8.800	2.80	11.80	1.60
2.817	2.40	5.817	105.42	8.817	2.80	11.82	1.60
2.833	2.40	5.833	105.42	8.833	2.80	11.83	1.60
2.850	2.40	5.850	105.42	8.850	2.80	11.85	1.60
2.867	2.40	5.867	105.42	8.867	2.80	11.87	1.60
2.883	2.40	5.883	105.42	8.883	2.80	11.88	1.60

2.900	2.40	5.900	105.42	8.900	2.80	11.90	1.60
2.917	2.40	5.917	105.42	8.917	2.80	11.92	1.60
2.933	2.40	5.933	105.42	8.933	2.80	11.93	1.60
2.950	2.40	5.950	105.42	8.950	2.80	11.95	1.60
2.967	2.40	5.967	105.42	8.967	2.80	11.97	1.60
2.983	2.40	5.983	105.42	8.983	2.80	11.98	1.60
3.000	2.40	6.000	105.29	9.000	2.80	12.00	1.60

Unit Hyd Qpeak (cms)= 0.694

PEAK FLOW (cms)= 0.373 (i)
TIME TO PEAK (hrs)= 6.983
RUNOFF VOLUME (mm)= 22.637
TOTAL RAINFALL (mm)= 79.859
RUNOFF COEFFICIENT = 0.283

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

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0010):	2.53	0.095	6.27	44.54
	+ ID2= 2 (0011):	0.80	0.093	6.08	68.20
	ID = 3 (0004):	3.33	0.183	6.12	50.22

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
	ID1= 3 (0004):	3.33	0.183	6.12	50.22
	+ ID2= 2 (0027):	17.26	0.373	6.98	22.64
	ID = 1 (0004):	20.59	0.493	6.82	27.10

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0004):	20.59	0.493	6.82	27.10
	+ ID2= 2 (0003):	4.49	0.059	7.07	32.75
	ID = 3 (0004):	25.08	0.552	6.82	28.11

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
	ID1= 3 (0004):	25.08	0.552	6.82	28.11
	+ ID2= 2 (0009):	2.07	0.308	6.03	45.70
	ID = 1 (0004):	27.15	0.610	6.05	29.45

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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       V    V   I    SSSSS  U   U    A    L              (v 5.0.2027)
       V    V   I    SS     U   U   A A   L
        V  V    I     SS    U   U  AAAAA  L
        V  V    I      SS   U   U  A   A  L
         VV     I    SSSSS  UUUUU  A   A  LLLLL

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

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\8698ceb6-850d-408e-8453-47d72c759

Summary filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\8698ceb6-850d-408e-8453-47d72c759

DATE: 12/19/2018 TIME: 10:47:46

USER:

COMMENTS: _____

****
** SIMULATION : Run 11 **
****

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\3a4df615
Ptotal= 87.91 mm	Comments: 50-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.20	3.25	3.52	6.25	15.82	9.25	3.08
0.50	2.20	3.50	3.52	6.50	15.82	9.50	3.08
0.75	2.20	3.75	3.52	6.75	7.03	9.75	3.08
1.00	2.20	4.00	3.52	7.00	7.03	10.00	3.08
1.25	2.20	4.25	5.27	7.25	5.27	10.25	1.76
1.50	2.20	4.50	5.27	7.50	5.27	10.50	1.76
1.75	2.20	4.75	7.03	7.75	5.27	10.75	1.76
2.00	2.20	5.00	7.03	8.00	5.27	11.00	1.76
2.25	2.64	5.25	10.55	8.25	3.08	11.25	1.76
2.50	2.64	5.50	10.55	8.50	3.08	11.50	1.76
2.75	2.64	5.75	42.20	8.75	3.08	11.75	1.76
3.00	2.64	6.00	116.04	9.00	3.08	12.00	1.76

CALIB NASHYD (0025)	Area (ha)= 1.48	Curve Number (CN)= 67.0
ID= 1 DT= 1.0 min	Ia (mm)= 5.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.34	

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.20	3.017	3.52	6.017	15.82	9.02	3.08
0.033	2.20	3.033	3.52	6.033	15.82	9.03	3.08
0.050	2.20	3.050	3.52	6.050	15.82	9.05	3.08
0.067	2.20	3.067	3.52	6.067	15.82	9.07	3.08
0.083	2.20	3.083	3.52	6.083	15.82	9.08	3.08
0.100	2.20	3.100	3.52	6.100	15.82	9.10	3.08
0.117	2.20	3.117	3.52	6.117	15.82	9.12	3.08
0.133	2.20	3.133	3.52	6.133	15.82	9.13	3.08
0.150	2.20	3.150	3.52	6.150	15.82	9.15	3.08
0.167	2.20	3.167	3.52	6.167	15.82	9.17	3.08
0.183	2.20	3.183	3.52	6.183	15.82	9.18	3.08
0.200	2.20	3.200	3.52	6.200	15.82	9.20	3.08
0.217	2.20	3.217	3.52	6.217	15.82	9.22	3.08
0.233	2.20	3.233	3.52	6.233	15.82	9.23	3.08
0.250	2.20	3.250	3.52	6.250	15.82	9.25	3.08
0.267	2.20	3.267	3.52	6.267	15.82	9.27	3.08
0.283	2.20	3.283	3.52	6.283	15.82	9.28	3.08
0.300	2.20	3.300	3.52	6.300	15.82	9.30	3.08
0.317	2.20	3.317	3.52	6.317	15.82	9.32	3.08
0.333	2.20	3.333	3.52	6.333	15.82	9.33	3.08
0.350	2.20	3.350	3.52	6.350	15.82	9.35	3.08
0.367	2.20	3.367	3.52	6.367	15.82	9.37	3.08
0.383	2.20	3.383	3.52	6.383	15.82	9.38	3.08
0.400	2.20	3.400	3.52	6.400	15.82	9.40	3.08
0.417	2.20	3.417	3.52	6.417	15.82	9.42	3.08
0.433	2.20	3.433	3.52	6.433	15.82	9.43	3.08
0.450	2.20	3.450	3.52	6.450	15.82	9.45	3.08
0.467	2.20	3.467	3.52	6.467	15.82	9.47	3.08
0.483	2.20	3.483	3.52	6.483	15.82	9.48	3.08
0.500	2.20	3.500	3.52	6.500	15.81	9.50	3.08
0.517	2.20	3.517	3.52	6.517	7.03	9.52	3.08

0.533	2.20	3.533	3.52	6.533	7.03	9.53	3.08
0.550	2.20	3.550	3.52	6.550	7.03	9.55	3.08
0.567	2.20	3.567	3.52	6.567	7.03	9.57	3.08
0.583	2.20	3.583	3.52	6.583	7.03	9.58	3.08
0.600	2.20	3.600	3.52	6.600	7.03	9.60	3.08
0.617	2.20	3.617	3.52	6.617	7.03	9.62	3.08
0.633	2.20	3.633	3.52	6.633	7.03	9.63	3.08
0.650	2.20	3.650	3.52	6.650	7.03	9.65	3.08
0.667	2.20	3.667	3.52	6.667	7.03	9.67	3.08
0.683	2.20	3.683	3.52	6.683	7.03	9.68	3.08
0.700	2.20	3.700	3.52	6.700	7.03	9.70	3.08
0.717	2.20	3.717	3.52	6.717	7.03	9.72	3.08
0.733	2.20	3.733	3.52	6.733	7.03	9.73	3.08
0.750	2.20	3.750	3.52	6.750	7.03	9.75	3.08
0.767	2.20	3.767	3.52	6.767	7.03	9.77	3.08
0.783	2.20	3.783	3.52	6.783	7.03	9.78	3.08
0.800	2.20	3.800	3.52	6.800	7.03	9.80	3.08
0.817	2.20	3.817	3.52	6.817	7.03	9.82	3.08
0.833	2.20	3.833	3.52	6.833	7.03	9.83	3.08
0.850	2.20	3.850	3.52	6.850	7.03	9.85	3.08
0.867	2.20	3.867	3.52	6.867	7.03	9.87	3.08
0.883	2.20	3.883	3.52	6.883	7.03	9.88	3.08
0.900	2.20	3.900	3.52	6.900	7.03	9.90	3.08
0.917	2.20	3.917	3.52	6.917	7.03	9.92	3.08
0.933	2.20	3.933	3.52	6.933	7.03	9.93	3.08
0.950	2.20	3.950	3.52	6.950	7.03	9.95	3.08
0.967	2.20	3.967	3.52	6.967	7.03	9.97	3.08
0.983	2.20	3.983	3.52	6.983	7.03	9.98	3.08
1.000	2.20	4.000	3.52	7.000	7.03	10.00	3.08
1.017	2.20	4.017	5.27	7.017	5.27	10.02	1.76
1.033	2.20	4.033	5.27	7.033	5.27	10.03	1.76
1.050	2.20	4.050	5.27	7.050	5.27	10.05	1.76
1.067	2.20	4.067	5.27	7.067	5.27	10.07	1.76
1.083	2.20	4.083	5.27	7.083	5.27	10.08	1.76
1.100	2.20	4.100	5.27	7.100	5.27	10.10	1.76
1.117	2.20	4.117	5.27	7.117	5.27	10.12	1.76
1.133	2.20	4.133	5.27	7.133	5.27	10.13	1.76
1.150	2.20	4.150	5.27	7.150	5.27	10.15	1.76
1.167	2.20	4.167	5.27	7.167	5.27	10.17	1.76
1.183	2.20	4.183	5.27	7.183	5.27	10.18	1.76
1.200	2.20	4.200	5.27	7.200	5.27	10.20	1.76
1.217	2.20	4.217	5.27	7.217	5.27	10.22	1.76
1.233	2.20	4.233	5.27	7.233	5.27	10.23	1.76
1.250	2.20	4.250	5.27	7.250	5.27	10.25	1.76
1.267	2.20	4.267	5.27	7.267	5.27	10.27	1.76
1.283	2.20	4.283	5.27	7.283	5.27	10.28	1.76
1.300	2.20	4.300	5.27	7.300	5.27	10.30	1.76
1.317	2.20	4.317	5.27	7.317	5.27	10.32	1.76
1.333	2.20	4.333	5.27	7.333	5.27	10.33	1.76
1.350	2.20	4.350	5.27	7.350	5.27	10.35	1.76
1.367	2.20	4.367	5.27	7.367	5.27	10.37	1.76
1.383	2.20	4.383	5.27	7.383	5.27	10.38	1.76
1.400	2.20	4.400	5.27	7.400	5.27	10.40	1.76
1.417	2.20	4.417	5.27	7.417	5.27	10.42	1.76
1.433	2.20	4.433	5.27	7.433	5.27	10.43	1.76
1.450	2.20	4.450	5.27	7.450	5.27	10.45	1.76
1.467	2.20	4.467	5.27	7.467	5.27	10.47	1.76
1.483	2.20	4.483	5.27	7.483	5.27	10.48	1.76
1.500	2.20	4.500	5.28	7.500	5.27	10.50	1.76
1.517	2.20	4.517	7.03	7.517	5.27	10.52	1.76
1.533	2.20	4.533	7.03	7.533	5.27	10.53	1.76
1.550	2.20	4.550	7.03	7.550	5.27	10.55	1.76
1.567	2.20	4.567	7.03	7.567	5.27	10.57	1.76
1.583	2.20	4.583	7.03	7.583	5.27	10.58	1.76
1.600	2.20	4.600	7.03	7.600	5.27	10.60	1.76
1.617	2.20	4.617	7.03	7.617	5.27	10.62	1.76
1.633	2.20	4.633	7.03	7.633	5.27	10.63	1.76
1.650	2.20	4.650	7.03	7.650	5.27	10.65	1.76
1.667	2.20	4.667	7.03	7.667	5.27	10.67	1.76
1.683	2.20	4.683	7.03	7.683	5.27	10.68	1.76
1.700	2.20	4.700	7.03	7.700	5.27	10.70	1.76
1.717	2.20	4.717	7.03	7.717	5.27	10.72	1.76
1.733	2.20	4.733	7.03	7.733	5.27	10.73	1.76
1.750	2.20	4.750	7.03	7.750	5.27	10.75	1.76
1.767	2.20	4.767	7.03	7.767	5.27	10.77	1.76
1.783	2.20	4.783	7.03	7.783	5.27	10.78	1.76
1.800	2.20	4.800	7.03	7.800	5.27	10.80	1.76
1.817	2.20	4.817	7.03	7.817	5.27	10.82	1.76
1.833	2.20	4.833	7.03	7.833	5.27	10.83	1.76
1.850	2.20	4.850	7.03	7.850	5.27	10.85	1.76
1.867	2.20	4.867	7.03	7.867	5.27	10.87	1.76
1.883	2.20	4.883	7.03	7.883	5.27	10.88	1.76
1.900	2.20	4.900	7.03	7.900	5.27	10.90	1.76
1.917	2.20	4.917	7.03	7.917	5.27	10.92	1.76
1.933	2.20	4.933	7.03	7.933	5.27	10.93	1.76
1.950	2.20	4.950	7.03	7.950	5.27	10.95	1.76
1.967	2.20	4.967	7.03	7.967	5.27	10.97	1.76
1.983	2.20	4.983	7.03	7.983	5.27	10.98	1.76
2.000	2.20	5.000	7.04	8.000	5.27	11.00	1.76
2.017	2.64	5.017	10.55	8.017	3.08	11.02	1.76
2.033	2.64	5.033	10.55	8.033	3.08	11.03	1.76

2.050	2.64	5.050	10.55	8.050	3.08	11.05	1.76
2.067	2.64	5.067	10.55	8.067	3.08	11.07	1.76
2.083	2.64	5.083	10.55	8.083	3.08	11.08	1.76
2.100	2.64	5.100	10.55	8.100	3.08	11.10	1.76
2.117	2.64	5.117	10.55	8.117	3.08	11.12	1.76
2.133	2.64	5.133	10.55	8.133	3.08	11.13	1.76
2.150	2.64	5.150	10.55	8.150	3.08	11.15	1.76
2.167	2.64	5.167	10.55	8.167	3.08	11.17	1.76
2.183	2.64	5.183	10.55	8.183	3.08	11.18	1.76
2.200	2.64	5.200	10.55	8.200	3.08	11.20	1.76
2.217	2.64	5.217	10.55	8.217	3.08	11.22	1.76
2.233	2.64	5.233	10.55	8.233	3.08	11.23	1.76
2.250	2.64	5.250	10.55	8.250	3.08	11.25	1.76
2.267	2.64	5.267	10.55	8.267	3.08	11.27	1.76
2.283	2.64	5.283	10.55	8.283	3.08	11.28	1.76
2.300	2.64	5.300	10.55	8.300	3.08	11.30	1.76
2.317	2.64	5.317	10.55	8.317	3.08	11.32	1.76
2.333	2.64	5.333	10.55	8.333	3.08	11.33	1.76
2.350	2.64	5.350	10.55	8.350	3.08	11.35	1.76
2.367	2.64	5.367	10.55	8.367	3.08	11.37	1.76
2.383	2.64	5.383	10.55	8.383	3.08	11.38	1.76
2.400	2.64	5.400	10.55	8.400	3.08	11.40	1.76
2.417	2.64	5.417	10.55	8.417	3.08	11.42	1.76
2.433	2.64	5.433	10.55	8.433	3.08	11.43	1.76
2.450	2.64	5.450	10.55	8.450	3.08	11.45	1.76
2.467	2.64	5.467	10.55	8.467	3.08	11.47	1.76
2.483	2.64	5.483	10.55	8.483	3.08	11.48	1.76
2.500	2.64	5.500	10.58	8.500	3.08	11.50	1.76
2.517	2.64	5.517	42.20	8.517	3.08	11.52	1.76
2.533	2.64	5.533	42.20	8.533	3.08	11.53	1.76
2.550	2.64	5.550	42.20	8.550	3.08	11.55	1.76
2.567	2.64	5.567	42.20	8.567	3.08	11.57	1.76
2.583	2.64	5.583	42.20	8.583	3.08	11.58	1.76
2.600	2.64	5.600	42.20	8.600	3.08	11.60	1.76
2.617	2.64	5.617	42.20	8.617	3.08	11.62	1.76
2.633	2.64	5.633	42.20	8.633	3.08	11.63	1.76
2.650	2.64	5.650	42.20	8.650	3.08	11.65	1.76
2.667	2.64	5.667	42.20	8.667	3.08	11.67	1.76
2.683	2.64	5.683	42.20	8.683	3.08	11.68	1.76
2.700	2.64	5.700	42.20	8.700	3.08	11.70	1.76
2.717	2.64	5.717	42.20	8.717	3.08	11.72	1.76
2.733	2.64	5.733	42.20	8.733	3.08	11.73	1.76
2.750	2.64	5.750	42.29	8.750	3.08	11.75	1.76
2.767	2.64	5.767	116.04	8.767	3.08	11.77	1.76
2.783	2.64	5.783	116.04	8.783	3.08	11.78	1.76
2.800	2.64	5.800	116.04	8.800	3.08	11.80	1.76
2.817	2.64	5.817	116.04	8.817	3.08	11.82	1.76
2.833	2.64	5.833	116.04	8.833	3.08	11.83	1.76
2.850	2.64	5.850	116.04	8.850	3.08	11.85	1.76
2.867	2.64	5.867	116.04	8.867	3.08	11.87	1.76
2.883	2.64	5.883	116.04	8.883	3.08	11.88	1.76
2.900	2.64	5.900	116.04	8.900	3.08	11.90	1.76
2.917	2.64	5.917	116.04	8.917	3.08	11.92	1.76
2.933	2.64	5.933	116.04	8.933	3.08	11.93	1.76
2.950	2.64	5.950	116.04	8.950	3.08	11.95	1.76
2.967	2.64	5.967	116.04	8.967	3.08	11.97	1.76
2.983	2.64	5.983	116.04	8.983	3.08	11.98	1.76
3.000	2.64	6.000	115.90	9.000	3.08	12.00	1.76

Unit Hyd Qpeak (cms)= 0.166

PEAK FLOW (cms)= 0.100 (i)
TIME TO PEAK (hrs)= 6.233
RUNOFF VOLUME (mm)= 33.045
TOTAL RAINFALL (mm)= 87.909
RUNOFF COEFFICIENT = 0.376

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

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\3a4df615
Ptotal= 87.91 mm	Comments: 50-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.20	3.25	3.52	6.25	15.82	9.25	3.08
0.50	2.20	3.50	3.52	6.50	15.82	9.50	3.08
0.75	2.20	3.75	3.52	6.75	7.03	9.75	3.08
1.00	2.20	4.00	3.52	7.00	7.03	10.00	3.08
1.25	2.20	4.25	5.27	7.25	5.27	10.25	1.76
1.50	2.20	4.50	5.27	7.50	5.27	10.50	1.76
1.75	2.20	4.75	7.03	7.75	5.27	10.75	1.76
2.00	2.20	5.00	7.03	8.00	5.27	11.00	1.76
2.25	2.64	5.25	10.55	8.25	3.08	11.25	1.76
2.50	2.64	5.50	10.55	8.50	3.08	11.50	1.76
2.75	2.64	5.75	42.20	8.75	3.08	11.75	1.76
3.00	2.64	6.00	116.04	9.00	3.08	12.00	1.76

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| CALIB            |
| STANDHYD (  0001)|   Area    (ha)=   3.01
|ID= 1 DT= 1.0 min |   Total Imp(%)=  57.00   Dir. Conn.(%)=  46.00
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                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      1.72         1.29
     Dep. Storage     (mm)=      1.00         5.00
     Average Slope     (%)=      1.50         3.00
     Length            (m)=    141.66        40.00
     Manings n            =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   1.0 MIN. TIME STEP.
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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.017	2.20	3.017	3.52	6.017	15.82	9.02	3.08
0.033	2.20	3.033	3.52	6.033	15.82	9.03	3.08
0.050	2.20	3.050	3.52	6.050	15.82	9.05	3.08
0.067	2.20	3.067	3.52	6.067	15.82	9.07	3.08
0.083	2.20	3.083	3.52	6.083	15.82	9.08	3.08
0.100	2.20	3.100	3.52	6.100	15.82	9.10	3.08
0.117	2.20	3.117	3.52	6.117	15.82	9.12	3.08
0.133	2.20	3.133	3.52	6.133	15.82	9.13	3.08
0.150	2.20	3.150	3.52	6.150	15.82	9.15	3.08
0.167	2.20	3.167	3.52	6.167	15.82	9.17	3.08
0.183	2.20	3.183	3.52	6.183	15.82	9.18	3.08
0.200	2.20	3.200	3.52	6.200	15.82	9.20	3.08
0.217	2.20	3.217	3.52	6.217	15.82	9.22	3.08
0.233	2.20	3.233	3.52	6.233	15.82	9.23	3.08
0.250	2.20	3.250	3.52	6.250	15.82	9.25	3.08
0.267	2.20	3.267	3.52	6.267	15.82	9.27	3.08
0.283	2.20	3.283	3.52	6.283	15.82	9.28	3.08
0.300	2.20	3.300	3.52	6.300	15.82	9.30	3.08
0.317	2.20	3.317	3.52	6.317	15.82	9.32	3.08
0.333	2.20	3.333	3.52	6.333	15.82	9.33	3.08
0.350	2.20	3.350	3.52	6.350	15.82	9.35	3.08
0.367	2.20	3.367	3.52	6.367	15.82	9.37	3.08
0.383	2.20	3.383	3.52	6.383	15.82	9.38	3.08
0.400	2.20	3.400	3.52	6.400	15.82	9.40	3.08
0.417	2.20	3.417	3.52	6.417	15.82	9.42	3.08
0.433	2.20	3.433	3.52	6.433	15.82	9.43	3.08
0.450	2.20	3.450	3.52	6.450	15.82	9.45	3.08
0.467	2.20	3.467	3.52	6.467	15.82	9.47	3.08
0.483	2.20	3.483	3.52	6.483	15.82	9.48	3.08
0.500	2.20	3.500	3.52	6.500	15.81	9.50	3.08
0.517	2.20	3.517	3.52	6.517	7.03	9.52	3.08
0.533	2.20	3.533	3.52	6.533	7.03	9.53	3.08
0.550	2.20	3.550	3.52	6.550	7.03	9.55	3.08
0.567	2.20	3.567	3.52	6.567	7.03	9.57	3.08
0.583	2.20	3.583	3.52	6.583	7.03	9.58	3.08
0.600	2.20	3.600	3.52	6.600	7.03	9.60	3.08
0.617	2.20	3.617	3.52	6.617	7.03	9.62	3.08
0.633	2.20	3.633	3.52	6.633	7.03	9.63	3.08
0.650	2.20	3.650	3.52	6.650	7.03	9.65	3.08
0.667	2.20	3.667	3.52	6.667	7.03	9.67	3.08
0.683	2.20	3.683	3.52	6.683	7.03	9.68	3.08
0.700	2.20	3.700	3.52	6.700	7.03	9.70	3.08
0.717	2.20	3.717	3.52	6.717	7.03	9.72	3.08
0.733	2.20	3.733	3.52	6.733	7.03	9.73	3.08
0.750	2.20	3.750	3.52	6.750	7.03	9.75	3.08
0.767	2.20	3.767	3.52	6.767	7.03	9.77	3.08
0.783	2.20	3.783	3.52	6.783	7.03	9.78	3.08
0.800	2.20	3.800	3.52	6.800	7.03	9.80	3.08
0.817	2.20	3.817	3.52	6.817	7.03	9.82	3.08
0.833	2.20	3.833	3.52	6.833	7.03	9.83	3.08
0.850	2.20	3.850	3.52	6.850	7.03	9.85	3.08
0.867	2.20	3.867	3.52	6.867	7.03	9.87	3.08
0.883	2.20	3.883	3.52	6.883	7.03	9.88	3.08
0.900	2.20	3.900	3.52	6.900	7.03	9.90	3.08
0.917	2.20	3.917	3.52	6.917	7.03	9.92	3.08
0.933	2.20	3.933	3.52	6.933	7.03	9.93	3.08
0.950	2.20	3.950	3.52	6.950	7.03	9.95	3.08
0.967	2.20	3.967	3.52	6.967	7.03	9.97	3.08
0.983	2.20	3.983	3.52	6.983	7.03	9.98	3.08
1.000	2.20	4.000	3.52	7.000	7.03	10.00	3.08
1.017	2.20	4.017	5.27	7.017	5.27	10.02	1.76
1.033	2.20	4.033	5.27	7.033	5.27	10.03	1.76
1.050	2.20	4.050	5.27	7.050	5.27	10.05	1.76
1.067	2.20	4.067	5.27	7.067	5.27	10.07	1.76
1.083	2.20	4.083	5.27	7.083	5.27	10.08	1.76
1.100	2.20	4.100	5.27	7.100	5.27	10.10	1.76
1.117	2.20	4.117	5.27	7.117	5.27	10.12	1.76
1.133	2.20	4.133	5.27	7.133	5.27	10.13	1.76
1.150	2.20	4.150	5.27	7.150	5.27	10.15	1.76
1.167	2.20	4.167	5.27	7.167	5.27	10.17	1.76

1.183	2.20	4.183	5.27	7.183	5.27	10.18	1.76
1.200	2.20	4.200	5.27	7.200	5.27	10.20	1.76
1.217	2.20	4.217	5.27	7.217	5.27	10.22	1.76
1.233	2.20	4.233	5.27	7.233	5.27	10.23	1.76
1.250	2.20	4.250	5.27	7.250	5.27	10.25	1.76
1.267	2.20	4.267	5.27	7.267	5.27	10.27	1.76
1.283	2.20	4.283	5.27	7.283	5.27	10.28	1.76
1.300	2.20	4.300	5.27	7.300	5.27	10.30	1.76
1.317	2.20	4.317	5.27	7.317	5.27	10.32	1.76
1.333	2.20	4.333	5.27	7.333	5.27	10.33	1.76
1.350	2.20	4.350	5.27	7.350	5.27	10.35	1.76
1.367	2.20	4.367	5.27	7.367	5.27	10.37	1.76
1.383	2.20	4.383	5.27	7.383	5.27	10.38	1.76
1.400	2.20	4.400	5.27	7.400	5.27	10.40	1.76
1.417	2.20	4.417	5.27	7.417	5.27	10.42	1.76
1.433	2.20	4.433	5.27	7.433	5.27	10.43	1.76
1.450	2.20	4.450	5.27	7.450	5.27	10.45	1.76
1.467	2.20	4.467	5.27	7.467	5.27	10.47	1.76
1.483	2.20	4.483	5.27	7.483	5.27	10.48	1.76
1.500	2.20	4.500	5.28	7.500	5.27	10.50	1.76
1.517	2.20	4.517	7.03	7.517	5.27	10.52	1.76
1.533	2.20	4.533	7.03	7.533	5.27	10.53	1.76
1.550	2.20	4.550	7.03	7.550	5.27	10.55	1.76
1.567	2.20	4.567	7.03	7.567	5.27	10.57	1.76
1.583	2.20	4.583	7.03	7.583	5.27	10.58	1.76
1.600	2.20	4.600	7.03	7.600	5.27	10.60	1.76
1.617	2.20	4.617	7.03	7.617	5.27	10.62	1.76
1.633	2.20	4.633	7.03	7.633	5.27	10.63	1.76
1.650	2.20	4.650	7.03	7.650	5.27	10.65	1.76
1.667	2.20	4.667	7.03	7.667	5.27	10.67	1.76
1.683	2.20	4.683	7.03	7.683	5.27	10.68	1.76
1.700	2.20	4.700	7.03	7.700	5.27	10.70	1.76
1.717	2.20	4.717	7.03	7.717	5.27	10.72	1.76
1.733	2.20	4.733	7.03	7.733	5.27	10.73	1.76
1.750	2.20	4.750	7.03	7.750	5.27	10.75	1.76
1.767	2.20	4.767	7.03	7.767	5.27	10.77	1.76
1.783	2.20	4.783	7.03	7.783	5.27	10.78	1.76
1.800	2.20	4.800	7.03	7.800	5.27	10.80	1.76
1.817	2.20	4.817	7.03	7.817	5.27	10.82	1.76
1.833	2.20	4.833	7.03	7.833	5.27	10.83	1.76
1.850	2.20	4.850	7.03	7.850	5.27	10.85	1.76
1.867	2.20	4.867	7.03	7.867	5.27	10.87	1.76
1.883	2.20	4.883	7.03	7.883	5.27	10.88	1.76
1.900	2.20	4.900	7.03	7.900	5.27	10.90	1.76
1.917	2.20	4.917	7.03	7.917	5.27	10.92	1.76
1.933	2.20	4.933	7.03	7.933	5.27	10.93	1.76
1.950	2.20	4.950	7.03	7.950	5.27	10.95	1.76
1.967	2.20	4.967	7.03	7.967	5.27	10.97	1.76
1.983	2.20	4.983	7.03	7.983	5.27	10.98	1.76
2.000	2.20	5.000	7.04	8.000	5.27	11.00	1.76
2.017	2.64	5.017	10.55	8.017	3.08	11.02	1.76
2.033	2.64	5.033	10.55	8.033	3.08	11.03	1.76
2.050	2.64	5.050	10.55	8.050	3.08	11.05	1.76
2.067	2.64	5.067	10.55	8.067	3.08	11.07	1.76
2.083	2.64	5.083	10.55	8.083	3.08	11.08	1.76
2.100	2.64	5.100	10.55	8.100	3.08	11.10	1.76
2.117	2.64	5.117	10.55	8.117	3.08	11.12	1.76
2.133	2.64	5.133	10.55	8.133	3.08	11.13	1.76
2.150	2.64	5.150	10.55	8.150	3.08	11.15	1.76
2.167	2.64	5.167	10.55	8.167	3.08	11.17	1.76
2.183	2.64	5.183	10.55	8.183	3.08	11.18	1.76
2.200	2.64	5.200	10.55	8.200	3.08	11.20	1.76
2.217	2.64	5.217	10.55	8.217	3.08	11.22	1.76
2.233	2.64	5.233	10.55	8.233	3.08	11.23	1.76
2.250	2.64	5.250	10.55	8.250	3.08	11.25	1.76
2.267	2.64	5.267	10.55	8.267	3.08	11.27	1.76
2.283	2.64	5.283	10.55	8.283	3.08	11.28	1.76
2.300	2.64	5.300	10.55	8.300	3.08	11.30	1.76
2.317	2.64	5.317	10.55	8.317	3.08	11.32	1.76
2.333	2.64	5.333	10.55	8.333	3.08	11.33	1.76
2.350	2.64	5.350	10.55	8.350	3.08	11.35	1.76
2.367	2.64	5.367	10.55	8.367	3.08	11.37	1.76
2.383	2.64	5.383	10.55	8.383	3.08	11.38	1.76
2.400	2.64	5.400	10.55	8.400	3.08	11.40	1.76
2.417	2.64	5.417	10.55	8.417	3.08	11.42	1.76
2.433	2.64	5.433	10.55	8.433	3.08	11.43	1.76
2.450	2.64	5.450	10.55	8.450	3.08	11.45	1.76
2.467	2.64	5.467	10.55	8.467	3.08	11.47	1.76
2.483	2.64	5.483	10.55	8.483	3.08	11.48	1.76
2.500	2.64	5.500	10.58	8.500	3.08	11.50	1.76
2.517	2.64	5.517	42.20	8.517	3.08	11.52	1.76
2.533	2.64	5.533	42.20	8.533	3.08	11.53	1.76
2.550	2.64	5.550	42.20	8.550	3.08	11.55	1.76
2.567	2.64	5.567	42.20	8.567	3.08	11.57	1.76
2.583	2.64	5.583	42.20	8.583	3.08	11.58	1.76
2.600	2.64	5.600	42.20	8.600	3.08	11.60	1.76
2.617	2.64	5.617	42.20	8.617	3.08	11.62	1.76
2.633	2.64	5.633	42.20	8.633	3.08	11.63	1.76
2.650	2.64	5.650	42.20	8.650	3.08	11.65	1.76
2.667	2.64	5.667	42.20	8.667	3.08	11.67	1.76
2.683	2.64	5.683	42.20	8.683	3.08	11.68	1.76

2.700	2.64	5.700	42.20	8.700	3.08	11.70	1.76
2.717	2.64	5.717	42.20	8.717	3.08	11.72	1.76
2.733	2.64	5.733	42.20	8.733	3.08	11.73	1.76
2.750	2.64	5.750	42.29	8.750	3.08	11.75	1.76
2.767	2.64	5.767	116.04	8.767	3.08	11.77	1.76
2.783	2.64	5.783	116.04	8.783	3.08	11.78	1.76
2.800	2.64	5.800	116.04	8.800	3.08	11.80	1.76
2.817	2.64	5.817	116.04	8.817	3.08	11.82	1.76
2.833	2.64	5.833	116.04	8.833	3.08	11.83	1.76
2.850	2.64	5.850	116.04	8.850	3.08	11.85	1.76
2.867	2.64	5.867	116.04	8.867	3.08	11.87	1.76
2.883	2.64	5.883	116.04	8.883	3.08	11.88	1.76
2.900	2.64	5.900	116.04	8.900	3.08	11.90	1.76
2.917	2.64	5.917	116.04	8.917	3.08	11.92	1.76
2.933	2.64	5.933	116.04	8.933	3.08	11.93	1.76
2.950	2.64	5.950	116.04	8.950	3.08	11.95	1.76
2.967	2.64	5.967	116.04	8.967	3.08	11.97	1.76
2.983	2.64	5.983	116.04	8.983	3.08	11.98	1.76
3.000	2.64	6.000	115.90	9.000	3.08	12.00	1.76

Max.Eff.Inten.(mm/hr)=	116.04	46.06	
over (min)	5.00	9.00	
Storage Coeff. (min)=	2.63 (ii)	8.36 (ii)	
Unit Hyd. Tpeak (min)=	5.00	9.00	
Unit Hyd. peak (cms)=	0.33	0.13	
			TOTALS
PEAK FLOW (cms)=	0.44	0.12	0.556 (iii)
TIME TO PEAK (hrs)=	6.00	6.07	6.00
RUNOFF VOLUME (mm)=	86.90	22.57	52.17
TOTAL RAINFALL (mm)=	87.91	87.91	87.91
RUNOFF COEFFICIENT =	0.99	0.26	0.59

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0016)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0001):	3.01	0.556	6.00	52.17
	+ ID2= 2 (0025):	1.48	0.100	6.23	33.05
	ID = 3 (0016):	4.49	0.616	6.00	45.86

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0003)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0410	0.0864
	0.0000	0.0281	0.0800	0.1533
	0.0010	0.0321	0.0900	0.1746
	0.0040	0.0479	0.1110	0.2118
	0.0070	0.0518	0.1180	0.2246

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0016)	4.490	0.616	6.00	45.86
OUTFLOW: ID= 1 (0003)	4.490	0.067	7.07	38.13

PEAK FLOW REDUCTION [Qout/Qin](%)= 10.94
TIME SHIFT OF PEAK FLOW (min)= 64.00
MAXIMUM STORAGE USED (ha.m.)= 0.1316

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\3a4df615
Ptotal= 87.91 mm	Comments: 50-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.20	3.25	3.52	6.25	15.82	9.25	3.08
0.50	2.20	3.50	3.52	6.50	15.82	9.50	3.08
0.75	2.20	3.75	3.52	6.75	7.03	9.75	3.08
1.00	2.20	4.00	3.52	7.00	7.03	10.00	3.08
1.25	2.20	4.25	5.27	7.25	5.27	10.25	1.76
1.50	2.20	4.50	5.27	7.50	5.27	10.50	1.76
1.75	2.20	4.75	7.03	7.75	5.27	10.75	1.76
2.00	2.20	5.00	7.03	8.00	5.27	11.00	1.76

2.25	2.64	5.25	10.55	8.25	3.08	11.25	1.76
2.50	2.64	5.50	10.55	8.50	3.08	11.50	1.76
2.75	2.64	5.75	42.20	8.75	3.08	11.75	1.76
3.00	2.64	6.00	116.04	9.00	3.08	12.00	1.76

CALIB NASHYD (0026) ID= 1 DT= 1.0 min	Area (ha)= 0.27	Curve Number (CN)= 71.0
	Ia (mm)= 3.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.02	

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.20	3.017	3.52	6.017	15.82	9.02	3.08
0.033	2.20	3.033	3.52	6.033	15.82	9.03	3.08
0.050	2.20	3.050	3.52	6.050	15.82	9.05	3.08
0.067	2.20	3.067	3.52	6.067	15.82	9.07	3.08
0.083	2.20	3.083	3.52	6.083	15.82	9.08	3.08
0.100	2.20	3.100	3.52	6.100	15.82	9.10	3.08
0.117	2.20	3.117	3.52	6.117	15.82	9.12	3.08
0.133	2.20	3.133	3.52	6.133	15.82	9.13	3.08
0.150	2.20	3.150	3.52	6.150	15.82	9.15	3.08
0.167	2.20	3.167	3.52	6.167	15.82	9.17	3.08
0.183	2.20	3.183	3.52	6.183	15.82	9.18	3.08
0.200	2.20	3.200	3.52	6.200	15.82	9.20	3.08
0.217	2.20	3.217	3.52	6.217	15.82	9.22	3.08
0.233	2.20	3.233	3.52	6.233	15.82	9.23	3.08
0.250	2.20	3.250	3.52	6.250	15.82	9.25	3.08
0.267	2.20	3.267	3.52	6.267	15.82	9.27	3.08
0.283	2.20	3.283	3.52	6.283	15.82	9.28	3.08
0.300	2.20	3.300	3.52	6.300	15.82	9.30	3.08
0.317	2.20	3.317	3.52	6.317	15.82	9.32	3.08
0.333	2.20	3.333	3.52	6.333	15.82	9.33	3.08
0.350	2.20	3.350	3.52	6.350	15.82	9.35	3.08
0.367	2.20	3.367	3.52	6.367	15.82	9.37	3.08
0.383	2.20	3.383	3.52	6.383	15.82	9.38	3.08
0.400	2.20	3.400	3.52	6.400	15.82	9.40	3.08
0.417	2.20	3.417	3.52	6.417	15.82	9.42	3.08
0.433	2.20	3.433	3.52	6.433	15.82	9.43	3.08
0.450	2.20	3.450	3.52	6.450	15.82	9.45	3.08
0.467	2.20	3.467	3.52	6.467	15.82	9.47	3.08
0.483	2.20	3.483	3.52	6.483	15.82	9.48	3.08
0.500	2.20	3.500	3.52	6.500	15.81	9.50	3.08
0.517	2.20	3.517	3.52	6.517	7.03	9.52	3.08
0.533	2.20	3.533	3.52	6.533	7.03	9.53	3.08
0.550	2.20	3.550	3.52	6.550	7.03	9.55	3.08
0.567	2.20	3.567	3.52	6.567	7.03	9.57	3.08
0.583	2.20	3.583	3.52	6.583	7.03	9.58	3.08
0.600	2.20	3.600	3.52	6.600	7.03	9.60	3.08
0.617	2.20	3.617	3.52	6.617	7.03	9.62	3.08
0.633	2.20	3.633	3.52	6.633	7.03	9.63	3.08
0.650	2.20	3.650	3.52	6.650	7.03	9.65	3.08
0.667	2.20	3.667	3.52	6.667	7.03	9.67	3.08
0.683	2.20	3.683	3.52	6.683	7.03	9.68	3.08
0.700	2.20	3.700	3.52	6.700	7.03	9.70	3.08
0.717	2.20	3.717	3.52	6.717	7.03	9.72	3.08
0.733	2.20	3.733	3.52	6.733	7.03	9.73	3.08
0.750	2.20	3.750	3.52	6.750	7.03	9.75	3.08
0.767	2.20	3.767	3.52	6.767	7.03	9.77	3.08
0.783	2.20	3.783	3.52	6.783	7.03	9.78	3.08
0.800	2.20	3.800	3.52	6.800	7.03	9.80	3.08
0.817	2.20	3.817	3.52	6.817	7.03	9.82	3.08
0.833	2.20	3.833	3.52	6.833	7.03	9.83	3.08
0.850	2.20	3.850	3.52	6.850	7.03	9.85	3.08
0.867	2.20	3.867	3.52	6.867	7.03	9.87	3.08
0.883	2.20	3.883	3.52	6.883	7.03	9.88	3.08
0.900	2.20	3.900	3.52	6.900	7.03	9.90	3.08
0.917	2.20	3.917	3.52	6.917	7.03	9.92	3.08
0.933	2.20	3.933	3.52	6.933	7.03	9.93	3.08
0.950	2.20	3.950	3.52	6.950	7.03	9.95	3.08
0.967	2.20	3.967	3.52	6.967	7.03	9.97	3.08
0.983	2.20	3.983	3.52	6.983	7.03	9.98	3.08
1.000	2.20	4.000	3.52	7.000	7.03	10.00	3.08
1.017	2.20	4.017	5.27	7.017	5.27	10.02	1.76
1.033	2.20	4.033	5.27	7.033	5.27	10.03	1.76
1.050	2.20	4.050	5.27	7.050	5.27	10.05	1.76
1.067	2.20	4.067	5.27	7.067	5.27	10.07	1.76
1.083	2.20	4.083	5.27	7.083	5.27	10.08	1.76
1.100	2.20	4.100	5.27	7.100	5.27	10.10	1.76
1.117	2.20	4.117	5.27	7.117	5.27	10.12	1.76
1.133	2.20	4.133	5.27	7.133	5.27	10.13	1.76
1.150	2.20	4.150	5.27	7.150	5.27	10.15	1.76
1.167	2.20	4.167	5.27	7.167	5.27	10.17	1.76
1.183	2.20	4.183	5.27	7.183	5.27	10.18	1.76
1.200	2.20	4.200	5.27	7.200	5.27	10.20	1.76

1.217	2.20	4.217	5.27	7.217	5.27	10.22	1.76
1.233	2.20	4.233	5.27	7.233	5.27	10.23	1.76
1.250	2.20	4.250	5.27	7.250	5.27	10.25	1.76
1.267	2.20	4.267	5.27	7.267	5.27	10.27	1.76
1.283	2.20	4.283	5.27	7.283	5.27	10.28	1.76
1.300	2.20	4.300	5.27	7.300	5.27	10.30	1.76
1.317	2.20	4.317	5.27	7.317	5.27	10.32	1.76
1.333	2.20	4.333	5.27	7.333	5.27	10.33	1.76
1.350	2.20	4.350	5.27	7.350	5.27	10.35	1.76
1.367	2.20	4.367	5.27	7.367	5.27	10.37	1.76
1.383	2.20	4.383	5.27	7.383	5.27	10.38	1.76
1.400	2.20	4.400	5.27	7.400	5.27	10.40	1.76
1.417	2.20	4.417	5.27	7.417	5.27	10.42	1.76
1.433	2.20	4.433	5.27	7.433	5.27	10.43	1.76
1.450	2.20	4.450	5.27	7.450	5.27	10.45	1.76
1.467	2.20	4.467	5.27	7.467	5.27	10.47	1.76
1.483	2.20	4.483	5.27	7.483	5.27	10.48	1.76
1.500	2.20	4.500	5.28	7.500	5.27	10.50	1.76
1.517	2.20	4.517	7.03	7.517	5.27	10.52	1.76
1.533	2.20	4.533	7.03	7.533	5.27	10.53	1.76
1.550	2.20	4.550	7.03	7.550	5.27	10.55	1.76
1.567	2.20	4.567	7.03	7.567	5.27	10.57	1.76
1.583	2.20	4.583	7.03	7.583	5.27	10.58	1.76
1.600	2.20	4.600	7.03	7.600	5.27	10.60	1.76
1.617	2.20	4.617	7.03	7.617	5.27	10.62	1.76
1.633	2.20	4.633	7.03	7.633	5.27	10.63	1.76
1.650	2.20	4.650	7.03	7.650	5.27	10.65	1.76
1.667	2.20	4.667	7.03	7.667	5.27	10.67	1.76
1.683	2.20	4.683	7.03	7.683	5.27	10.68	1.76
1.700	2.20	4.700	7.03	7.700	5.27	10.70	1.76
1.717	2.20	4.717	7.03	7.717	5.27	10.72	1.76
1.733	2.20	4.733	7.03	7.733	5.27	10.73	1.76
1.750	2.20	4.750	7.03	7.750	5.27	10.75	1.76
1.767	2.20	4.767	7.03	7.767	5.27	10.77	1.76
1.783	2.20	4.783	7.03	7.783	5.27	10.78	1.76
1.800	2.20	4.800	7.03	7.800	5.27	10.80	1.76
1.817	2.20	4.817	7.03	7.817	5.27	10.82	1.76
1.833	2.20	4.833	7.03	7.833	5.27	10.83	1.76
1.850	2.20	4.850	7.03	7.850	5.27	10.85	1.76
1.867	2.20	4.867	7.03	7.867	5.27	10.87	1.76
1.883	2.20	4.883	7.03	7.883	5.27	10.88	1.76
1.900	2.20	4.900	7.03	7.900	5.27	10.90	1.76
1.917	2.20	4.917	7.03	7.917	5.27	10.92	1.76
1.933	2.20	4.933	7.03	7.933	5.27	10.93	1.76
1.950	2.20	4.950	7.03	7.950	5.27	10.95	1.76
1.967	2.20	4.967	7.03	7.967	5.27	10.97	1.76
1.983	2.20	4.983	7.03	7.983	5.27	10.98	1.76
2.000	2.20	5.000	7.04	8.000	5.27	11.00	1.76
2.017	2.64	5.017	10.55	8.017	3.08	11.02	1.76
2.033	2.64	5.033	10.55	8.033	3.08	11.03	1.76
2.050	2.64	5.050	10.55	8.050	3.08	11.05	1.76
2.067	2.64	5.067	10.55	8.067	3.08	11.07	1.76
2.083	2.64	5.083	10.55	8.083	3.08	11.08	1.76
2.100	2.64	5.100	10.55	8.100	3.08	11.10	1.76
2.117	2.64	5.117	10.55	8.117	3.08	11.12	1.76
2.133	2.64	5.133	10.55	8.133	3.08	11.13	1.76
2.150	2.64	5.150	10.55	8.150	3.08	11.15	1.76
2.167	2.64	5.167	10.55	8.167	3.08	11.17	1.76
2.183	2.64	5.183	10.55	8.183	3.08	11.18	1.76
2.200	2.64	5.200	10.55	8.200	3.08	11.20	1.76
2.217	2.64	5.217	10.55	8.217	3.08	11.22	1.76
2.233	2.64	5.233	10.55	8.233	3.08	11.23	1.76
2.250	2.64	5.250	10.55	8.250	3.08	11.25	1.76
2.267	2.64	5.267	10.55	8.267	3.08	11.27	1.76
2.283	2.64	5.283	10.55	8.283	3.08	11.28	1.76
2.300	2.64	5.300	10.55	8.300	3.08	11.30	1.76
2.317	2.64	5.317	10.55	8.317	3.08	11.32	1.76
2.333	2.64	5.333	10.55	8.333	3.08	11.33	1.76
2.350	2.64	5.350	10.55	8.350	3.08	11.35	1.76
2.367	2.64	5.367	10.55	8.367	3.08	11.37	1.76
2.383	2.64	5.383	10.55	8.383	3.08	11.38	1.76
2.400	2.64	5.400	10.55	8.400	3.08	11.40	1.76
2.417	2.64	5.417	10.55	8.417	3.08	11.42	1.76
2.433	2.64	5.433	10.55	8.433	3.08	11.43	1.76
2.450	2.64	5.450	10.55	8.450	3.08	11.45	1.76
2.467	2.64	5.467	10.55	8.467	3.08	11.47	1.76
2.483	2.64	5.483	10.55	8.483	3.08	11.48	1.76
2.500	2.64	5.500	10.58	8.500	3.08	11.50	1.76
2.517	2.64	5.517	42.20	8.517	3.08	11.52	1.76
2.533	2.64	5.533	42.20	8.533	3.08	11.53	1.76
2.550	2.64	5.550	42.20	8.550	3.08	11.55	1.76
2.567	2.64	5.567	42.20	8.567	3.08	11.57	1.76
2.583	2.64	5.583	42.20	8.583	3.08	11.58	1.76
2.600	2.64	5.600	42.20	8.600	3.08	11.60	1.76
2.617	2.64	5.617	42.20	8.617	3.08	11.62	1.76
2.633	2.64	5.633	42.20	8.633	3.08	11.63	1.76
2.650	2.64	5.650	42.20	8.650	3.08	11.65	1.76
2.667	2.64	5.667	42.20	8.667	3.08	11.67	1.76
2.683	2.64	5.683	42.20	8.683	3.08	11.68	1.76
2.700	2.64	5.700	42.20	8.700	3.08	11.70	1.76
2.717	2.64	5.717	42.20	8.717	3.08	11.72	1.76

2.733	2.64	5.733	42.20	8.733	3.08	11.73	1.76
2.750	2.64	5.750	42.29	8.750	3.08	11.75	1.76
2.767	2.64	5.767	116.04	8.767	3.08	11.77	1.76
2.783	2.64	5.783	116.04	8.783	3.08	11.78	1.76
2.800	2.64	5.800	116.04	8.800	3.08	11.80	1.76
2.817	2.64	5.817	116.04	8.817	3.08	11.82	1.76
2.833	2.64	5.833	116.04	8.833	3.08	11.83	1.76
2.850	2.64	5.850	116.04	8.850	3.08	11.85	1.76
2.867	2.64	5.867	116.04	8.867	3.08	11.87	1.76
2.883	2.64	5.883	116.04	8.883	3.08	11.88	1.76
2.900	2.64	5.900	116.04	8.900	3.08	11.90	1.76
2.917	2.64	5.917	116.04	8.917	3.08	11.92	1.76
2.933	2.64	5.933	116.04	8.933	3.08	11.93	1.76
2.950	2.64	5.950	116.04	8.950	3.08	11.95	1.76
2.967	2.64	5.967	116.04	8.967	3.08	11.97	1.76
2.983	2.64	5.983	116.04	8.983	3.08	11.98	1.76
3.000	2.64	6.000	115.90	9.000	3.08	12.00	1.76

Unit Hyd Qpeak (cms)= 0.516

PEAK FLOW (cms)= 0.049 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 37.223
TOTAL RAINFALL (mm)= 87.909
RUNOFF COEFFICIENT = 0.423

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

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\3a4df615
Ptotal= 87.91 mm	Comments: 50-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.20	3.25	3.52	6.25	15.82	9.25	3.08
0.50	2.20	3.50	3.52	6.50	15.82	9.50	3.08
0.75	2.20	3.75	3.52	6.75	7.03	9.75	3.08
1.00	2.20	4.00	3.52	7.00	7.03	10.00	3.08
1.25	2.20	4.25	5.27	7.25	5.27	10.25	1.76
1.50	2.20	4.50	5.27	7.50	5.27	10.50	1.76
1.75	2.20	4.75	7.03	7.75	5.27	10.75	1.76
2.00	2.20	5.00	7.03	8.00	5.27	11.00	1.76
2.25	2.64	5.25	10.55	8.25	3.08	11.25	1.76
2.50	2.64	5.50	10.55	8.50	3.08	11.50	1.76
2.75	2.64	5.75	42.20	8.75	3.08	11.75	1.76
3.00	2.64	6.00	116.04	9.00	3.08	12.00	1.76

CALIB STANDHYD (0007) ID= 1 DT= 1.0 min	Area (ha)= 1.80 Total Imp(%)= 59.00 Dir. Conn.(%)= 48.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.06	0.74
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	109.54	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.20	3.017	3.52	6.017	15.82	9.02	3.08
0.033	2.20	3.033	3.52	6.033	15.82	9.03	3.08
0.050	2.20	3.050	3.52	6.050	15.82	9.05	3.08
0.067	2.20	3.067	3.52	6.067	15.82	9.07	3.08
0.083	2.20	3.083	3.52	6.083	15.82	9.08	3.08
0.100	2.20	3.100	3.52	6.100	15.82	9.10	3.08
0.117	2.20	3.117	3.52	6.117	15.82	9.12	3.08
0.133	2.20	3.133	3.52	6.133	15.82	9.13	3.08
0.150	2.20	3.150	3.52	6.150	15.82	9.15	3.08
0.167	2.20	3.167	3.52	6.167	15.82	9.17	3.08
0.183	2.20	3.183	3.52	6.183	15.82	9.18	3.08
0.200	2.20	3.200	3.52	6.200	15.82	9.20	3.08
0.217	2.20	3.217	3.52	6.217	15.82	9.22	3.08
0.233	2.20	3.233	3.52	6.233	15.82	9.23	3.08
0.250	2.20	3.250	3.52	6.250	15.82	9.25	3.08
0.267	2.20	3.267	3.52	6.267	15.82	9.27	3.08
0.283	2.20	3.283	3.52	6.283	15.82	9.28	3.08
0.300	2.20	3.300	3.52	6.300	15.82	9.30	3.08
0.317	2.20	3.317	3.52	6.317	15.82	9.32	3.08
0.333	2.20	3.333	3.52	6.333	15.82	9.33	3.08

0.350	2.20	3.350	3.52	6.350	15.82	9.35	3.08
0.367	2.20	3.367	3.52	6.367	15.82	9.37	3.08
0.383	2.20	3.383	3.52	6.383	15.82	9.38	3.08
0.400	2.20	3.400	3.52	6.400	15.82	9.40	3.08
0.417	2.20	3.417	3.52	6.417	15.82	9.42	3.08
0.433	2.20	3.433	3.52	6.433	15.82	9.43	3.08
0.450	2.20	3.450	3.52	6.450	15.82	9.45	3.08
0.467	2.20	3.467	3.52	6.467	15.82	9.47	3.08
0.483	2.20	3.483	3.52	6.483	15.82	9.48	3.08
0.500	2.20	3.500	3.52	6.500	15.81	9.50	3.08
0.517	2.20	3.517	3.52	6.517	7.03	9.52	3.08
0.533	2.20	3.533	3.52	6.533	7.03	9.53	3.08
0.550	2.20	3.550	3.52	6.550	7.03	9.55	3.08
0.567	2.20	3.567	3.52	6.567	7.03	9.57	3.08
0.583	2.20	3.583	3.52	6.583	7.03	9.58	3.08
0.600	2.20	3.600	3.52	6.600	7.03	9.60	3.08
0.617	2.20	3.617	3.52	6.617	7.03	9.62	3.08
0.633	2.20	3.633	3.52	6.633	7.03	9.63	3.08
0.650	2.20	3.650	3.52	6.650	7.03	9.65	3.08
0.667	2.20	3.667	3.52	6.667	7.03	9.67	3.08
0.683	2.20	3.683	3.52	6.683	7.03	9.68	3.08
0.700	2.20	3.700	3.52	6.700	7.03	9.70	3.08
0.717	2.20	3.717	3.52	6.717	7.03	9.72	3.08
0.733	2.20	3.733	3.52	6.733	7.03	9.73	3.08
0.750	2.20	3.750	3.52	6.750	7.03	9.75	3.08
0.767	2.20	3.767	3.52	6.767	7.03	9.77	3.08
0.783	2.20	3.783	3.52	6.783	7.03	9.78	3.08
0.800	2.20	3.800	3.52	6.800	7.03	9.80	3.08
0.817	2.20	3.817	3.52	6.817	7.03	9.82	3.08
0.833	2.20	3.833	3.52	6.833	7.03	9.83	3.08
0.850	2.20	3.850	3.52	6.850	7.03	9.85	3.08
0.867	2.20	3.867	3.52	6.867	7.03	9.87	3.08
0.883	2.20	3.883	3.52	6.883	7.03	9.88	3.08
0.900	2.20	3.900	3.52	6.900	7.03	9.90	3.08
0.917	2.20	3.917	3.52	6.917	7.03	9.92	3.08
0.933	2.20	3.933	3.52	6.933	7.03	9.93	3.08
0.950	2.20	3.950	3.52	6.950	7.03	9.95	3.08
0.967	2.20	3.967	3.52	6.967	7.03	9.97	3.08
0.983	2.20	3.983	3.52	6.983	7.03	9.98	3.08
1.000	2.20	4.000	3.52	7.000	7.03	10.00	3.08
1.017	2.20	4.017	5.27	7.017	5.27	10.02	1.76
1.033	2.20	4.033	5.27	7.033	5.27	10.03	1.76
1.050	2.20	4.050	5.27	7.050	5.27	10.05	1.76
1.067	2.20	4.067	5.27	7.067	5.27	10.07	1.76
1.083	2.20	4.083	5.27	7.083	5.27	10.08	1.76
1.100	2.20	4.100	5.27	7.100	5.27	10.10	1.76
1.117	2.20	4.117	5.27	7.117	5.27	10.12	1.76
1.133	2.20	4.133	5.27	7.133	5.27	10.13	1.76
1.150	2.20	4.150	5.27	7.150	5.27	10.15	1.76
1.167	2.20	4.167	5.27	7.167	5.27	10.17	1.76
1.183	2.20	4.183	5.27	7.183	5.27	10.18	1.76
1.200	2.20	4.200	5.27	7.200	5.27	10.20	1.76
1.217	2.20	4.217	5.27	7.217	5.27	10.22	1.76
1.233	2.20	4.233	5.27	7.233	5.27	10.23	1.76
1.250	2.20	4.250	5.27	7.250	5.27	10.25	1.76
1.267	2.20	4.267	5.27	7.267	5.27	10.27	1.76
1.283	2.20	4.283	5.27	7.283	5.27	10.28	1.76
1.300	2.20	4.300	5.27	7.300	5.27	10.30	1.76
1.317	2.20	4.317	5.27	7.317	5.27	10.32	1.76
1.333	2.20	4.333	5.27	7.333	5.27	10.33	1.76
1.350	2.20	4.350	5.27	7.350	5.27	10.35	1.76
1.367	2.20	4.367	5.27	7.367	5.27	10.37	1.76
1.383	2.20	4.383	5.27	7.383	5.27	10.38	1.76
1.400	2.20	4.400	5.27	7.400	5.27	10.40	1.76
1.417	2.20	4.417	5.27	7.417	5.27	10.42	1.76
1.433	2.20	4.433	5.27	7.433	5.27	10.43	1.76
1.450	2.20	4.450	5.27	7.450	5.27	10.45	1.76
1.467	2.20	4.467	5.27	7.467	5.27	10.47	1.76
1.483	2.20	4.483	5.27	7.483	5.27	10.48	1.76
1.500	2.20	4.500	5.28	7.500	5.27	10.50	1.76
1.517	2.20	4.517	7.03	7.517	5.27	10.52	1.76
1.533	2.20	4.533	7.03	7.533	5.27	10.53	1.76
1.550	2.20	4.550	7.03	7.550	5.27	10.55	1.76
1.567	2.20	4.567	7.03	7.567	5.27	10.57	1.76
1.583	2.20	4.583	7.03	7.583	5.27	10.58	1.76
1.600	2.20	4.600	7.03	7.600	5.27	10.60	1.76
1.617	2.20	4.617	7.03	7.617	5.27	10.62	1.76
1.633	2.20	4.633	7.03	7.633	5.27	10.63	1.76
1.650	2.20	4.650	7.03	7.650	5.27	10.65	1.76
1.667	2.20	4.667	7.03	7.667	5.27	10.67	1.76
1.683	2.20	4.683	7.03	7.683	5.27	10.68	1.76
1.700	2.20	4.700	7.03	7.700	5.27	10.70	1.76
1.717	2.20	4.717	7.03	7.717	5.27	10.72	1.76
1.733	2.20	4.733	7.03	7.733	5.27	10.73	1.76
1.750	2.20	4.750	7.03	7.750	5.27	10.75	1.76
1.767	2.20	4.767	7.03	7.767	5.27	10.77	1.76
1.783	2.20	4.783	7.03	7.783	5.27	10.78	1.76
1.800	2.20	4.800	7.03	7.800	5.27	10.80	1.76
1.817	2.20	4.817	7.03	7.817	5.27	10.82	1.76
1.833	2.20	4.833	7.03	7.833	5.27	10.83	1.76
1.850	2.20	4.850	7.03	7.850	5.27	10.85	1.76

1.867	2.20	4.867	7.03	7.867	5.27	10.87	1.76
1.883	2.20	4.883	7.03	7.883	5.27	10.88	1.76
1.900	2.20	4.900	7.03	7.900	5.27	10.90	1.76
1.917	2.20	4.917	7.03	7.917	5.27	10.92	1.76
1.933	2.20	4.933	7.03	7.933	5.27	10.93	1.76
1.950	2.20	4.950	7.03	7.950	5.27	10.95	1.76
1.967	2.20	4.967	7.03	7.967	5.27	10.97	1.76
1.983	2.20	4.983	7.03	7.983	5.27	10.98	1.76
2.000	2.20	5.000	7.04	8.000	5.27	11.00	1.76
2.017	2.64	5.017	10.55	8.017	3.08	11.02	1.76
2.033	2.64	5.033	10.55	8.033	3.08	11.03	1.76
2.050	2.64	5.050	10.55	8.050	3.08	11.05	1.76
2.067	2.64	5.067	10.55	8.067	3.08	11.07	1.76
2.083	2.64	5.083	10.55	8.083	3.08	11.08	1.76
2.100	2.64	5.100	10.55	8.100	3.08	11.10	1.76
2.117	2.64	5.117	10.55	8.117	3.08	11.12	1.76
2.133	2.64	5.133	10.55	8.133	3.08	11.13	1.76
2.150	2.64	5.150	10.55	8.150	3.08	11.15	1.76
2.167	2.64	5.167	10.55	8.167	3.08	11.17	1.76
2.183	2.64	5.183	10.55	8.183	3.08	11.18	1.76
2.200	2.64	5.200	10.55	8.200	3.08	11.20	1.76
2.217	2.64	5.217	10.55	8.217	3.08	11.22	1.76
2.233	2.64	5.233	10.55	8.233	3.08	11.23	1.76
2.250	2.64	5.250	10.55	8.250	3.08	11.25	1.76
2.267	2.64	5.267	10.55	8.267	3.08	11.27	1.76
2.283	2.64	5.283	10.55	8.283	3.08	11.28	1.76
2.300	2.64	5.300	10.55	8.300	3.08	11.30	1.76
2.317	2.64	5.317	10.55	8.317	3.08	11.32	1.76
2.333	2.64	5.333	10.55	8.333	3.08	11.33	1.76
2.350	2.64	5.350	10.55	8.350	3.08	11.35	1.76
2.367	2.64	5.367	10.55	8.367	3.08	11.37	1.76
2.383	2.64	5.383	10.55	8.383	3.08	11.38	1.76
2.400	2.64	5.400	10.55	8.400	3.08	11.40	1.76
2.417	2.64	5.417	10.55	8.417	3.08	11.42	1.76
2.433	2.64	5.433	10.55	8.433	3.08	11.43	1.76
2.450	2.64	5.450	10.55	8.450	3.08	11.45	1.76
2.467	2.64	5.467	10.55	8.467	3.08	11.47	1.76
2.483	2.64	5.483	10.55	8.483	3.08	11.48	1.76
2.500	2.64	5.500	10.58	8.500	3.08	11.50	1.76
2.517	2.64	5.517	42.20	8.517	3.08	11.52	1.76
2.533	2.64	5.533	42.20	8.533	3.08	11.53	1.76
2.550	2.64	5.550	42.20	8.550	3.08	11.55	1.76
2.567	2.64	5.567	42.20	8.567	3.08	11.57	1.76
2.583	2.64	5.583	42.20	8.583	3.08	11.58	1.76
2.600	2.64	5.600	42.20	8.600	3.08	11.60	1.76
2.617	2.64	5.617	42.20	8.617	3.08	11.62	1.76
2.633	2.64	5.633	42.20	8.633	3.08	11.63	1.76
2.650	2.64	5.650	42.20	8.650	3.08	11.65	1.76
2.667	2.64	5.667	42.20	8.667	3.08	11.67	1.76
2.683	2.64	5.683	42.20	8.683	3.08	11.68	1.76
2.700	2.64	5.700	42.20	8.700	3.08	11.70	1.76
2.717	2.64	5.717	42.20	8.717	3.08	11.72	1.76
2.733	2.64	5.733	42.20	8.733	3.08	11.73	1.76
2.750	2.64	5.750	42.29	8.750	3.08	11.75	1.76
2.767	2.64	5.767	116.04	8.767	3.08	11.77	1.76
2.783	2.64	5.783	116.04	8.783	3.08	11.78	1.76
2.800	2.64	5.800	116.04	8.800	3.08	11.80	1.76
2.817	2.64	5.817	116.04	8.817	3.08	11.82	1.76
2.833	2.64	5.833	116.04	8.833	3.08	11.83	1.76
2.850	2.64	5.850	116.04	8.850	3.08	11.85	1.76
2.867	2.64	5.867	116.04	8.867	3.08	11.87	1.76
2.883	2.64	5.883	116.04	8.883	3.08	11.88	1.76
2.900	2.64	5.900	116.04	8.900	3.08	11.90	1.76
2.917	2.64	5.917	116.04	8.917	3.08	11.92	1.76
2.933	2.64	5.933	116.04	8.933	3.08	11.93	1.76
2.950	2.64	5.950	116.04	8.950	3.08	11.95	1.76
2.967	2.64	5.967	116.04	8.967	3.08	11.97	1.76
2.983	2.64	5.983	116.04	8.983	3.08	11.98	1.76
3.000	2.64	6.000	115.90	9.000	3.08	12.00	1.76

Max.Eff.Inten.(mm/hr)=	116.04	46.89	
over (min)	5.00	9.00	
Storage Coeff. (min)=	2.54 (ii)	8.79 (ii)	
Unit Hyd. Tpeak (min)=	5.00	9.00	
Unit Hyd. peak (cms)=	0.33	0.13	
			TOTALS
PEAK FLOW (cms)=	0.28	0.07	0.341 (iii)
TIME TO PEAK (hrs)=	6.00	6.07	6.00
RUNOFF VOLUME (mm)=	86.91	22.76	53.55
TOTAL RAINFALL (mm)=	87.91	87.91	87.91
RUNOFF COEFFICIENT =	0.99	0.26	0.61

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0018)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0026):	0.27	0.049	6.00	37.22
	+ ID2= 2 (0007):	1.80	0.341	6.00	53.55
	ID = 3 (0018):	2.07	0.390	6.00	51.42

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0009)	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
IN= 2---> OUT= 1				
DT= 1.0 min	0.0000	0.0000	0.0330	0.0298
	0.0020	0.0000	0.0480	0.0300
	0.0190	0.0288	0.5150	0.0368
	0.0250	0.0292	0.5380	0.0368

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0018)	2.070	0.390	6.00	51.42
OUTFLOW: ID= 1 (0009)	2.070	0.365	6.02	51.42

PEAK FLOW REDUCTION [Qout/Qin](%)= 93.47
TIME SHIFT OF PEAK FLOW (min)= 1.00
MAXIMUM STORAGE USED (ha.m.)= 0.0346

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\3a4df615
Ptotal= 87.91 mm	Comments: 50-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.20	3.25	3.52	6.25	15.82	9.25	3.08
0.50	2.20	3.50	3.52	6.50	15.82	9.50	3.08
0.75	2.20	3.75	3.52	6.75	7.03	9.75	3.08
1.00	2.20	4.00	3.52	7.00	7.03	10.00	3.08
1.25	2.20	4.25	5.27	7.25	5.27	10.25	1.76
1.50	2.20	4.50	5.27	7.50	5.27	10.50	1.76
1.75	2.20	4.75	7.03	7.75	5.27	10.75	1.76
2.00	2.20	5.00	7.03	8.00	5.27	11.00	1.76
2.25	2.64	5.25	10.55	8.25	3.08	11.25	1.76
2.50	2.64	5.50	10.55	8.50	3.08	11.50	1.76
2.75	2.64	5.75	42.20	8.75	3.08	11.75	1.76
3.00	2.64	6.00	116.04	9.00	3.08	12.00	1.76

CALIB	Area (ha)= 0.80	
STANDHYD (0006)	Total Imp(%)= 87.00	Dir. Conn.(%)= 82.00
ID= 1 DT= 1.0 min		

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.70	0.10
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	73.03	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.20	3.017	3.52	6.017	15.82	9.02	3.08
0.033	2.20	3.033	3.52	6.033	15.82	9.03	3.08
0.050	2.20	3.050	3.52	6.050	15.82	9.05	3.08
0.067	2.20	3.067	3.52	6.067	15.82	9.07	3.08
0.083	2.20	3.083	3.52	6.083	15.82	9.08	3.08
0.100	2.20	3.100	3.52	6.100	15.82	9.10	3.08
0.117	2.20	3.117	3.52	6.117	15.82	9.12	3.08
0.133	2.20	3.133	3.52	6.133	15.82	9.13	3.08
0.150	2.20	3.150	3.52	6.150	15.82	9.15	3.08
0.167	2.20	3.167	3.52	6.167	15.82	9.17	3.08
0.183	2.20	3.183	3.52	6.183	15.82	9.18	3.08
0.200	2.20	3.200	3.52	6.200	15.82	9.20	3.08
0.217	2.20	3.217	3.52	6.217	15.82	9.22	3.08
0.233	2.20	3.233	3.52	6.233	15.82	9.23	3.08
0.250	2.20	3.250	3.52	6.250	15.82	9.25	3.08
0.267	2.20	3.267	3.52	6.267	15.82	9.27	3.08
0.283	2.20	3.283	3.52	6.283	15.82	9.28	3.08

0.300	2.20	3.300	3.52	6.300	15.82	9.30	3.08
0.317	2.20	3.317	3.52	6.317	15.82	9.32	3.08
0.333	2.20	3.333	3.52	6.333	15.82	9.33	3.08
0.350	2.20	3.350	3.52	6.350	15.82	9.35	3.08
0.367	2.20	3.367	3.52	6.367	15.82	9.37	3.08
0.383	2.20	3.383	3.52	6.383	15.82	9.38	3.08
0.400	2.20	3.400	3.52	6.400	15.82	9.40	3.08
0.417	2.20	3.417	3.52	6.417	15.82	9.42	3.08
0.433	2.20	3.433	3.52	6.433	15.82	9.43	3.08
0.450	2.20	3.450	3.52	6.450	15.82	9.45	3.08
0.467	2.20	3.467	3.52	6.467	15.82	9.47	3.08
0.483	2.20	3.483	3.52	6.483	15.82	9.48	3.08
0.500	2.20	3.500	3.52	6.500	15.81	9.50	3.08
0.517	2.20	3.517	3.52	6.517	7.03	9.52	3.08
0.533	2.20	3.533	3.52	6.533	7.03	9.53	3.08
0.550	2.20	3.550	3.52	6.550	7.03	9.55	3.08
0.567	2.20	3.567	3.52	6.567	7.03	9.57	3.08
0.583	2.20	3.583	3.52	6.583	7.03	9.58	3.08
0.600	2.20	3.600	3.52	6.600	7.03	9.60	3.08
0.617	2.20	3.617	3.52	6.617	7.03	9.62	3.08
0.633	2.20	3.633	3.52	6.633	7.03	9.63	3.08
0.650	2.20	3.650	3.52	6.650	7.03	9.65	3.08
0.667	2.20	3.667	3.52	6.667	7.03	9.67	3.08
0.683	2.20	3.683	3.52	6.683	7.03	9.68	3.08
0.700	2.20	3.700	3.52	6.700	7.03	9.70	3.08
0.717	2.20	3.717	3.52	6.717	7.03	9.72	3.08
0.733	2.20	3.733	3.52	6.733	7.03	9.73	3.08
0.750	2.20	3.750	3.52	6.750	7.03	9.75	3.08
0.767	2.20	3.767	3.52	6.767	7.03	9.77	3.08
0.783	2.20	3.783	3.52	6.783	7.03	9.78	3.08
0.800	2.20	3.800	3.52	6.800	7.03	9.80	3.08
0.817	2.20	3.817	3.52	6.817	7.03	9.82	3.08
0.833	2.20	3.833	3.52	6.833	7.03	9.83	3.08
0.850	2.20	3.850	3.52	6.850	7.03	9.85	3.08
0.867	2.20	3.867	3.52	6.867	7.03	9.87	3.08
0.883	2.20	3.883	3.52	6.883	7.03	9.88	3.08
0.900	2.20	3.900	3.52	6.900	7.03	9.90	3.08
0.917	2.20	3.917	3.52	6.917	7.03	9.92	3.08
0.933	2.20	3.933	3.52	6.933	7.03	9.93	3.08
0.950	2.20	3.950	3.52	6.950	7.03	9.95	3.08
0.967	2.20	3.967	3.52	6.967	7.03	9.97	3.08
0.983	2.20	3.983	3.52	6.983	7.03	9.98	3.08
1.000	2.20	4.000	3.52	7.000	7.03	10.00	3.08
1.017	2.20	4.017	5.27	7.017	5.27	10.02	1.76
1.033	2.20	4.033	5.27	7.033	5.27	10.03	1.76
1.050	2.20	4.050	5.27	7.050	5.27	10.05	1.76
1.067	2.20	4.067	5.27	7.067	5.27	10.07	1.76
1.083	2.20	4.083	5.27	7.083	5.27	10.08	1.76
1.100	2.20	4.100	5.27	7.100	5.27	10.10	1.76
1.117	2.20	4.117	5.27	7.117	5.27	10.12	1.76
1.133	2.20	4.133	5.27	7.133	5.27	10.13	1.76
1.150	2.20	4.150	5.27	7.150	5.27	10.15	1.76
1.167	2.20	4.167	5.27	7.167	5.27	10.17	1.76
1.183	2.20	4.183	5.27	7.183	5.27	10.18	1.76
1.200	2.20	4.200	5.27	7.200	5.27	10.20	1.76
1.217	2.20	4.217	5.27	7.217	5.27	10.22	1.76
1.233	2.20	4.233	5.27	7.233	5.27	10.23	1.76
1.250	2.20	4.250	5.27	7.250	5.27	10.25	1.76
1.267	2.20	4.267	5.27	7.267	5.27	10.27	1.76
1.283	2.20	4.283	5.27	7.283	5.27	10.28	1.76
1.300	2.20	4.300	5.27	7.300	5.27	10.30	1.76
1.317	2.20	4.317	5.27	7.317	5.27	10.32	1.76
1.333	2.20	4.333	5.27	7.333	5.27	10.33	1.76
1.350	2.20	4.350	5.27	7.350	5.27	10.35	1.76
1.367	2.20	4.367	5.27	7.367	5.27	10.37	1.76
1.383	2.20	4.383	5.27	7.383	5.27	10.38	1.76
1.400	2.20	4.400	5.27	7.400	5.27	10.40	1.76
1.417	2.20	4.417	5.27	7.417	5.27	10.42	1.76
1.433	2.20	4.433	5.27	7.433	5.27	10.43	1.76
1.450	2.20	4.450	5.27	7.450	5.27	10.45	1.76
1.467	2.20	4.467	5.27	7.467	5.27	10.47	1.76
1.483	2.20	4.483	5.27	7.483	5.27	10.48	1.76
1.500	2.20	4.500	5.28	7.500	5.27	10.50	1.76
1.517	2.20	4.517	7.03	7.517	5.27	10.52	1.76
1.533	2.20	4.533	7.03	7.533	5.27	10.53	1.76
1.550	2.20	4.550	7.03	7.550	5.27	10.55	1.76
1.567	2.20	4.567	7.03	7.567	5.27	10.57	1.76
1.583	2.20	4.583	7.03	7.583	5.27	10.58	1.76
1.600	2.20	4.600	7.03	7.600	5.27	10.60	1.76
1.617	2.20	4.617	7.03	7.617	5.27	10.62	1.76
1.633	2.20	4.633	7.03	7.633	5.27	10.63	1.76
1.650	2.20	4.650	7.03	7.650	5.27	10.65	1.76
1.667	2.20	4.667	7.03	7.667	5.27	10.67	1.76
1.683	2.20	4.683	7.03	7.683	5.27	10.68	1.76
1.700	2.20	4.700	7.03	7.700	5.27	10.70	1.76
1.717	2.20	4.717	7.03	7.717	5.27	10.72	1.76
1.733	2.20	4.733	7.03	7.733	5.27	10.73	1.76
1.750	2.20	4.750	7.03	7.750	5.27	10.75	1.76
1.767	2.20	4.767	7.03	7.767	5.27	10.77	1.76
1.783	2.20	4.783	7.03	7.783	5.27	10.78	1.76
1.800	2.20	4.800	7.03	7.800	5.27	10.80	1.76

1.817	2.20	4.817	7.03	7.817	5.27	10.82	1.76
1.833	2.20	4.833	7.03	7.833	5.27	10.83	1.76
1.850	2.20	4.850	7.03	7.850	5.27	10.85	1.76
1.867	2.20	4.867	7.03	7.867	5.27	10.87	1.76
1.883	2.20	4.883	7.03	7.883	5.27	10.88	1.76
1.900	2.20	4.900	7.03	7.900	5.27	10.90	1.76
1.917	2.20	4.917	7.03	7.917	5.27	10.92	1.76
1.933	2.20	4.933	7.03	7.933	5.27	10.93	1.76
1.950	2.20	4.950	7.03	7.950	5.27	10.95	1.76
1.967	2.20	4.967	7.03	7.967	5.27	10.97	1.76
1.983	2.20	4.983	7.03	7.983	5.27	10.98	1.76
2.000	2.20	5.000	7.04	8.000	5.27	11.00	1.76
2.017	2.64	5.017	10.55	8.017	3.08	11.02	1.76
2.033	2.64	5.033	10.55	8.033	3.08	11.03	1.76
2.050	2.64	5.050	10.55	8.050	3.08	11.05	1.76
2.067	2.64	5.067	10.55	8.067	3.08	11.07	1.76
2.083	2.64	5.083	10.55	8.083	3.08	11.08	1.76
2.100	2.64	5.100	10.55	8.100	3.08	11.10	1.76
2.117	2.64	5.117	10.55	8.117	3.08	11.12	1.76
2.133	2.64	5.133	10.55	8.133	3.08	11.13	1.76
2.150	2.64	5.150	10.55	8.150	3.08	11.15	1.76
2.167	2.64	5.167	10.55	8.167	3.08	11.17	1.76
2.183	2.64	5.183	10.55	8.183	3.08	11.18	1.76
2.200	2.64	5.200	10.55	8.200	3.08	11.20	1.76
2.217	2.64	5.217	10.55	8.217	3.08	11.22	1.76
2.233	2.64	5.233	10.55	8.233	3.08	11.23	1.76
2.250	2.64	5.250	10.55	8.250	3.08	11.25	1.76
2.267	2.64	5.267	10.55	8.267	3.08	11.27	1.76
2.283	2.64	5.283	10.55	8.283	3.08	11.28	1.76
2.300	2.64	5.300	10.55	8.300	3.08	11.30	1.76
2.317	2.64	5.317	10.55	8.317	3.08	11.32	1.76
2.333	2.64	5.333	10.55	8.333	3.08	11.33	1.76
2.350	2.64	5.350	10.55	8.350	3.08	11.35	1.76
2.367	2.64	5.367	10.55	8.367	3.08	11.37	1.76
2.383	2.64	5.383	10.55	8.383	3.08	11.38	1.76
2.400	2.64	5.400	10.55	8.400	3.08	11.40	1.76
2.417	2.64	5.417	10.55	8.417	3.08	11.42	1.76
2.433	2.64	5.433	10.55	8.433	3.08	11.43	1.76
2.450	2.64	5.450	10.55	8.450	3.08	11.45	1.76
2.467	2.64	5.467	10.55	8.467	3.08	11.47	1.76
2.483	2.64	5.483	10.55	8.483	3.08	11.48	1.76
2.500	2.64	5.500	10.58	8.500	3.08	11.50	1.76
2.517	2.64	5.517	42.20	8.517	3.08	11.52	1.76
2.533	2.64	5.533	42.20	8.533	3.08	11.53	1.76
2.550	2.64	5.550	42.20	8.550	3.08	11.55	1.76
2.567	2.64	5.567	42.20	8.567	3.08	11.57	1.76
2.583	2.64	5.583	42.20	8.583	3.08	11.58	1.76
2.600	2.64	5.600	42.20	8.600	3.08	11.60	1.76
2.617	2.64	5.617	42.20	8.617	3.08	11.62	1.76
2.633	2.64	5.633	42.20	8.633	3.08	11.63	1.76
2.650	2.64	5.650	42.20	8.650	3.08	11.65	1.76
2.667	2.64	5.667	42.20	8.667	3.08	11.67	1.76
2.683	2.64	5.683	42.20	8.683	3.08	11.68	1.76
2.700	2.64	5.700	42.20	8.700	3.08	11.70	1.76
2.717	2.64	5.717	42.20	8.717	3.08	11.72	1.76
2.733	2.64	5.733	42.20	8.733	3.08	11.73	1.76
2.750	2.64	5.750	42.29	8.750	3.08	11.75	1.76
2.767	2.64	5.767	116.04	8.767	3.08	11.77	1.76
2.783	2.64	5.783	116.04	8.783	3.08	11.78	1.76
2.800	2.64	5.800	116.04	8.800	3.08	11.80	1.76
2.817	2.64	5.817	116.04	8.817	3.08	11.82	1.76
2.833	2.64	5.833	116.04	8.833	3.08	11.83	1.76
2.850	2.64	5.850	116.04	8.850	3.08	11.85	1.76
2.867	2.64	5.867	116.04	8.867	3.08	11.87	1.76
2.883	2.64	5.883	116.04	8.883	3.08	11.88	1.76
2.900	2.64	5.900	116.04	8.900	3.08	11.90	1.76
2.917	2.64	5.917	116.04	8.917	3.08	11.92	1.76
2.933	2.64	5.933	116.04	8.933	3.08	11.93	1.76
2.950	2.64	5.950	116.04	8.950	3.08	11.95	1.76
2.967	2.64	5.967	116.04	8.967	3.08	11.97	1.76
2.983	2.64	5.983	116.04	8.983	3.08	11.98	1.76
3.000	2.64	6.000	115.90	9.000	3.08	12.00	1.76

Max.Eff.Inten.(mm/hr)=	116.04	54.88	
over (min)	5.00	6.00	
Storage Coeff. (min)=	1.99 (ii)	5.18 (ii)	
Unit Hyd. Tpeak (min)=	5.00	6.00	
Unit Hyd. peak (cms)=	0.37	0.21	
			TOTALS
PEAK FLOW (cms)=	0.21	0.01	0.225 (iii)
TIME TO PEAK (hrs)=	6.00	6.02	6.00
RUNOFF VOLUME (mm)=	86.90	24.41	75.66
TOTAL RAINFALL (mm)=	87.91	87.91	87.91
RUNOFF COEFFICIENT =	0.99	0.28	0.86

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0011) IN= 2---> OUT= 1 DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0810	0.0180
	0.0010	0.0005	0.0910	0.0205
	0.0060	0.0056	0.1120	0.0249
	0.0100	0.0061	0.1190	0.0264
	0.0430	0.0101	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0006)	0.800	0.225	6.00	75.66
OUTFLOW: ID= 1 (0011)	0.800	0.102	6.08	75.50

PEAK FLOW REDUCTION [Qout/Qin](%)= 45.54
TIME SHIFT OF PEAK FLOW (min)= 5.00
MAXIMUM STORAGE USED (ha.m.)= 0.0229

READ STORM Ptotal= 87.91 mm	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\3a4df615 Comments: 50-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.20	3.25	3.52	6.25	15.82	9.25	3.08
0.50	2.20	3.50	3.52	6.50	15.82	9.50	3.08
0.75	2.20	3.75	3.52	6.75	7.03	9.75	3.08
1.00	2.20	4.00	3.52	7.00	7.03	10.00	3.08
1.25	2.20	4.25	5.27	7.25	5.27	10.25	1.76
1.50	2.20	4.50	5.27	7.50	5.27	10.50	1.76
1.75	2.20	4.75	7.03	7.75	5.27	10.75	1.76
2.00	2.20	5.00	7.03	8.00	5.27	11.00	1.76
2.25	2.64	5.25	10.55	8.25	3.08	11.25	1.76
2.50	2.64	5.50	10.55	8.50	3.08	11.50	1.76
2.75	2.64	5.75	42.20	8.75	3.08	11.75	1.76
3.00	2.64	6.00	116.04	9.00	3.08	12.00	1.76

CALIB STANDHYD (0008) ID= 1 DT= 1.0 min	Area (ha)= 2.53 Total Imp(%)= 52.00 Dir. Conn.(%)= 44.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.32	1.21
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	129.87	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.20	3.017	3.52	6.017	15.82	9.02	3.08
0.033	2.20	3.033	3.52	6.033	15.82	9.03	3.08
0.050	2.20	3.050	3.52	6.050	15.82	9.05	3.08
0.067	2.20	3.067	3.52	6.067	15.82	9.07	3.08
0.083	2.20	3.083	3.52	6.083	15.82	9.08	3.08
0.100	2.20	3.100	3.52	6.100	15.82	9.10	3.08
0.117	2.20	3.117	3.52	6.117	15.82	9.12	3.08
0.133	2.20	3.133	3.52	6.133	15.82	9.13	3.08
0.150	2.20	3.150	3.52	6.150	15.82	9.15	3.08
0.167	2.20	3.167	3.52	6.167	15.82	9.17	3.08
0.183	2.20	3.183	3.52	6.183	15.82	9.18	3.08
0.200	2.20	3.200	3.52	6.200	15.82	9.20	3.08
0.217	2.20	3.217	3.52	6.217	15.82	9.22	3.08
0.233	2.20	3.233	3.52	6.233	15.82	9.23	3.08
0.250	2.20	3.250	3.52	6.250	15.82	9.25	3.08
0.267	2.20	3.267	3.52	6.267	15.82	9.27	3.08
0.283	2.20	3.283	3.52	6.283	15.82	9.28	3.08
0.300	2.20	3.300	3.52	6.300	15.82	9.30	3.08
0.317	2.20	3.317	3.52	6.317	15.82	9.32	3.08
0.333	2.20	3.333	3.52	6.333	15.82	9.33	3.08
0.350	2.20	3.350	3.52	6.350	15.82	9.35	3.08
0.367	2.20	3.367	3.52	6.367	15.82	9.37	3.08
0.383	2.20	3.383	3.52	6.383	15.82	9.38	3.08
0.400	2.20	3.400	3.52	6.400	15.82	9.40	3.08
0.417	2.20	3.417	3.52	6.417	15.82	9.42	3.08
0.433	2.20	3.433	3.52	6.433	15.82	9.43	3.08

0.450	2.20	3.450	3.52	6.450	15.82	9.45	3.08
0.467	2.20	3.467	3.52	6.467	15.82	9.47	3.08
0.483	2.20	3.483	3.52	6.483	15.82	9.48	3.08
0.500	2.20	3.500	3.52	6.500	15.81	9.50	3.08
0.517	2.20	3.517	3.52	6.517	7.03	9.52	3.08
0.533	2.20	3.533	3.52	6.533	7.03	9.53	3.08
0.550	2.20	3.550	3.52	6.550	7.03	9.55	3.08
0.567	2.20	3.567	3.52	6.567	7.03	9.57	3.08
0.583	2.20	3.583	3.52	6.583	7.03	9.58	3.08
0.600	2.20	3.600	3.52	6.600	7.03	9.60	3.08
0.617	2.20	3.617	3.52	6.617	7.03	9.62	3.08
0.633	2.20	3.633	3.52	6.633	7.03	9.63	3.08
0.650	2.20	3.650	3.52	6.650	7.03	9.65	3.08
0.667	2.20	3.667	3.52	6.667	7.03	9.67	3.08
0.683	2.20	3.683	3.52	6.683	7.03	9.68	3.08
0.700	2.20	3.700	3.52	6.700	7.03	9.70	3.08
0.717	2.20	3.717	3.52	6.717	7.03	9.72	3.08
0.733	2.20	3.733	3.52	6.733	7.03	9.73	3.08
0.750	2.20	3.750	3.52	6.750	7.03	9.75	3.08
0.767	2.20	3.767	3.52	6.767	7.03	9.77	3.08
0.783	2.20	3.783	3.52	6.783	7.03	9.78	3.08
0.800	2.20	3.800	3.52	6.800	7.03	9.80	3.08
0.817	2.20	3.817	3.52	6.817	7.03	9.82	3.08
0.833	2.20	3.833	3.52	6.833	7.03	9.83	3.08
0.850	2.20	3.850	3.52	6.850	7.03	9.85	3.08
0.867	2.20	3.867	3.52	6.867	7.03	9.87	3.08
0.883	2.20	3.883	3.52	6.883	7.03	9.88	3.08
0.900	2.20	3.900	3.52	6.900	7.03	9.90	3.08
0.917	2.20	3.917	3.52	6.917	7.03	9.92	3.08
0.933	2.20	3.933	3.52	6.933	7.03	9.93	3.08
0.950	2.20	3.950	3.52	6.950	7.03	9.95	3.08
0.967	2.20	3.967	3.52	6.967	7.03	9.97	3.08
0.983	2.20	3.983	3.52	6.983	7.03	9.98	3.08
1.000	2.20	4.000	3.52	7.000	7.03	10.00	3.08
1.017	2.20	4.017	5.27	7.017	5.27	10.02	1.76
1.033	2.20	4.033	5.27	7.033	5.27	10.03	1.76
1.050	2.20	4.050	5.27	7.050	5.27	10.05	1.76
1.067	2.20	4.067	5.27	7.067	5.27	10.07	1.76
1.083	2.20	4.083	5.27	7.083	5.27	10.08	1.76
1.100	2.20	4.100	5.27	7.100	5.27	10.10	1.76
1.117	2.20	4.117	5.27	7.117	5.27	10.12	1.76
1.133	2.20	4.133	5.27	7.133	5.27	10.13	1.76
1.150	2.20	4.150	5.27	7.150	5.27	10.15	1.76
1.167	2.20	4.167	5.27	7.167	5.27	10.17	1.76
1.183	2.20	4.183	5.27	7.183	5.27	10.18	1.76
1.200	2.20	4.200	5.27	7.200	5.27	10.20	1.76
1.217	2.20	4.217	5.27	7.217	5.27	10.22	1.76
1.233	2.20	4.233	5.27	7.233	5.27	10.23	1.76
1.250	2.20	4.250	5.27	7.250	5.27	10.25	1.76
1.267	2.20	4.267	5.27	7.267	5.27	10.27	1.76
1.283	2.20	4.283	5.27	7.283	5.27	10.28	1.76
1.300	2.20	4.300	5.27	7.300	5.27	10.30	1.76
1.317	2.20	4.317	5.27	7.317	5.27	10.32	1.76
1.333	2.20	4.333	5.27	7.333	5.27	10.33	1.76
1.350	2.20	4.350	5.27	7.350	5.27	10.35	1.76
1.367	2.20	4.367	5.27	7.367	5.27	10.37	1.76
1.383	2.20	4.383	5.27	7.383	5.27	10.38	1.76
1.400	2.20	4.400	5.27	7.400	5.27	10.40	1.76
1.417	2.20	4.417	5.27	7.417	5.27	10.42	1.76
1.433	2.20	4.433	5.27	7.433	5.27	10.43	1.76
1.450	2.20	4.450	5.27	7.450	5.27	10.45	1.76
1.467	2.20	4.467	5.27	7.467	5.27	10.47	1.76
1.483	2.20	4.483	5.27	7.483	5.27	10.48	1.76
1.500	2.20	4.500	5.28	7.500	5.27	10.50	1.76
1.517	2.20	4.517	7.03	7.517	5.27	10.52	1.76
1.533	2.20	4.533	7.03	7.533	5.27	10.53	1.76
1.550	2.20	4.550	7.03	7.550	5.27	10.55	1.76
1.567	2.20	4.567	7.03	7.567	5.27	10.57	1.76
1.583	2.20	4.583	7.03	7.583	5.27	10.58	1.76
1.600	2.20	4.600	7.03	7.600	5.27	10.60	1.76
1.617	2.20	4.617	7.03	7.617	5.27	10.62	1.76
1.633	2.20	4.633	7.03	7.633	5.27	10.63	1.76
1.650	2.20	4.650	7.03	7.650	5.27	10.65	1.76
1.667	2.20	4.667	7.03	7.667	5.27	10.67	1.76
1.683	2.20	4.683	7.03	7.683	5.27	10.68	1.76
1.700	2.20	4.700	7.03	7.700	5.27	10.70	1.76
1.717	2.20	4.717	7.03	7.717	5.27	10.72	1.76
1.733	2.20	4.733	7.03	7.733	5.27	10.73	1.76
1.750	2.20	4.750	7.03	7.750	5.27	10.75	1.76
1.767	2.20	4.767	7.03	7.767	5.27	10.77	1.76
1.783	2.20	4.783	7.03	7.783	5.27	10.78	1.76
1.800	2.20	4.800	7.03	7.800	5.27	10.80	1.76
1.817	2.20	4.817	7.03	7.817	5.27	10.82	1.76
1.833	2.20	4.833	7.03	7.833	5.27	10.83	1.76
1.850	2.20	4.850	7.03	7.850	5.27	10.85	1.76
1.867	2.20	4.867	7.03	7.867	5.27	10.87	1.76
1.883	2.20	4.883	7.03	7.883	5.27	10.88	1.76
1.900	2.20	4.900	7.03	7.900	5.27	10.90	1.76
1.917	2.20	4.917	7.03	7.917	5.27	10.92	1.76
1.933	2.20	4.933	7.03	7.933	5.27	10.93	1.76
1.950	2.20	4.950	7.03	7.950	5.27	10.95	1.76

1.967	2.20	4.967	7.03	7.967	5.27	10.97	1.76
1.983	2.20	4.983	7.03	7.983	5.27	10.98	1.76
2.000	2.20	5.000	7.04	8.000	5.27	11.00	1.76
2.017	2.64	5.017	10.55	8.017	3.08	11.02	1.76
2.033	2.64	5.033	10.55	8.033	3.08	11.03	1.76
2.050	2.64	5.050	10.55	8.050	3.08	11.05	1.76
2.067	2.64	5.067	10.55	8.067	3.08	11.07	1.76
2.083	2.64	5.083	10.55	8.083	3.08	11.08	1.76
2.100	2.64	5.100	10.55	8.100	3.08	11.10	1.76
2.117	2.64	5.117	10.55	8.117	3.08	11.12	1.76
2.133	2.64	5.133	10.55	8.133	3.08	11.13	1.76
2.150	2.64	5.150	10.55	8.150	3.08	11.15	1.76
2.167	2.64	5.167	10.55	8.167	3.08	11.17	1.76
2.183	2.64	5.183	10.55	8.183	3.08	11.18	1.76
2.200	2.64	5.200	10.55	8.200	3.08	11.20	1.76
2.217	2.64	5.217	10.55	8.217	3.08	11.22	1.76
2.233	2.64	5.233	10.55	8.233	3.08	11.23	1.76
2.250	2.64	5.250	10.55	8.250	3.08	11.25	1.76
2.267	2.64	5.267	10.55	8.267	3.08	11.27	1.76
2.283	2.64	5.283	10.55	8.283	3.08	11.28	1.76
2.300	2.64	5.300	10.55	8.300	3.08	11.30	1.76
2.317	2.64	5.317	10.55	8.317	3.08	11.32	1.76
2.333	2.64	5.333	10.55	8.333	3.08	11.33	1.76
2.350	2.64	5.350	10.55	8.350	3.08	11.35	1.76
2.367	2.64	5.367	10.55	8.367	3.08	11.37	1.76
2.383	2.64	5.383	10.55	8.383	3.08	11.38	1.76
2.400	2.64	5.400	10.55	8.400	3.08	11.40	1.76
2.417	2.64	5.417	10.55	8.417	3.08	11.42	1.76
2.433	2.64	5.433	10.55	8.433	3.08	11.43	1.76
2.450	2.64	5.450	10.55	8.450	3.08	11.45	1.76
2.467	2.64	5.467	10.55	8.467	3.08	11.47	1.76
2.483	2.64	5.483	10.55	8.483	3.08	11.48	1.76
2.500	2.64	5.500	10.58	8.500	3.08	11.50	1.76
2.517	2.64	5.517	42.20	8.517	3.08	11.52	1.76
2.533	2.64	5.533	42.20	8.533	3.08	11.53	1.76
2.550	2.64	5.550	42.20	8.550	3.08	11.55	1.76
2.567	2.64	5.567	42.20	8.567	3.08	11.57	1.76
2.583	2.64	5.583	42.20	8.583	3.08	11.58	1.76
2.600	2.64	5.600	42.20	8.600	3.08	11.60	1.76
2.617	2.64	5.617	42.20	8.617	3.08	11.62	1.76
2.633	2.64	5.633	42.20	8.633	3.08	11.63	1.76
2.650	2.64	5.650	42.20	8.650	3.08	11.65	1.76
2.667	2.64	5.667	42.20	8.667	3.08	11.67	1.76
2.683	2.64	5.683	42.20	8.683	3.08	11.68	1.76
2.700	2.64	5.700	42.20	8.700	3.08	11.70	1.76
2.717	2.64	5.717	42.20	8.717	3.08	11.72	1.76
2.733	2.64	5.733	42.20	8.733	3.08	11.73	1.76
2.750	2.64	5.750	42.29	8.750	3.08	11.75	1.76
2.767	2.64	5.767	116.04	8.767	3.08	11.77	1.76
2.783	2.64	5.783	116.04	8.783	3.08	11.78	1.76
2.800	2.64	5.800	116.04	8.800	3.08	11.80	1.76
2.817	2.64	5.817	116.04	8.817	3.08	11.82	1.76
2.833	2.64	5.833	116.04	8.833	3.08	11.83	1.76
2.850	2.64	5.850	116.04	8.850	3.08	11.85	1.76
2.867	2.64	5.867	116.04	8.867	3.08	11.87	1.76
2.883	2.64	5.883	116.04	8.883	3.08	11.88	1.76
2.900	2.64	5.900	116.04	8.900	3.08	11.90	1.76
2.917	2.64	5.917	116.04	8.917	3.08	11.92	1.76
2.933	2.64	5.933	116.04	8.933	3.08	11.93	1.76
2.950	2.64	5.950	116.04	8.950	3.08	11.95	1.76
2.967	2.64	5.967	116.04	8.967	3.08	11.97	1.76
2.983	2.64	5.983	116.04	8.983	3.08	11.98	1.76
3.000	2.64	6.000	115.90	9.000	3.08	12.00	1.76

Max.Eff.Inten.(mm/hr)=	116.04	40.28		
over (min)	5.00	10.00		
Storage Coeff. (min)=	2.82 (ii)	9.70 (ii)		
Unit Hyd. Tpeak (min)=	5.00	10.00		
Unit Hyd. peak (cms)=	0.32	0.12		
			TOTALS	
PEAK FLOW (cms)=	0.36	0.09	0.439 (iii)	
TIME TO PEAK (hrs)=	6.00	6.08	6.00	
RUNOFF VOLUME (mm)=	86.91	21.24	50.14	
TOTAL RAINFALL (mm)=	87.91	87.91	87.91	
RUNOFF COEFFICIENT =	0.99	0.24	0.57	

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0010) IN= 2---> OUT= 1 DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0810	0.0465
	0.0010	0.0012	0.0910	0.0530

0.0060	0.0145	0.1120	0.0643
0.0100	0.0157	0.1190	0.0683
0.0430	0.0262	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0008)	2.530	0.439	6.00	50.14
OUTFLOW: ID= 1 (0010)	2.530	0.106	6.25	50.02

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.18
TIME SHIFT OF PEAK FLOW (min)= 15.00
MAXIMUM STORAGE USED (ha.m.)= 0.0612

READ STORM | Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\3a4df615
Ptotal= 87.91 mm | Comments: 50-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.20	3.25	3.52	6.25	15.82	9.25	3.08
0.50	2.20	3.50	3.52	6.50	15.82	9.50	3.08
0.75	2.20	3.75	3.52	6.75	7.03	9.75	3.08
1.00	2.20	4.00	3.52	7.00	7.03	10.00	3.08
1.25	2.20	4.25	5.27	7.25	5.27	10.25	1.76
1.50	2.20	4.50	5.27	7.50	5.27	10.50	1.76
1.75	2.20	4.75	7.03	7.75	5.27	10.75	1.76
2.00	2.20	5.00	7.03	8.00	5.27	11.00	1.76
2.25	2.64	5.25	10.55	8.25	3.08	11.25	1.76
2.50	2.64	5.50	10.55	8.50	3.08	11.50	1.76
2.75	2.64	5.75	42.20	8.75	3.08	11.75	1.76
3.00	2.64	6.00	116.04	9.00	3.08	12.00	1.76

CALIB NASHYD (0027) | Area (ha)= 17.26 Curve Number (CN)= 60.0
ID= 1 DT= 1.0 min | Ia (mm)= 5.60 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.95

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.20	3.017	3.52	6.017	15.82	9.02	3.08
0.033	2.20	3.033	3.52	6.033	15.82	9.03	3.08
0.050	2.20	3.050	3.52	6.050	15.82	9.05	3.08
0.067	2.20	3.067	3.52	6.067	15.82	9.07	3.08
0.083	2.20	3.083	3.52	6.083	15.82	9.08	3.08
0.100	2.20	3.100	3.52	6.100	15.82	9.10	3.08
0.117	2.20	3.117	3.52	6.117	15.82	9.12	3.08
0.133	2.20	3.133	3.52	6.133	15.82	9.13	3.08
0.150	2.20	3.150	3.52	6.150	15.82	9.15	3.08
0.167	2.20	3.167	3.52	6.167	15.82	9.17	3.08
0.183	2.20	3.183	3.52	6.183	15.82	9.18	3.08
0.200	2.20	3.200	3.52	6.200	15.82	9.20	3.08
0.217	2.20	3.217	3.52	6.217	15.82	9.22	3.08
0.233	2.20	3.233	3.52	6.233	15.82	9.23	3.08
0.250	2.20	3.250	3.52	6.250	15.82	9.25	3.08
0.267	2.20	3.267	3.52	6.267	15.82	9.27	3.08
0.283	2.20	3.283	3.52	6.283	15.82	9.28	3.08
0.300	2.20	3.300	3.52	6.300	15.82	9.30	3.08
0.317	2.20	3.317	3.52	6.317	15.82	9.32	3.08
0.333	2.20	3.333	3.52	6.333	15.82	9.33	3.08
0.350	2.20	3.350	3.52	6.350	15.82	9.35	3.08
0.367	2.20	3.367	3.52	6.367	15.82	9.37	3.08
0.383	2.20	3.383	3.52	6.383	15.82	9.38	3.08
0.400	2.20	3.400	3.52	6.400	15.82	9.40	3.08
0.417	2.20	3.417	3.52	6.417	15.82	9.42	3.08
0.433	2.20	3.433	3.52	6.433	15.82	9.43	3.08
0.450	2.20	3.450	3.52	6.450	15.82	9.45	3.08
0.467	2.20	3.467	3.52	6.467	15.82	9.47	3.08
0.483	2.20	3.483	3.52	6.483	15.82	9.48	3.08
0.500	2.20	3.500	3.52	6.500	15.81	9.50	3.08
0.517	2.20	3.517	3.52	6.517	7.03	9.52	3.08
0.533	2.20	3.533	3.52	6.533	7.03	9.53	3.08
0.550	2.20	3.550	3.52	6.550	7.03	9.55	3.08
0.567	2.20	3.567	3.52	6.567	7.03	9.57	3.08
0.583	2.20	3.583	3.52	6.583	7.03	9.58	3.08
0.600	2.20	3.600	3.52	6.600	7.03	9.60	3.08
0.617	2.20	3.617	3.52	6.617	7.03	9.62	3.08
0.633	2.20	3.633	3.52	6.633	7.03	9.63	3.08
0.650	2.20	3.650	3.52	6.650	7.03	9.65	3.08
0.667	2.20	3.667	3.52	6.667	7.03	9.67	3.08
0.683	2.20	3.683	3.52	6.683	7.03	9.68	3.08

0.700	2.20	3.700	3.52	6.700	7.03	9.70	3.08
0.717	2.20	3.717	3.52	6.717	7.03	9.72	3.08
0.733	2.20	3.733	3.52	6.733	7.03	9.73	3.08
0.750	2.20	3.750	3.52	6.750	7.03	9.75	3.08
0.767	2.20	3.767	3.52	6.767	7.03	9.77	3.08
0.783	2.20	3.783	3.52	6.783	7.03	9.78	3.08
0.800	2.20	3.800	3.52	6.800	7.03	9.80	3.08
0.817	2.20	3.817	3.52	6.817	7.03	9.82	3.08
0.833	2.20	3.833	3.52	6.833	7.03	9.83	3.08
0.850	2.20	3.850	3.52	6.850	7.03	9.85	3.08
0.867	2.20	3.867	3.52	6.867	7.03	9.87	3.08
0.883	2.20	3.883	3.52	6.883	7.03	9.88	3.08
0.900	2.20	3.900	3.52	6.900	7.03	9.90	3.08
0.917	2.20	3.917	3.52	6.917	7.03	9.92	3.08
0.933	2.20	3.933	3.52	6.933	7.03	9.93	3.08
0.950	2.20	3.950	3.52	6.950	7.03	9.95	3.08
0.967	2.20	3.967	3.52	6.967	7.03	9.97	3.08
0.983	2.20	3.983	3.52	6.983	7.03	9.98	3.08
1.000	2.20	4.000	3.52	7.000	7.03	10.00	3.08
1.017	2.20	4.017	5.27	7.017	5.27	10.02	1.76
1.033	2.20	4.033	5.27	7.033	5.27	10.03	1.76
1.050	2.20	4.050	5.27	7.050	5.27	10.05	1.76
1.067	2.20	4.067	5.27	7.067	5.27	10.07	1.76
1.083	2.20	4.083	5.27	7.083	5.27	10.08	1.76
1.100	2.20	4.100	5.27	7.100	5.27	10.10	1.76
1.117	2.20	4.117	5.27	7.117	5.27	10.12	1.76
1.133	2.20	4.133	5.27	7.133	5.27	10.13	1.76
1.150	2.20	4.150	5.27	7.150	5.27	10.15	1.76
1.167	2.20	4.167	5.27	7.167	5.27	10.17	1.76
1.183	2.20	4.183	5.27	7.183	5.27	10.18	1.76
1.200	2.20	4.200	5.27	7.200	5.27	10.20	1.76
1.217	2.20	4.217	5.27	7.217	5.27	10.22	1.76
1.233	2.20	4.233	5.27	7.233	5.27	10.23	1.76
1.250	2.20	4.250	5.27	7.250	5.27	10.25	1.76
1.267	2.20	4.267	5.27	7.267	5.27	10.27	1.76
1.283	2.20	4.283	5.27	7.283	5.27	10.28	1.76
1.300	2.20	4.300	5.27	7.300	5.27	10.30	1.76
1.317	2.20	4.317	5.27	7.317	5.27	10.32	1.76
1.333	2.20	4.333	5.27	7.333	5.27	10.33	1.76
1.350	2.20	4.350	5.27	7.350	5.27	10.35	1.76
1.367	2.20	4.367	5.27	7.367	5.27	10.37	1.76
1.383	2.20	4.383	5.27	7.383	5.27	10.38	1.76
1.400	2.20	4.400	5.27	7.400	5.27	10.40	1.76
1.417	2.20	4.417	5.27	7.417	5.27	10.42	1.76
1.433	2.20	4.433	5.27	7.433	5.27	10.43	1.76
1.450	2.20	4.450	5.27	7.450	5.27	10.45	1.76
1.467	2.20	4.467	5.27	7.467	5.27	10.47	1.76
1.483	2.20	4.483	5.27	7.483	5.27	10.48	1.76
1.500	2.20	4.500	5.28	7.500	5.27	10.50	1.76
1.517	2.20	4.517	7.03	7.517	5.27	10.52	1.76
1.533	2.20	4.533	7.03	7.533	5.27	10.53	1.76
1.550	2.20	4.550	7.03	7.550	5.27	10.55	1.76
1.567	2.20	4.567	7.03	7.567	5.27	10.57	1.76
1.583	2.20	4.583	7.03	7.583	5.27	10.58	1.76
1.600	2.20	4.600	7.03	7.600	5.27	10.60	1.76
1.617	2.20	4.617	7.03	7.617	5.27	10.62	1.76
1.633	2.20	4.633	7.03	7.633	5.27	10.63	1.76
1.650	2.20	4.650	7.03	7.650	5.27	10.65	1.76
1.667	2.20	4.667	7.03	7.667	5.27	10.67	1.76
1.683	2.20	4.683	7.03	7.683	5.27	10.68	1.76
1.700	2.20	4.700	7.03	7.700	5.27	10.70	1.76
1.717	2.20	4.717	7.03	7.717	5.27	10.72	1.76
1.733	2.20	4.733	7.03	7.733	5.27	10.73	1.76
1.750	2.20	4.750	7.03	7.750	5.27	10.75	1.76
1.767	2.20	4.767	7.03	7.767	5.27	10.77	1.76
1.783	2.20	4.783	7.03	7.783	5.27	10.78	1.76
1.800	2.20	4.800	7.03	7.800	5.27	10.80	1.76
1.817	2.20	4.817	7.03	7.817	5.27	10.82	1.76
1.833	2.20	4.833	7.03	7.833	5.27	10.83	1.76
1.850	2.20	4.850	7.03	7.850	5.27	10.85	1.76
1.867	2.20	4.867	7.03	7.867	5.27	10.87	1.76
1.883	2.20	4.883	7.03	7.883	5.27	10.88	1.76
1.900	2.20	4.900	7.03	7.900	5.27	10.90	1.76
1.917	2.20	4.917	7.03	7.917	5.27	10.92	1.76
1.933	2.20	4.933	7.03	7.933	5.27	10.93	1.76
1.950	2.20	4.950	7.03	7.950	5.27	10.95	1.76
1.967	2.20	4.967	7.03	7.967	5.27	10.97	1.76
1.983	2.20	4.983	7.03	7.983	5.27	10.98	1.76
2.000	2.20	5.000	7.04	8.000	5.27	11.00	1.76
2.017	2.64	5.017	10.55	8.017	3.08	11.02	1.76
2.033	2.64	5.033	10.55	8.033	3.08	11.03	1.76
2.050	2.64	5.050	10.55	8.050	3.08	11.05	1.76
2.067	2.64	5.067	10.55	8.067	3.08	11.07	1.76
2.083	2.64	5.083	10.55	8.083	3.08	11.08	1.76
2.100	2.64	5.100	10.55	8.100	3.08	11.10	1.76
2.117	2.64	5.117	10.55	8.117	3.08	11.12	1.76
2.133	2.64	5.133	10.55	8.133	3.08	11.13	1.76
2.150	2.64	5.150	10.55	8.150	3.08	11.15	1.76
2.167	2.64	5.167	10.55	8.167	3.08	11.17	1.76
2.183	2.64	5.183	10.55	8.183	3.08	11.18	1.76
2.200	2.64	5.200	10.55	8.200	3.08	11.20	1.76

2.217	2.64	5.217	10.55	8.217	3.08	11.22	1.76
2.233	2.64	5.233	10.55	8.233	3.08	11.23	1.76
2.250	2.64	5.250	10.55	8.250	3.08	11.25	1.76
2.267	2.64	5.267	10.55	8.267	3.08	11.27	1.76
2.283	2.64	5.283	10.55	8.283	3.08	11.28	1.76
2.300	2.64	5.300	10.55	8.300	3.08	11.30	1.76
2.317	2.64	5.317	10.55	8.317	3.08	11.32	1.76
2.333	2.64	5.333	10.55	8.333	3.08	11.33	1.76
2.350	2.64	5.350	10.55	8.350	3.08	11.35	1.76
2.367	2.64	5.367	10.55	8.367	3.08	11.37	1.76
2.383	2.64	5.383	10.55	8.383	3.08	11.38	1.76
2.400	2.64	5.400	10.55	8.400	3.08	11.40	1.76
2.417	2.64	5.417	10.55	8.417	3.08	11.42	1.76
2.433	2.64	5.433	10.55	8.433	3.08	11.43	1.76
2.450	2.64	5.450	10.55	8.450	3.08	11.45	1.76
2.467	2.64	5.467	10.55	8.467	3.08	11.47	1.76
2.483	2.64	5.483	10.55	8.483	3.08	11.48	1.76
2.500	2.64	5.500	10.58	8.500	3.08	11.50	1.76
2.517	2.64	5.517	42.20	8.517	3.08	11.52	1.76
2.533	2.64	5.533	42.20	8.533	3.08	11.53	1.76
2.550	2.64	5.550	42.20	8.550	3.08	11.55	1.76
2.567	2.64	5.567	42.20	8.567	3.08	11.57	1.76
2.583	2.64	5.583	42.20	8.583	3.08	11.58	1.76
2.600	2.64	5.600	42.20	8.600	3.08	11.60	1.76
2.617	2.64	5.617	42.20	8.617	3.08	11.62	1.76
2.633	2.64	5.633	42.20	8.633	3.08	11.63	1.76
2.650	2.64	5.650	42.20	8.650	3.08	11.65	1.76
2.667	2.64	5.667	42.20	8.667	3.08	11.67	1.76
2.683	2.64	5.683	42.20	8.683	3.08	11.68	1.76
2.700	2.64	5.700	42.20	8.700	3.08	11.70	1.76
2.717	2.64	5.717	42.20	8.717	3.08	11.72	1.76
2.733	2.64	5.733	42.20	8.733	3.08	11.73	1.76
2.750	2.64	5.750	42.29	8.750	3.08	11.75	1.76
2.767	2.64	5.767	116.04	8.767	3.08	11.77	1.76
2.783	2.64	5.783	116.04	8.783	3.08	11.78	1.76
2.800	2.64	5.800	116.04	8.800	3.08	11.80	1.76
2.817	2.64	5.817	116.04	8.817	3.08	11.82	1.76
2.833	2.64	5.833	116.04	8.833	3.08	11.83	1.76
2.850	2.64	5.850	116.04	8.850	3.08	11.85	1.76
2.867	2.64	5.867	116.04	8.867	3.08	11.87	1.76
2.883	2.64	5.883	116.04	8.883	3.08	11.88	1.76
2.900	2.64	5.900	116.04	8.900	3.08	11.90	1.76
2.917	2.64	5.917	116.04	8.917	3.08	11.92	1.76
2.933	2.64	5.933	116.04	8.933	3.08	11.93	1.76
2.950	2.64	5.950	116.04	8.950	3.08	11.95	1.76
2.967	2.64	5.967	116.04	8.967	3.08	11.97	1.76
2.983	2.64	5.983	116.04	8.983	3.08	11.98	1.76
3.000	2.64	6.000	115.90	9.000	3.08	12.00	1.76

Unit Hyd Qpeak (cms)= 0.694

PEAK FLOW (cms)= 0.446 (i)
TIME TO PEAK (hrs)= 6.967
RUNOFF VOLUME (mm)= 26.921
TOTAL RAINFALL (mm)= 87.909
RUNOFF COEFFICIENT = 0.306

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

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0010):		2.53	0.106	6.25	50.02
+ ID2= 2 (0011):		0.80	0.102	6.08	75.50
ID = 3 (0004):		3.33	0.204	6.12	56.14

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
ID1= 3 (0004):		3.33	0.204	6.12	56.14
+ ID2= 2 (0027):		17.26	0.446	6.97	26.92
ID = 1 (0004):		20.59	0.578	6.83	31.65

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)

```
       ID1= 1 (  0004):    20.59   0.578     6.83    31.65
     + ID2= 2 (  0003):     4.49   0.067     7.07    38.13
       ================================================
       ID = 3 (  0004):    25.08   0.645     6.85    32.81

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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| ADD HYD  (  0004)|
|   3 +  2 =  1    |         AREA    QPEAK    TPEAK     R.V.
--------------------         (ha)    (cms)    (hrs)     (mm)
       ID1= 3 (  0004):    25.08   0.645     6.85    32.81
     + ID2= 2 (  0009):     2.07   0.365     6.02    51.42
       ================================================
       ID = 1 (  0004):    27.15   0.704     6.05    34.23

    NOTE:  PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

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

      V    V   I    SSSSS  U   U    A    L             (v 5.0.2027)
      V    V   I    SS     U   U   A A   L
       V  V    I     SS    U   U  AAAAA  L
       V  V    I      SS   U   U  A   A  L
        VV     I    SSSSS  UUUUU  A   A  LLLLL

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


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\844d9288-6dd3-49f1-8875-9848402
06
  Summary filename:
C:\Users\noconnor.SKAENG\AppData\Local\Civica\VH5\c814be0e-9f58-4d4b-af1c-cd5943bb33db\844d9288-6dd3-49f1-8875-9848402
06


DATE: 12/19/2018                          TIME: 10:47:46

USER:


COMMENTS: _____________________________________________________


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  ***********************************************
  ** SIMULATION : Run 12                       **
  ***********************************************


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|    READ STORM    |    Filename: C:\Users\noconnor.SKAENG\AppD
|                  |              ata\Local\Temp\
|                  |              79084dd1-c78d-40ca-a50a-120316a195ef\9c9568e7
| Ptotal= 95.97 mm |    Comments: 100-Year 12-Hour SCS II Design Storm
--------------------
                TIME    RAIN |  TIME    RAIN |'  TIME    RAIN |  TIME    RAIN
                 hrs   mm/hr |   hrs   mm/hr |'   hrs   mm/hr |   hrs   mm/hr
                0.25    2.40 |  3.25    3.84 |  6.25   17.27 |  9.25    3.36
                0.50    2.40 |  3.50    3.84 |  6.50   17.27 |  9.50    3.36
                0.75    2.40 |  3.75    3.84 |  6.75    7.68 |  9.75    3.36
                1.00    2.40 |  4.00    3.84 |  7.00    7.68 | 10.00    3.36
                1.25    2.40 |  4.25    5.76 |  7.25    5.76 | 10.25    1.92
                1.50    2.40 |  4.50    5.76 |  7.50    5.76 | 10.50    1.92
                1.75    2.40 |  4.75    7.68 |  7.75    5.76 | 10.75    1.92
                2.00    2.40 |  5.00    7.68 |  8.00    5.76 | 11.00    1.92
                2.25    2.88 |  5.25   11.52 |  8.25    3.36 | 11.25    1.92
                2.50    2.88 |  5.50   11.52 |  8.50    3.36 | 11.50    1.92
                2.75    2.88 |  5.75   46.07 |  8.75    3.36 | 11.75    1.92
                3.00    2.88 |  6.00  126.68 |  9.00    3.36 | 12.00    1.92

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| CALIB            |
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| NASHYD (0025)| Area (ha)= 1.48 Curve Number (CN)= 67.0
|ID= 1 DT= 1.0 min | Ia (mm)= 5.00 # of Linear Res.(N)= 3.00
U.H. Tp(hrs)= 0.34

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.40	3.017	3.84	6.017	17.27	9.02	3.36
0.033	2.40	3.033	3.84	6.033	17.27	9.03	3.36
0.050	2.40	3.050	3.84	6.050	17.27	9.05	3.36
0.067	2.40	3.067	3.84	6.067	17.27	9.07	3.36
0.083	2.40	3.083	3.84	6.083	17.27	9.08	3.36
0.100	2.40	3.100	3.84	6.100	17.27	9.10	3.36
0.117	2.40	3.117	3.84	6.117	17.27	9.12	3.36
0.133	2.40	3.133	3.84	6.133	17.27	9.13	3.36
0.150	2.40	3.150	3.84	6.150	17.27	9.15	3.36
0.167	2.40	3.167	3.84	6.167	17.27	9.17	3.36
0.183	2.40	3.183	3.84	6.183	17.27	9.18	3.36
0.200	2.40	3.200	3.84	6.200	17.27	9.20	3.36
0.217	2.40	3.217	3.84	6.217	17.27	9.22	3.36
0.233	2.40	3.233	3.84	6.233	17.27	9.23	3.36
0.250	2.40	3.250	3.84	6.250	17.27	9.25	3.36
0.267	2.40	3.267	3.84	6.267	17.27	9.27	3.36
0.283	2.40	3.283	3.84	6.283	17.27	9.28	3.36
0.300	2.40	3.300	3.84	6.300	17.27	9.30	3.36
0.317	2.40	3.317	3.84	6.317	17.27	9.32	3.36
0.333	2.40	3.333	3.84	6.333	17.27	9.33	3.36
0.350	2.40	3.350	3.84	6.350	17.27	9.35	3.36
0.367	2.40	3.367	3.84	6.367	17.27	9.37	3.36
0.383	2.40	3.383	3.84	6.383	17.27	9.38	3.36
0.400	2.40	3.400	3.84	6.400	17.27	9.40	3.36
0.417	2.40	3.417	3.84	6.417	17.27	9.42	3.36
0.433	2.40	3.433	3.84	6.433	17.27	9.43	3.36
0.450	2.40	3.450	3.84	6.450	17.27	9.45	3.36
0.467	2.40	3.467	3.84	6.467	17.27	9.47	3.36
0.483	2.40	3.483	3.84	6.483	17.27	9.48	3.36
0.500	2.40	3.500	3.84	6.500	17.26	9.50	3.36
0.517	2.40	3.517	3.84	6.517	7.68	9.52	3.36
0.533	2.40	3.533	3.84	6.533	7.68	9.53	3.36
0.550	2.40	3.550	3.84	6.550	7.68	9.55	3.36
0.567	2.40	3.567	3.84	6.567	7.68	9.57	3.36
0.583	2.40	3.583	3.84	6.583	7.68	9.58	3.36
0.600	2.40	3.600	3.84	6.600	7.68	9.60	3.36
0.617	2.40	3.617	3.84	6.617	7.68	9.62	3.36
0.633	2.40	3.633	3.84	6.633	7.68	9.63	3.36
0.650	2.40	3.650	3.84	6.650	7.68	9.65	3.36
0.667	2.40	3.667	3.84	6.667	7.68	9.67	3.36
0.683	2.40	3.683	3.84	6.683	7.68	9.68	3.36
0.700	2.40	3.700	3.84	6.700	7.68	9.70	3.36
0.717	2.40	3.717	3.84	6.717	7.68	9.72	3.36
0.733	2.40	3.733	3.84	6.733	7.68	9.73	3.36
0.750	2.40	3.750	3.84	6.750	7.68	9.75	3.36
0.767	2.40	3.767	3.84	6.767	7.68	9.77	3.36
0.783	2.40	3.783	3.84	6.783	7.68	9.78	3.36
0.800	2.40	3.800	3.84	6.800	7.68	9.80	3.36
0.817	2.40	3.817	3.84	6.817	7.68	9.82	3.36
0.833	2.40	3.833	3.84	6.833	7.68	9.83	3.36
0.850	2.40	3.850	3.84	6.850	7.68	9.85	3.36
0.867	2.40	3.867	3.84	6.867	7.68	9.87	3.36
0.883	2.40	3.883	3.84	6.883	7.68	9.88	3.36
0.900	2.40	3.900	3.84	6.900	7.68	9.90	3.36
0.917	2.40	3.917	3.84	6.917	7.68	9.92	3.36
0.933	2.40	3.933	3.84	6.933	7.68	9.93	3.36
0.950	2.40	3.950	3.84	6.950	7.68	9.95	3.36
0.967	2.40	3.967	3.84	6.967	7.68	9.97	3.36
0.983	2.40	3.983	3.84	6.983	7.68	9.98	3.36
1.000	2.40	4.000	3.84	7.000	7.67	10.00	3.36
1.017	2.40	4.017	5.76	7.017	5.76	10.02	1.92
1.033	2.40	4.033	5.76	7.033	5.76	10.03	1.92
1.050	2.40	4.050	5.76	7.050	5.76	10.05	1.92
1.067	2.40	4.067	5.76	7.067	5.76	10.07	1.92
1.083	2.40	4.083	5.76	7.083	5.76	10.08	1.92
1.100	2.40	4.100	5.76	7.100	5.76	10.10	1.92
1.117	2.40	4.117	5.76	7.117	5.76	10.12	1.92
1.133	2.40	4.133	5.76	7.133	5.76	10.13	1.92
1.150	2.40	4.150	5.76	7.150	5.76	10.15	1.92
1.167	2.40	4.167	5.76	7.167	5.76	10.17	1.92
1.183	2.40	4.183	5.76	7.183	5.76	10.18	1.92
1.200	2.40	4.200	5.76	7.200	5.76	10.20	1.92
1.217	2.40	4.217	5.76	7.217	5.76	10.22	1.92
1.233	2.40	4.233	5.76	7.233	5.76	10.23	1.92
1.250	2.40	4.250	5.76	7.250	5.76	10.25	1.92
1.267	2.40	4.267	5.76	7.267	5.76	10.27	1.92
1.283	2.40	4.283	5.76	7.283	5.76	10.28	1.92
1.300	2.40	4.300	5.76	7.300	5.76	10.30	1.92
1.317	2.40	4.317	5.76	7.317	5.76	10.32	1.92
1.333	2.40	4.333	5.76	7.333	5.76	10.33	1.92
1.350	2.40	4.350	5.76	7.350	5.76	10.35	1.92

1.367	2.40	4.367	5.76	7.367	5.76	10.37	1.92
1.383	2.40	4.383	5.76	7.383	5.76	10.38	1.92
1.400	2.40	4.400	5.76	7.400	5.76	10.40	1.92
1.417	2.40	4.417	5.76	7.417	5.76	10.42	1.92
1.433	2.40	4.433	5.76	7.433	5.76	10.43	1.92
1.450	2.40	4.450	5.76	7.450	5.76	10.45	1.92
1.467	2.40	4.467	5.76	7.467	5.76	10.47	1.92
1.483	2.40	4.483	5.76	7.483	5.76	10.48	1.92
1.500	2.40	4.500	5.76	7.500	5.76	10.50	1.92
1.517	2.40	4.517	7.68	7.517	5.76	10.52	1.92
1.533	2.40	4.533	7.68	7.533	5.76	10.53	1.92
1.550	2.40	4.550	7.68	7.550	5.76	10.55	1.92
1.567	2.40	4.567	7.68	7.567	5.76	10.57	1.92
1.583	2.40	4.583	7.68	7.583	5.76	10.58	1.92
1.600	2.40	4.600	7.68	7.600	5.76	10.60	1.92
1.617	2.40	4.617	7.68	7.617	5.76	10.62	1.92
1.633	2.40	4.633	7.68	7.633	5.76	10.63	1.92
1.650	2.40	4.650	7.68	7.650	5.76	10.65	1.92
1.667	2.40	4.667	7.68	7.667	5.76	10.67	1.92
1.683	2.40	4.683	7.68	7.683	5.76	10.68	1.92
1.700	2.40	4.700	7.68	7.700	5.76	10.70	1.92
1.717	2.40	4.717	7.68	7.717	5.76	10.72	1.92
1.733	2.40	4.733	7.68	7.733	5.76	10.73	1.92
1.750	2.40	4.750	7.68	7.750	5.76	10.75	1.92
1.767	2.40	4.767	7.68	7.767	5.76	10.77	1.92
1.783	2.40	4.783	7.68	7.783	5.76	10.78	1.92
1.800	2.40	4.800	7.68	7.800	5.76	10.80	1.92
1.817	2.40	4.817	7.68	7.817	5.76	10.82	1.92
1.833	2.40	4.833	7.68	7.833	5.76	10.83	1.92
1.850	2.40	4.850	7.68	7.850	5.76	10.85	1.92
1.867	2.40	4.867	7.68	7.867	5.76	10.87	1.92
1.883	2.40	4.883	7.68	7.883	5.76	10.88	1.92
1.900	2.40	4.900	7.68	7.900	5.76	10.90	1.92
1.917	2.40	4.917	7.68	7.917	5.76	10.92	1.92
1.933	2.40	4.933	7.68	7.933	5.76	10.93	1.92
1.950	2.40	4.950	7.68	7.950	5.76	10.95	1.92
1.967	2.40	4.967	7.68	7.967	5.76	10.97	1.92
1.983	2.40	4.983	7.68	7.983	5.76	10.98	1.92
2.000	2.40	5.000	7.68	8.000	5.75	11.00	1.92
2.017	2.88	5.017	11.52	8.017	3.36	11.02	1.92
2.033	2.88	5.033	11.52	8.033	3.36	11.03	1.92
2.050	2.88	5.050	11.52	8.050	3.36	11.05	1.92
2.067	2.88	5.067	11.52	8.067	3.36	11.07	1.92
2.083	2.88	5.083	11.52	8.083	3.36	11.08	1.92
2.100	2.88	5.100	11.52	8.100	3.36	11.10	1.92
2.117	2.88	5.117	11.52	8.117	3.36	11.12	1.92
2.133	2.88	5.133	11.52	8.133	3.36	11.13	1.92
2.150	2.88	5.150	11.52	8.150	3.36	11.15	1.92
2.167	2.88	5.167	11.52	8.167	3.36	11.17	1.92
2.183	2.88	5.183	11.52	8.183	3.36	11.18	1.92
2.200	2.88	5.200	11.52	8.200	3.36	11.20	1.92
2.217	2.88	5.217	11.52	8.217	3.36	11.22	1.92
2.233	2.88	5.233	11.52	8.233	3.36	11.23	1.92
2.250	2.88	5.250	11.52	8.250	3.36	11.25	1.92
2.267	2.88	5.267	11.52	8.267	3.36	11.27	1.92
2.283	2.88	5.283	11.52	8.283	3.36	11.28	1.92
2.300	2.88	5.300	11.52	8.300	3.36	11.30	1.92
2.317	2.88	5.317	11.52	8.317	3.36	11.32	1.92
2.333	2.88	5.333	11.52	8.333	3.36	11.33	1.92
2.350	2.88	5.350	11.52	8.350	3.36	11.35	1.92
2.367	2.88	5.367	11.52	8.367	3.36	11.37	1.92
2.383	2.88	5.383	11.52	8.383	3.36	11.38	1.92
2.400	2.88	5.400	11.52	8.400	3.36	11.40	1.92
2.417	2.88	5.417	11.52	8.417	3.36	11.42	1.92
2.433	2.88	5.433	11.52	8.433	3.36	11.43	1.92
2.450	2.88	5.450	11.52	8.450	3.36	11.45	1.92
2.467	2.88	5.467	11.52	8.467	3.36	11.47	1.92
2.483	2.88	5.483	11.52	8.483	3.36	11.48	1.92
2.500	2.88	5.500	11.55	8.500	3.36	11.50	1.92
2.517	2.88	5.517	46.07	8.517	3.36	11.52	1.92
2.533	2.88	5.533	46.07	8.533	3.36	11.53	1.92
2.550	2.88	5.550	46.07	8.550	3.36	11.55	1.92
2.567	2.88	5.567	46.07	8.567	3.36	11.57	1.92
2.583	2.88	5.583	46.07	8.583	3.36	11.58	1.92
2.600	2.88	5.600	46.07	8.600	3.36	11.60	1.92
2.617	2.88	5.617	46.07	8.617	3.36	11.62	1.92
2.633	2.88	5.633	46.07	8.633	3.36	11.63	1.92
2.650	2.88	5.650	46.07	8.650	3.36	11.65	1.92
2.667	2.88	5.667	46.07	8.667	3.36	11.67	1.92
2.683	2.88	5.683	46.07	8.683	3.36	11.68	1.92
2.700	2.88	5.700	46.07	8.700	3.36	11.70	1.92
2.717	2.88	5.717	46.07	8.717	3.36	11.72	1.92
2.733	2.88	5.733	46.07	8.733	3.36	11.73	1.92
2.750	2.88	5.750	46.16	8.750	3.36	11.75	1.92
2.767	2.88	5.767	126.68	8.767	3.36	11.77	1.92
2.783	2.88	5.783	126.68	8.783	3.36	11.78	1.92
2.800	2.88	5.800	126.68	8.800	3.36	11.80	1.92
2.817	2.88	5.817	126.68	8.817	3.36	11.82	1.92
2.833	2.88	5.833	126.68	8.833	3.36	11.83	1.92
2.850	2.88	5.850	126.68	8.850	3.36	11.85	1.92
2.867	2.88	5.867	126.68	8.867	3.36	11.87	1.92

2.883	2.88	5.883	126.68	8.883	3.36	11.88	1.92
2.900	2.88	5.900	126.68	8.900	3.36	11.90	1.92
2.917	2.88	5.917	126.68	8.917	3.36	11.92	1.92
2.933	2.88	5.933	126.68	8.933	3.36	11.93	1.92
2.950	2.88	5.950	126.68	8.950	3.36	11.95	1.92
2.967	2.88	5.967	126.68	8.967	3.36	11.97	1.92
2.983	2.88	5.983	126.68	8.983	3.36	11.98	1.92
3.000	2.88	6.000	126.53	9.000	3.36	12.00	1.92

Unit Hyd Qpeak (cms)= 0.166

PEAK FLOW (cms)= 0.116 (i)
TIME TO PEAK (hrs)= 6.233
RUNOFF VOLUME (mm)= 38.298
TOTAL RAINFALL (mm)= 95.968
RUNOFF COEFFICIENT = 0.399

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

READ STORM | Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\9c9568e7
Ptotal= 95.97 mm | Comments: 100-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.40	3.25	3.84	6.25	17.27	9.25	3.36
0.50	2.40	3.50	3.84	6.50	17.27	9.50	3.36
0.75	2.40	3.75	3.84	6.75	7.68	9.75	3.36
1.00	2.40	4.00	3.84	7.00	7.68	10.00	3.36
1.25	2.40	4.25	5.76	7.25	5.76	10.25	1.92
1.50	2.40	4.50	5.76	7.50	5.76	10.50	1.92
1.75	2.40	4.75	7.68	7.75	5.76	10.75	1.92
2.00	2.40	5.00	7.68	8.00	5.76	11.00	1.92
2.25	2.88	5.25	11.52	8.25	3.36	11.25	1.92
2.50	2.88	5.50	11.52	8.50	3.36	11.50	1.92
2.75	2.88	5.75	46.07	8.75	3.36	11.75	1.92
3.00	2.88	6.00	126.68	9.00	3.36	12.00	1.92

CALIB | STANDHYD (0001) | ID= 1 DT= 1.0 min | Area (ha)= 3.01 Total Imp(%)= 57.00 Dir. Conn.(%)= 46.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.72	1.29
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.50	3.00
Length	(m)=	141.66	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.40	3.017	3.84	6.017	17.27	9.02	3.36
0.033	2.40	3.033	3.84	6.033	17.27	9.03	3.36
0.050	2.40	3.050	3.84	6.050	17.27	9.05	3.36
0.067	2.40	3.067	3.84	6.067	17.27	9.07	3.36
0.083	2.40	3.083	3.84	6.083	17.27	9.08	3.36
0.100	2.40	3.100	3.84	6.100	17.27	9.10	3.36
0.117	2.40	3.117	3.84	6.117	17.27	9.12	3.36
0.133	2.40	3.133	3.84	6.133	17.27	9.13	3.36
0.150	2.40	3.150	3.84	6.150	17.27	9.15	3.36
0.167	2.40	3.167	3.84	6.167	17.27	9.17	3.36
0.183	2.40	3.183	3.84	6.183	17.27	9.18	3.36
0.200	2.40	3.200	3.84	6.200	17.27	9.20	3.36
0.217	2.40	3.217	3.84	6.217	17.27	9.22	3.36
0.233	2.40	3.233	3.84	6.233	17.27	9.23	3.36
0.250	2.40	3.250	3.84	6.250	17.27	9.25	3.36
0.267	2.40	3.267	3.84	6.267	17.27	9.27	3.36
0.283	2.40	3.283	3.84	6.283	17.27	9.28	3.36
0.300	2.40	3.300	3.84	6.300	17.27	9.30	3.36
0.317	2.40	3.317	3.84	6.317	17.27	9.32	3.36
0.333	2.40	3.333	3.84	6.333	17.27	9.33	3.36
0.350	2.40	3.350	3.84	6.350	17.27	9.35	3.36
0.367	2.40	3.367	3.84	6.367	17.27	9.37	3.36
0.383	2.40	3.383	3.84	6.383	17.27	9.38	3.36
0.400	2.40	3.400	3.84	6.400	17.27	9.40	3.36
0.417	2.40	3.417	3.84	6.417	17.27	9.42	3.36
0.433	2.40	3.433	3.84	6.433	17.27	9.43	3.36
0.450	2.40	3.450	3.84	6.450	17.27	9.45	3.36
0.467	2.40	3.467	3.84	6.467	17.27	9.47	3.36
0.483	2.40	3.483	3.84	6.483	17.27	9.48	3.36

0.500	2.40	3.500	3.84	6.500	17.26	9.50	3.36
0.517	2.40	3.517	3.84	6.517	7.68	9.52	3.36
0.533	2.40	3.533	3.84	6.533	7.68	9.53	3.36
0.550	2.40	3.550	3.84	6.550	7.68	9.55	3.36
0.567	2.40	3.567	3.84	6.567	7.68	9.57	3.36
0.583	2.40	3.583	3.84	6.583	7.68	9.58	3.36
0.600	2.40	3.600	3.84	6.600	7.68	9.60	3.36
0.617	2.40	3.617	3.84	6.617	7.68	9.62	3.36
0.633	2.40	3.633	3.84	6.633	7.68	9.63	3.36
0.650	2.40	3.650	3.84	6.650	7.68	9.65	3.36
0.667	2.40	3.667	3.84	6.667	7.68	9.67	3.36
0.683	2.40	3.683	3.84	6.683	7.68	9.68	3.36
0.700	2.40	3.700	3.84	6.700	7.68	9.70	3.36
0.717	2.40	3.717	3.84	6.717	7.68	9.72	3.36
0.733	2.40	3.733	3.84	6.733	7.68	9.73	3.36
0.750	2.40	3.750	3.84	6.750	7.68	9.75	3.36
0.767	2.40	3.767	3.84	6.767	7.68	9.77	3.36
0.783	2.40	3.783	3.84	6.783	7.68	9.78	3.36
0.800	2.40	3.800	3.84	6.800	7.68	9.80	3.36
0.817	2.40	3.817	3.84	6.817	7.68	9.82	3.36
0.833	2.40	3.833	3.84	6.833	7.68	9.83	3.36
0.850	2.40	3.850	3.84	6.850	7.68	9.85	3.36
0.867	2.40	3.867	3.84	6.867	7.68	9.87	3.36
0.883	2.40	3.883	3.84	6.883	7.68	9.88	3.36
0.900	2.40	3.900	3.84	6.900	7.68	9.90	3.36
0.917	2.40	3.917	3.84	6.917	7.68	9.92	3.36
0.933	2.40	3.933	3.84	6.933	7.68	9.93	3.36
0.950	2.40	3.950	3.84	6.950	7.68	9.95	3.36
0.967	2.40	3.967	3.84	6.967	7.68	9.97	3.36
0.983	2.40	3.983	3.84	6.983	7.68	9.98	3.36
1.000	2.40	4.000	3.84	7.000	7.67	10.00	3.36
1.017	2.40	4.017	5.76	7.017	5.76	10.02	1.92
1.033	2.40	4.033	5.76	7.033	5.76	10.03	1.92
1.050	2.40	4.050	5.76	7.050	5.76	10.05	1.92
1.067	2.40	4.067	5.76	7.067	5.76	10.07	1.92
1.083	2.40	4.083	5.76	7.083	5.76	10.08	1.92
1.100	2.40	4.100	5.76	7.100	5.76	10.10	1.92
1.117	2.40	4.117	5.76	7.117	5.76	10.12	1.92
1.133	2.40	4.133	5.76	7.133	5.76	10.13	1.92
1.150	2.40	4.150	5.76	7.150	5.76	10.15	1.92
1.167	2.40	4.167	5.76	7.167	5.76	10.17	1.92
1.183	2.40	4.183	5.76	7.183	5.76	10.18	1.92
1.200	2.40	4.200	5.76	7.200	5.76	10.20	1.92
1.217	2.40	4.217	5.76	7.217	5.76	10.22	1.92
1.233	2.40	4.233	5.76	7.233	5.76	10.23	1.92
1.250	2.40	4.250	5.76	7.250	5.76	10.25	1.92
1.267	2.40	4.267	5.76	7.267	5.76	10.27	1.92
1.283	2.40	4.283	5.76	7.283	5.76	10.28	1.92
1.300	2.40	4.300	5.76	7.300	5.76	10.30	1.92
1.317	2.40	4.317	5.76	7.317	5.76	10.32	1.92
1.333	2.40	4.333	5.76	7.333	5.76	10.33	1.92
1.350	2.40	4.350	5.76	7.350	5.76	10.35	1.92
1.367	2.40	4.367	5.76	7.367	5.76	10.37	1.92
1.383	2.40	4.383	5.76	7.383	5.76	10.38	1.92
1.400	2.40	4.400	5.76	7.400	5.76	10.40	1.92
1.417	2.40	4.417	5.76	7.417	5.76	10.42	1.92
1.433	2.40	4.433	5.76	7.433	5.76	10.43	1.92
1.450	2.40	4.450	5.76	7.450	5.76	10.45	1.92
1.467	2.40	4.467	5.76	7.467	5.76	10.47	1.92
1.483	2.40	4.483	5.76	7.483	5.76	10.48	1.92
1.500	2.40	4.500	5.76	7.500	5.76	10.50	1.92
1.517	2.40	4.517	7.68	7.517	5.76	10.52	1.92
1.533	2.40	4.533	7.68	7.533	5.76	10.53	1.92
1.550	2.40	4.550	7.68	7.550	5.76	10.55	1.92
1.567	2.40	4.567	7.68	7.567	5.76	10.57	1.92
1.583	2.40	4.583	7.68	7.583	5.76	10.58	1.92
1.600	2.40	4.600	7.68	7.600	5.76	10.60	1.92
1.617	2.40	4.617	7.68	7.617	5.76	10.62	1.92
1.633	2.40	4.633	7.68	7.633	5.76	10.63	1.92
1.650	2.40	4.650	7.68	7.650	5.76	10.65	1.92
1.667	2.40	4.667	7.68	7.667	5.76	10.67	1.92
1.683	2.40	4.683	7.68	7.683	5.76	10.68	1.92
1.700	2.40	4.700	7.68	7.700	5.76	10.70	1.92
1.717	2.40	4.717	7.68	7.717	5.76	10.72	1.92
1.733	2.40	4.733	7.68	7.733	5.76	10.73	1.92
1.750	2.40	4.750	7.68	7.750	5.76	10.75	1.92
1.767	2.40	4.767	7.68	7.767	5.76	10.77	1.92
1.783	2.40	4.783	7.68	7.783	5.76	10.78	1.92
1.800	2.40	4.800	7.68	7.800	5.76	10.80	1.92
1.817	2.40	4.817	7.68	7.817	5.76	10.82	1.92
1.833	2.40	4.833	7.68	7.833	5.76	10.83	1.92
1.850	2.40	4.850	7.68	7.850	5.76	10.85	1.92
1.867	2.40	4.867	7.68	7.867	5.76	10.87	1.92
1.883	2.40	4.883	7.68	7.883	5.76	10.88	1.92
1.900	2.40	4.900	7.68	7.900	5.76	10.90	1.92
1.917	2.40	4.917	7.68	7.917	5.76	10.92	1.92
1.933	2.40	4.933	7.68	7.933	5.76	10.93	1.92
1.950	2.40	4.950	7.68	7.950	5.76	10.95	1.92
1.967	2.40	4.967	7.68	7.967	5.76	10.97	1.92
1.983	2.40	4.983	7.68	7.983	5.76	10.98	1.92
2.000	2.40	5.000	7.68	8.000	5.75	11.00	1.92

2.017	2.88	5.017	11.52	8.017	3.36	11.02	1.92
2.033	2.88	5.033	11.52	8.033	3.36	11.03	1.92
2.050	2.88	5.050	11.52	8.050	3.36	11.05	1.92
2.067	2.88	5.067	11.52	8.067	3.36	11.07	1.92
2.083	2.88	5.083	11.52	8.083	3.36	11.08	1.92
2.100	2.88	5.100	11.52	8.100	3.36	11.10	1.92
2.117	2.88	5.117	11.52	8.117	3.36	11.12	1.92
2.133	2.88	5.133	11.52	8.133	3.36	11.13	1.92
2.150	2.88	5.150	11.52	8.150	3.36	11.15	1.92
2.167	2.88	5.167	11.52	8.167	3.36	11.17	1.92
2.183	2.88	5.183	11.52	8.183	3.36	11.18	1.92
2.200	2.88	5.200	11.52	8.200	3.36	11.20	1.92
2.217	2.88	5.217	11.52	8.217	3.36	11.22	1.92
2.233	2.88	5.233	11.52	8.233	3.36	11.23	1.92
2.250	2.88	5.250	11.52	8.250	3.36	11.25	1.92
2.267	2.88	5.267	11.52	8.267	3.36	11.27	1.92
2.283	2.88	5.283	11.52	8.283	3.36	11.28	1.92
2.300	2.88	5.300	11.52	8.300	3.36	11.30	1.92
2.317	2.88	5.317	11.52	8.317	3.36	11.32	1.92
2.333	2.88	5.333	11.52	8.333	3.36	11.33	1.92
2.350	2.88	5.350	11.52	8.350	3.36	11.35	1.92
2.367	2.88	5.367	11.52	8.367	3.36	11.37	1.92
2.383	2.88	5.383	11.52	8.383	3.36	11.38	1.92
2.400	2.88	5.400	11.52	8.400	3.36	11.40	1.92
2.417	2.88	5.417	11.52	8.417	3.36	11.42	1.92
2.433	2.88	5.433	11.52	8.433	3.36	11.43	1.92
2.450	2.88	5.450	11.52	8.450	3.36	11.45	1.92
2.467	2.88	5.467	11.52	8.467	3.36	11.47	1.92
2.483	2.88	5.483	11.52	8.483	3.36	11.48	1.92
2.500	2.88	5.500	11.55	8.500	3.36	11.50	1.92
2.517	2.88	5.517	46.07	8.517	3.36	11.52	1.92
2.533	2.88	5.533	46.07	8.533	3.36	11.53	1.92
2.550	2.88	5.550	46.07	8.550	3.36	11.55	1.92
2.567	2.88	5.567	46.07	8.567	3.36	11.57	1.92
2.583	2.88	5.583	46.07	8.583	3.36	11.58	1.92
2.600	2.88	5.600	46.07	8.600	3.36	11.60	1.92
2.617	2.88	5.617	46.07	8.617	3.36	11.62	1.92
2.633	2.88	5.633	46.07	8.633	3.36	11.63	1.92
2.650	2.88	5.650	46.07	8.650	3.36	11.65	1.92
2.667	2.88	5.667	46.07	8.667	3.36	11.67	1.92
2.683	2.88	5.683	46.07	8.683	3.36	11.68	1.92
2.700	2.88	5.700	46.07	8.700	3.36	11.70	1.92
2.717	2.88	5.717	46.07	8.717	3.36	11.72	1.92
2.733	2.88	5.733	46.07	8.733	3.36	11.73	1.92
2.750	2.88	5.750	46.16	8.750	3.36	11.75	1.92
2.767	2.88	5.767	126.68	8.767	3.36	11.77	1.92
2.783	2.88	5.783	126.68	8.783	3.36	11.78	1.92
2.800	2.88	5.800	126.68	8.800	3.36	11.80	1.92
2.817	2.88	5.817	126.68	8.817	3.36	11.82	1.92
2.833	2.88	5.833	126.68	8.833	3.36	11.83	1.92
2.850	2.88	5.850	126.68	8.850	3.36	11.85	1.92
2.867	2.88	5.867	126.68	8.867	3.36	11.87	1.92
2.883	2.88	5.883	126.68	8.883	3.36	11.88	1.92
2.900	2.88	5.900	126.68	8.900	3.36	11.90	1.92
2.917	2.88	5.917	126.68	8.917	3.36	11.92	1.92
2.933	2.88	5.933	126.68	8.933	3.36	11.93	1.92
2.950	2.88	5.950	126.68	8.950	3.36	11.95	1.92
2.967	2.88	5.967	126.68	8.967	3.36	11.97	1.92
2.983	2.88	5.983	126.68	8.983	3.36	11.98	1.92
3.000	2.88	6.000	126.53	9.000	3.36	12.00	1.92

Max.Eff.Inten.(mm/hr)=	126.68	53.91	
over (min)	5.00	9.00	
Storage Coeff. (min)=	2.54 (ii)	8.07 (ii)	
Unit Hyd. Tpeak (min)=	5.00	9.00	
Unit Hyd. peak (cms)=	0.34	0.14	
			TOTALS
PEAK FLOW (cms)=	0.48	0.15	0.619 (iii)
TIME TO PEAK (hrs)=	6.00	6.05	6.00
RUNOFF VOLUME (mm)=	94.96	26.43	57.96
TOTAL RAINFALL (mm)=	95.97	95.97	95.97
RUNOFF COEFFICIENT =	0.99	0.28	0.60

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0016)				
1 + 2 = 3	AREA	QPEAK	TPEAK	R.V.
	(ha)	(cms)	(hrs)	(mm)
ID1= 1 (0001):	3.01	0.619	6.00	57.96
+ ID2= 2 (0025):	1.48	0.116	6.23	38.30
ID = 3 (0016):	4.49	0.689	6.00	51.48

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0003) IN= 2---> OUT= 1 DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0410	0.0864
	0.0000	0.0281	0.0800	0.1533
	0.0010	0.0321	0.0900	0.1746
	0.0040	0.0479	0.1110	0.2118
	0.0070	0.0518	0.1180	0.2246

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0016)	4.490	0.689	6.00	51.48
OUTFLOW: ID= 1 (0003)	4.490	0.076	7.07	43.68

PEAK FLOW REDUCTION [Qout/Qin](%)= 11.08
TIME SHIFT OF PEAK FLOW (min)= 64.00
MAXIMUM STORAGE USED (ha.m.)= 0.1469

READ STORM Ptotal= 95.97 mm	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\9c9568e7
	Comments: 100-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.40	3.25	3.84	6.25	17.27	9.25	3.36
0.50	2.40	3.50	3.84	6.50	17.27	9.50	3.36
0.75	2.40	3.75	3.84	6.75	7.68	9.75	3.36
1.00	2.40	4.00	3.84	7.00	7.68	10.00	3.36
1.25	2.40	4.25	5.76	7.25	5.76	10.25	1.92
1.50	2.40	4.50	5.76	7.50	5.76	10.50	1.92
1.75	2.40	4.75	7.68	7.75	5.76	10.75	1.92
2.00	2.40	5.00	7.68	8.00	5.76	11.00	1.92
2.25	2.88	5.25	11.52	8.25	3.36	11.25	1.92
2.50	2.88	5.50	11.52	8.50	3.36	11.50	1.92
2.75	2.88	5.75	46.07	8.75	3.36	11.75	1.92
3.00	2.88	6.00	126.68	9.00	3.36	12.00	1.92

CALIB NASHYD (0026) ID= 1 DT= 1.0 min	Area (ha)= 0.27	Curve Number (CN)= 71.0
	Ia (mm)= 3.00	# of Linear Res.(N)= 3.00
	U.H. Tp(hrs)= 0.02	

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.40	3.017	3.84	6.017	17.27	9.02	3.36
0.033	2.40	3.033	3.84	6.033	17.27	9.03	3.36
0.050	2.40	3.050	3.84	6.050	17.27	9.05	3.36
0.067	2.40	3.067	3.84	6.067	17.27	9.07	3.36
0.083	2.40	3.083	3.84	6.083	17.27	9.08	3.36
0.100	2.40	3.100	3.84	6.100	17.27	9.10	3.36
0.117	2.40	3.117	3.84	6.117	17.27	9.12	3.36
0.133	2.40	3.133	3.84	6.133	17.27	9.13	3.36
0.150	2.40	3.150	3.84	6.150	17.27	9.15	3.36
0.167	2.40	3.167	3.84	6.167	17.27	9.17	3.36
0.183	2.40	3.183	3.84	6.183	17.27	9.18	3.36
0.200	2.40	3.200	3.84	6.200	17.27	9.20	3.36
0.217	2.40	3.217	3.84	6.217	17.27	9.22	3.36
0.233	2.40	3.233	3.84	6.233	17.27	9.23	3.36
0.250	2.40	3.250	3.84	6.250	17.27	9.25	3.36
0.267	2.40	3.267	3.84	6.267	17.27	9.27	3.36
0.283	2.40	3.283	3.84	6.283	17.27	9.28	3.36
0.300	2.40	3.300	3.84	6.300	17.27	9.30	3.36
0.317	2.40	3.317	3.84	6.317	17.27	9.32	3.36
0.333	2.40	3.333	3.84	6.333	17.27	9.33	3.36
0.350	2.40	3.350	3.84	6.350	17.27	9.35	3.36
0.367	2.40	3.367	3.84	6.367	17.27	9.37	3.36
0.383	2.40	3.383	3.84	6.383	17.27	9.38	3.36
0.400	2.40	3.400	3.84	6.400	17.27	9.40	3.36
0.417	2.40	3.417	3.84	6.417	17.27	9.42	3.36
0.433	2.40	3.433	3.84	6.433	17.27	9.43	3.36
0.450	2.40	3.450	3.84	6.450	17.27	9.45	3.36
0.467	2.40	3.467	3.84	6.467	17.27	9.47	3.36
0.483	2.40	3.483	3.84	6.483	17.27	9.48	3.36
0.500	2.40	3.500	3.84	6.500	17.26	9.50	3.36
0.517	2.40	3.517	3.84	6.517	7.68	9.52	3.36

0.533	2.40	3.533	3.84	6.533	7.68	9.53	3.36
0.550	2.40	3.550	3.84	6.550	7.68	9.55	3.36
0.567	2.40	3.567	3.84	6.567	7.68	9.57	3.36
0.583	2.40	3.583	3.84	6.583	7.68	9.58	3.36
0.600	2.40	3.600	3.84	6.600	7.68	9.60	3.36
0.617	2.40	3.617	3.84	6.617	7.68	9.62	3.36
0.633	2.40	3.633	3.84	6.633	7.68	9.63	3.36
0.650	2.40	3.650	3.84	6.650	7.68	9.65	3.36
0.667	2.40	3.667	3.84	6.667	7.68	9.67	3.36
0.683	2.40	3.683	3.84	6.683	7.68	9.68	3.36
0.700	2.40	3.700	3.84	6.700	7.68	9.70	3.36
0.717	2.40	3.717	3.84	6.717	7.68	9.72	3.36
0.733	2.40	3.733	3.84	6.733	7.68	9.73	3.36
0.750	2.40	3.750	3.84	6.750	7.68	9.75	3.36
0.767	2.40	3.767	3.84	6.767	7.68	9.77	3.36
0.783	2.40	3.783	3.84	6.783	7.68	9.78	3.36
0.800	2.40	3.800	3.84	6.800	7.68	9.80	3.36
0.817	2.40	3.817	3.84	6.817	7.68	9.82	3.36
0.833	2.40	3.833	3.84	6.833	7.68	9.83	3.36
0.850	2.40	3.850	3.84	6.850	7.68	9.85	3.36
0.867	2.40	3.867	3.84	6.867	7.68	9.87	3.36
0.883	2.40	3.883	3.84	6.883	7.68	9.88	3.36
0.900	2.40	3.900	3.84	6.900	7.68	9.90	3.36
0.917	2.40	3.917	3.84	6.917	7.68	9.92	3.36
0.933	2.40	3.933	3.84	6.933	7.68	9.93	3.36
0.950	2.40	3.950	3.84	6.950	7.68	9.95	3.36
0.967	2.40	3.967	3.84	6.967	7.68	9.97	3.36
0.983	2.40	3.983	3.84	6.983	7.68	9.98	3.36
1.000	2.40	4.000	3.84	7.000	7.67	10.00	3.36
1.017	2.40	4.017	5.76	7.017	5.76	10.02	1.92
1.033	2.40	4.033	5.76	7.033	5.76	10.03	1.92
1.050	2.40	4.050	5.76	7.050	5.76	10.05	1.92
1.067	2.40	4.067	5.76	7.067	5.76	10.07	1.92
1.083	2.40	4.083	5.76	7.083	5.76	10.08	1.92
1.100	2.40	4.100	5.76	7.100	5.76	10.10	1.92
1.117	2.40	4.117	5.76	7.117	5.76	10.12	1.92
1.133	2.40	4.133	5.76	7.133	5.76	10.13	1.92
1.150	2.40	4.150	5.76	7.150	5.76	10.15	1.92
1.167	2.40	4.167	5.76	7.167	5.76	10.17	1.92
1.183	2.40	4.183	5.76	7.183	5.76	10.18	1.92
1.200	2.40	4.200	5.76	7.200	5.76	10.20	1.92
1.217	2.40	4.217	5.76	7.217	5.76	10.22	1.92
1.233	2.40	4.233	5.76	7.233	5.76	10.23	1.92
1.250	2.40	4.250	5.76	7.250	5.76	10.25	1.92
1.267	2.40	4.267	5.76	7.267	5.76	10.27	1.92
1.283	2.40	4.283	5.76	7.283	5.76	10.28	1.92
1.300	2.40	4.300	5.76	7.300	5.76	10.30	1.92
1.317	2.40	4.317	5.76	7.317	5.76	10.32	1.92
1.333	2.40	4.333	5.76	7.333	5.76	10.33	1.92
1.350	2.40	4.350	5.76	7.350	5.76	10.35	1.92
1.367	2.40	4.367	5.76	7.367	5.76	10.37	1.92
1.383	2.40	4.383	5.76	7.383	5.76	10.38	1.92
1.400	2.40	4.400	5.76	7.400	5.76	10.40	1.92
1.417	2.40	4.417	5.76	7.417	5.76	10.42	1.92
1.433	2.40	4.433	5.76	7.433	5.76	10.43	1.92
1.450	2.40	4.450	5.76	7.450	5.76	10.45	1.92
1.467	2.40	4.467	5.76	7.467	5.76	10.47	1.92
1.483	2.40	4.483	5.76	7.483	5.76	10.48	1.92
1.500	2.40	4.500	5.76	7.500	5.76	10.50	1.92
1.517	2.40	4.517	7.68	7.517	5.76	10.52	1.92
1.533	2.40	4.533	7.68	7.533	5.76	10.53	1.92
1.550	2.40	4.550	7.68	7.550	5.76	10.55	1.92
1.567	2.40	4.567	7.68	7.567	5.76	10.57	1.92
1.583	2.40	4.583	7.68	7.583	5.76	10.58	1.92
1.600	2.40	4.600	7.68	7.600	5.76	10.60	1.92
1.617	2.40	4.617	7.68	7.617	5.76	10.62	1.92
1.633	2.40	4.633	7.68	7.633	5.76	10.63	1.92
1.650	2.40	4.650	7.68	7.650	5.76	10.65	1.92
1.667	2.40	4.667	7.68	7.667	5.76	10.67	1.92
1.683	2.40	4.683	7.68	7.683	5.76	10.68	1.92
1.700	2.40	4.700	7.68	7.700	5.76	10.70	1.92
1.717	2.40	4.717	7.68	7.717	5.76	10.72	1.92
1.733	2.40	4.733	7.68	7.733	5.76	10.73	1.92
1.750	2.40	4.750	7.68	7.750	5.76	10.75	1.92
1.767	2.40	4.767	7.68	7.767	5.76	10.77	1.92
1.783	2.40	4.783	7.68	7.783	5.76	10.78	1.92
1.800	2.40	4.800	7.68	7.800	5.76	10.80	1.92
1.817	2.40	4.817	7.68	7.817	5.76	10.82	1.92
1.833	2.40	4.833	7.68	7.833	5.76	10.83	1.92
1.850	2.40	4.850	7.68	7.850	5.76	10.85	1.92
1.867	2.40	4.867	7.68	7.867	5.76	10.87	1.92
1.883	2.40	4.883	7.68	7.883	5.76	10.88	1.92
1.900	2.40	4.900	7.68	7.900	5.76	10.90	1.92
1.917	2.40	4.917	7.68	7.917	5.76	10.92	1.92
1.933	2.40	4.933	7.68	7.933	5.76	10.93	1.92
1.950	2.40	4.950	7.68	7.950	5.76	10.95	1.92
1.967	2.40	4.967	7.68	7.967	5.76	10.97	1.92
1.983	2.40	4.983	7.68	7.983	5.76	10.98	1.92
2.000	2.40	5.000	7.68	8.000	5.75	11.00	1.92
2.017	2.88	5.017	11.52	8.017	3.36	11.02	1.92
2.033	2.88	5.033	11.52	8.033	3.36	11.03	1.92

2.050	2.88	5.050	11.52	8.050	3.36	11.05	1.92
2.067	2.88	5.067	11.52	8.067	3.36	11.07	1.92
2.083	2.88	5.083	11.52	8.083	3.36	11.08	1.92
2.100	2.88	5.100	11.52	8.100	3.36	11.10	1.92
2.117	2.88	5.117	11.52	8.117	3.36	11.12	1.92
2.133	2.88	5.133	11.52	8.133	3.36	11.13	1.92
2.150	2.88	5.150	11.52	8.150	3.36	11.15	1.92
2.167	2.88	5.167	11.52	8.167	3.36	11.17	1.92
2.183	2.88	5.183	11.52	8.183	3.36	11.18	1.92
2.200	2.88	5.200	11.52	8.200	3.36	11.20	1.92
2.217	2.88	5.217	11.52	8.217	3.36	11.22	1.92
2.233	2.88	5.233	11.52	8.233	3.36	11.23	1.92
2.250	2.88	5.250	11.52	8.250	3.36	11.25	1.92
2.267	2.88	5.267	11.52	8.267	3.36	11.27	1.92
2.283	2.88	5.283	11.52	8.283	3.36	11.28	1.92
2.300	2.88	5.300	11.52	8.300	3.36	11.30	1.92
2.317	2.88	5.317	11.52	8.317	3.36	11.32	1.92
2.333	2.88	5.333	11.52	8.333	3.36	11.33	1.92
2.350	2.88	5.350	11.52	8.350	3.36	11.35	1.92
2.367	2.88	5.367	11.52	8.367	3.36	11.37	1.92
2.383	2.88	5.383	11.52	8.383	3.36	11.38	1.92
2.400	2.88	5.400	11.52	8.400	3.36	11.40	1.92
2.417	2.88	5.417	11.52	8.417	3.36	11.42	1.92
2.433	2.88	5.433	11.52	8.433	3.36	11.43	1.92
2.450	2.88	5.450	11.52	8.450	3.36	11.45	1.92
2.467	2.88	5.467	11.52	8.467	3.36	11.47	1.92
2.483	2.88	5.483	11.52	8.483	3.36	11.48	1.92
2.500	2.88	5.500	11.55	8.500	3.36	11.50	1.92
2.517	2.88	5.517	46.07	8.517	3.36	11.52	1.92
2.533	2.88	5.533	46.07	8.533	3.36	11.53	1.92
2.550	2.88	5.550	46.07	8.550	3.36	11.55	1.92
2.567	2.88	5.567	46.07	8.567	3.36	11.57	1.92
2.583	2.88	5.583	46.07	8.583	3.36	11.58	1.92
2.600	2.88	5.600	46.07	8.600	3.36	11.60	1.92
2.617	2.88	5.617	46.07	8.617	3.36	11.62	1.92
2.633	2.88	5.633	46.07	8.633	3.36	11.63	1.92
2.650	2.88	5.650	46.07	8.650	3.36	11.65	1.92
2.667	2.88	5.667	46.07	8.667	3.36	11.67	1.92
2.683	2.88	5.683	46.07	8.683	3.36	11.68	1.92
2.700	2.88	5.700	46.07	8.700	3.36	11.70	1.92
2.717	2.88	5.717	46.07	8.717	3.36	11.72	1.92
2.733	2.88	5.733	46.07	8.733	3.36	11.73	1.92
2.750	2.88	5.750	46.16	8.750	3.36	11.75	1.92
2.767	2.88	5.767	126.68	8.767	3.36	11.77	1.92
2.783	2.88	5.783	126.68	8.783	3.36	11.78	1.92
2.800	2.88	5.800	126.68	8.800	3.36	11.80	1.92
2.817	2.88	5.817	126.68	8.817	3.36	11.82	1.92
2.833	2.88	5.833	126.68	8.833	3.36	11.83	1.92
2.850	2.88	5.850	126.68	8.850	3.36	11.85	1.92
2.867	2.88	5.867	126.68	8.867	3.36	11.87	1.92
2.883	2.88	5.883	126.68	8.883	3.36	11.88	1.92
2.900	2.88	5.900	126.68	8.900	3.36	11.90	1.92
2.917	2.88	5.917	126.68	8.917	3.36	11.92	1.92
2.933	2.88	5.933	126.68	8.933	3.36	11.93	1.92
2.950	2.88	5.950	126.68	8.950	3.36	11.95	1.92
2.967	2.88	5.967	126.68	8.967	3.36	11.97	1.92
2.983	2.88	5.983	126.68	8.983	3.36	11.98	1.92
3.000	2.88	6.000	126.53	9.000	3.36	12.00	1.92

Unit Hyd Qpeak (cms)= 0.516

PEAK FLOW (cms)= 0.056 (i)
TIME TO PEAK (hrs)= 6.000
RUNOFF VOLUME (mm)= 42.795
TOTAL RAINFALL (mm)= 95.968
RUNOFF COEFFICIENT = 0.446

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

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\9c9568e7
Ptotal= 95.97 mm	Comments: 100-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.40	3.25	3.84	6.25	17.27	9.25	3.36
0.50	2.40	3.50	3.84	6.50	17.27	9.50	3.36
0.75	2.40	3.75	3.84	6.75	7.68	9.75	3.36
1.00	2.40	4.00	3.84	7.00	7.68	10.00	3.36
1.25	2.40	4.25	5.76	7.25	5.76	10.25	1.92
1.50	2.40	4.50	5.76	7.50	5.76	10.50	1.92
1.75	2.40	4.75	7.68	7.75	5.76	10.75	1.92
2.00	2.40	5.00	7.68	8.00	5.76	11.00	1.92
2.25	2.88	5.25	11.52	8.25	3.36	11.25	1.92
2.50	2.88	5.50	11.52	8.50	3.36	11.50	1.92
2.75	2.88	5.75	46.07	8.75	3.36	11.75	1.92
3.00	2.88	6.00	126.68	9.00	3.36	12.00	1.92

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| CALIB            |
| STANDHYD (  0007)|   Area    (ha)=   1.80
|ID= 1 DT= 1.0 min |   Total Imp(%)=  59.00   Dir. Conn.(%)=  48.00
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                          IMPERVIOUS    PERVIOUS (i)
     Surface Area     (ha)=      1.06         0.74
     Dep. Storage     (mm)=      1.00         5.00
     Average Slope     (%)=      1.00         2.00
     Length            (m)=    109.54        40.00
     Manning n            =     0.013        0.250

         NOTE:  RAINFALL WAS TRANSFORMED TO   1.0 MIN. TIME STEP.
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---- TRANSFORMED HYETOGRAPH ----

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.017	2.40	3.017	3.84	6.017	17.27	9.02	3.36
0.033	2.40	3.033	3.84	6.033	17.27	9.03	3.36
0.050	2.40	3.050	3.84	6.050	17.27	9.05	3.36
0.067	2.40	3.067	3.84	6.067	17.27	9.07	3.36
0.083	2.40	3.083	3.84	6.083	17.27	9.08	3.36
0.100	2.40	3.100	3.84	6.100	17.27	9.10	3.36
0.117	2.40	3.117	3.84	6.117	17.27	9.12	3.36
0.133	2.40	3.133	3.84	6.133	17.27	9.13	3.36
0.150	2.40	3.150	3.84	6.150	17.27	9.15	3.36
0.167	2.40	3.167	3.84	6.167	17.27	9.17	3.36
0.183	2.40	3.183	3.84	6.183	17.27	9.18	3.36
0.200	2.40	3.200	3.84	6.200	17.27	9.20	3.36
0.217	2.40	3.217	3.84	6.217	17.27	9.22	3.36
0.233	2.40	3.233	3.84	6.233	17.27	9.23	3.36
0.250	2.40	3.250	3.84	6.250	17.27	9.25	3.36
0.267	2.40	3.267	3.84	6.267	17.27	9.27	3.36
0.283	2.40	3.283	3.84	6.283	17.27	9.28	3.36
0.300	2.40	3.300	3.84	6.300	17.27	9.30	3.36
0.317	2.40	3.317	3.84	6.317	17.27	9.32	3.36
0.333	2.40	3.333	3.84	6.333	17.27	9.33	3.36
0.350	2.40	3.350	3.84	6.350	17.27	9.35	3.36
0.367	2.40	3.367	3.84	6.367	17.27	9.37	3.36
0.383	2.40	3.383	3.84	6.383	17.27	9.38	3.36
0.400	2.40	3.400	3.84	6.400	17.27	9.40	3.36
0.417	2.40	3.417	3.84	6.417	17.27	9.42	3.36
0.433	2.40	3.433	3.84	6.433	17.27	9.43	3.36
0.450	2.40	3.450	3.84	6.450	17.27	9.45	3.36
0.467	2.40	3.467	3.84	6.467	17.27	9.47	3.36
0.483	2.40	3.483	3.84	6.483	17.27	9.48	3.36
0.500	2.40	3.500	3.84	6.500	17.26	9.50	3.36
0.517	2.40	3.517	3.84	6.517	7.68	9.52	3.36
0.533	2.40	3.533	3.84	6.533	7.68	9.53	3.36
0.550	2.40	3.550	3.84	6.550	7.68	9.55	3.36
0.567	2.40	3.567	3.84	6.567	7.68	9.57	3.36
0.583	2.40	3.583	3.84	6.583	7.68	9.58	3.36
0.600	2.40	3.600	3.84	6.600	7.68	9.60	3.36
0.617	2.40	3.617	3.84	6.617	7.68	9.62	3.36
0.633	2.40	3.633	3.84	6.633	7.68	9.63	3.36
0.650	2.40	3.650	3.84	6.650	7.68	9.65	3.36
0.667	2.40	3.667	3.84	6.667	7.68	9.67	3.36
0.683	2.40	3.683	3.84	6.683	7.68	9.68	3.36
0.700	2.40	3.700	3.84	6.700	7.68	9.70	3.36
0.717	2.40	3.717	3.84	6.717	7.68	9.72	3.36
0.733	2.40	3.733	3.84	6.733	7.68	9.73	3.36
0.750	2.40	3.750	3.84	6.750	7.68	9.75	3.36
0.767	2.40	3.767	3.84	6.767	7.68	9.77	3.36
0.783	2.40	3.783	3.84	6.783	7.68	9.78	3.36
0.800	2.40	3.800	3.84	6.800	7.68	9.80	3.36
0.817	2.40	3.817	3.84	6.817	7.68	9.82	3.36
0.833	2.40	3.833	3.84	6.833	7.68	9.83	3.36
0.850	2.40	3.850	3.84	6.850	7.68	9.85	3.36
0.867	2.40	3.867	3.84	6.867	7.68	9.87	3.36
0.883	2.40	3.883	3.84	6.883	7.68	9.88	3.36
0.900	2.40	3.900	3.84	6.900	7.68	9.90	3.36
0.917	2.40	3.917	3.84	6.917	7.68	9.92	3.36
0.933	2.40	3.933	3.84	6.933	7.68	9.93	3.36
0.950	2.40	3.950	3.84	6.950	7.68	9.95	3.36
0.967	2.40	3.967	3.84	6.967	7.68	9.97	3.36
0.983	2.40	3.983	3.84	6.983	7.68	9.98	3.36
1.000	2.40	4.000	3.84	7.000	7.67	10.00	3.36
1.017	2.40	4.017	5.76	7.017	5.76	10.02	1.92
1.033	2.40	4.033	5.76	7.033	5.76	10.03	1.92
1.050	2.40	4.050	5.76	7.050	5.76	10.05	1.92
1.067	2.40	4.067	5.76	7.067	5.76	10.07	1.92
1.083	2.40	4.083	5.76	7.083	5.76	10.08	1.92
1.100	2.40	4.100	5.76	7.100	5.76	10.10	1.92
1.117	2.40	4.117	5.76	7.117	5.76	10.12	1.92
1.133	2.40	4.133	5.76	7.133	5.76	10.13	1.92
1.150	2.40	4.150	5.76	7.150	5.76	10.15	1.92
1.167	2.40	4.167	5.76	7.167	5.76	10.17	1.92

1.183	2.40	4.183	5.76	7.183	5.76	10.18	1.92
1.200	2.40	4.200	5.76	7.200	5.76	10.20	1.92
1.217	2.40	4.217	5.76	7.217	5.76	10.22	1.92
1.233	2.40	4.233	5.76	7.233	5.76	10.23	1.92
1.250	2.40	4.250	5.76	7.250	5.76	10.25	1.92
1.267	2.40	4.267	5.76	7.267	5.76	10.27	1.92
1.283	2.40	4.283	5.76	7.283	5.76	10.28	1.92
1.300	2.40	4.300	5.76	7.300	5.76	10.30	1.92
1.317	2.40	4.317	5.76	7.317	5.76	10.32	1.92
1.333	2.40	4.333	5.76	7.333	5.76	10.33	1.92
1.350	2.40	4.350	5.76	7.350	5.76	10.35	1.92
1.367	2.40	4.367	5.76	7.367	5.76	10.37	1.92
1.383	2.40	4.383	5.76	7.383	5.76	10.38	1.92
1.400	2.40	4.400	5.76	7.400	5.76	10.40	1.92
1.417	2.40	4.417	5.76	7.417	5.76	10.42	1.92
1.433	2.40	4.433	5.76	7.433	5.76	10.43	1.92
1.450	2.40	4.450	5.76	7.450	5.76	10.45	1.92
1.467	2.40	4.467	5.76	7.467	5.76	10.47	1.92
1.483	2.40	4.483	5.76	7.483	5.76	10.48	1.92
1.500	2.40	4.500	5.76	7.500	5.76	10.50	1.92
1.517	2.40	4.517	7.68	7.517	5.76	10.52	1.92
1.533	2.40	4.533	7.68	7.533	5.76	10.53	1.92
1.550	2.40	4.550	7.68	7.550	5.76	10.55	1.92
1.567	2.40	4.567	7.68	7.567	5.76	10.57	1.92
1.583	2.40	4.583	7.68	7.583	5.76	10.58	1.92
1.600	2.40	4.600	7.68	7.600	5.76	10.60	1.92
1.617	2.40	4.617	7.68	7.617	5.76	10.62	1.92
1.633	2.40	4.633	7.68	7.633	5.76	10.63	1.92
1.650	2.40	4.650	7.68	7.650	5.76	10.65	1.92
1.667	2.40	4.667	7.68	7.667	5.76	10.67	1.92
1.683	2.40	4.683	7.68	7.683	5.76	10.68	1.92
1.700	2.40	4.700	7.68	7.700	5.76	10.70	1.92
1.717	2.40	4.717	7.68	7.717	5.76	10.72	1.92
1.733	2.40	4.733	7.68	7.733	5.76	10.73	1.92
1.750	2.40	4.750	7.68	7.750	5.76	10.75	1.92
1.767	2.40	4.767	7.68	7.767	5.76	10.77	1.92
1.783	2.40	4.783	7.68	7.783	5.76	10.78	1.92
1.800	2.40	4.800	7.68	7.800	5.76	10.80	1.92
1.817	2.40	4.817	7.68	7.817	5.76	10.82	1.92
1.833	2.40	4.833	7.68	7.833	5.76	10.83	1.92
1.850	2.40	4.850	7.68	7.850	5.76	10.85	1.92
1.867	2.40	4.867	7.68	7.867	5.76	10.87	1.92
1.883	2.40	4.883	7.68	7.883	5.76	10.88	1.92
1.900	2.40	4.900	7.68	7.900	5.76	10.90	1.92
1.917	2.40	4.917	7.68	7.917	5.76	10.92	1.92
1.933	2.40	4.933	7.68	7.933	5.76	10.93	1.92
1.950	2.40	4.950	7.68	7.950	5.76	10.95	1.92
1.967	2.40	4.967	7.68	7.967	5.76	10.97	1.92
1.983	2.40	4.983	7.68	7.983	5.76	10.98	1.92
2.000	2.40	5.000	7.68	8.000	5.75	11.00	1.92
2.017	2.88	5.017	11.52	8.017	3.36	11.02	1.92
2.033	2.88	5.033	11.52	8.033	3.36	11.03	1.92
2.050	2.88	5.050	11.52	8.050	3.36	11.05	1.92
2.067	2.88	5.067	11.52	8.067	3.36	11.07	1.92
2.083	2.88	5.083	11.52	8.083	3.36	11.08	1.92
2.100	2.88	5.100	11.52	8.100	3.36	11.10	1.92
2.117	2.88	5.117	11.52	8.117	3.36	11.12	1.92
2.133	2.88	5.133	11.52	8.133	3.36	11.13	1.92
2.150	2.88	5.150	11.52	8.150	3.36	11.15	1.92
2.167	2.88	5.167	11.52	8.167	3.36	11.17	1.92
2.183	2.88	5.183	11.52	8.183	3.36	11.18	1.92
2.200	2.88	5.200	11.52	8.200	3.36	11.20	1.92
2.217	2.88	5.217	11.52	8.217	3.36	11.22	1.92
2.233	2.88	5.233	11.52	8.233	3.36	11.23	1.92
2.250	2.88	5.250	11.52	8.250	3.36	11.25	1.92
2.267	2.88	5.267	11.52	8.267	3.36	11.27	1.92
2.283	2.88	5.283	11.52	8.283	3.36	11.28	1.92
2.300	2.88	5.300	11.52	8.300	3.36	11.30	1.92
2.317	2.88	5.317	11.52	8.317	3.36	11.32	1.92
2.333	2.88	5.333	11.52	8.333	3.36	11.33	1.92
2.350	2.88	5.350	11.52	8.350	3.36	11.35	1.92
2.367	2.88	5.367	11.52	8.367	3.36	11.37	1.92
2.383	2.88	5.383	11.52	8.383	3.36	11.38	1.92
2.400	2.88	5.400	11.52	8.400	3.36	11.40	1.92
2.417	2.88	5.417	11.52	8.417	3.36	11.42	1.92
2.433	2.88	5.433	11.52	8.433	3.36	11.43	1.92
2.450	2.88	5.450	11.52	8.450	3.36	11.45	1.92
2.467	2.88	5.467	11.52	8.467	3.36	11.47	1.92
2.483	2.88	5.483	11.52	8.483	3.36	11.48	1.92
2.500	2.88	5.500	11.55	8.500	3.36	11.50	1.92
2.517	2.88	5.517	46.07	8.517	3.36	11.52	1.92
2.533	2.88	5.533	46.07	8.533	3.36	11.53	1.92
2.550	2.88	5.550	46.07	8.550	3.36	11.55	1.92
2.567	2.88	5.567	46.07	8.567	3.36	11.57	1.92
2.583	2.88	5.583	46.07	8.583	3.36	11.58	1.92
2.600	2.88	5.600	46.07	8.600	3.36	11.60	1.92
2.617	2.88	5.617	46.07	8.617	3.36	11.62	1.92
2.633	2.88	5.633	46.07	8.633	3.36	11.63	1.92
2.650	2.88	5.650	46.07	8.650	3.36	11.65	1.92
2.667	2.88	5.667	46.07	8.667	3.36	11.67	1.92
2.683	2.88	5.683	46.07	8.683	3.36	11.68	1.92

2.700	2.88	5.700	46.07	8.700	3.36	11.70	1.92
2.717	2.88	5.717	46.07	8.717	3.36	11.72	1.92
2.733	2.88	5.733	46.07	8.733	3.36	11.73	1.92
2.750	2.88	5.750	46.16	8.750	3.36	11.75	1.92
2.767	2.88	5.767	126.68	8.767	3.36	11.77	1.92
2.783	2.88	5.783	126.68	8.783	3.36	11.78	1.92
2.800	2.88	5.800	126.68	8.800	3.36	11.80	1.92
2.817	2.88	5.817	126.68	8.817	3.36	11.82	1.92
2.833	2.88	5.833	126.68	8.833	3.36	11.83	1.92
2.850	2.88	5.850	126.68	8.850	3.36	11.85	1.92
2.867	2.88	5.867	126.68	8.867	3.36	11.87	1.92
2.883	2.88	5.883	126.68	8.883	3.36	11.88	1.92
2.900	2.88	5.900	126.68	8.900	3.36	11.90	1.92
2.917	2.88	5.917	126.68	8.917	3.36	11.92	1.92
2.933	2.88	5.933	126.68	8.933	3.36	11.93	1.92
2.950	2.88	5.950	126.68	8.950	3.36	11.95	1.92
2.967	2.88	5.967	126.68	8.967	3.36	11.97	1.92
2.983	2.88	5.983	126.68	8.983	3.36	11.98	1.92
3.000	2.88	6.000	126.53	9.000	3.36	12.00	1.92

Max.Eff.Inten.(mm/hr)=	126.68	54.87	
over (min)	5.00	9.00	
Storage Coeff. (min)=	2.45 (ii)	8.48 (ii)	
Unit Hyd. Tpeak (min)=	5.00	9.00	
Unit Hyd. peak (cms)=	0.34	0.13	
			TOTALS
PEAK FLOW (cms)=	0.30	0.08	0.379 (iii)
TIME TO PEAK (hrs)=	6.00	6.07	6.00
RUNOFF VOLUME (mm)=	94.96	26.64	59.44
TOTAL RAINFALL (mm)=	95.97	95.97	95.97
RUNOFF COEFFICIENT =	0.99	0.28	0.62

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

ADD HYD (0018)		AREA	QPEAK	TPEAK	R.V.
		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0026):	0.27	0.056	6.00	42.80
1 + 2 = 3	+ ID2= 2 (0007):	1.80	0.379	6.00	59.44
	ID = 3 (0018):	2.07	0.435	6.00	57.27

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

RESERVOIR(0009)				
IN= 2---> OUT= 1				
DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0330	0.0298
	0.0020	0.0000	0.0480	0.0300
	0.0190	0.0288	0.5150	0.0368
	0.0250	0.0292	0.5380	0.0368

		AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (	0018)	2.070	0.435	6.00	57.27
OUTFLOW: ID= 1 (	0009)	2.070	0.413	6.02	57.27

PEAK FLOW REDUCTION [Qout/Qin](%)= 94.89
TIME SHIFT OF PEAK FLOW (min)= 1.00
MAXIMUM STORAGE USED (ha.m.)= 0.0353

READ STORM	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\9c9568e7
Ptotal= 95.97 mm	Comments: 100-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.40	3.25	3.84	6.25	17.27	9.25	3.36
0.50	2.40	3.50	3.84	6.50	17.27	9.50	3.36
0.75	2.40	3.75	3.84	6.75	7.68	9.75	3.36
1.00	2.40	4.00	3.84	7.00	7.68	10.00	3.36
1.25	2.40	4.25	5.76	7.25	5.76	10.25	1.92
1.50	2.40	4.50	5.76	7.50	5.76	10.50	1.92
1.75	2.40	4.75	7.68	7.75	5.76	10.75	1.92
2.00	2.40	5.00	7.68	8.00	5.76	11.00	1.92
2.25	2.88	5.25	11.52	8.25	3.36	11.25	1.92

2.50	2.88	5.50	11.52	8.50	3.36	11.50	1.92
2.75	2.88	5.75	46.07	8.75	3.36	11.75	1.92
3.00	2.88	6.00	126.68	9.00	3.36	12.00	1.92

CALIB		
STANDHYD (0006)	Area (ha)=	0.80
ID= 1 DT= 1.0 min	Total Imp(%)=	87.00 Dir. Conn.(%)= 82.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	0.70	0.10
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	73.03	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.40	3.017	3.84	6.017	17.27	9.02	3.36
0.033	2.40	3.033	3.84	6.033	17.27	9.03	3.36
0.050	2.40	3.050	3.84	6.050	17.27	9.05	3.36
0.067	2.40	3.067	3.84	6.067	17.27	9.07	3.36
0.083	2.40	3.083	3.84	6.083	17.27	9.08	3.36
0.100	2.40	3.100	3.84	6.100	17.27	9.10	3.36
0.117	2.40	3.117	3.84	6.117	17.27	9.12	3.36
0.133	2.40	3.133	3.84	6.133	17.27	9.13	3.36
0.150	2.40	3.150	3.84	6.150	17.27	9.15	3.36
0.167	2.40	3.167	3.84	6.167	17.27	9.17	3.36
0.183	2.40	3.183	3.84	6.183	17.27	9.18	3.36
0.200	2.40	3.200	3.84	6.200	17.27	9.20	3.36
0.217	2.40	3.217	3.84	6.217	17.27	9.22	3.36
0.233	2.40	3.233	3.84	6.233	17.27	9.23	3.36
0.250	2.40	3.250	3.84	6.250	17.27	9.25	3.36
0.267	2.40	3.267	3.84	6.267	17.27	9.27	3.36
0.283	2.40	3.283	3.84	6.283	17.27	9.28	3.36
0.300	2.40	3.300	3.84	6.300	17.27	9.30	3.36
0.317	2.40	3.317	3.84	6.317	17.27	9.32	3.36
0.333	2.40	3.333	3.84	6.333	17.27	9.33	3.36
0.350	2.40	3.350	3.84	6.350	17.27	9.35	3.36
0.367	2.40	3.367	3.84	6.367	17.27	9.37	3.36
0.383	2.40	3.383	3.84	6.383	17.27	9.38	3.36
0.400	2.40	3.400	3.84	6.400	17.27	9.40	3.36
0.417	2.40	3.417	3.84	6.417	17.27	9.42	3.36
0.433	2.40	3.433	3.84	6.433	17.27	9.43	3.36
0.450	2.40	3.450	3.84	6.450	17.27	9.45	3.36
0.467	2.40	3.467	3.84	6.467	17.27	9.47	3.36
0.483	2.40	3.483	3.84	6.483	17.27	9.48	3.36
0.500	2.40	3.500	3.84	6.500	17.26	9.50	3.36
0.517	2.40	3.517	3.84	6.517	7.68	9.52	3.36
0.533	2.40	3.533	3.84	6.533	7.68	9.53	3.36
0.550	2.40	3.550	3.84	6.550	7.68	9.55	3.36
0.567	2.40	3.567	3.84	6.567	7.68	9.57	3.36
0.583	2.40	3.583	3.84	6.583	7.68	9.58	3.36
0.600	2.40	3.600	3.84	6.600	7.68	9.60	3.36
0.617	2.40	3.617	3.84	6.617	7.68	9.62	3.36
0.633	2.40	3.633	3.84	6.633	7.68	9.63	3.36
0.650	2.40	3.650	3.84	6.650	7.68	9.65	3.36
0.667	2.40	3.667	3.84	6.667	7.68	9.67	3.36
0.683	2.40	3.683	3.84	6.683	7.68	9.68	3.36
0.700	2.40	3.700	3.84	6.700	7.68	9.70	3.36
0.717	2.40	3.717	3.84	6.717	7.68	9.72	3.36
0.733	2.40	3.733	3.84	6.733	7.68	9.73	3.36
0.750	2.40	3.750	3.84	6.750	7.68	9.75	3.36
0.767	2.40	3.767	3.84	6.767	7.68	9.77	3.36
0.783	2.40	3.783	3.84	6.783	7.68	9.78	3.36
0.800	2.40	3.800	3.84	6.800	7.68	9.80	3.36
0.817	2.40	3.817	3.84	6.817	7.68	9.82	3.36
0.833	2.40	3.833	3.84	6.833	7.68	9.83	3.36
0.850	2.40	3.850	3.84	6.850	7.68	9.85	3.36
0.867	2.40	3.867	3.84	6.867	7.68	9.87	3.36
0.883	2.40	3.883	3.84	6.883	7.68	9.88	3.36
0.900	2.40	3.900	3.84	6.900	7.68	9.90	3.36
0.917	2.40	3.917	3.84	6.917	7.68	9.92	3.36
0.933	2.40	3.933	3.84	6.933	7.68	9.93	3.36
0.950	2.40	3.950	3.84	6.950	7.68	9.95	3.36
0.967	2.40	3.967	3.84	6.967	7.68	9.97	3.36
0.983	2.40	3.983	3.84	6.983	7.68	9.98	3.36
1.000	2.40	4.000	3.84	7.000	7.67	10.00	3.36
1.017	2.40	4.017	5.76	7.017	5.76	10.02	1.92
1.033	2.40	4.033	5.76	7.033	5.76	10.03	1.92
1.050	2.40	4.050	5.76	7.050	5.76	10.05	1.92
1.067	2.40	4.067	5.76	7.067	5.76	10.07	1.92
1.083	2.40	4.083	5.76	7.083	5.76	10.08	1.92
1.100	2.40	4.100	5.76	7.100	5.76	10.10	1.92
1.117	2.40	4.117	5.76	7.117	5.76	10.12	1.92

1.133	2.40	4.133	5.76	7.133	5.76	10.13	1.92
1.150	2.40	4.150	5.76	7.150	5.76	10.15	1.92
1.167	2.40	4.167	5.76	7.167	5.76	10.17	1.92
1.183	2.40	4.183	5.76	7.183	5.76	10.18	1.92
1.200	2.40	4.200	5.76	7.200	5.76	10.20	1.92
1.217	2.40	4.217	5.76	7.217	5.76	10.22	1.92
1.233	2.40	4.233	5.76	7.233	5.76	10.23	1.92
1.250	2.40	4.250	5.76	7.250	5.76	10.25	1.92
1.267	2.40	4.267	5.76	7.267	5.76	10.27	1.92
1.283	2.40	4.283	5.76	7.283	5.76	10.28	1.92
1.300	2.40	4.300	5.76	7.300	5.76	10.30	1.92
1.317	2.40	4.317	5.76	7.317	5.76	10.32	1.92
1.333	2.40	4.333	5.76	7.333	5.76	10.33	1.92
1.350	2.40	4.350	5.76	7.350	5.76	10.35	1.92
1.367	2.40	4.367	5.76	7.367	5.76	10.37	1.92
1.383	2.40	4.383	5.76	7.383	5.76	10.38	1.92
1.400	2.40	4.400	5.76	7.400	5.76	10.40	1.92
1.417	2.40	4.417	5.76	7.417	5.76	10.42	1.92
1.433	2.40	4.433	5.76	7.433	5.76	10.43	1.92
1.450	2.40	4.450	5.76	7.450	5.76	10.45	1.92
1.467	2.40	4.467	5.76	7.467	5.76	10.47	1.92
1.483	2.40	4.483	5.76	7.483	5.76	10.48	1.92
1.500	2.40	4.500	5.76	7.500	5.76	10.50	1.92
1.517	2.40	4.517	7.68	7.517	5.76	10.52	1.92
1.533	2.40	4.533	7.68	7.533	5.76	10.53	1.92
1.550	2.40	4.550	7.68	7.550	5.76	10.55	1.92
1.567	2.40	4.567	7.68	7.567	5.76	10.57	1.92
1.583	2.40	4.583	7.68	7.583	5.76	10.58	1.92
1.600	2.40	4.600	7.68	7.600	5.76	10.60	1.92
1.617	2.40	4.617	7.68	7.617	5.76	10.62	1.92
1.633	2.40	4.633	7.68	7.633	5.76	10.63	1.92
1.650	2.40	4.650	7.68	7.650	5.76	10.65	1.92
1.667	2.40	4.667	7.68	7.667	5.76	10.67	1.92
1.683	2.40	4.683	7.68	7.683	5.76	10.68	1.92
1.700	2.40	4.700	7.68	7.700	5.76	10.70	1.92
1.717	2.40	4.717	7.68	7.717	5.76	10.72	1.92
1.733	2.40	4.733	7.68	7.733	5.76	10.73	1.92
1.750	2.40	4.750	7.68	7.750	5.76	10.75	1.92
1.767	2.40	4.767	7.68	7.767	5.76	10.77	1.92
1.783	2.40	4.783	7.68	7.783	5.76	10.78	1.92
1.800	2.40	4.800	7.68	7.800	5.76	10.80	1.92
1.817	2.40	4.817	7.68	7.817	5.76	10.82	1.92
1.833	2.40	4.833	7.68	7.833	5.76	10.83	1.92
1.850	2.40	4.850	7.68	7.850	5.76	10.85	1.92
1.867	2.40	4.867	7.68	7.867	5.76	10.87	1.92
1.883	2.40	4.883	7.68	7.883	5.76	10.88	1.92
1.900	2.40	4.900	7.68	7.900	5.76	10.90	1.92
1.917	2.40	4.917	7.68	7.917	5.76	10.92	1.92
1.933	2.40	4.933	7.68	7.933	5.76	10.93	1.92
1.950	2.40	4.950	7.68	7.950	5.76	10.95	1.92
1.967	2.40	4.967	7.68	7.967	5.76	10.97	1.92
1.983	2.40	4.983	7.68	7.983	5.76	10.98	1.92
2.000	2.40	5.000	7.68	8.000	5.75	11.00	1.92
2.017	2.88	5.017	11.52	8.017	3.36	11.02	1.92
2.033	2.88	5.033	11.52	8.033	3.36	11.03	1.92
2.050	2.88	5.050	11.52	8.050	3.36	11.05	1.92
2.067	2.88	5.067	11.52	8.067	3.36	11.07	1.92
2.083	2.88	5.083	11.52	8.083	3.36	11.08	1.92
2.100	2.88	5.100	11.52	8.100	3.36	11.10	1.92
2.117	2.88	5.117	11.52	8.117	3.36	11.12	1.92
2.133	2.88	5.133	11.52	8.133	3.36	11.13	1.92
2.150	2.88	5.150	11.52	8.150	3.36	11.15	1.92
2.167	2.88	5.167	11.52	8.167	3.36	11.17	1.92
2.183	2.88	5.183	11.52	8.183	3.36	11.18	1.92
2.200	2.88	5.200	11.52	8.200	3.36	11.20	1.92
2.217	2.88	5.217	11.52	8.217	3.36	11.22	1.92
2.233	2.88	5.233	11.52	8.233	3.36	11.23	1.92
2.250	2.88	5.250	11.52	8.250	3.36	11.25	1.92
2.267	2.88	5.267	11.52	8.267	3.36	11.27	1.92
2.283	2.88	5.283	11.52	8.283	3.36	11.28	1.92
2.300	2.88	5.300	11.52	8.300	3.36	11.30	1.92
2.317	2.88	5.317	11.52	8.317	3.36	11.32	1.92
2.333	2.88	5.333	11.52	8.333	3.36	11.33	1.92
2.350	2.88	5.350	11.52	8.350	3.36	11.35	1.92
2.367	2.88	5.367	11.52	8.367	3.36	11.37	1.92
2.383	2.88	5.383	11.52	8.383	3.36	11.38	1.92
2.400	2.88	5.400	11.52	8.400	3.36	11.40	1.92
2.417	2.88	5.417	11.52	8.417	3.36	11.42	1.92
2.433	2.88	5.433	11.52	8.433	3.36	11.43	1.92
2.450	2.88	5.450	11.52	8.450	3.36	11.45	1.92
2.467	2.88	5.467	11.52	8.467	3.36	11.47	1.92
2.483	2.88	5.483	11.52	8.483	3.36	11.48	1.92
2.500	2.88	5.500	11.55	8.500	3.36	11.50	1.92
2.517	2.88	5.517	46.07	8.517	3.36	11.52	1.92
2.533	2.88	5.533	46.07	8.533	3.36	11.53	1.92
2.550	2.88	5.550	46.07	8.550	3.36	11.55	1.92
2.567	2.88	5.567	46.07	8.567	3.36	11.57	1.92
2.583	2.88	5.583	46.07	8.583	3.36	11.58	1.92
2.600	2.88	5.600	46.07	8.600	3.36	11.60	1.92
2.617	2.88	5.617	46.07	8.617	3.36	11.62	1.92
2.633	2.88	5.633	46.07	8.633	3.36	11.63	1.92

2.650	2.88	5.650	46.07	8.650	3.36	11.65	1.92
2.667	2.88	5.667	46.07	8.667	3.36	11.67	1.92
2.683	2.88	5.683	46.07	8.683	3.36	11.68	1.92
2.700	2.88	5.700	46.07	8.700	3.36	11.70	1.92
2.717	2.88	5.717	46.07	8.717	3.36	11.72	1.92
2.733	2.88	5.733	46.07	8.733	3.36	11.73	1.92
2.750	2.88	5.750	46.16	8.750	3.36	11.75	1.92
2.767	2.88	5.767	126.68	8.767	3.36	11.77	1.92
2.783	2.88	5.783	126.68	8.783	3.36	11.78	1.92
2.800	2.88	5.800	126.68	8.800	3.36	11.80	1.92
2.817	2.88	5.817	126.68	8.817	3.36	11.82	1.92
2.833	2.88	5.833	126.68	8.833	3.36	11.83	1.92
2.850	2.88	5.850	126.68	8.850	3.36	11.85	1.92
2.867	2.88	5.867	126.68	8.867	3.36	11.87	1.92
2.883	2.88	5.883	126.68	8.883	3.36	11.88	1.92
2.900	2.88	5.900	126.68	8.900	3.36	11.90	1.92
2.917	2.88	5.917	126.68	8.917	3.36	11.92	1.92
2.933	2.88	5.933	126.68	8.933	3.36	11.93	1.92
2.950	2.88	5.950	126.68	8.950	3.36	11.95	1.92
2.967	2.88	5.967	126.68	8.967	3.36	11.97	1.92
2.983	2.88	5.983	126.68	8.983	3.36	11.98	1.92
3.000	2.88	6.000	126.53	9.000	3.36	12.00	1.92

Max.Eff.Inten.(mm/hr)=	126.68	64.07	
over (min)	5.00	5.00	
Storage Coeff. (min)=	1.92 (ii)	5.00 (ii)	
Unit Hyd. Tpeak (min)=	5.00	5.00	
Unit Hyd. peak (cms)=	0.38	0.23	
			TOTALS
PEAK FLOW (cms)=	0.23	0.02	0.247 (iii)
TIME TO PEAK (hrs)=	6.00	6.02	6.00
RUNOFF VOLUME (mm)=	94.97	28.51	83.00
TOTAL RAINFALL (mm)=	95.97	95.97	95.97
RUNOFF COEFFICIENT =	0.99	0.30	0.86

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0011)
IN= 2---> OUT= 1
DT= 1.0 min

OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
0.0000	0.0000	0.0810	0.0180
0.0010	0.0005	0.0910	0.0205
0.0060	0.0056	0.1120	0.0249
0.0100	0.0061	0.1190	0.0264
0.0430	0.0101	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0006)	0.800	0.247	6.00	83.00
OUTFLOW: ID= 1 (0011)	0.800	0.112	6.08	82.84

PEAK FLOW REDUCTION [Qout/Qin](%)= 45.27
TIME SHIFT OF PEAK FLOW (min)= 5.00
MAXIMUM STORAGE USED (ha.m.)= 0.0249

READ STORM
Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\9c9568e7
Ptotal= 95.97 mm
Comments: 100-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.40	3.25	3.84	6.25	17.27	9.25	3.36
0.50	2.40	3.50	3.84	6.50	17.27	9.50	3.36
0.75	2.40	3.75	3.84	6.75	7.68	9.75	3.36
1.00	2.40	4.00	3.84	7.00	7.68	10.00	3.36
1.25	2.40	4.25	5.76	7.25	5.76	10.25	1.92
1.50	2.40	4.50	5.76	7.50	5.76	10.50	1.92
1.75	2.40	4.75	7.68	7.75	5.76	10.75	1.92
2.00	2.40	5.00	7.68	8.00	5.76	11.00	1.92
2.25	2.88	5.25	11.52	8.25	3.36	11.25	1.92
2.50	2.88	5.50	11.52	8.50	3.36	11.50	1.92
2.75	2.88	5.75	46.07	8.75	3.36	11.75	1.92
3.00	2.88	6.00	126.68	9.00	3.36	12.00	1.92

CALIB
STANDHYD (0008) Area (ha)= 2.53

|ID= 1 DT= 1.0 min | Total Imp(%)= 52.00 Dir. Conn.(%)= 44.00

		IMPERVIOUS	PERVIOUS (i)
Surface Area	(ha)=	1.32	1.21
Dep. Storage	(mm)=	1.00	5.00
Average Slope	(%)=	1.00	2.00
Length	(m)=	129.87	40.00
Mannings n	=	0.013	0.250

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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
0.017	2.40	3.017	3.84	6.017	17.27	9.02	3.36
0.033	2.40	3.033	3.84	6.033	17.27	9.03	3.36
0.050	2.40	3.050	3.84	6.050	17.27	9.05	3.36
0.067	2.40	3.067	3.84	6.067	17.27	9.07	3.36
0.083	2.40	3.083	3.84	6.083	17.27	9.08	3.36
0.100	2.40	3.100	3.84	6.100	17.27	9.10	3.36
0.117	2.40	3.117	3.84	6.117	17.27	9.12	3.36
0.133	2.40	3.133	3.84	6.133	17.27	9.13	3.36
0.150	2.40	3.150	3.84	6.150	17.27	9.15	3.36
0.167	2.40	3.167	3.84	6.167	17.27	9.17	3.36
0.183	2.40	3.183	3.84	6.183	17.27	9.18	3.36
0.200	2.40	3.200	3.84	6.200	17.27	9.20	3.36
0.217	2.40	3.217	3.84	6.217	17.27	9.22	3.36
0.233	2.40	3.233	3.84	6.233	17.27	9.23	3.36
0.250	2.40	3.250	3.84	6.250	17.27	9.25	3.36
0.267	2.40	3.267	3.84	6.267	17.27	9.27	3.36
0.283	2.40	3.283	3.84	6.283	17.27	9.28	3.36
0.300	2.40	3.300	3.84	6.300	17.27	9.30	3.36
0.317	2.40	3.317	3.84	6.317	17.27	9.32	3.36
0.333	2.40	3.333	3.84	6.333	17.27	9.33	3.36
0.350	2.40	3.350	3.84	6.350	17.27	9.35	3.36
0.367	2.40	3.367	3.84	6.367	17.27	9.37	3.36
0.383	2.40	3.383	3.84	6.383	17.27	9.38	3.36
0.400	2.40	3.400	3.84	6.400	17.27	9.40	3.36
0.417	2.40	3.417	3.84	6.417	17.27	9.42	3.36
0.433	2.40	3.433	3.84	6.433	17.27	9.43	3.36
0.450	2.40	3.450	3.84	6.450	17.27	9.45	3.36
0.467	2.40	3.467	3.84	6.467	17.27	9.47	3.36
0.483	2.40	3.483	3.84	6.483	17.27	9.48	3.36
0.500	2.40	3.500	3.84	6.500	17.26	9.50	3.36
0.517	2.40	3.517	3.84	6.517	7.68	9.52	3.36
0.533	2.40	3.533	3.84	6.533	7.68	9.53	3.36
0.550	2.40	3.550	3.84	6.550	7.68	9.55	3.36
0.567	2.40	3.567	3.84	6.567	7.68	9.57	3.36
0.583	2.40	3.583	3.84	6.583	7.68	9.58	3.36
0.600	2.40	3.600	3.84	6.600	7.68	9.60	3.36
0.617	2.40	3.617	3.84	6.617	7.68	9.62	3.36
0.633	2.40	3.633	3.84	6.633	7.68	9.63	3.36
0.650	2.40	3.650	3.84	6.650	7.68	9.65	3.36
0.667	2.40	3.667	3.84	6.667	7.68	9.67	3.36
0.683	2.40	3.683	3.84	6.683	7.68	9.68	3.36
0.700	2.40	3.700	3.84	6.700	7.68	9.70	3.36
0.717	2.40	3.717	3.84	6.717	7.68	9.72	3.36
0.733	2.40	3.733	3.84	6.733	7.68	9.73	3.36
0.750	2.40	3.750	3.84	6.750	7.68	9.75	3.36
0.767	2.40	3.767	3.84	6.767	7.68	9.77	3.36
0.783	2.40	3.783	3.84	6.783	7.68	9.78	3.36
0.800	2.40	3.800	3.84	6.800	7.68	9.80	3.36
0.817	2.40	3.817	3.84	6.817	7.68	9.82	3.36
0.833	2.40	3.833	3.84	6.833	7.68	9.83	3.36
0.850	2.40	3.850	3.84	6.850	7.68	9.85	3.36
0.867	2.40	3.867	3.84	6.867	7.68	9.87	3.36
0.883	2.40	3.883	3.84	6.883	7.68	9.88	3.36
0.900	2.40	3.900	3.84	6.900	7.68	9.90	3.36
0.917	2.40	3.917	3.84	6.917	7.68	9.92	3.36
0.933	2.40	3.933	3.84	6.933	7.68	9.93	3.36
0.950	2.40	3.950	3.84	6.950	7.68	9.95	3.36
0.967	2.40	3.967	3.84	6.967	7.68	9.97	3.36
0.983	2.40	3.983	3.84	6.983	7.68	9.98	3.36
1.000	2.40	4.000	3.84	7.000	7.67	10.00	3.36
1.017	2.40	4.017	5.76	7.017	5.76	10.02	1.92
1.033	2.40	4.033	5.76	7.033	5.76	10.03	1.92
1.050	2.40	4.050	5.76	7.050	5.76	10.05	1.92
1.067	2.40	4.067	5.76	7.067	5.76	10.07	1.92
1.083	2.40	4.083	5.76	7.083	5.76	10.08	1.92
1.100	2.40	4.100	5.76	7.100	5.76	10.10	1.92
1.117	2.40	4.117	5.76	7.117	5.76	10.12	1.92
1.133	2.40	4.133	5.76	7.133	5.76	10.13	1.92
1.150	2.40	4.150	5.76	7.150	5.76	10.15	1.92
1.167	2.40	4.167	5.76	7.167	5.76	10.17	1.92
1.183	2.40	4.183	5.76	7.183	5.76	10.18	1.92
1.200	2.40	4.200	5.76	7.200	5.76	10.20	1.92
1.217	2.40	4.217	5.76	7.217	5.76	10.22	1.92
1.233	2.40	4.233	5.76	7.233	5.76	10.23	1.92
1.250	2.40	4.250	5.76	7.250	5.76	10.25	1.92
1.267	2.40	4.267	5.76	7.267	5.76	10.27	1.92

1.283	2.40	4.283	5.76	7.283	5.76	10.28	1.92
1.300	2.40	4.300	5.76	7.300	5.76	10.30	1.92
1.317	2.40	4.317	5.76	7.317	5.76	10.32	1.92
1.333	2.40	4.333	5.76	7.333	5.76	10.33	1.92
1.350	2.40	4.350	5.76	7.350	5.76	10.35	1.92
1.367	2.40	4.367	5.76	7.367	5.76	10.37	1.92
1.383	2.40	4.383	5.76	7.383	5.76	10.38	1.92
1.400	2.40	4.400	5.76	7.400	5.76	10.40	1.92
1.417	2.40	4.417	5.76	7.417	5.76	10.42	1.92
1.433	2.40	4.433	5.76	7.433	5.76	10.43	1.92
1.450	2.40	4.450	5.76	7.450	5.76	10.45	1.92
1.467	2.40	4.467	5.76	7.467	5.76	10.47	1.92
1.483	2.40	4.483	5.76	7.483	5.76	10.48	1.92
1.500	2.40	4.500	5.76	7.500	5.76	10.50	1.92
1.517	2.40	4.517	7.68	7.517	5.76	10.52	1.92
1.533	2.40	4.533	7.68	7.533	5.76	10.53	1.92
1.550	2.40	4.550	7.68	7.550	5.76	10.55	1.92
1.567	2.40	4.567	7.68	7.567	5.76	10.57	1.92
1.583	2.40	4.583	7.68	7.583	5.76	10.58	1.92
1.600	2.40	4.600	7.68	7.600	5.76	10.60	1.92
1.617	2.40	4.617	7.68	7.617	5.76	10.62	1.92
1.633	2.40	4.633	7.68	7.633	5.76	10.63	1.92
1.650	2.40	4.650	7.68	7.650	5.76	10.65	1.92
1.667	2.40	4.667	7.68	7.667	5.76	10.67	1.92
1.683	2.40	4.683	7.68	7.683	5.76	10.68	1.92
1.700	2.40	4.700	7.68	7.700	5.76	10.70	1.92
1.717	2.40	4.717	7.68	7.717	5.76	10.72	1.92
1.733	2.40	4.733	7.68	7.733	5.76	10.73	1.92
1.750	2.40	4.750	7.68	7.750	5.76	10.75	1.92
1.767	2.40	4.767	7.68	7.767	5.76	10.77	1.92
1.783	2.40	4.783	7.68	7.783	5.76	10.78	1.92
1.800	2.40	4.800	7.68	7.800	5.76	10.80	1.92
1.817	2.40	4.817	7.68	7.817	5.76	10.82	1.92
1.833	2.40	4.833	7.68	7.833	5.76	10.83	1.92
1.850	2.40	4.850	7.68	7.850	5.76	10.85	1.92
1.867	2.40	4.867	7.68	7.867	5.76	10.87	1.92
1.883	2.40	4.883	7.68	7.883	5.76	10.88	1.92
1.900	2.40	4.900	7.68	7.900	5.76	10.90	1.92
1.917	2.40	4.917	7.68	7.917	5.76	10.92	1.92
1.933	2.40	4.933	7.68	7.933	5.76	10.93	1.92
1.950	2.40	4.950	7.68	7.950	5.76	10.95	1.92
1.967	2.40	4.967	7.68	7.967	5.76	10.97	1.92
1.983	2.40	4.983	7.68	7.983	5.76	10.98	1.92
2.000	2.40	5.000	7.68	8.000	5.75	11.00	1.92
2.017	2.88	5.017	11.52	8.017	3.36	11.02	1.92
2.033	2.88	5.033	11.52	8.033	3.36	11.03	1.92
2.050	2.88	5.050	11.52	8.050	3.36	11.05	1.92
2.067	2.88	5.067	11.52	8.067	3.36	11.07	1.92
2.083	2.88	5.083	11.52	8.083	3.36	11.08	1.92
2.100	2.88	5.100	11.52	8.100	3.36	11.10	1.92
2.117	2.88	5.117	11.52	8.117	3.36	11.12	1.92
2.133	2.88	5.133	11.52	8.133	3.36	11.13	1.92
2.150	2.88	5.150	11.52	8.150	3.36	11.15	1.92
2.167	2.88	5.167	11.52	8.167	3.36	11.17	1.92
2.183	2.88	5.183	11.52	8.183	3.36	11.18	1.92
2.200	2.88	5.200	11.52	8.200	3.36	11.20	1.92
2.217	2.88	5.217	11.52	8.217	3.36	11.22	1.92
2.233	2.88	5.233	11.52	8.233	3.36	11.23	1.92
2.250	2.88	5.250	11.52	8.250	3.36	11.25	1.92
2.267	2.88	5.267	11.52	8.267	3.36	11.27	1.92
2.283	2.88	5.283	11.52	8.283	3.36	11.28	1.92
2.300	2.88	5.300	11.52	8.300	3.36	11.30	1.92
2.317	2.88	5.317	11.52	8.317	3.36	11.32	1.92
2.333	2.88	5.333	11.52	8.333	3.36	11.33	1.92
2.350	2.88	5.350	11.52	8.350	3.36	11.35	1.92
2.367	2.88	5.367	11.52	8.367	3.36	11.37	1.92
2.383	2.88	5.383	11.52	8.383	3.36	11.38	1.92
2.400	2.88	5.400	11.52	8.400	3.36	11.40	1.92
2.417	2.88	5.417	11.52	8.417	3.36	11.42	1.92
2.433	2.88	5.433	11.52	8.433	3.36	11.43	1.92
2.450	2.88	5.450	11.52	8.450	3.36	11.45	1.92
2.467	2.88	5.467	11.52	8.467	3.36	11.47	1.92
2.483	2.88	5.483	11.52	8.483	3.36	11.48	1.92
2.500	2.88	5.500	11.55	8.500	3.36	11.50	1.92
2.517	2.88	5.517	46.07	8.517	3.36	11.52	1.92
2.533	2.88	5.533	46.07	8.533	3.36	11.53	1.92
2.550	2.88	5.550	46.07	8.550	3.36	11.55	1.92
2.567	2.88	5.567	46.07	8.567	3.36	11.57	1.92
2.583	2.88	5.583	46.07	8.583	3.36	11.58	1.92
2.600	2.88	5.600	46.07	8.600	3.36	11.60	1.92
2.617	2.88	5.617	46.07	8.617	3.36	11.62	1.92
2.633	2.88	5.633	46.07	8.633	3.36	11.63	1.92
2.650	2.88	5.650	46.07	8.650	3.36	11.65	1.92
2.667	2.88	5.667	46.07	8.667	3.36	11.67	1.92
2.683	2.88	5.683	46.07	8.683	3.36	11.68	1.92
2.700	2.88	5.700	46.07	8.700	3.36	11.70	1.92
2.717	2.88	5.717	46.07	8.717	3.36	11.72	1.92
2.733	2.88	5.733	46.07	8.733	3.36	11.73	1.92
2.750	2.88	5.750	46.16	8.750	3.36	11.75	1.92
2.767	2.88	5.767	126.68	8.767	3.36	11.77	1.92
2.783	2.88	5.783	126.68	8.783	3.36	11.78	1.92

2.800	2.88	5.800	126.68	8.800	3.36	11.80	1.92
2.817	2.88	5.817	126.68	8.817	3.36	11.82	1.92
2.833	2.88	5.833	126.68	8.833	3.36	11.83	1.92
2.850	2.88	5.850	126.68	8.850	3.36	11.85	1.92
2.867	2.88	5.867	126.68	8.867	3.36	11.87	1.92
2.883	2.88	5.883	126.68	8.883	3.36	11.88	1.92
2.900	2.88	5.900	126.68	8.900	3.36	11.90	1.92
2.917	2.88	5.917	126.68	8.917	3.36	11.92	1.92
2.933	2.88	5.933	126.68	8.933	3.36	11.93	1.92
2.950	2.88	5.950	126.68	8.950	3.36	11.95	1.92
2.967	2.88	5.967	126.68	8.967	3.36	11.97	1.92
2.983	2.88	5.983	126.68	8.983	3.36	11.98	1.92
3.000	2.88	6.000	126.53	9.000	3.36	12.00	1.92

Max.Eff.Inten.(mm/hr)=	126.68	47.24	
over (min)	5.00	10.00	
Storage Coeff. (min)=	2.72 (ii)	9.37 (ii)	
Unit Hyd. Tpeak (min)=	5.00	10.00	
Unit Hyd. peak (cms)=	0.32	0.12	
			TOTALS
PEAK FLOW (cms)=	0.39	0.11	0.489 (iii)
TIME TO PEAK (hrs)=	6.00	6.07	6.00
RUNOFF VOLUME (mm)=	94.97	24.93	55.74
TOTAL RAINFALL (mm)=	95.97	95.97	95.97
RUNOFF COEFFICIENT =	0.99	0.26	0.58

(i) CN PROCEDURE SELECTED FOR PERVIOUS LOSSES:
CN* = 47.0 Ia = Dep. Storage (Above)
(ii) TIME STEP (DT) SHOULD BE SMALLER OR EQUAL
THAN THE STORAGE COEFFICIENT.
(iii) PEAK FLOW DOES NOT INCLUDE BASEFLOW IF ANY.

RESERVOIR(0010) IN= 2---> OUT= 1 DT= 1.0 min	OUTFLOW (cms)	STORAGE (ha.m.)	OUTFLOW (cms)	STORAGE (ha.m.)
	0.0000	0.0000	0.0810	0.0465
	0.0010	0.0012	0.0910	0.0530
	0.0060	0.0145	0.1120	0.0643
	0.0100	0.0157	0.1190	0.0683
	0.0430	0.0262	0.0000	0.0000

	AREA (ha)	QPEAK (cms)	TPEAK (hrs)	R.V. (mm)
INFLOW : ID= 2 (0008)	2.530	0.489	6.00	55.74
OUTFLOW: ID= 1 (0010)	2.530	0.117	6.27	55.62

PEAK FLOW REDUCTION [Qout/Qin](%)= 24.03
TIME SHIFT OF PEAK FLOW (min)= 16.00
MAXIMUM STORAGE USED (ha.m.)= 0.0674

READ STORM Ptotal= 95.97 mm	Filename: C:\Users\noconnor.SKAENG\AppData\Local\Temp\79084dd1-c78d-40ca-a50a-120316a195ef\9c9568e7 Comments: 100-Year 12-Hour SCS II Design Storm

TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr	TIME hrs	RAIN mm/hr
0.25	2.40	3.25	3.84	6.25	17.27	9.25	3.36
0.50	2.40	3.50	3.84	6.50	17.27	9.50	3.36
0.75	2.40	3.75	3.84	6.75	7.68	9.75	3.36
1.00	2.40	4.00	3.84	7.00	7.68	10.00	3.36
1.25	2.40	4.25	5.76	7.25	5.76	10.25	1.92
1.50	2.40	4.50	5.76	7.50	5.76	10.50	1.92
1.75	2.40	4.75	7.68	7.75	5.76	10.75	1.92
2.00	2.40	5.00	7.68	8.00	5.76	11.00	1.92
2.25	2.88	5.25	11.52	8.25	3.36	11.25	1.92
2.50	2.88	5.50	11.52	8.50	3.36	11.50	1.92
2.75	2.88	5.75	46.07	8.75	3.36	11.75	1.92
3.00	2.88	6.00	126.68	9.00	3.36	12.00	1.92

CALIB NASHYD (0027) ID= 1 DT= 1.0 min	Area (ha)= 17.26 Curve Number (CN)= 60.0 Ia (mm)= 5.60 # of Linear Res.(N)= 3.00 U.H. Tp(hrs)= 0.95

NOTE: RAINFALL WAS TRANSFORMED TO 1.0 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

0.017	2.40	3.017	3.84	6.017	17.27	9.02	3.36
0.033	2.40	3.033	3.84	6.033	17.27	9.03	3.36
0.050	2.40	3.050	3.84	6.050	17.27	9.05	3.36
0.067	2.40	3.067	3.84	6.067	17.27	9.07	3.36
0.083	2.40	3.083	3.84	6.083	17.27	9.08	3.36
0.100	2.40	3.100	3.84	6.100	17.27	9.10	3.36
0.117	2.40	3.117	3.84	6.117	17.27	9.12	3.36
0.133	2.40	3.133	3.84	6.133	17.27	9.13	3.36
0.150	2.40	3.150	3.84	6.150	17.27	9.15	3.36
0.167	2.40	3.167	3.84	6.167	17.27	9.17	3.36
0.183	2.40	3.183	3.84	6.183	17.27	9.18	3.36
0.200	2.40	3.200	3.84	6.200	17.27	9.20	3.36
0.217	2.40	3.217	3.84	6.217	17.27	9.22	3.36
0.233	2.40	3.233	3.84	6.233	17.27	9.23	3.36
0.250	2.40	3.250	3.84	6.250	17.27	9.25	3.36
0.267	2.40	3.267	3.84	6.267	17.27	9.27	3.36
0.283	2.40	3.283	3.84	6.283	17.27	9.28	3.36
0.300	2.40	3.300	3.84	6.300	17.27	9.30	3.36
0.317	2.40	3.317	3.84	6.317	17.27	9.32	3.36
0.333	2.40	3.333	3.84	6.333	17.27	9.33	3.36
0.350	2.40	3.350	3.84	6.350	17.27	9.35	3.36
0.367	2.40	3.367	3.84	6.367	17.27	9.37	3.36
0.383	2.40	3.383	3.84	6.383	17.27	9.38	3.36
0.400	2.40	3.400	3.84	6.400	17.27	9.40	3.36
0.417	2.40	3.417	3.84	6.417	17.27	9.42	3.36
0.433	2.40	3.433	3.84	6.433	17.27	9.43	3.36
0.450	2.40	3.450	3.84	6.450	17.27	9.45	3.36
0.467	2.40	3.467	3.84	6.467	17.27	9.47	3.36
0.483	2.40	3.483	3.84	6.483	17.27	9.48	3.36
0.500	2.40	3.500	3.84	6.500	17.26	9.50	3.36
0.517	2.40	3.517	3.84	6.517	7.68	9.52	3.36
0.533	2.40	3.533	3.84	6.533	7.68	9.53	3.36
0.550	2.40	3.550	3.84	6.550	7.68	9.55	3.36
0.567	2.40	3.567	3.84	6.567	7.68	9.57	3.36
0.583	2.40	3.583	3.84	6.583	7.68	9.58	3.36
0.600	2.40	3.600	3.84	6.600	7.68	9.60	3.36
0.617	2.40	3.617	3.84	6.617	7.68	9.62	3.36
0.633	2.40	3.633	3.84	6.633	7.68	9.63	3.36
0.650	2.40	3.650	3.84	6.650	7.68	9.65	3.36
0.667	2.40	3.667	3.84	6.667	7.68	9.67	3.36
0.683	2.40	3.683	3.84	6.683	7.68	9.68	3.36
0.700	2.40	3.700	3.84	6.700	7.68	9.70	3.36
0.717	2.40	3.717	3.84	6.717	7.68	9.72	3.36
0.733	2.40	3.733	3.84	6.733	7.68	9.73	3.36
0.750	2.40	3.750	3.84	6.750	7.68	9.75	3.36
0.767	2.40	3.767	3.84	6.767	7.68	9.77	3.36
0.783	2.40	3.783	3.84	6.783	7.68	9.78	3.36
0.800	2.40	3.800	3.84	6.800	7.68	9.80	3.36
0.817	2.40	3.817	3.84	6.817	7.68	9.82	3.36
0.833	2.40	3.833	3.84	6.833	7.68	9.83	3.36
0.850	2.40	3.850	3.84	6.850	7.68	9.85	3.36
0.867	2.40	3.867	3.84	6.867	7.68	9.87	3.36
0.883	2.40	3.883	3.84	6.883	7.68	9.88	3.36
0.900	2.40	3.900	3.84	6.900	7.68	9.90	3.36
0.917	2.40	3.917	3.84	6.917	7.68	9.92	3.36
0.933	2.40	3.933	3.84	6.933	7.68	9.93	3.36
0.950	2.40	3.950	3.84	6.950	7.68	9.95	3.36
0.967	2.40	3.967	3.84	6.967	7.68	9.97	3.36
0.983	2.40	3.983	3.84	6.983	7.68	9.98	3.36
1.000	2.40	4.000	3.84	7.000	7.67	10.00	3.36
1.017	2.40	4.017	5.76	7.017	5.76	10.02	1.92
1.033	2.40	4.033	5.76	7.033	5.76	10.03	1.92
1.050	2.40	4.050	5.76	7.050	5.76	10.05	1.92
1.067	2.40	4.067	5.76	7.067	5.76	10.07	1.92
1.083	2.40	4.083	5.76	7.083	5.76	10.08	1.92
1.100	2.40	4.100	5.76	7.100	5.76	10.10	1.92
1.117	2.40	4.117	5.76	7.117	5.76	10.12	1.92
1.133	2.40	4.133	5.76	7.133	5.76	10.13	1.92
1.150	2.40	4.150	5.76	7.150	5.76	10.15	1.92
1.167	2.40	4.167	5.76	7.167	5.76	10.17	1.92
1.183	2.40	4.183	5.76	7.183	5.76	10.18	1.92
1.200	2.40	4.200	5.76	7.200	5.76	10.20	1.92
1.217	2.40	4.217	5.76	7.217	5.76	10.22	1.92
1.233	2.40	4.233	5.76	7.233	5.76	10.23	1.92
1.250	2.40	4.250	5.76	7.250	5.76	10.25	1.92
1.267	2.40	4.267	5.76	7.267	5.76	10.27	1.92
1.283	2.40	4.283	5.76	7.283	5.76	10.28	1.92
1.300	2.40	4.300	5.76	7.300	5.76	10.30	1.92
1.317	2.40	4.317	5.76	7.317	5.76	10.32	1.92
1.333	2.40	4.333	5.76	7.333	5.76	10.33	1.92
1.350	2.40	4.350	5.76	7.350	5.76	10.35	1.92
1.367	2.40	4.367	5.76	7.367	5.76	10.37	1.92
1.383	2.40	4.383	5.76	7.383	5.76	10.38	1.92
1.400	2.40	4.400	5.76	7.400	5.76	10.40	1.92
1.417	2.40	4.417	5.76	7.417	5.76	10.42	1.92
1.433	2.40	4.433	5.76	7.433	5.76	10.43	1.92
1.450	2.40	4.450	5.76	7.450	5.76	10.45	1.92
1.467	2.40	4.467	5.76	7.467	5.76	10.47	1.92
1.483	2.40	4.483	5.76	7.483	5.76	10.48	1.92
1.500	2.40	4.500	5.76	7.500	5.76	10.50	1.92
1.517	2.40	4.517	7.68	7.517	5.76	10.52	1.92

1.533	2.40	4.533	7.68	7.533	5.76	10.53	1.92
1.550	2.40	4.550	7.68	7.550	5.76	10.55	1.92
1.567	2.40	4.567	7.68	7.567	5.76	10.57	1.92
1.583	2.40	4.583	7.68	7.583	5.76	10.58	1.92
1.600	2.40	4.600	7.68	7.600	5.76	10.60	1.92
1.617	2.40	4.617	7.68	7.617	5.76	10.62	1.92
1.633	2.40	4.633	7.68	7.633	5.76	10.63	1.92
1.650	2.40	4.650	7.68	7.650	5.76	10.65	1.92
1.667	2.40	4.667	7.68	7.667	5.76	10.67	1.92
1.683	2.40	4.683	7.68	7.683	5.76	10.68	1.92
1.700	2.40	4.700	7.68	7.700	5.76	10.70	1.92
1.717	2.40	4.717	7.68	7.717	5.76	10.72	1.92
1.733	2.40	4.733	7.68	7.733	5.76	10.73	1.92
1.750	2.40	4.750	7.68	7.750	5.76	10.75	1.92
1.767	2.40	4.767	7.68	7.767	5.76	10.77	1.92
1.783	2.40	4.783	7.68	7.783	5.76	10.78	1.92
1.800	2.40	4.800	7.68	7.800	5.76	10.80	1.92
1.817	2.40	4.817	7.68	7.817	5.76	10.82	1.92
1.833	2.40	4.833	7.68	7.833	5.76	10.83	1.92
1.850	2.40	4.850	7.68	7.850	5.76	10.85	1.92
1.867	2.40	4.867	7.68	7.867	5.76	10.87	1.92
1.883	2.40	4.883	7.68	7.883	5.76	10.88	1.92
1.900	2.40	4.900	7.68	7.900	5.76	10.90	1.92
1.917	2.40	4.917	7.68	7.917	5.76	10.92	1.92
1.933	2.40	4.933	7.68	7.933	5.76	10.93	1.92
1.950	2.40	4.950	7.68	7.950	5.76	10.95	1.92
1.967	2.40	4.967	7.68	7.967	5.76	10.97	1.92
1.983	2.40	4.983	7.68	7.983	5.76	10.98	1.92
2.000	2.40	5.000	7.68	8.000	5.75	11.00	1.92
2.017	2.88	5.017	11.52	8.017	3.36	11.02	1.92
2.033	2.88	5.033	11.52	8.033	3.36	11.03	1.92
2.050	2.88	5.050	11.52	8.050	3.36	11.05	1.92
2.067	2.88	5.067	11.52	8.067	3.36	11.07	1.92
2.083	2.88	5.083	11.52	8.083	3.36	11.08	1.92
2.100	2.88	5.100	11.52	8.100	3.36	11.10	1.92
2.117	2.88	5.117	11.52	8.117	3.36	11.12	1.92
2.133	2.88	5.133	11.52	8.133	3.36	11.13	1.92
2.150	2.88	5.150	11.52	8.150	3.36	11.15	1.92
2.167	2.88	5.167	11.52	8.167	3.36	11.17	1.92
2.183	2.88	5.183	11.52	8.183	3.36	11.18	1.92
2.200	2.88	5.200	11.52	8.200	3.36	11.20	1.92
2.217	2.88	5.217	11.52	8.217	3.36	11.22	1.92
2.233	2.88	5.233	11.52	8.233	3.36	11.23	1.92
2.250	2.88	5.250	11.52	8.250	3.36	11.25	1.92
2.267	2.88	5.267	11.52	8.267	3.36	11.27	1.92
2.283	2.88	5.283	11.52	8.283	3.36	11.28	1.92
2.300	2.88	5.300	11.52	8.300	3.36	11.30	1.92
2.317	2.88	5.317	11.52	8.317	3.36	11.32	1.92
2.333	2.88	5.333	11.52	8.333	3.36	11.33	1.92
2.350	2.88	5.350	11.52	8.350	3.36	11.35	1.92
2.367	2.88	5.367	11.52	8.367	3.36	11.37	1.92
2.383	2.88	5.383	11.52	8.383	3.36	11.38	1.92
2.400	2.88	5.400	11.52	8.400	3.36	11.40	1.92
2.417	2.88	5.417	11.52	8.417	3.36	11.42	1.92
2.433	2.88	5.433	11.52	8.433	3.36	11.43	1.92
2.450	2.88	5.450	11.52	8.450	3.36	11.45	1.92
2.467	2.88	5.467	11.52	8.467	3.36	11.47	1.92
2.483	2.88	5.483	11.52	8.483	3.36	11.48	1.92
2.500	2.88	5.500	11.55	8.500	3.36	11.50	1.92
2.517	2.88	5.517	46.07	8.517	3.36	11.52	1.92
2.533	2.88	5.533	46.07	8.533	3.36	11.53	1.92
2.550	2.88	5.550	46.07	8.550	3.36	11.55	1.92
2.567	2.88	5.567	46.07	8.567	3.36	11.57	1.92
2.583	2.88	5.583	46.07	8.583	3.36	11.58	1.92
2.600	2.88	5.600	46.07	8.600	3.36	11.60	1.92
2.617	2.88	5.617	46.07	8.617	3.36	11.62	1.92
2.633	2.88	5.633	46.07	8.633	3.36	11.63	1.92
2.650	2.88	5.650	46.07	8.650	3.36	11.65	1.92
2.667	2.88	5.667	46.07	8.667	3.36	11.67	1.92
2.683	2.88	5.683	46.07	8.683	3.36	11.68	1.92
2.700	2.88	5.700	46.07	8.700	3.36	11.70	1.92
2.717	2.88	5.717	46.07	8.717	3.36	11.72	1.92
2.733	2.88	5.733	46.07	8.733	3.36	11.73	1.92
2.750	2.88	5.750	46.16	8.750	3.36	11.75	1.92
2.767	2.88	5.767	126.68	8.767	3.36	11.77	1.92
2.783	2.88	5.783	126.68	8.783	3.36	11.78	1.92
2.800	2.88	5.800	126.68	8.800	3.36	11.80	1.92
2.817	2.88	5.817	126.68	8.817	3.36	11.82	1.92
2.833	2.88	5.833	126.68	8.833	3.36	11.83	1.92
2.850	2.88	5.850	126.68	8.850	3.36	11.85	1.92
2.867	2.88	5.867	126.68	8.867	3.36	11.87	1.92
2.883	2.88	5.883	126.68	8.883	3.36	11.88	1.92
2.900	2.88	5.900	126.68	8.900	3.36	11.90	1.92
2.917	2.88	5.917	126.68	8.917	3.36	11.92	1.92
2.933	2.88	5.933	126.68	8.933	3.36	11.93	1.92
2.950	2.88	5.950	126.68	8.950	3.36	11.95	1.92
2.967	2.88	5.967	126.68	8.967	3.36	11.97	1.92
2.983	2.88	5.983	126.68	8.983	3.36	11.98	1.92
3.000	2.88	6.000	126.53	9.000	3.36	12.00	1.92

Unit Hyd Qpeak (cms)= 0.694

```
     PEAK FLOW       (cms)=   0.523 (i)
     TIME TO PEAK    (hrs)=   6.967
     RUNOFF VOLUME    (mm)=  31.443
     TOTAL RAINFALL   (mm)=  95.968
     RUNOFF COEFFICIENT   =   0.328

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

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0010):	2.53	0.117	6.27	55.62
	+ ID2= 2 (0011):	0.80	0.112	6.08	82.84
	ID = 3 (0004):	3.33	0.224	6.12	62.16

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
	ID1= 3 (0004):	3.33	0.224	6.12	62.16
	+ ID2= 2 (0027):	17.26	0.523	6.97	31.44
	ID = 1 (0004):	20.59	0.669	6.85	36.41

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
1 + 2 = 3		(ha)	(cms)	(hrs)	(mm)
	ID1= 1 (0004):	20.59	0.669	6.85	36.41
	+ ID2= 2 (0003):	4.49	0.076	7.07	43.68
	ID = 3 (0004):	25.08	0.745	6.85	37.71

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

ADD HYD (0004)		AREA	QPEAK	TPEAK	R.V.
3 + 2 = 1		(ha)	(cms)	(hrs)	(mm)
	ID1= 3 (0004):	25.08	0.745	6.85	37.71
	+ ID2= 2 (0009):	2.07	0.413	6.02	57.27
	ID = 1 (0004):	27.15	0.794	6.05	39.20

NOTE: PEAK FLOWS DO NOT INCLUDE BASEFLOWS IF ANY.

APPENDIX E

FLOODPLAIN HYDRAULICS

HEC-RAS Plan: Plan 69 Locations: User Defined Profile: Regional Storm

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Holland East	28	3110	Regional Storm	28.40	330.69	332.74	331.27	332.74	0.000003	0.07	544.29	491.87	0.02
Holland East	28	3109.5		Culvert									
Holland East	28	3109	Regional Storm	28.40	330.54	332.20	332.20	332.52	0.009793	2.68	12.10	356.78	0.98
Holland East	28	3108.75	Regional Storm	28.40	330.57	331.50		331.51	0.000755	0.72	87.07	293.08	0.27
Holland East	28	3108.5	Regional Storm	28.40	330.64	331.34		331.38	0.005031	1.32	30.30	81.99	0.64
Holland East	28	3108.4	Regional Storm	28.40	330.75	331.31		331.34	0.004664	1.21	37.61	133.91	0.61
Holland East	28	3108.3	Regional Storm	28.40	330.43	331.26		331.30	0.004836	1.40	34.76	117.41	0.64
Holland East	28	3108.25	Regional Storm	28.40	330.15	331.10		331.14	0.002867	1.14	36.71	89.08	0.50
Holland East	28	3108	Regional Storm	34.50	330.03	330.92		330.97	0.004940	1.49	34.89	87.04	0.65
Holland East	28	3107.75	Regional Storm	34.50	330.15	330.79		330.83	0.004386	1.14	37.65	100.50	0.59
Holland East	28	3107.5	Regional Storm	34.50	329.85	330.70		330.72	0.001869	0.87	54.23	153.17	0.40
Holland East	28	3107.4	Regional Storm	34.50	329.50	330.24		330.28	0.002087	0.93	37.94	86.72	0.43
Holland East	28	3107.3	Regional Storm	34.50	329.50	330.20		330.24	0.001664	0.87	39.74	77.90	0.39
Holland East	28	3107.2	Regional Storm	34.50	329.25	330.11		330.19	0.002940	1.58	30.77	59.11	0.56
Holland East	28	3107	Regional Storm	36.10	329.16	329.99		330.09	0.004570	1.42	25.38	50.55	0.64
Holland East	28	3106.5	Regional Storm	36.10	328.87	329.73		329.80	0.002151	1.22	32.80	61.01	0.47
Holland East	28	3106	Regional Storm	38.70	328.24	329.76	328.81	329.76	0.000061	0.30	148.22	155.78	0.09
Holland East	28	3105.6		Culvert									
Holland East	28	3105	Regional Storm	47.70	327.72	329.30	329.10	329.39	0.002069	1.55	44.14	72.65	0.48
Holland East	28	3104	Regional Storm	47.70	327.79	328.76		328.83	0.001595	1.30	44.74	59.16	0.42

HEC-RAS Plan: Plan 69 Locations: User Defined Profile: Regional Storm

River	Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(m3/s)	(m)	(m)	(m)	(m)	(m/m)	(m/s)	(m2)	(m)	
Holland East	28	3110	Regional Storm	28.40	330.69	332.74	331.27	332.74	0.000003	0.07	544.29	491.87	0.02
Holland East	28	3109.5		Culvert									
Holland East	28	3109	Regional Storm	28.40	330.54	332.20	332.20	332.52	0.009793	2.68	12.10	356.78	0.98
Holland East	28	3108.75	Regional Storm	28.40	330.57	331.46		331.47	0.001073	0.83	77.07	284.55	0.32
Holland East	28	3108.5	Regional Storm	28.40	330.60	331.17		331.27	0.010805	1.70	20.16	52.09	0.90
Holland East	28	3108.4	Regional Storm	28.40	330.47	331.09		331.20	0.009896	2.08	19.81	51.14	0.92
Holland East	28	3108.3	Regional Storm	28.40	330.44	331.12		331.14	0.001591	0.85	50.32	119.61	0.37
Holland East	28	3108.25	Regional Storm	28.40	330.19	331.09		331.10	0.000503	0.60	72.95	128.83	0.22
Holland East	28	3108	Regional Storm	34.50	329.88	331.08	330.55	331.08	0.000302	0.58	101.13	148.06	0.18
Holland East	28	3107.75	Regional Storm	34.50	329.73	331.06		331.06	0.000161	0.46	119.17	149.45	0.13
Holland East	28	3107.5	Regional Storm	34.50	329.59	331.05	330.37	331.05	0.000360	0.73	86.11	130.91	0.20
Holland East	28	3107.4	Regional Storm	34.50	329.30	330.91	330.24	330.97	0.001192	1.44	30.86	29.64	0.38
Holland East	28	3107.35		Culvert									
Holland East	28	3107.3	Regional Storm	34.50	329.21	330.23	330.15	330.46	0.008960	2.80	16.60	37.63	0.96
Holland East	28	3107.2	Regional Storm	34.50	329.15	330.19		330.25	0.002507	1.50	33.19	50.25	0.51
Holland East	28	3107	Regional Storm	36.10	329.03	330.05		330.15	0.004208	1.92	26.04	40.94	0.66
Holland East	28	3106.5	Regional Storm	36.10	328.67	329.71		329.82	0.004245	1.95	25.03	37.30	0.66
Holland East	28	3106	Regional Storm	38.70	328.24	329.76	328.81	329.76	0.000060	0.29	148.24	155.79	0.08
Holland East	28	3105.6		Culvert									
Holland East	28	3105	Regional Storm	47.70	327.72	329.30	329.10	329.39	0.002069	1.55	44.14	72.65	0.48
Holland East	28	3104	Regional Storm	47.70	327.79	328.76		328.83	0.001595	1.30	44.74	59.16	0.42

FLOODPLAIN STORAGE CALCULATIONS

Existing Conditions

HEC-RAS Section Flow Areas (m^2)

*Distance (m)	0.0	7.9	11.4	39.4	40.6	32.0	26.5	66.4	25.0	19.6	27.9	81.6	102.8	
EL\Sta.	3108.5	3108.4	3108.3	3108.25	3108	3107.75	3107.5	3107.4	3107.3	3107.2	3107	3106.5	3106	EL
331.50														331.50
331.25	5.6	6.9	1.2											331.25
331.00	12.4	19.5	21.9	8.7										331.00
330.75	8.0	10.9	11.4	16.9	13.9	4.0								330.75
330.50	3.9		0.7	9.0	15.2	20.7	24.9							330.50
330.25			0.1	2.0	5.0	13.3	23.0							330.25
330.00				0.1	0.4	0.1	6.1	18.6	14.5	6.3				330.00
329.75							0.1	13.1	14.8	11.6	10.8		1.6	329.75
329.50								6.2	10.6	8.4	8.5	12.9	37.8	329.50
329.25										4.6	5.5	11.3	34.7	329.25
329.00											0.7	7.2	29.8	329.00
328.75												1.3	25.7	328.75
328.50													14.1	328.50
328.25													5.2	328.25

Storage Volume Between Sections (m^3)

EL\Sta.	3108.5	3108.4	3108.3	3108.25	3108	3107.75	3107.5	3107.4	3107.3	3107.2	3107	3106.5	3106	Total	EL
331.50															331.50
331.25		50	46	23										119	331.25
331.00		127	237	602	176									1142	331.00
330.75		75	127	558	625	285	53							1722	330.75
330.50		15	4	192	492	574	606	413						2295	330.50
330.25			0	40	140	292	481	1175						2129	330.25
330.00				2	10	8	82	817	413	203	87			1622	330.00
329.75							2	439	348	258	313	441	80	1882	329.75
329.50								205	210	186	236	875	2605	4316	329.50
329.25										45	141	683	2362	3231	329.25
329.00											9	323	1903	2236	329.00
328.75												51	1815	1866	328.75
328.50													431	431	328.50
328.25													134	134	328.25
Total	0	266	415	1416	1442	1159	1223	3050	971	692	786	2373	9331	**23124**	

$$V_{EL,Sta} = \frac{A_{EL,Sta-1} + A_{EL,Sta}}{2} * L_{Sta-1,Sta}$$

Where

V = Storage volume at elevtion increment between sections (m^3)
A = Incremental elevation area within section below flood elevation (m^2)
L = Characteristic distance between sections (m)

Post-Development Conditions

HEC-RAS Section Flow Areas (m^2)

Distance (m)	0.0	7.9	11.4	39.4	40.6	32.0	26.5	66.4	6.1	13.2	5.7	19.6	27.9	81.6	102.8	
EL\Sta.	3108.5	3108.4	3108.3	3108.25	3108	3107.75	3107.5	3107.4	3107.35	3107.35	3107.3	3107.2	3107	3106.5	3106	EL
331.50																331.50
331.25																331.25
331.00	8.4	4.4	14.3	10.2	11.9	9.0	7.0									331.00
330.75	8.0	10.3	26.5	36.1	37.0	37.1	32.1	4.7								330.75
330.50	3.9	5.1	9.1	27.0	32.3	36.4	23.3	7.2	0.7							330.50
330.25		0.0	0.0	1.0	18.6	27.0	16.3	7.0	3.7	1.0						330.25
330.00				0.2	1.8	9.9	11.1	6.8	3.7	3.7	8.5	8.7	1.8			330.00
329.75						0.2	2.8	6.6	3.7	3.7	8.9	11.1	8.6		1.6	329.75
329.50							0.1	2.8	2.2	3.7	6.4	10.1	8.1	7.7	37.8	329.50
329.25								0.1			0.3	0.8	3.8	8.8	34.7	329.25
329.00												0.0	0.1	7.98	29.8	329.00
328.75														0.53	25.7	328.75
328.50														0.02	14.1	328.50
328.25															5.2	328.25

Storage Volume Between Sections (m^3)

EL\Sta.	3108.5	3108.4	3108.3	3108.25	3108	3107.75	3107.5	3107.4	3107.35	3107.35	3107.3	3107.2	3107	3106.5	3106	Total	EL
331.50																	331.50
331.25																	331.25
331.00		51	107	483	448	333	211	231								1864	331.00
330.75		72	210	1233	1482	1184	918	1220	14							6334	330.75
330.50		35	81	710	1203	1098	791	1011	24	5						4958	330.50
330.25		0	0	20	397	728	574	772	33	31	3					2557	330.25
330.00				4	40	187	279	594	32	49	35	168	145	72		1605	330.00
329.75						4	40	313	32	49	36	195	274	350	80	1374	329.75
329.50							1	95	15	39	29	161	254	645	2336	3576	329.50
329.25								4	0		1	11	64	513	2235	2828	329.25
329.00												0	2	331	1942	2275	329.00
328.75														22	1778	1800	328.75
328.50														1	431	431	328.50
328.25															134	134	328.25
Total	0	158	398	2448	3570	3534	2815	4240	151	174	104	535	740	1933	8936	**29735**	

$$V_{EL,Sta} = \frac{A_{EL,Sta-1} + A_{EL,Sta}}{2} * L_{Sta-1,Sta}$$

Where

$V_{EL,Sta}$ = Storage volume at elevtion increment between sections (m^3)
$A_{EL,Sta}$ = Incremental elevation area within section below flood elevation (m^2)
$L_{Sta-1,Sta}$ = Characteristic distance between sections (m)

Floodplain Storage by 0.25m Elevation Increment (m^3)

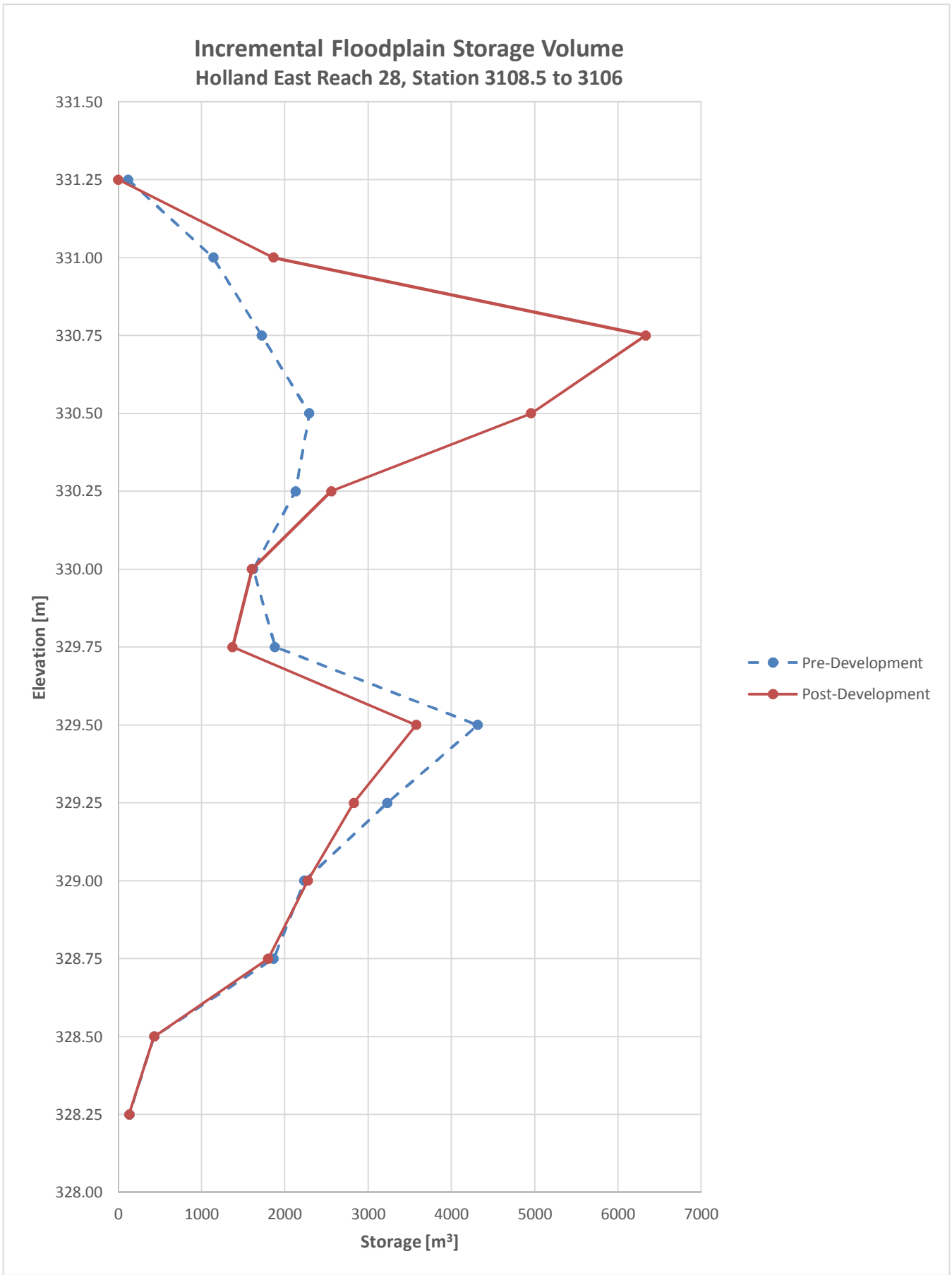
EL	Pre	Post	Delta	% Change
331.25	119	0	-119	-100
331.00	1142	1864	722	63
330.75	1722	6334	4612	268
330.50	2295	4958	2663	116
330.25	2129	2557	428	20
330.00	1622	1605	-17	-1
329.75	1882	1374	-508	-27
329.50	4316	3576	-740	-17
329.25	3231	2828	-403	-12
329.00	2236	2275	39	2
328.75	1866	1800	-66	-4
328.50	431	431	0.8	0
328.25	134	134	0	0
Total	23124	29735	6611	

Net Increase 28.6%

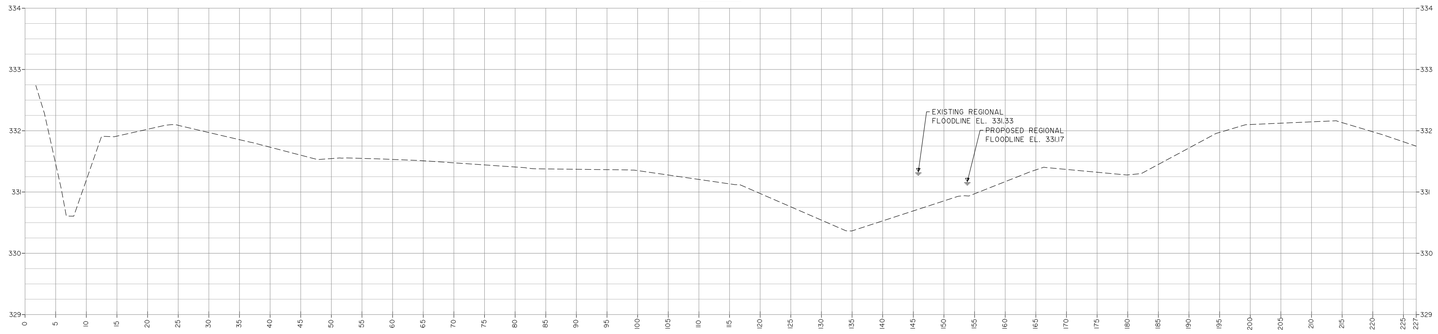
Floodplain Storage by HEC-RAS Cross Section (m^3)

HEC-RAS Section	Pre	Post	Delta	% Change
3108.5	0	0	0	0
3108.4	266	158	-108	-40
3108.3	415	398	-16	-4
3108.25	1416	2448	1032	73
3108	1442	3570	2128	148
3107.75	1159	3534	2375	205
3107.5	1223	2815	1591	130
3107.4	3050	4240	1190	39
3107.35*	-	151	151	-
3107.35*	-	174	174	-
3107.3	971	104	-868	-89
3107.2	692	535	-157	-23
3107	786	740	-46	-6
3106.5	2373	1933	-440	-19
3106	9331	8936	-395	-4
Total	23124	29735	6611	28.6

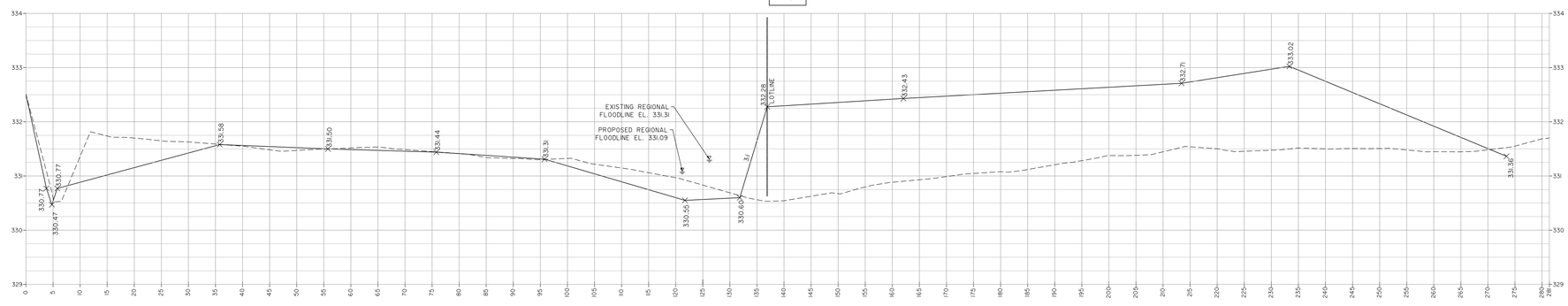
*Upstream and downstream culvert sections


Incremental Floodplain Storage Volume
Holland East Reach 28, Station 3108.5 to 3106
331.50
331.25
331.00
330.75
330.50
330.25
330.00
329.75
329.50
329.25
329.00
328.75
328.50
328.25
328.00
Elevation [m]
0
1000
2000
3000
4000
5000
6000
7000
Storage [m³]
Pre-Development
Post-Development

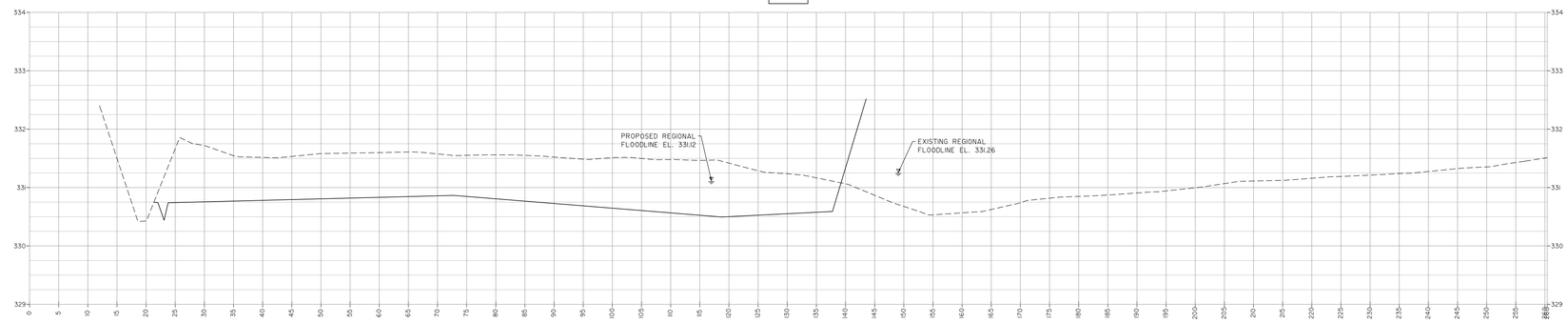
3108.5



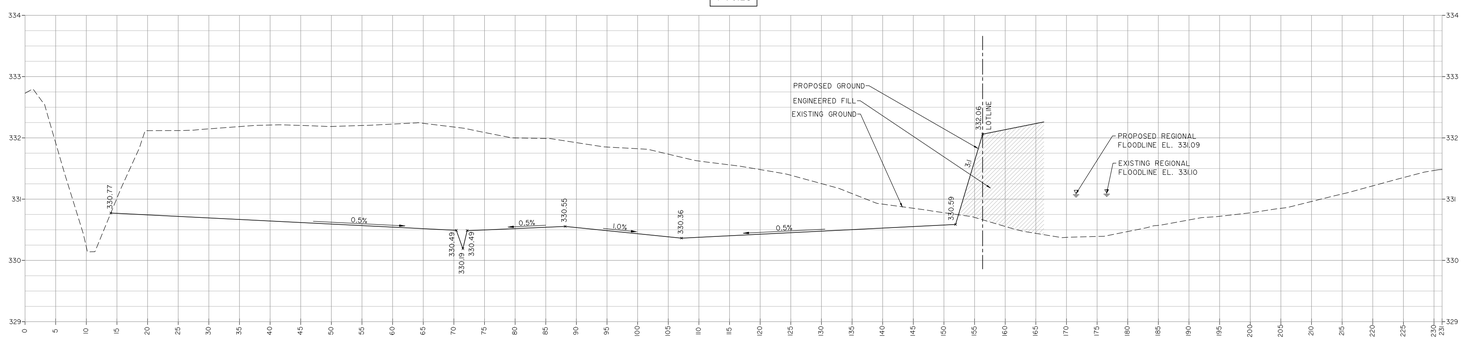
3108.4



3108.3



3108.25



SCALE HOR. 1:500
VER. 1:50

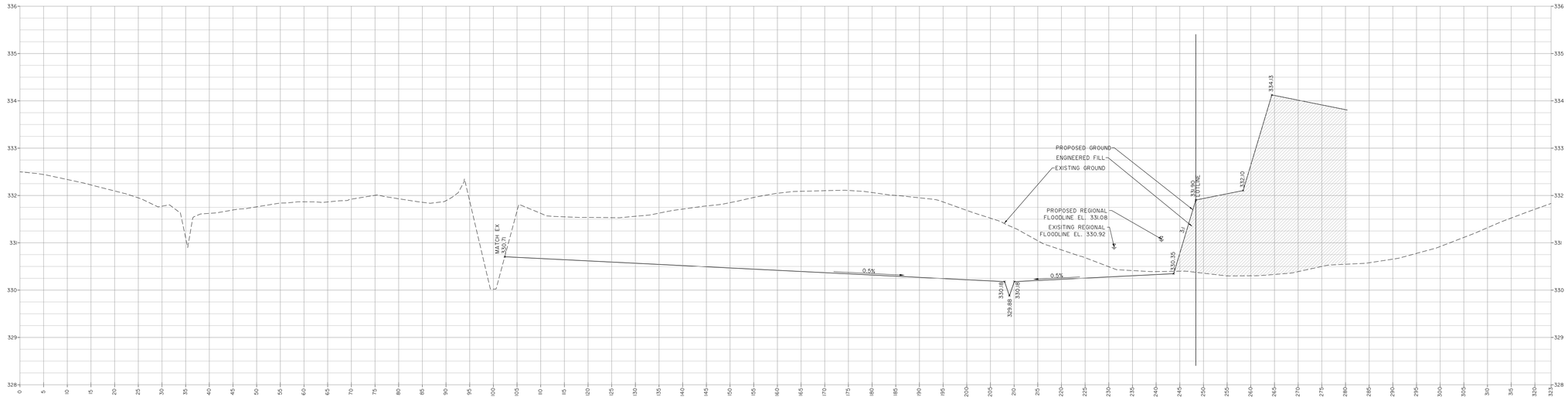
CUT/FILL CROSS SECTIONS

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

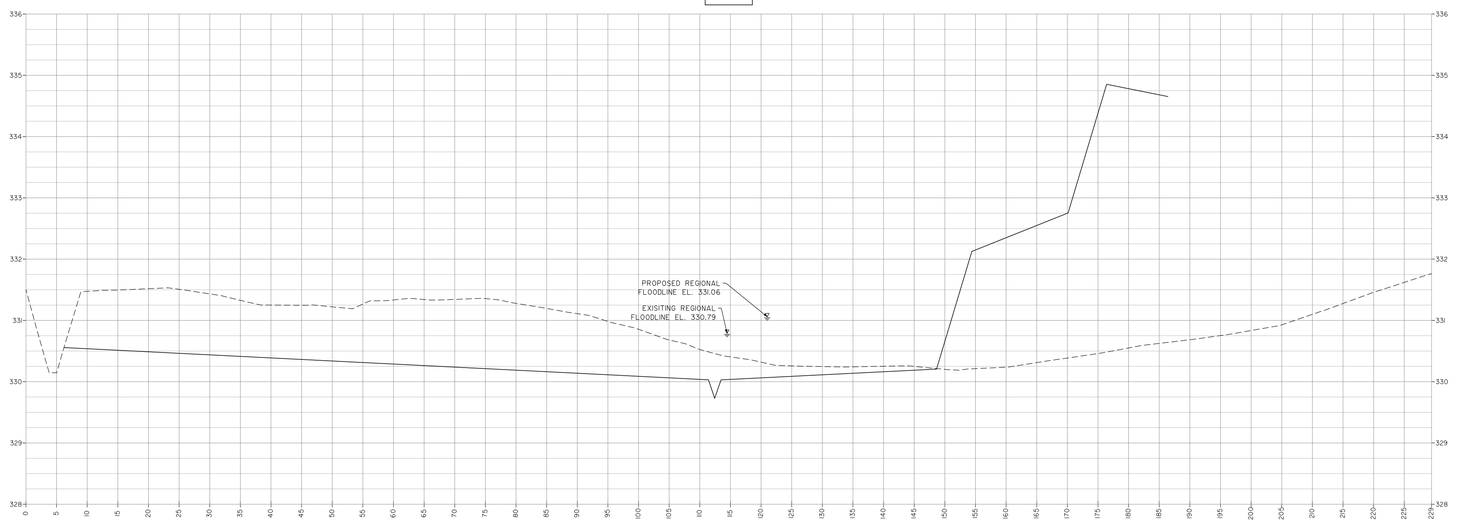
PROJECT NUMBER	FIGURE NUMBER
13:286	CF 1

PLOT DATE: 7/10/2008 5:18 PM CAD FILE: P:\13\286\Drawing Files\Phase 1\Figure\F1SR - May 2008\286 Fig XX Floodplain Storage.dwg

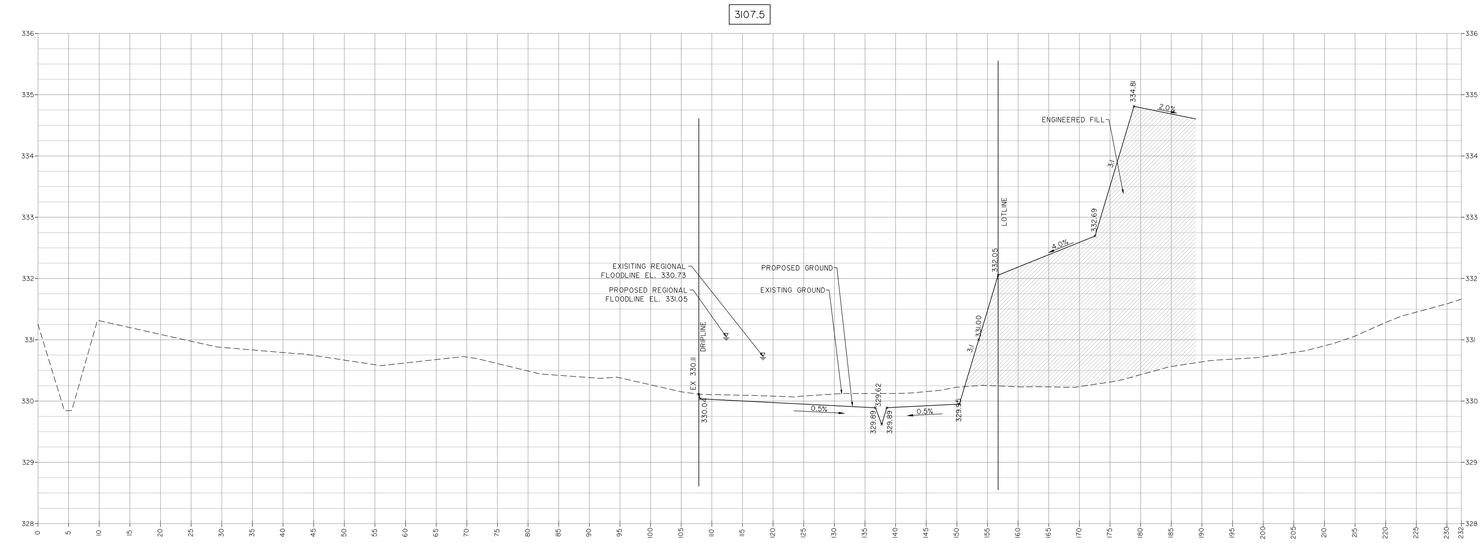
3108



3107.75



3107.5



SCALE HOR. 1:500
VER. 1:50

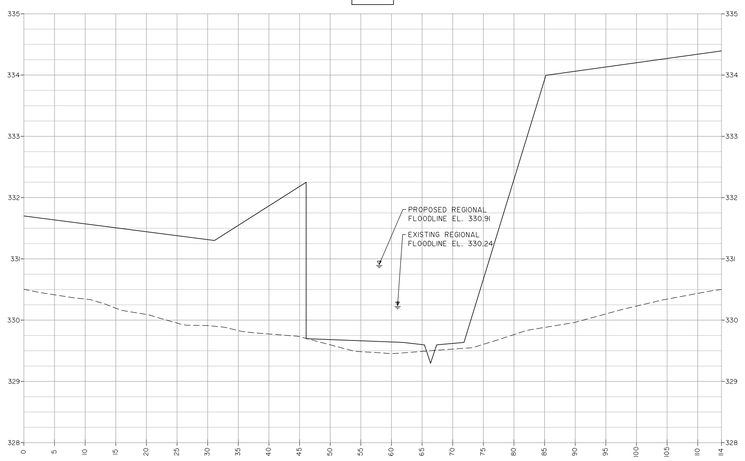
CUT/FILL CROSS SECTIONS

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

PROJECT NUMBER	FIGURE NUMBER
13:286	CF 2

PLOT DATE: 7/10/2008 5:29 PM CAD FILE: P:\13\286\Drawing Files\Phase IV\Figures\FSSR - May 2008\286 Fig XX Floodplain Storage.dwg

3107.4



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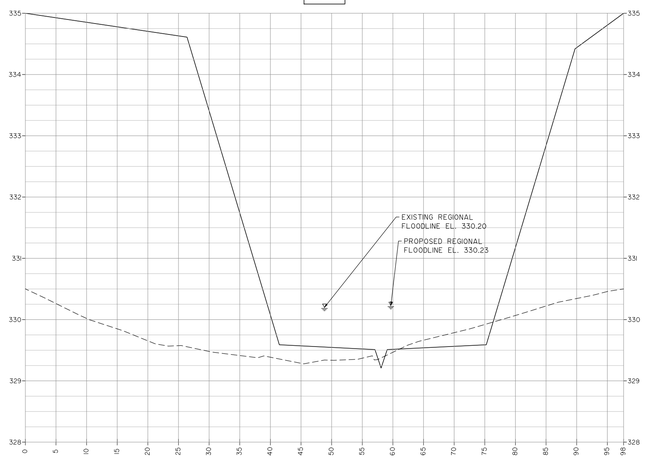

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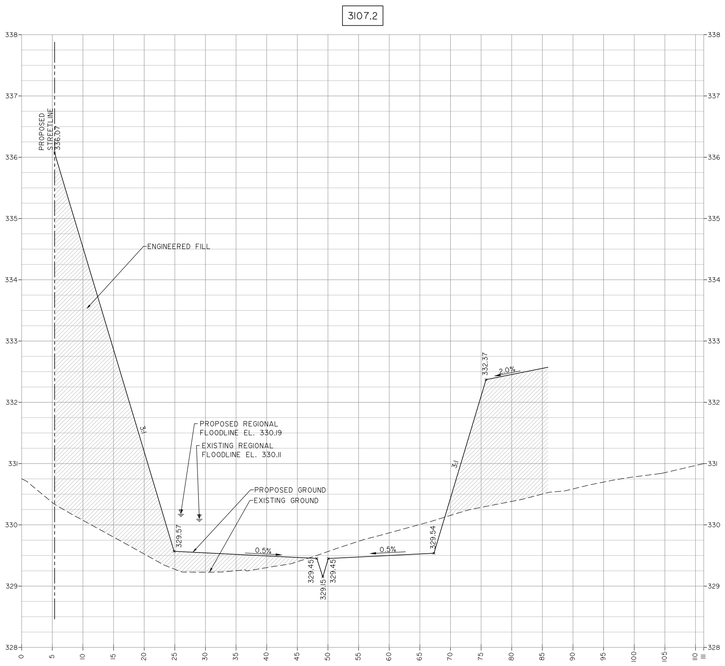
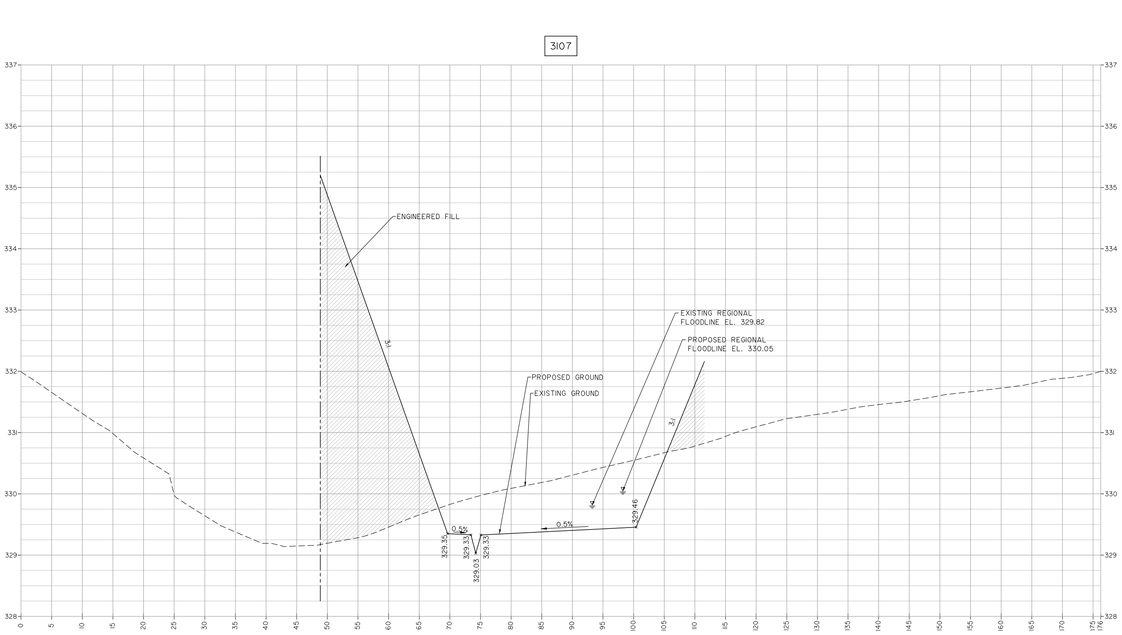


3107



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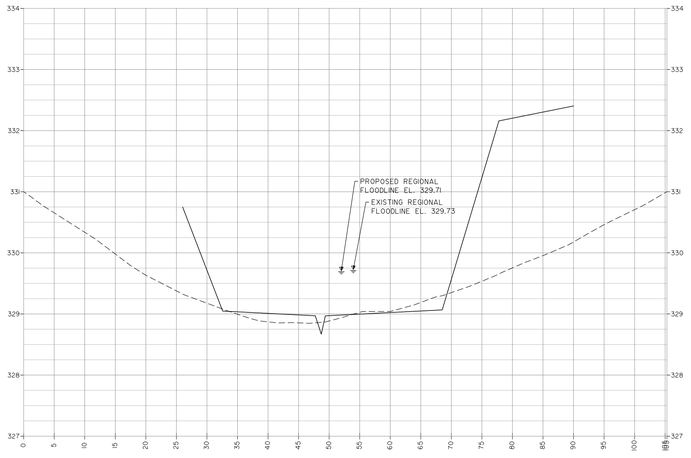
CUT/FILL CROSS SECTIONS

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

PROJECT NUMBER	FIGURE NUMBER
13.286	CF 3

PLOT DATE: 7/10/2008 5:31 PM LAD FILE: P:\13\286\Drawing Files\Phase IV\Figures\FSSR - May 2008\286 Fig XX Floodplain Stress.dwg

3106.5



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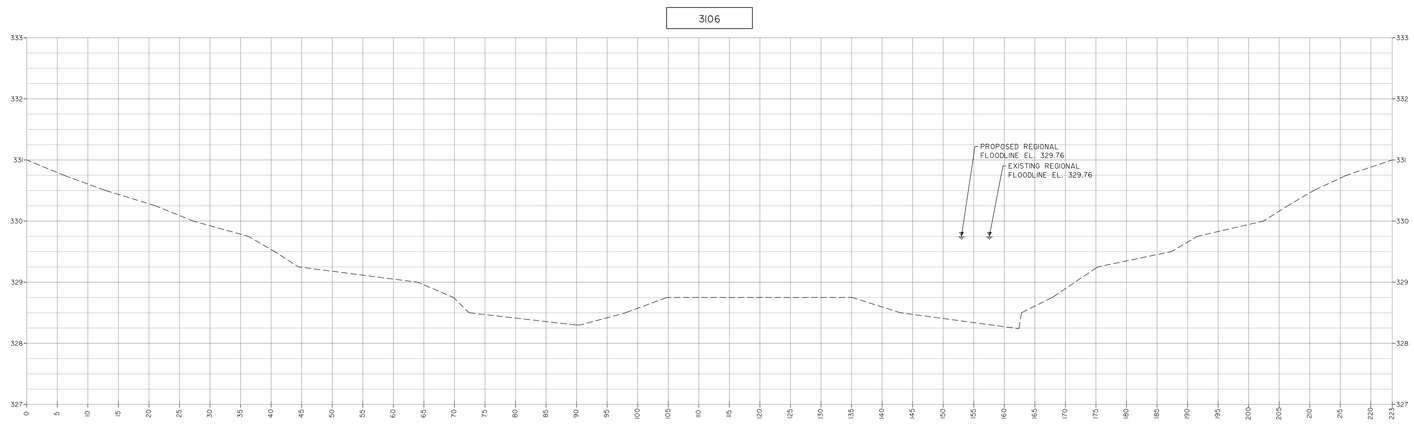


SCALE HOR. 1:500
VER. 1:50

CUT/FILL CROSS SECTIONS

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

PROJECT NUMBER	FIGURE NUMBER
13:286	CF 4

PLOT DATE: 7/07/2018 5:33 PM CAD FILE: P:\13\286\Drawing Files\Phase IV\figures\FS58 - May 2018\286 Fig XX Floodplain Storage.dwg

EAST LIMIT OF SUBDIVISION

NORTH LIMIT OF SUBDIVISION

WEST LIMIT OF SUBDIVISION

STREET A

STREET B

STREET C

STREET D

STREET E

LAKESHORE ROAD

LIMIT OF 3.0m BUFFER

EXISTING WETLAND

EXISTING WOODLAND

BLOCK 145 OPEN SPACE CONSERVATION

BLOCK 146 OPEN SPACE CONSERVATION

BLOCK 147 OPEN SPACE CONSERVATION

BLOCK 148 OPEN SPACE CONSERVATION

BLOCK 149 OPEN SPACE CONSERVATION

BLOCK 150 WOODLAND BUFFER

BLOCK 151 WOODLAND BUFFER

BLOCK 152 WOODLAND BUFFER

BLOCK 153 WOODLAND BUFFER

BLOCK 154 WOODLAND AND WETLAND PROTECTION AREA

BLOCK 155 WOODLAND BUFFER

BLOCK 156 WOODLAND BUFFER

BLOCK 157 WOODLAND BUFFER

CROSSING
RISE: 1.60m
SPAN: 14.94m
LENGTH: 9.0m

LID 3
STORMTECH
GROUNDWATER ELEV: 328.50
GRANULAR INVERT: 329.77
CELL INVERT: 330.73
GROUND SURFACE: 333.16

LID 4
STORMTECH
GROUNDWATER ELEV: 328.40
GRANULAR INVERT: 329.40
CELL INVERT: 329.73
GROUND SURFACE: 332.16

LID 7
STORMTECH
GROUNDWATER ELEV: 328.25
GRANULAR INVERT: 329.27
CELL INVERT: 329.65
GROUND SURFACE: 332.08

MH 1
TOP 334.58
N INV 331.34
S INV 331.53

MH 2
TOP 334.18
N INV 330.79
W INV 330.94
E INV 330.75

MH 3
TOP 334.31
E INV 331.28

MH 4
TOP 335.39
W INV 332.03
S INV 331.68

MH 5
TOP 335.12
N INV 331.25
S INV 331.15

MH 6
TOP 334.62
N INV 330.85
S INV 330.62

MH 7
TOP 333.92
N INV 330.24
W INV 330.39
S INV 330.16

MH 8
TOP 333.55
N INV 329.81
W INV 329.75

MH 9
TOP 334.86
E INV 331.45
SW INV 331.37

MH 10
TOP 334.74
NE INV 331.31
SW INV 331.23

MH 11
TOP 334.81
NE INV 331.16
S INV 331.11

MH 12
TOP 334.38
N INV 330.83
S INV 330.98
W INV 330.76

MH 101
TOP 335.29
S INV 331.43

MH 102
TOP 334.70
W INV 331.30
S INV 331.15

MH 103
TOP 333.28
N INV 330.88
E INV 330.66

MH 104
TOP 334.69
E INV 331.57

MH 105
TOP 334.49
W INV 331.24
E INV 331.16

MH 106
TOP 334.34
W INV 331.00
S INV 330.85

MH 107
TOP 333.95
N INV 330.50
W INV 330.43
E INV 330.20

MH 108
TOP 334.96
N INV 330.60
E INV 330.52

MH 109
TOP 333.85
NW INV 330.40
E INV 329.95

MH 110
TOP 334.67
E INV 331.67

MH 111
TOP 334.66
W INV 332.41

MH 112
TOP 334.83
N 331.71

MH 113
TOP 334.74
E INV 332.26
N INV 331.36
S INV 331.36

MH 114
TOP 334.38
N INV 330.80
S INV 330.80
E INV 331.88 (UPPER)
E INV 330.75 (LOWER)

MH 115
TOP 339.12
W INV 332.64

MH 116
TOP 334.85
E INV 333.93
S 331.08

OGS
TOP 334.6
W INV 332.72 (LOWER)
W INV 331.85 (UPPER)
E 330.69

HW1
INV 329.60

HW2
INV 330.70

HW3
INV 329.56

HW4
INV 330.50

HW5
INV 331.91

LEGEND:

- PROPOSED STORM SEWER
- PROPOSED STORM MANHOLE
- PROPOSED STORM DRAINAGE AREA
- PROPOSED CHANNEL REALIGNMENT
- LOT MAY REQUIRE SUMP PUMP SYSTEM TO STORM SEWERS

SCALE 1:750

PROPOSED STORM SERVICING

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

PROJECT NUMBER	FIGURE NUMBER
13:286	5

PLOT DATE: 12/09/2018 9:07 AM CAD FILE: P:\13\286\Drawing Files\Phase 1\Figures\FIG5P... May 2018\286 Fig 05 Prelim Storm Servicing.dwg

EAST LIMIT OF SUBDIVISION

NORTH LIMIT OF SUBDIVISION

WEST LIMIT OF SUBDIVISION

STREET A

STREET B

STREET C

STREET D

STREET E

105.0 - 200ϕ SAN @ 1.0%

108.0 - 200ϕ SAN @ 0.5%

82.0 - 200ϕ SAN @ 0.5%

2.0 - 200ϕ SAN @ 0.5%

59.3 - 200ϕ SAN @ 1.0%

27.0 - 200ϕ SAN @ 0.5%

12.0 - 200ϕ SAN @ 0.5%

100.2 - 200ϕ SAN @ 0.5%

97.0 - 200ϕ SAN @ 0.5%

42.6 - 200ϕ SAN @ 1.0%

12.1 - 200ϕ SAN @ 0.5%

48.7 - 200ϕ SAN @ 0.5%

13.9 - 200ϕ SAN @ 0.5%

14.1 - 200ϕ SAN @ 0.5%

44.8 - 200ϕ SAN @ 0.5%

10.0 - 200ϕ SAN @ 1.0%

61.1 - 200ϕ SAN @ 0.5%

76.0 - 200ϕ SAN @ 1.0%

30.4 - 200ϕ SAN @ 0.5%

39.6 - 200ϕ SAN @ 0.5%

10.3 - 200ϕ SAN @ 0.5%

47.7 - 200ϕ SAN @ 1.0%

55.9 - 200ϕ SAN @ 0.5%

23.1 - 200ϕ SAN @ 0.5%

28.7 - 200ϕ SAN @ 0.5%

71.5 - 200ϕ SAN @ 1.0%

70.6 - 200ϕ SAN @ 0.5%

61.0 - 200ϕ SAN @ 0.5%

29.2 - 200ϕ SAN @ 0.5%

46.7 - 200ϕ SAN @ 1.0%

MH 1A
TOP 335.35
W INV 331.05
S INV 331.05

MH 2A
TOP 334.86
E INV 330.46
SW INV 330.43

MH 3A
TOP 334.74
NE INV 330.37
SW INV 330.34

MH 4A
TOP 334.67
NE INV 330.28
S INV 330.25

MH 5A
TOP 334.58
N INV 329.75
S INV 329.72

MH 6A
TOP 334.3
E INV 331.20

MH 7A
TOP 334.18
W INV 330.90
N INV 329.24
E INV 329.18

MH 8A
TOP 335.13
N INV 330.00
S INV 329.97

MH 9A
TOP 333.92
N INV 329.43
W INV 328.81
S INV 328.75

MH 10A
TOP 332.53
N INV 328.34
S INV 328.31

MH 11A
TOP 333.05
N INV 328.21
N DROP 327.36
SW INV 327.30

MH 12A
TOP 333.95
N INV 330.90

MH 13A
TOP 334.34
W INV 328.45
S INV 330.12
E INV 328.42

MH 14A
TOP 335.10
W INV 328.8
SE INV 328.08

MH 15A
TOP 335.33
NW INV 328.01
S INV 327.98

MH 16A
TOP 335.00
NW 331.80

MH 17A
TOP 335.05
SE INV 331.70
N INV 331.67

MH 18A
TOP 335.25
S INV 331.45
S DROP 327.91
N INV 327.91
NW INV 327.84

MH 19A
TOP 329.3
NW INV 327.65
NW DROP 326.87
E INV 326.87
S INV 326.81

MH 101A
TOP 334.85
E INV 330.50
S INV 330.44

MH 102A
TOP 334.41
N INV 330.09
S INV 330.06

MH 103A
TOP 334.48
N INV 329.75
S INV 329.72

MH 104A
TOP 334.62
N INV 329.57
S INV 329.54

MH 105A
TOP 334.79
N INV 331.60

MH 106A
TOP 334.71
S INV 331.13
S DROP 329.43
N INV 329.43
E INV 329.37

MH 107A
TOP 335.56
W INV 329.25
E INV 329.22

MH 108A
TOP 334.70
S INV 330.75
S DROP 328.96
W INV 328.94
E INV 328.91

MH 109A
TOP 334.43
N INV 331.23

MH 110A
TOP 334.69
W INV 328.96
NE INV 328.83

MH 111A
TOP 334.49
SW INV 328.63
E INV 328.60

MH 112A
TOP 335.25
S INV 331.45
S DROP 327.91
N INV 327.91
NW INV 327.84

MH 113A
TOP 335.05
SE INV 331.70
N INV 331.67

MH 114A
TOP 335.00
NW 331.80

MH 115A
TOP 335.33
NW INV 328.01
S INV 327.98

MH 116A
TOP 335.00
NW 331.80

MH 117A
TOP 335.05
SE INV 331.70
N INV 331.67

MH 118A
TOP 335.25
S INV 331.45
S DROP 327.91
N INV 327.91
NW INV 327.84

MH 119A
TOP 329.3
NW INV 327.65
NW DROP 326.87
E INV 326.87
S INV 326.81

PSMH 120A
N INV 326.57

CROSSING DATA
STREAM ELEV 326.70
SAN TOP 327.20
CLEARANCE 1.50m

0.51 / 19
0.10 / 8
0.10 / 4
0.75 / 49
0.77 / 49
0.80 / 52
0.71 / 45
0.48 / 30
0.16 / 8
0.04 / 0
0.27 / 15
0.13 / 8
0.02 / 0
0.02 / 0
0.02 / 0
0.06 / 0
0.08 / 4
0.35 / 23
0.16 / 8
0.61 / 30
0.21 / 8
0.18 / 18
0.07 / 4
0.21 / 12
0.43 / 26
0.33 / 23
0.14 / 8
0.76 / 37
0.33 / 19
0.39 / 21
0.19 / 12
0.12 / 8

BLOCK 144 SWM

BLOCK 143 SWM

BLOCK 146 OPEN SPACE CONSERVATION

BLOCK 148 SWM

BLOCK 147 SWM

BLOCK 150 SWM

BLOCK 149 SWM

BLOCK 151 SWM

BLOCK 152 SWM

BLOCK 153 SWM

BLOCK 154 OPEN SPACE CONSERVATION

BLOCK 155 HDW WOODLAND WOODLAND BUFFER

BLOCK 156 WOODLAND BUFFER

BLOCK 157 WOODLAND BUFFER

BLOCK 158 WOODLAND BUFFER

BLOCK 159 WOODLAND BUFFER

BLOCK 160 WOODLAND BUFFER

BLOCK 161 WOODLAND BUFFER

BLOCK 162 WOODLAND BUFFER

BLOCK 163 WOODLAND BUFFER

BLOCK 164 WOODLAND BUFFER

EXISTING WOODLAND

EXISTING DRAINAGE EASEMENT

FM

PROPOSED LOCATION OF LOCAL SANITARY PUMPING STATION

LAKESHORE ROAD

LEGEND:

- PROPOSED SANITARY SEWER
- PROPOSED SANITARY MANHOLE
- FM — PROPOSED SANITARY FORCEMAIN

SCALE 1:750

PROPOSED SANITARY SERVICING

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

PROJECT NUMBER	FIGURE NUMBER
13:286	6

PLOT DATE: 02/7/2008 @4:44 AM CAD FILE: P:\13\286\Drawing Files\Phase 1\Figure\13F06 - May 2008\286 Fig 6.7 Proposed Sanitary Servicing.dwg

LEGEND:

- PROPOSED SANITARY SEWER
- PROPOSED SANITARY MANHOLE
- FM — PROPOSED SANITARY FORCEMAIN
- SITE BOUNDARY

ACCESS ROAD

EXISTING SANITARY FACILITY LOCATION

BALLANTRAE PUBLIC SCHOOL

McFARLAND STREET

AURORA ROAD

STREET E

STREET A

STREET D

STREET B

STREET C

EXISTING WOODLAND

EXISTING WOODLAND

LAKESHORE ROAD

EXISTING DRAINAGE EASEMENT

PROPOSED LOCATION OF LOCAL SANITARY PUMPING STATION

SCALE 1:1500

PROPOSED SANITARY OUTLET

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

PROJECT NUMBER	FIGURE NUMBER
13:286	7

PLOT DATE: 07/12/2018 9:03 PM CAD FILE: R:\13-286\Drawing Files\Phase 1\Figure\FIG8 - May 2008\286_Fig 6.7 Proposed Sanitary Servicing.dwg

EAST LIMIT OF SUBDIVISION

NORTH LIMIT OF SUBDIVISION

WEST LIMIT OF SUBDIVISION

STREET A

STREET B

STREET C

STREET D

STREET E

WATERMAIN

BLOCK 142 SWM

BLOCK 143 SWM

BLOCK 144 SWM

BLOCK 145 OPEN SPACE CONSERVATION

BLOCK 146 OPEN SPACE CONSERVATION

BLOCK 147 SWM

BLOCK 148 ROAD ACCESS

BLOCK 149 ROAD ACCESS

BLOCK 150 ROAD ACCESS

BLOCK 151 PUMPING STATION

BLOCK 152 PRIVATE ROAD

BLOCK 153 ROAD ACCESS

BLOCK 154 WOODLAND WETLAND PROTECTION AREA

BLOCK 155 SWM WOODLAND BUFFER

BLOCK 156 WOODLAND BUFFER

BLOCK 157 WOODLAND BUFFER

BLOCK 158 WOODLAND BUFFER

EXISTING WOODLAND

EXISTING WOODLAND

EXISTING 300Ø PVC WATERMAIN

EXISTING 300Ø PVC WATERMAIN

LAKESHORE ROAD

PROPOSED LOCATION FOR METER CHAMBER PER TOWN STD WS-603

PROPOSED WATERMAIN TO CONNECT INTO EXISTING WATERMAIN ON LAKESHORE ROAD

LEGEND:

- PROPOSED WATERMAIN
- EXISTING WATERMAIN
- PROPOSED CHANNEL REALIGNMENT

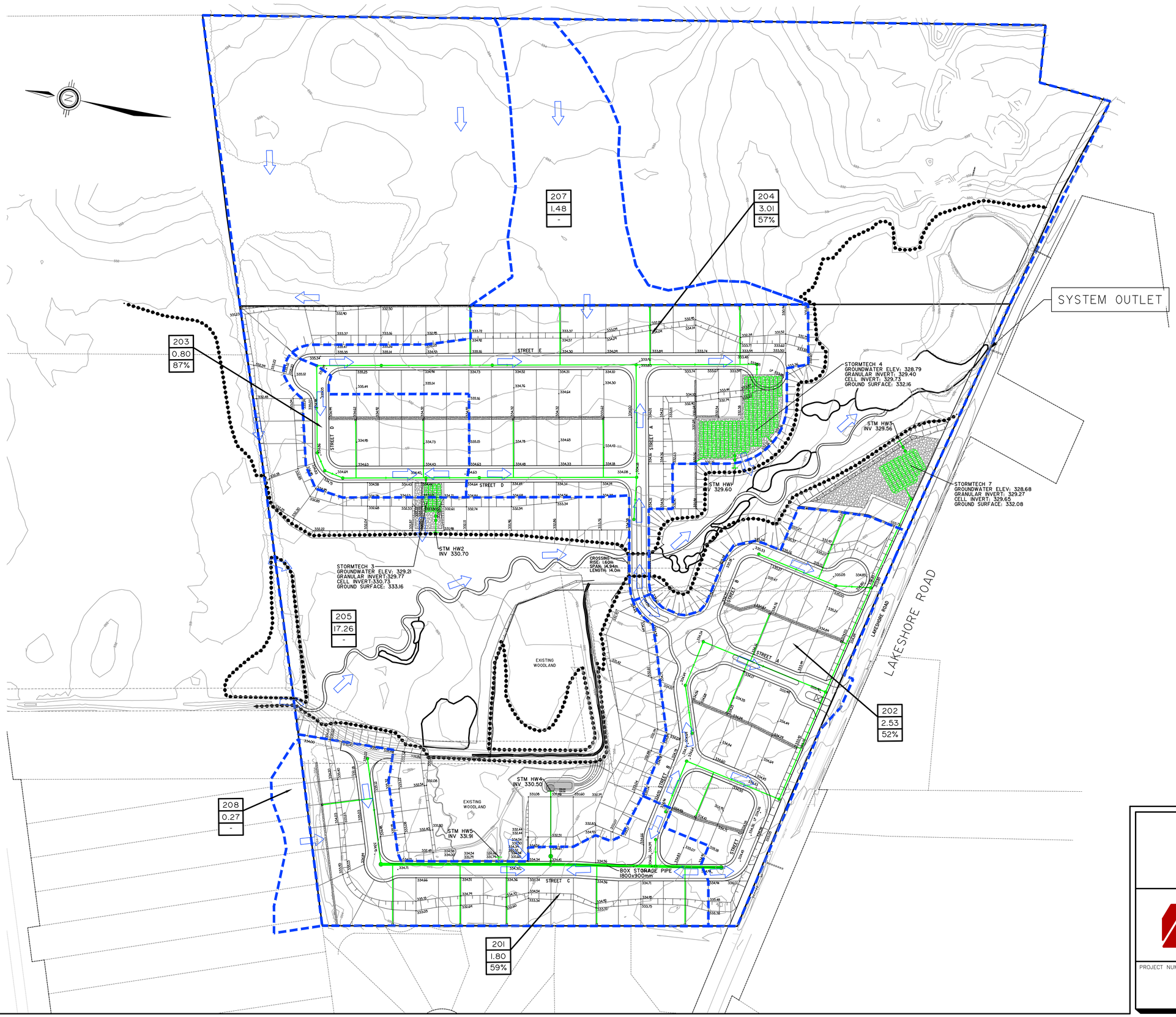
SCALE 1:750

PROPOSED WATER DISTRIBUTION

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

PROJECT NUMBER	FIGURE NUMBER
13:286	8

PLOT DATE: 01/14/2014 12:03 PM LAD FILE: P:\13\286\Drawing Files\Phase V\Figures\ESSR - May 2006\286 Fig 08 Prelim. Water Distribution.dwg



LEGEND:

- POST DEVELOPMENT DRAINAGE BOUNDARY
- OVERLAND FLOW ROUTE
- 202 / 2.51 / 53% — SUBCATCHMENT ID, SUBCATCHMENT AREA (HA), PERCENT IMPERVIOUS
- PROPOSED STORM SEWER
- PROPOSED REGIONAL FLOODLINE
- INFILTRATION GALLERY

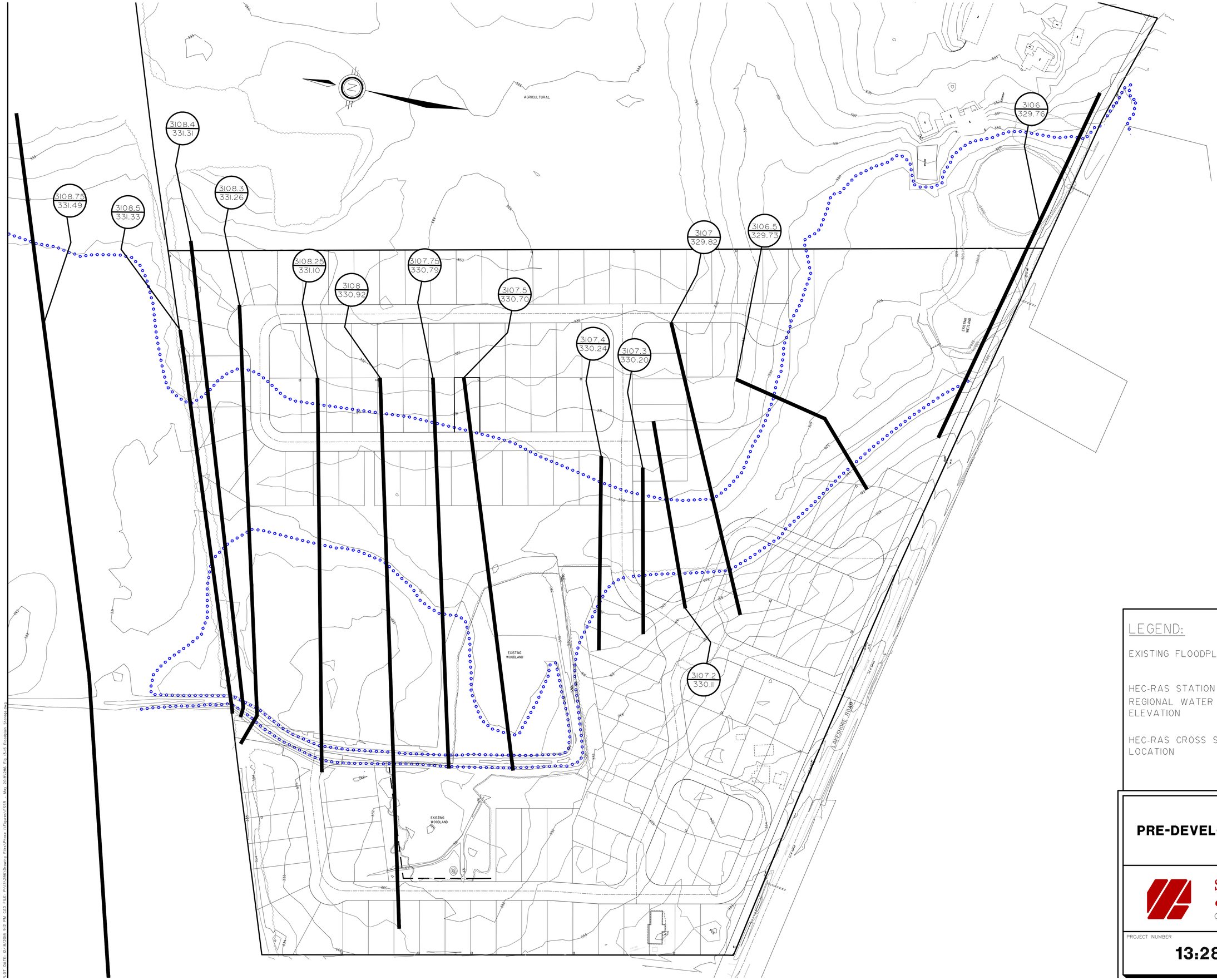
SCALE 1:1250

POST DEVELOPMENT DRAINAGE AREA

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

PROJECT NUMBER	FIGURE NUMBER
13:286	12

PLOT DATE: 12/9/2008 10:56 AM CAD FILE: P:\13\286\Drawing Files\Phase 1\Figures\FIG8 - May 2008\286 Fig 04 - 5.0 Post Development -2.dwg



LEGEND:

EXISTING FLOODPLAIN

HEC-RAS STATION
REGIONAL WATER SURFACE
ELEVATION — 3107.2 / 330.11

HEC-RAS CROSS SECTION
LOCATION

SCALE 1:1000

PRE-DEVELOPMENT FLOODPLAIN

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

PROJECT NUMBER	FIGURE NUMBER
13:286	13

PLOT DATE: 02/08/2006 9:21 PM CAD FILE: P:\13-286\Drawing Files\Phase 1\Figure13.DGN May 2006/286 Fig 13-5 Floodplain Storage.dgn

LEGEND:

PROPOSED FLOODPLAIN

HEC-RAS STATION
REGIONAL WATER SURFACE ELEVATION
3107.2
330.11

HEC-RAS CROSS SECTION LOCATION

SCALE 1:1000

POST-DEVELOPMENT FLOODPLAIN

SABOURIN KIMBLE & ASSOCIATES LTD.
CONSULTING ENGINEERS

PROJECT NUMBER	FIGURE NUMBER
13:286	14

PLOT DATE: 02/18/2008 9:00 PM CAD FILE: P:\13\286\Drawings\FinalPhase\Figures\FSSP - May 2008\286 Fig 13-14 Floodplain Sheet.dwg