TATHAM ENGINEERING

Enhancing our communities

Camperdown Condominiums

PRELIMINARY STORMWATER MANAGEMENT REPORT

2220740 Ontario Inc. c/o Romspen Investment Corp.

File 117304 | November 6, 2019

Document Control

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Date:

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Issue	Date	Description
1	November 6, 2019	Draft Plan Submission

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1 Introduction

Tatham Engineering Limited has been retained by 222074 Ontario Inc.to provide engineering services in support of a proposed residential development located on Old Lakeshore Road and Camperdown Road in the Town of The Blue Mountains. Specifically, this report has been prepared to demonstrate the preferred site servicing strategy and provide information relating to stormwater management and drainage.

1.1 SITE DESCRIPTION

The site is located on Old Lakeshore Road within the Craigleith Camperdown sub-watershed study area in the Town of The Blue Mountains. Currently, the site is zoned Residential (R3-H), Public Open Space (OS1) and Hazard (H) in accordance with Town By-law 2006-22. It is legally described as Part Lot 26 Concession 6 in the former Collingwood Township. A portion of the proposed development resides within the Nipissing Ridge geological region of the Georgian Bay Peninsula. We have enclosed a Site Location Plan (Fig.1) for your reference.

1.2 GEOTECHNICAL INVESTIGATION & REPORTS

Based on the Soil Survey of Grey County Map No. 17 (North), the on-site soils are Tecumseth Sand Loam (TS), Waterloo Sand Loam (Wsl) and Dunedin Clay (Duc). The soil material is characterized as poorly sorted outwash sand and clay. Tecumseth Sand Loam, Waterloo Sand Loam and Dunedin Clay have hydrologic soil group classifications of ‘AB’, ‘A’ and ‘D’ respectively. Soils of this nature are categorized as having ‘good to imperfect’ drainage which results in moderate infiltration.

Background reports prepared by C.F. Crozier & Associates Inc. obtained from the Grey County and Town of The Blue Mountains website suggests that Peto MacCallum Ltd. completed five test pit investigations on site to review the existing soil conditions in June of 2004. The report suggests that a uniform layer of topsoil (0.10 m depth) generally covers the site with underlying subsurface soil material consisting of native silty-clay overlaying weathered bedrock at a depth of between 0.8 m to 2.0 m.

Further geotechnical investigations were completed on May 10, 2019 by Central Earth Engineering. The investigation included excavating 8 test pits across the site to provide recommendations for foundations, slab on grade, pavement structure, soil excavation, compaction and ground water control.

The test pits encountered a topsoil layer at the ground surface between 250 mm to 400 mm thick. Underlying the topsoil, the test pits encountered undisturbed native soils that extended down to the bedrock surface. The undisturbed soil primarily consisted of silt and clay with trace sand

extending to elevations ranging from 190.1 to 188.8 m). Bedrock was encountered beneath the overburden soils in each test pit at elevations ranging from 188.5 to 190.1 m. The upper 0.3 to 1.0 m of the bedrock is considered rippable, and the excavations were advanced until bucket refusal on bedrock at elevations of 189.5 to 188.2 m.

The geotechnical report has been submitted under separate cover.

1.3 EXISTING LAND USE

The site is located at the base of the Nipissing Ridge formation on a flat plateau containing forested and open space areas with the land sloping from southwest to northeast between 2% and 5%.

1.4 PROPOSED LAND USE

The current site plan prepared by Innovative Planning Solutions (IPS) illustrates the proposed development consisting of 34 residential units, an 18.0 m ROW, open space (non-developable land), a walking trail and a stormwater management block.

2 Stormwater Management

2.1 STORMWATER MANAGEMENT OBJECTIVES AND BACKGROUND

The primary objective of the Stormwater Management Plan is to identify the existing and future drainage conditions in the area of the site to develop a plan that will mitigate the impact of the development of the local drainage systems. In addition, this plan will demonstrate that the development can be completed in accordance with applicable Municipal, Regional and Provincial guidelines.

This will be accomplished by evaluating the effect of the development on the local drainage conditions, constructing on-site quality control measures, and providing solutions to mitigate siltation and erosion during and after construction.

The stormwater management strategy for the proposed development site has been prepared recognizing the pertinent Conservation Authority, Municipal and Provincial guidelines on water resources including the following:

- *Policies for the Administration of the Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation (Ontario Regulation 151/06)*, Grey Sauble Conservation Authority, (January 2010);
- *The Blue Mountains Engineering Standards*, Town of The Blue Mountains, (April 2009); and,
- *Stormwater Management Planning and Design Manual*, Ministry of the Environment, (March 2003).

2.2 STORMWATER MANAGEMENT CRITERIA

Several environmental factors and site conditions govern the design of the stormwater management plan for the residential development. The SWM criteria to be adhered to during detailed design are as follows:

- Pre-to -post peak runoff flow rate matching for the 2 through 100-year design storm event;
- Safe conveyance of the Regional Storm Event through the development into the Municipal right-of-way; and
- Level 1 ‘Enhanced’ water quality treatment will be designed to meet or exceed Municipal and Provincial standards. The plan must achieve 80% total suspended solids (TSS) removal prior to off-site discharge.

3 Pre-Development Conditions

3.1 EXISTING SITE CONDITIONS

The subject property, which consists of parts of Catchment 101 and Catchment 102 (see DP-1), currently contains forested and open space areas and slopes from the southwest to northeast towards Old Lakeshore Road between 2% and 5%.

Catchment 101 contains external drainage from the rear-yards of the existing residential properties on the north side of Camperdown Court. This external drainage flows northeast through the subject property and crosses Old Lakeshore Road through an existing 900 mm x 900 mm concrete box culvert.

Catchment 102 contains external drainage from the rear-yards of a portion of the existing residential properties on the north side of Barton Boulevard. This external drainage flows northeast through the subject property and crosses Old Lakeshore Road through an existing 1500 mm x 1500 mm concrete box culvert.

Stormwater from Catchments 101 and 102 travels east after crossing Old Lakeshore Road, and eventually crosses Highway 26 through existing culverts where it outlets to an existing watercourse, and ultimately discharges into Nottawasaga Bay.

A preliminary Visual OTTHYMO model has been developed based on the current concept plan to quantify the pre-development peak runoff flow rates from the site. The model has been developed utilizing the Ministry of Transportation IDF Curve Lookup rainfall data and existing information from the Camperdown East 1 Limited Residential Development Preliminary Servicing and Stormwater Management Report (February 2009). Table 1 summarizes the hydrological parameters for the existing site.

Table 1: Pre-Development Hydrologic Parameters

Catchment ID	Catchment Area (Ha)	CN Number	Initial Abstraction (mm)	Runoff Coefficient	Time of Concentration (min)	Time to Peak (hr)
101	5.92	52.48	7.7	0.26	15.4	0.17
102	2.91	59.65	7.23	0.36	13.5	0.15

3.2 PRE-DEVELOPMENT PEAK RUNOFF FLOW RATE ANALYSIS

Table 2 summarizes the pre-development peak runoff flow rates from each catchment and the total peak runoff flow rate for the property. We have enclosed the Pre-Development Drainage Plan (DP-1) for reference.

Table 2: Pre-Development Peak Runoff Flow Rate Summary

Design Storm	4-Hour Chicago (m^3/s)	24-Hr SCS Type II (m^3/s)
25 mm	0.044	-
2-Year	0.051	0.199
5-Year	0.112	0.364
10-Year	0.164	0.496
25-Year	0.242	0.681
50-Year	0.305	0.828
100-Year	0.375	0.985
Regional	0.567	-

Detailed pre-development Visual OTTHYMO modeling results have been enclosed in Appendix A.

4 Post-Development Water Quantity Control

4.1 PROPOSED SITE CONDITIONS

The proposed stormwater management plan for the development will ensure the post-development peak runoff flow rates from the site are attenuated to pre-development levels while providing 'Enhanced' Level 1 stormwater quality control.

The proposed 34-unit development will have a combination of impervious areas consisting of houses, driveways and the proposed road, while the remaining areas will consist of the SWM Pond block, open space (non-developable land) and grassed/lawn areas (see DP-2).

The proposed drainage conditions will include an enhanced low flow cut off swale along the south limit of the development. This swale will intercept drainage from the rear-yards above the Nipissing Ridge and the open space south of the development (Catchments 202 & 203) and convey the runoff around the proposed development directly to the Old Lakeshore Road roadside ditch. The goal of the enhanced swale is too provide habitat for wetland plants and animals and to provide retention and attenuation of surface runoff for Catchments 202 & 203. Catchment 201 consists of the lots on the south side of the internal road, the majority of the internal road and also accounts for the impervious areas of lots 23 through 34 (the houses and driveways). Runoff from Catchment 201 will be collected by roadside ditches that will direct runoff to a proposed stormwater management facility. Controlled runoff from the SWM facility will be conveyed eastward via the roadside ditch along Old Lakeshore Road, ultimately discharging to the existing 1500 mm concrete box culvert, thereby combining with the intermittent watercourse.

Uncontrolled drainage from the remaining catchments (204, 205, 206 & 207) will be intercepted by the Old Lakeshore Road ditch and will ultimately outlet to the intermittent watercourse at the east limit of the property via the previously mentioned box culvert.

The Old Lakeshore Road ditch and culverts have been sized to convey the 100-year post development runoff from the site to the existing concrete box culvert.

4.2 POST-DEVELOPMENT PEAK RUNOFF FLOW RATE ANALYSIS

Detailed impervious calculations for each catchment are enclosed in Appendix B. Table 3 summarizes the hydrologic parameters for the proposed development.

Table 3: Post-Development Catchment Parameters

Catchment ID	Catchment Area (Ha)	Curve Number (CN)	% Impervious	% Impervious Directly Connect
Catchment 201	2.20	-	53.0	22.0
Catchment 202	1.63	44.13	-	-
Catchment 203	2.89	42.93	-	-
Catchment 204	0.64	48.08	-	-
Catchment 205	0.03	-	56.0	28.0
Catchment 206	0.73	-	28.0	12.0
Catchment 207	0.78	61.0	-	-

Table 4 below summarizes the post-development total peak flow rates from the development site. We have enclosed the Post-Development Drainage Plan (DP-2), storm sewer design sheet and detailed post-development Visual OTTHYMO modelling results in Appendix B for reference.

Table 4: Post-Development Peak Runoff Flow Rate Summary

Design Storm	Peak Runoff Flow Rate (m^3/s)	
	4-Hour Chicago	24-Hr SCS Type II
25 mm	0.036 (0.044)	-
2-Year	0.047 (0.051)	0.148 (0.199)
5-Year	0.099 (0.112)	0.270 (0.364)
10-Year	0.140 (0.164)	0.356 (0.496)
25-Year	0.201 (0.242)	0.474 (0.681)
50-Year	0.247 (0.305)	0.563 (0.828)
100-Year	0.296 (0.375)	0.660 (0.985)
Regional	0.382 (0.567)	-

(0.010) – Pre-development Flow Rates

4.3 STORMWATER MANAGEMENT FACILITY

The development will contain an extended detention wet pond constructed in accordance with the MECP Stormwater Management Planning and Design Manual (March 2003).

The outlet control structure will be located at the northeast corner of the SWM facility. Discharge from the facility will be released by an outlet structure to the roadside ditch on Old Lakeshore Road where it will be conveyed to the existing 1500 mm x 1500 mm box culvert crossing Old Lakeshore Road at the northeast corner of the property.

Extended detention will be achieved utilizing a 300 mm diameter orifice. All flows up to and including the 100-year event will be safely conveyed through the outlet control chamber facility. The Regional storm event will be safely conveyed to Old Lakeshore Road via overland flow.

The Visual OTTHYMO hydrologic model has been used to evaluate the function of the proposed wet pond. A summary of the storage volumes and water levels for the facility are provided in Table 5.

Table 5: Post-Development SWM Facility Volume Summary

Design Storm	Storage Volume Used (m^3)	Water Surface Elevation (m)
25 mm	44	189.15
2-year	246	189.78
5-year	371	190.02
10-year	527	190.27
25-year	664	190.43
50-year	765	190.55
100-year	870	190.65
Regional	2178	192.00

Detailed modelling results have been included in Appendix B for reference.

4.4 WATER QUALITY CONTROL

The primary outlet receiver for the site is the existing intermittent watercourse on the east side of the site and ultimately drains to Nottawasaga Bay which is a cold-water fishery. Level 1 'Enhanced' water quality treatment is required in the form of 80% total suspended solids (TSS) removal prior to off-site discharge. This will be achieved on-site through lot level controls and an oil/grit separator that will be sized during final design.

5 Siltation and Erosion Controls

Siltation and erosion controls will be implemented for all construction activities within the development site, including vegetation clearing, topsoil stripping, material stockpiling, road construction activities and grading operations. The detailed erosion and sediment control measures proposed will be implemented during and after construction and will be provided during final design and may include the following:

- heavy duty silt fence will be erected around the perimeter of the site before any grading operations commence to control sediment movement;
- a construction vehicle entrance will be constructed and maintained consisting of a stone mud mat to reduce off-site tracking of material; and
- rock check flow dams and straw bale check flow dams will be installed prior to construction and will be maintained and inspected throughout the course of construction as required to prevent the transportation of sediment and delirious materials offsite.

6 Summary

The proposed Stormwater Management Plan demonstrates that the development will meet the established criteria with respect to stormwater management set forth in governing documents and can proceed without negatively impacting the local drainage systems. Level 1 'Enhanced' water quality control in the form of 80% TSS removal and water quantity control in the form of post to pre-development peak flow matching will be satisfied through the use of internal storm sewers and overland flow culminating in an end-of-pipe stormwater management pond.

In conclusion, the proposed stormwater management plan supports the concept of an environmentally sustainable development and will mitigate anticipated stormwater impacts associated with the construction of the proposed development.

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CAMPERDOWN CONDOMINIUMS

SITE LOCATION PLAN

SCALE: N.T.S.	DATE: NOV/19	DWG NO. FIG. 1

Drawing Name: 117304-FIG01.dwg, Plotted: Nov 06, 2019

Appendix A: Pre-Development Hydrological Analysis

Project:	Camperdown Condominiums
File No.:	117304
Date:	March 2018
Designed By:	AS
Checked By:	RS
Subject:	CN Calculator

CURVE NUMBER, INITIAL ABSTRACTION & TIME TO PEAK CALCULATIONS

Catchment 101 **Area** 5.92 ha

WEIGHTED CN VALUE

Soil Series	Soil Series	Hydrologic Soil Group	Soil Texture	Runoff Coefficient Type	Catchment Soil Characteristics		Forest/Woodland			Pasture/Lawns			Meadows			Cultivated			Impervious			Wetland/Lakes/SWMF			Average CN for Soil Type
					Area	Percent	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	
TS	TECUMSETH	AB	Sand Loam	1	4.14	0.7	2.49	0.6	46	0.83	0.2	59	0.8288	0.2	51	0		68	0		100	0		50	49.6
WSL	WATERLOO	A	Sand Loam	1	1.78	0.3	0.53	0.30	32	0.71	0.40	49	0	0	38	0		62	0.5328	0.3	100	0		50	59.2
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
				Totals	5.92	1	3.0192	0.51		1.5392	0.26		0.8288	0.14		0	0		0.5328	0.09		0	0		52.48

Time of Concentration Calculations

For Runoff Coefficients greater than 0.4

Bransby-Williams Formula

Maximum Catchment Elevation	223	m
Minimum Catchment Elevation	190.5	m
Catchment length	200	m
Catchment Slope	16%	
Catchment Area	5.92	ha
Time of Concentration (Minutes)	**5.46**	
Time of Concentration (Hours)	**0.09**	
Time to Peak (2/3 x Time of Concentration)	**0.06**	

Time to Peak	**0.17 hrs**

For Runoff Coefficients less than 0.4

Airport Method

Maximum Catchment Elevation	223	m
Minimum Catchment Elevation	190.5	m
Catchment length	200	m
Catchment Slope	16%	
Catchment Area	5.92	ha
Time of Concentration (Minutes)	**15.39**	
Time of Concentration (Hours)	**0.26**	
Time to Peak (2/3 x Time of Concentration)	**0.17**	

Initial Abstraction	**7.7 mm**

Wetlands	12
Woods	10
Meadows	8
Cultivated	7
Lawns	5
Impervious	2

Runoff Coefficient	**0.26**

Landuse Type	Soil Series				
	TS	WSL	0	0	0
	1	1	#N/A	#N/A	#N/A
Forest/Woodland	0.18	0.18	#N/A	#N/A	#N/A
Cultivated	0.4	0.4	#N/A	#N/A	#N/A
Pasture/Lawn	0.22	0.22	#N/A	#N/A	#N/A
Impervious	0.95	0.95	#N/A	#N/A	#N/A
Wetland/Lake/SWMF	0.05	0.05	#N/A	#N/A	#N/A
Meadows	0.20	0.20	#N/A	#N/A	#N/A
Soil Series Total	0.192	0.427	#N/A	#N/A	#N/A

Project:	Camperdown Condominiums
File No.:	117304
Date:	March 2018
Designed By:	AS
Checked By:	RS
Subject:	CN Calculator

CURVE NUMBER, INITIAL ABSTRACTION & TIME TO PEAK CALCULATIONS

Catchment 102 **Area** 2.91 ha

WEIGHTED CN VALUE

Soil Series	Soil Series	Hydrologic Soil Group	Soil Texture	Runoff Coefficient Type	Catchment Soil Characteristics		Forest/Woodland			Pasture/Lawns			Meadows			Cultivated			Impervious			Wetland/Lakes/SWMF			Average CN for Soil Type
					Area	Percent	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	
TS	TECUMSETH	AB	Sand Loam	1	1.16	0.40	0.93	0.8	46	0.2328	0.2	59	0		51	0		68	0		100	0		50	48.6
WSL	WATERLOO	A	Sand Loam	1	0.73	0.25	0.58	0.8	32	0.15	0.2	49	0		38	0		62	0		100	0		50	35.4
DUC	DUNEDIN	D	Clay Loam or Clay	3	1.02	0.35	0.00	0	79	0.66	0.65	84	0		81	0		86	0.3565	0.35	100	0		50	89.6
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
				Totals	2.91	1.00	1.51	0.52		1.04	0.36		0	0		0	0		0.35648	0.1225		0	0		59.65

Time of Concentration Calculations

For Runoff Coefficients greater than 0.4

Bransby-Williams Formula

Maximum Catchment Elevation	223	m
Minimum Catchment Elevation	190.5	m
Catchment length	200	m
Catchment Slope	16%	
Catchment Area	2.91	ha
Time of Concentration (Minutes)	**5.87**	
Time of Concentration (Hours)	**0.10**	
Time to Peak (2/3 x Time of Concentration)	**0.07**	

For Runoff Coefficients less than 0.4

Airport Method

Maximum Catchment Elevation	223	m
Minimum Catchment Elevation	190.5	m
Catchment length	200	m
Catchment Slope	16%	
Catchment Area	2.91	ha
Time of Concentration (Minutes)	**13.53**	
Time of Concentration (Hours)	**0.23**	
Time to Peak (2/3 x Time of Concentration)	**0.15**	

Time to Peak	**0.15 hrs**

Initial Abstraction	**7.2325 mm**

Runoff Coefficient	**0.36**

Wetlands	12
Woods	10
Meadows	8
Cultivated	7
Lawns	5
Impervious	2

Landuse Type	Soil Series				
	TS	WSL	DUC	0	0
	1	1	3	#N/A	#N/A
Forest/Woodland	0.18	0.18	0.52	#N/A	#N/A
Cultivated	0.4	0.4	0.7	#N/A	#N/A
Pasture/Lawn	0.22	0.22	0.55	#N/A	#N/A
Impervious	0.95	0.95	0.95	#N/A	#N/A
Wetland/Lake/SWMF	0.05	0.05	0.05	#N/A	#N/A
Meadows	0.20	0.20	0.54	#N/A	#N/A
Soil Series Total	0.188	0.188	0.69	#N/A	#N/A

Ontario IDF CURVE LOOKUP

Active coordinate

44° 32' 15" N, 80° 23' 45" W (44.537500,-80.395833)

Retrieved: Fri, 05 Jan 2018 21:16:03 GMT

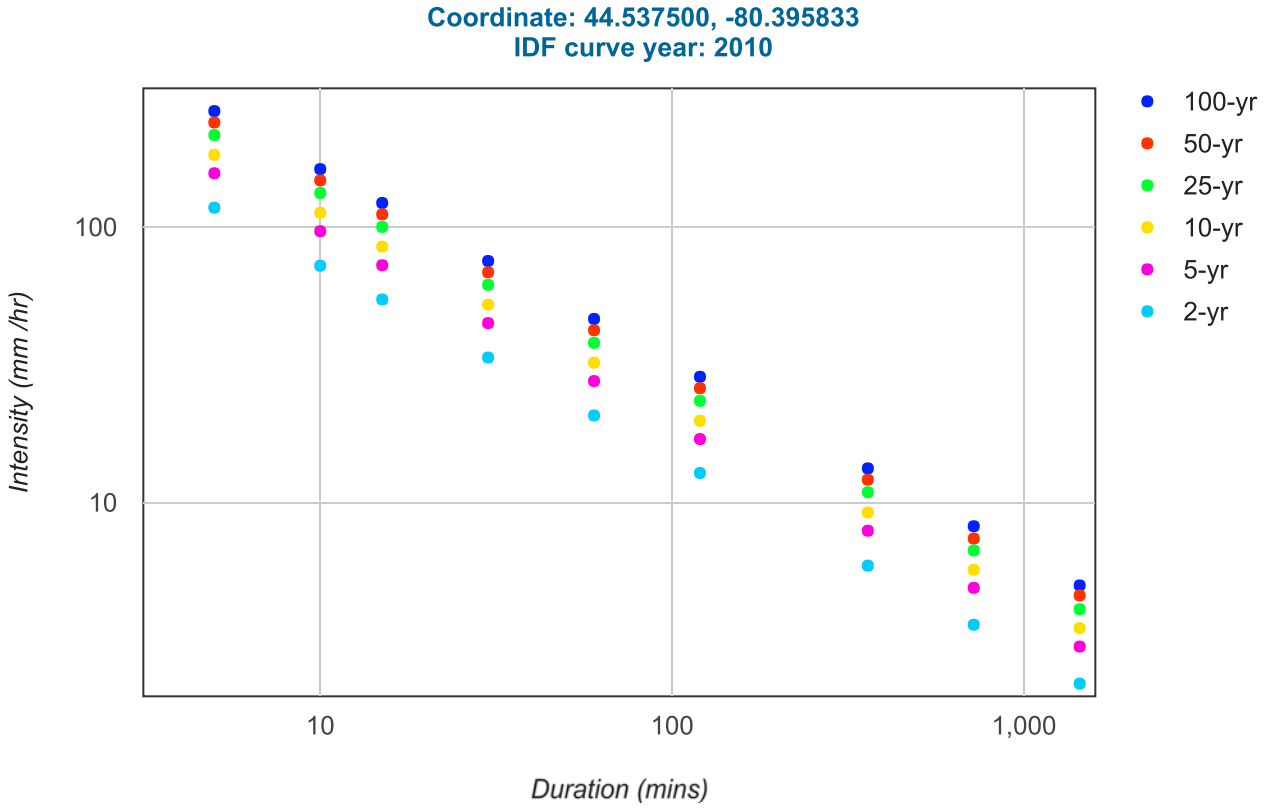
Location summary

These are the locations in the selection.

IDF Curve: 44° 32' 15" N, 80° 23' 45" W (44.537500,-80.395833)

Results

An IDF curve was found.



Coefficient summary

IDF Curve: 44° 32' 15" N, 80° 23' 45" W (44.537500,-80.395833)

Retrieved: Fri, 05 Jan 2018 21:16:03 GMT

Data year: 2010
IDF curve year: 2010

Return period	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
A	20.7	27.6	32.2	38.0	42.2	46.4
B	-0.699	-0.699	-0.699	-0.699	-0.699	-0.699

Statistics

Rainfall intensity (mm hr^{-1})

Duration	5-min	10-min	15-min	30-min	1-hr	2-hr	6-hr	12-hr	24-hr
2-yr	117.6	72.4	54.6	33.6	20.7	12.8	5.9	3.6	2.2
5-yr	156.8	96.6	72.7	44.8	27.6	17.0	7.9	4.9	3.0
10-yr	182.9	112.7	84.9	52.3	32.2	19.8	9.2	5.7	3.5
25-yr	215.8	133.0	100.1	61.7	38.0	23.4	10.9	6.7	4.1
50-yr	239.7	147.7	111.2	68.5	42.2	26.0	12.1	7.4	4.6
100-yr	263.6	162.3	122.3	75.3	46.4	28.6	13.3	8.2	5.0

Rainfall depth (mm)

Duration	5-min	10-min	15-min	30-min	1-hr	2-hr	6-hr	12-hr	24-hr
2-yr	9.8	12.1	13.6	16.8	20.7	25.5	35.5	43.7	53.9
5-yr	13.1	16.1	18.2	22.4	27.6	34.0	47.3	58.3	71.8
10-yr	15.2	18.8	21.2	26.1	32.2	39.7	55.2	68.0	83.8
25-yr	18.0	22.2	25.0	30.8	38.0	46.8	65.2	80.3	98.9
50-yr	20.0	24.6	27.8	34.3	42.2	52.0	72.4	89.2	109.8
100-yr	22.0	27.1	30.6	37.7	46.4	57.2	79.6	98.0	120.8

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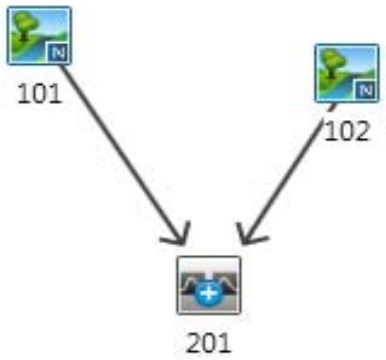
CAMPERDOWN CONDOMINIUM
PRE-DEVELOPMENT CONDITIONS



1	Nashyd	1	Route Pipe	1	Duhyd
1	Standhyd	1	Route Channel	1	Diverthyd
1	Addhyd	1	Route Reservoir		

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Project:	Camperdown Condominium		
File No.:	117304		
Subject:	Otthymo Flow Schematic		
Date:	Nov 2019	**Figure:**	1

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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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\072a7
622-91ba-426a-b460-64955a0e79ef\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\072a7
622-91ba-426a-b460-64955a0e79ef\scen


DATE: 11/06/2019                          TIME: 10:42:18

USER:


COMMENTS: _____________________________________________________________


  ***********************************************
  ** SIMULATION : Run 01                       **
  ***********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    READ STORM                6.0
    [ Ptot= 24.97 mm ]
    fname :
C:\Users\aschoof\AppData\Local\Temp\341e2ecf-1ead-49b0-bcdf-2b5feaea94a3\395184f1-35
bb-4c48-8e68-693
    remark: OWEN SOUND 25 mm (from a 2 year-4hr storm)

*
 ** CALIB NASHYD         0101  1  2.0    5.92    0.03  2.13   1.21 0.05   0.000
    [CN=52.5         ]
    [ N = 3.0:Tp 0.17]
*
 ** CALIB NASHYD         0102  1  2.0    2.91    0.02  2.10   1.66 0.07   0.000
    [CN=59.7         ]
```



```
    [ N = 3.0:Tp 0.15]
*
    ADD [  0101+  0102]  0201  3  2.0    8.83    0.04  2.10   1.36  n/a   0.000
*
================================================================================
======================


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\5f24e
3d2-8ab3-4143-9b38-ca5b6e82f73e\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\5f24e
3d2-8ab3-4143-9b38-ca5b6e82f73e\scen


DATE: 11/06/2019                          TIME: 10:42:18

USER:


COMMENTS: _____________________________________________________________


  ***********************************************
  ** SIMULATION : Run 02                       **
  ***********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    CHIC STORM               15.0
    [ Ptot= 31.36 mm ]
*
 ** CALIB NASHYD         0101  1  2.0    5.92    0.03  1.40   2.21 0.07   0.000
    [CN=52.5         ]
    [ N = 3.0:Tp 0.17]
*
 ** CALIB NASHYD         0102  1  2.0    2.91    0.02  1.37   2.97 0.09   0.000
    [CN=59.7         ]
    [ N = 3.0:Tp 0.15]
```

```
*
    ADD [  0101+  0102]  0201  3  2.0    8.83    0.05  1.37   2.46  n/a   0.000
*
================================================================================
======================


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\f421d
8f0-96b4-4a3d-8bbf-0ca22a158c6b\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\f421d
8f0-96b4-4a3d-8bbf-0ca22a158c6b\scen


DATE: 11/06/2019                          TIME: 10:42:18

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : Run 03                         **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    CHIC STORM                15.0
    [ Ptot= 41.81 mm ]
*
 ** CALIB NASHYD         0101  1  2.0    5.92    0.07  1.37   4.40 0.11   0.000
    [CN=52.5        ]
    [ N = 3.0:Tp 0.17]
*
 ** CALIB NASHYD         0102  1  2.0    2.91    0.05  1.33   5.79 0.14   0.000
    [CN=59.7        ]
    [ N = 3.0:Tp 0.15]
*
```



```
    ADD [  0101+  0102]  0201  3  2.0    8.83    0.11  1.37   4.86  n/a   0.000
*
 FINISH

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


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\9dc74
5c6-67cd-4763-9d84-bbb05ca214f6\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\9dc74
5c6-67cd-4763-9d84-bbb05ca214f6\scen


DATE: 11/06/2019                          TIME: 10:42:18

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : Run 04                         **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    CHIC STORM                15.0
    [ Ptot= 48.78 mm ]
*
 ** CALIB NASHYD         0101  1  2.0    5.92    0.10  1.37   6.22 0.13   0.000
    [CN=52.5        ]
    [ N = 3.0:Tp 0.17]
*
```

```
 ** CALIB NASHYD         0102  1  2.0    2.91    0.07  1.33   8.09 0.17   0.000
    [CN=59.7         ]
    [ N = 3.0:Tp 0.15]
*
    ADD [  0101+  0102]  0201  3  2.0    8.83    0.16  1.37   6.84  n/a   0.000
*
================================================================================
======================


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

        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\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\ae9eb
bb1-9df4-4a2c-84f5-56decb77878a\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\ae9eb
bb1-9df4-4a2c-84f5-56decb77878a\scen


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COMMENTS: _____________________________________________________________


  ***********************************************
  ** SIMULATION : Run 05                       **
  ***********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
   CHIC STORM               15.0
   [ Ptot= 57.56 mm ]
*
 ** CALIB NASHYD         0101  1  2.0    5.92    0.14  1.37   8.88 0.15   0.000
    [CN=52.5         ]
    [ N = 3.0:Tp 0.17]
*
 ** CALIB NASHYD         0102  1  2.0    2.91    0.10  1.33  11.40 0.20   0.000
```



```
    [CN=59.7         ]
    [ N = 3.0:Tp 0.15]
*
    ADD [  0101+  0102]  0201  3  2.0    8.83    0.24  1.37   9.71  n/a   0.000
*
================================================================================
======================


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\2a66f
c61-7e89-47f2-8b9e-736ee42e356e\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\2a66f
c61-7e89-47f2-8b9e-736ee42e356e\scen


DATE: 11/06/2019                          TIME: 10:42:18

USER:


COMMENTS: _____________________________________________________________


  ***********************************************
  ** SIMULATION : Run 06                       **
  ***********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
   CHIC STORM               15.0
   [ Ptot= 63.93 mm ]
*
 ** CALIB NASHYD         0101  1  2.0    5.92    0.18  1.37  11.04 0.17   0.000
    [CN=52.5         ]
    [ N = 3.0:Tp 0.17]
*
 ** CALIB NASHYD         0102  1  2.0    2.91    0.13  1.33  14.06 0.22   0.000
    [CN=59.7         ]
```

```
    [ N = 3.0:Tp 0.15]
*
    ADD [  0101+  0102]  0201  3  2.0    8.83    0.31  1.37  12.04  n/a   0.000
*
================================================================================
======================


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\bcc5d
207-9d45-42f4-af66-24f9ce52ad17\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\bcc5d
207-9d45-42f4-af66-24f9ce52ad17\scen


DATE: 11/06/2019                          TIME: 10:42:18

USER:


COMMENTS: _____________________________________________________________


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

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    CHIC STORM                15.0
    [ Ptot= 70.29 mm ]
*
 ** CALIB NASHYD         0101  1  2.0    5.92    0.22  1.37  13.39 0.19   0.000
    [CN=52.5         ]
    [ N = 3.0:Tp 0.17]
*
 ** CALIB NASHYD         0102  1  2.0    2.91    0.15  1.33  16.93 0.24   0.000
    [CN=59.7         ]
    [ N = 3.0:Tp 0.15]
```



```
*
   ADD [  0101+  0102]  0201  3  2.0    8.83    0.38  1.33  14.55  n/a   0.000
*
================================================================================
======================


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\a4614
08b-251c-4502-aee3-ceb22c683360\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\a4614
08b-251c-4502-aee3-ceb22c683360\scen


DATE: 11/06/2019                          TIME: 10:42:18

USER:


COMMENTS: _____________________________________________________________


  ***********************************************
  ** SIMULATION : Run 08                       **
  ***********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    READ STORM                12.0
    [ Ptot=193.00 mm ]
    fname :
C:\Users\aschoof\AppData\Local\Temp\341e2ecf-1ead-49b0-bcdf-2b5feaea94a3\4c311f83-81
af-42c6-ab26-d9d
    remark: TIMMINS REGIONAL 12 HOUR DURATION STORM

*
 ** CALIB NASHYD         0101  1  2.0    5.92    0.36  7.00  82.67 0.43   0.000
    [CN=52.5         ]
    [ N = 3.0:Tp 0.17]
```

```
*
 ** CALIB NASHYD         0102  1  2.0    2.91    0.21  7.00  96.49 0.50   0.000
    [CN=59.7         ]
    [ N = 3.0:Tp 0.15]
*
    ADD [  0101+  0102]  0201  3  2.0    8.83    0.57  7.00  87.23  n/a   0.000
*
```

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


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\67109
a76-acb2-47aa-8e2a-6345a87fc810\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\67109
a76-acb2-47aa-8e2a-6345a87fc810\scen


DATE: 11/06/2019                          TIME: 10:44:49

USER:


COMMENTS: _____________________________________________________________


  ***********************************************
  ** SIMULATION : Run 01                       **
  ***********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    MASS STORM                15.0
    [ Ptot= 53.74 mm ]
*
 ** CALIB NASHYD         0101  1  2.0    5.92    0.12 11.83   7.68 0.14   0.000
    [CN=52.5         ]
    [ N = 3.0:Tp 0.17]
*
 ** CALIB NASHYD         0102  1  2.0    2.91    0.08 11.80   9.91 0.18   0.000
    [CN=59.7         ]
    [ N = 3.0:Tp 0.15]
*
    ADD [  0101+  0102]  0201  3  2.0    8.83    0.20 11.83   8.41  n/a   0.000
*
================================================================================
```



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


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\f393b
f5d-ff8f-4285-b409-7736cec83500\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\f393b
f5d-ff8f-4285-b409-7736cec83500\scen


DATE: 11/06/2019                          TIME: 10:44:49

USER:


COMMENTS: _____________________________________________________________


  ***********************************************
  ** SIMULATION : Run 02                       **
  ***********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    MASS STORM                15.0
    [ Ptot= 71.58 mm ]
*
 ** CALIB NASHYD         0101  1  2.0    5.92    0.22 11.83  13.89 0.19   0.000
    [CN=52.5         ]
    [ N = 3.0:Tp 0.17]
*
 ** CALIB NASHYD         0102  1  2.0    2.91    0.15 11.80  17.53 0.24   0.000
    [CN=59.7         ]
    [ N = 3.0:Tp 0.15]
*
    ADD [  0101+  0102]  0201  3  2.0    8.83    0.36 11.80  15.09  n/a   0.000
*
 FINISH
```

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


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\5180e
208-118e-4943-a8d0-2b76bca49467\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\5180e
208-118e-4943-a8d0-2b76bca49467\scen


DATE: 11/06/2019                          TIME: 10:44:49

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : Run 03                         **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    MASS STORM                15.0
    [ Ptot= 83.55 mm ]
*
 ** CALIB NASHYD         0101  1  2.0    5.92    0.30 11.83  18.81 0.23   0.000
    [CN=52.5        ]
    [ N = 3.0:Tp 0.17]
*
 ** CALIB NASHYD         0102  1  2.0    2.91    0.20 11.80  23.47 0.28   0.000
    [CN=59.7        ]
    [ N = 3.0:Tp 0.15]
*
```



```
    ADD [  0101+  0102]  0201  3  2.0    8.83    0.50 11.80  20.34  n/a   0.000
*
================================================================================
======================


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\6e6bc
7fb-557c-468c-a763-b8a630ebe11e\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\6e6bc
7fb-557c-468c-a763-b8a630ebe11e\scen


DATE: 11/06/2019                          TIME: 10:44:49

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : Run 04                         **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    MASS STORM                15.0
    [ Ptot= 98.60 mm ]
*
 ** CALIB NASHYD         0101  1  2.0    5.92    0.41 11.83  25.75 0.26   0.000
    [CN=52.5        ]
    [ N = 3.0:Tp 0.17]
*
 ** CALIB NASHYD         0102  1  2.0    2.91    0.27 11.80  31.72 0.32   0.000
    [CN=59.7        ]
    [ N = 3.0:Tp 0.15]
*
    ADD [  0101+  0102]  0201  3  2.0    8.83    0.68 11.80  27.72  n/a   0.000
```

```
*
================================================================================
======================


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\de5e8
f76-c456-442a-82c1-bb8559fc12cf\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\de5e8
f76-c456-442a-82c1-bb8559fc12cf\scen


DATE: 11/06/2019                          TIME: 10:44:49

USER:


COMMENTS: _____________________________________________________________


  ***********************************************
  ** SIMULATION : Run 05                       **
  ***********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    MASS STORM                15.0
    [ Ptot=109.47 mm ]
*
 ** CALIB NASHYD         0101  1  2.0    5.92    0.50 11.83  31.22 0.29   0.000
    [CN=52.5         ]
    [ N = 3.0:Tp 0.17]
*
 ** CALIB NASHYD         0102  1  2.0    2.91    0.33 11.80  38.14 0.35   0.000
    [CN=59.7         ]
    [ N = 3.0:Tp 0.15]
*
    ADD [  0101+  0102]  0201  3  2.0    8.83    0.83 11.80  33.50  n/a   0.000
*
```



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


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\6bd8f
db0-be21-42f6-b312-abbedaeeeba6\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\6bd8f
db0-be21-42f6-b312-abbedaeeeba6\scen


DATE: 11/06/2019                          TIME: 10:44:49

USER:


COMMENTS: _____________________________________________________________


  ***********************************************
  ** SIMULATION : Run 06                       **
  ***********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    MASS STORM                15.0
    [ Ptot=120.44 mm ]
*
 ** CALIB NASHYD         0101  1  2.0    5.92    0.60 11.83  37.08 0.31   0.000
    [CN=52.5         ]
    [ N = 3.0:Tp 0.17]
*
 ** CALIB NASHYD         0102  1  2.0    2.91    0.39 11.80  44.96 0.37   0.000
    [CN=59.7         ]
    [ N = 3.0:Tp 0.15]
*
    ADD [  0101+  0102]  0201  3  2.0    8.83    0.98 11.80  39.68  n/a   0.000
*
```

Appendix B: Post-Development Hydrological Analysis

TATHAM ENGINEERING	Project: Camperdown Condominiums	Date: June 2018
	File No.: 117304	Designed: AS
	Subject: Impervious Calculations	Checked RS

Site Area (Catchment 201)	=	22,000	sq.m	
Impervious Area	=	11,581	sq.m	(Asphalt, Driveway, House, Pond)
Pervious Area	=	10,419	sq.m	
Directly Connected Area	=	4,785	sq.m	(Asphalt, Driveway, House)
% Impervious	=	52.6		
% Directly Connected	=	21.8		

Site Area (Catchment 205)	=	300	sq.m	
Impervious Area	=	168	sq.m	(Asphalt, Driveway, House)
Pervious Area	=	132	sq.m	
Directly Connected Area	=	84	sq.m	(Asphalt, Driveway, House)
% Impervious	=	56.0		
% Directly Connected	=	28.0		

Site Area (Catchment 206)	=	7,300	sq.m	
Impervious Area	=	2,027	sq.m	(Asphalt, Driveway, House)
Pervious Area	=	5,273	sq.m	
Directly Connected Area	=	867	sq.m	(Asphalt, Driveway, House)
% Impervious	=	27.8		
% Directly Connected	=	11.9		

Project:	Camperdown Condominiums
File No.:	117304
Date:	June 2018
Designed By:	AS
Checked By:	RS
Subject:	CN Calculator

CURVE NUMBER, INITIAL ABSTRACTION & TIME TO PEAK CALCULATIONS

Catchment 202 **Area** 1.63 ha

WEIGHTED CN VALUE

Soil Series	Soil Series	Hydrologic Soil Group	Soil Texture	Runoff Coefficient Type	Catchment Soil Characteristics		Forest/Woodland			Pasture/Lawns			Meadows			Cultivated			Impervious			Wetland/Lakes/SWMF			Average CN for Soil Type
					Area	Percent	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	
WSL	WATERLOO	A	Sand Loam	1	1.22	0.75	1.22	1	32	0		49	0		38	0		62	0		100	0		50	32
DUC	DUNEDIN	D	Clay Loam or Clay	3	0.41	0.25	0.29	0.7	79	0.12	0.3	84	0		81	0		86	0		100	0		50	80.5
	#N/A	#N/A	#N/A	#N/A	0.00		0.00		#N/A	0.00		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
				Totals	**1.63**	**1.00**	**1.51**	**0.93**		**0.12**	**0.08**		**0**	**0**		**0**	**0**		**0**	**0**		**0**	**0**		**44.13**

Time of Concentration Calculations

For Runoff Coefficients greater than 0.4

Bransby-Williams Formula

Maximum Catchment Elevation	223	m
Minimum Catchment Elevation	190.5	m
Catchment length	200	m
Catchment Slope	16%	
Catchment Area	1.63	ha
Time of Concentration (Minutes)	**6.22**	
Time of Concentration (Hours)	**0.10**	
Time to Peak (2/3 x Time of Concentration)	**0.07**	

For Runoff Coefficients less than 0.4

Airport Method

Maximum Catchment Elevation	223	m
Minimum Catchment Elevation	190.5	m
Catchment length	200	m
Catchment Slope	16%	
Catchment Area	1.63	ha
Time of Concentration (Minutes)	**15.30**	
Time of Concentration (Hours)	**0.25**	
Time to Peak (2/3 x Time of Concentration)	**0.17**	

Time to Peak	**0.17 hrs**

Initial Abstraction	**9.625 mm**

Wetlands	12
Woods	10
Meadows	8
Cultivated	7
Lawns	5
Impervious	2

Runoff Coefficient	**0.27**

Landuse Type	Soil Series				
	WSL	DUC	0	0	0
	1	3	#N/A	#N/A	#N/A
Forest/Woodland	0.18	0.52	#N/A	#N/A	#N/A
Cultivated	0.4	0.7	#N/A	#N/A	#N/A
Pasture/Lawn	0.22	0.55	#N/A	#N/A	#N/A
Impervious	0.95	0.95	#N/A	#N/A	#N/A
Wetland/Lake/SWMF	0.05	0.05	#N/A	#N/A	#N/A
Meadows	0.20	0.54	#N/A	#N/A	#N/A
Soil Series Total	0.18	0.529	#N/A	#N/A	#N/A

Project:	Camperdown Condominiums
File No.:	117304
Date:	June 2018
Designed By:	AS
Checked By:	RS
Subject:	CN Calculator

CURVE NUMBER, INITIAL ABSTRACTION & TIME TO PEAK CALCULATIONS

Catchment 203 **Area** 2.89 ha

WEIGHTED CN VALUE

Soil Series	Soil Series	Hydrologic Soil Group	Soil Texture	Runoff Coefficient Type	Catchment Soil Characteristics		Forest/Woodland			Pasture/Lawns			Meadows			Cultivated			Impervious			Wetland/Lakes/SWMF			Average CN for Soil Type
					Area	Percent	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	
TS	TECUMSETH	AB	Sand Loam	1	0.98	0.34	0.98	1	46	0		59	0		51	0		68	0		100	0		50	46
WSL	WATERLOO	A	Sand Loam	1	1.91	0.66	1.43	0.75	32	0.29	0.15	49	0		38	0		62	0.1907	0.1	100	0		50	41.35
	#N/A	#N/A	#N/A	#N/A	0.00				#N/A			#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
				Totals	**2.89**	**1.00**	**2.41**	**0.84**		**0.29**	**0.10**		**0**	**0**		**0**	**0**		**0.19074**	**0.066**		**0**	**0**		**42.93**

Time of Concentration Calculations

For Runoff Coefficients greater than 0.4

Bransby-Williams Formula

Maximum Catchment Elevation	223	m
Minimum Catchment Elevation	190.5	m
Catchment length	200	m
Catchment Slope	16%	
Catchment Area	2.89	ha
Time of Concentration (Minutes)	**5.87**	
Time of Concentration (Hours)	**0.10**	
Time to Peak (2/3 x Time of Concentration)	**0.07**	

For Runoff Coefficients less than 0.4

Airport Method

Maximum Catchment Elevation	223	m
Minimum Catchment Elevation	190.5	m
Catchment length	200	m
Catchment Slope	16%	
Catchment Area	2.89	ha
Time of Concentration (Minutes)	**15.90**	
Time of Concentration (Hours)	**0.26**	
Time to Peak (2/3 x Time of Concentration)	**0.18**	

Time to Peak	**0.18 hrs**

Initial Abstraction	**8.977 mm**

Wetlands	12
Woods	10
Meadows	8
Cultivated	7
Lawns	5
Impervious	2

Runoff Coefficient	**0.23**

Landuse Type	Soil Series				
	TS	WSL	0	0	0
	1	1	#N/A	#N/A	#N/A
Forest/Woodland	0.18	0.18	#N/A	#N/A	#N/A
Cultivated	0.4	0.4	#N/A	#N/A	#N/A
Pasture/Lawn	0.22	0.22	#N/A	#N/A	#N/A
Impervious	0.95	0.95	#N/A	#N/A	#N/A
Wetland/Lake/SWMF	0.05	0.05	#N/A	#N/A	#N/A
Meadows	0.20	0.20	#N/A	#N/A	#N/A
Soil Series Total	0.18	0.263	#N/A	#N/A	#N/A

Project:	Camperdown Condominiums
File No.:	117304
Date:	June 2018
Designed By:	AS
Checked By:	RS
Subject:	CN Calculator

CURVE NUMBER, INITIAL ABSTRACTION & TIME TO PEAK CALCULATIONS

Catchment 204 **Area** 0.64 ha

WEIGHTED CN VALUE

Soil Series	Soil Series	Hydrologic Soil Group	Soil Texture	Runoff Coefficient Type	Catchment Soil Characteristics		Forest/Woodland			Pasture/Lawns			Meadows			Cultivated			Impervious			Wetland/Lakes/SWMF			Average CN for Soil Type
					Area	Percent	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	
TS	TECUMSETH	AB	Sand Loam	1	0.64	1.00	0.54	0.84	46	0.1024	0.16	59	0		51	0		68	0		100	0		50	48.08
	#N/A	#N/A	#N/A	#N/A	0.00		0.00		#N/A	0.00		#N/A	0		#N/A	0		#N/A	0	0.1	#N/A	0		#N/A	0
	#N/A	#N/A	#N/A	#N/A	0.00				#N/A			#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
				Totals	0.64	1.00	0.54	0.84		0.10	0.16		0	0		0	0		0	0		0	0		48.08

Time of Concentration Calculations

For Runoff Coefficients greater than 0.4

Bransby-Williams Formula

Maximum Catchment Elevation	192	m
Minimum Catchment Elevation	190	m
Catchment length	115	m
Catchment Slope	2%	
Catchment Area	0.64	ha
Time of Concentration (Minutes)	**6.14**	
Time of Concentration (Hours)	**0.10**	
Time to Peak (2/3 x Time of Concentration)	**0.07**	

For Runoff Coefficients less than 0.4

Airport Method

Maximum Catchment Elevation	192	m
Minimum Catchment Elevation	190	m
Catchment length	115	m
Catchment Slope	2%	
Catchment Area	0.64	ha
Time of Concentration (Minutes)	**29.61**	
Time of Concentration (Hours)	**0.49**	
Time to Peak (2/3 x Time of Concentration)	**0.33**	

Time to Peak	**0.33 hrs**

Initial Abstraction	**9.2 mm**

Runoff Coefficient	**0.08**

Wetlands	12
Woods	10
Meadows	8
Cultivated	7
Lawns	5
Impervious	2

Landuse Type	Soil Series				
	TS	0	0	0	0
	1	#N/A	#N/A	#N/A	#N/A
Forest/Woodland	0.08	#N/A	#N/A	#N/A	#N/A
Cultivated	0.22	#N/A	#N/A	#N/A	#N/A
Pasture/Lawn	0.1	#N/A	#N/A	#N/A	#N/A
Impervious	0.95	#N/A	#N/A	#N/A	#N/A
Wetland/Lake/SWMF	0.05	#N/A	#N/A	#N/A	#N/A
Meadows	0.09	#N/A	#N/A	#N/A	#N/A
Soil Series Total	0.0832	#N/A	#N/A	#N/A	#N/A

Project:	Camperdown Condominiums
File No.:	117304
Date:	March 2018
Designed By:	AS
Checked By:	RS
Subject:	CN Calculator

CURVE NUMBER, INITIAL ABSTRACTION & TIME TO PEAK CALCULATIONS

Catchment 207 **Area** 0.78 ha

WEIGHTED CN VALUE

Soil Series	Soil Series	Hydrologic Soil Group	Soil Texture	Runoff Coefficient Type	Catchment Soil Characteristics		Forest/Woodland			Pasture/Lawns			Meadows			Cultivated			Impervious			Wetland/Lakes/SWMF			Average CN for Soil Type
					Area	Percent	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	Area	Percent	CN	
TS	TECUMSETH	AB	Sand Loam	1	0.78	1.00	0.08	0.1	46	0.6396	0.82	59	0		51	0		68	0.0624	0.08	100	0		50	60.98
	#N/A	#N/A	#N/A	#N/A	0.00		0.00		#N/A	0.00		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
	#N/A	#N/A	#N/A	#N/A	0.00				#N/A			#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
	#N/A	#N/A	#N/A	#N/A	0		0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0		#N/A	0
				Totals	**0.78**	**1.00**	**0.08**	**0.10**		**0.64**	**0.82**		**0**	**0**		**0**	**0**		**0.0624**	**0.08**		**0**	**0**		**60.98**

Time of Concentration Calculations

For Runoff Coefficients greater than 0.4

Bransby-Williams Formula

Maximum Catchment Elevation	191	m
Minimum Catchment Elevation	187	m
Catchment length	100	m
Catchment Slope	4%	
Catchment Area	0.78	ha
Time of Concentration (Minutes)	**4.43**	
Time of Concentration (Hours)	**0.07**	
Time to Peak (2/3 x Time of Concentration)	**0.05**	

For Runoff Coefficients less than 0.4

Airport Method

Maximum Catchment Elevation	191	m
Minimum Catchment Elevation	187	m
Catchment length	100	m
Catchment Slope	4%	
Catchment Area	0.78	ha
Time of Concentration (Minutes)	**19.27**	
Time of Concentration (Hours)	**0.32**	
Time to Peak (2/3 x Time of Concentration)	**0.21**	

Time to Peak	**0.21 hrs**

Initial Abstraction	**5.26 mm**

Wetlands	12
Woods	10
Meadows	8
Cultivated	7
Lawns	5
Impervious	2

Runoff Coefficient	**0.17**

Landuse Type	Soil Series				
	TS	0	0	0	0
	1	#N/A	#N/A	#N/A	#N/A
Forest/Woodland	0.08	#N/A	#N/A	#N/A	#N/A
Cultivated	0.22	#N/A	#N/A	#N/A	#N/A
Pasture/Lawn	0.1	#N/A	#N/A	#N/A	#N/A
Impervious	0.95	#N/A	#N/A	#N/A	#N/A
Wetland/Lake/SWMF	0.05	#N/A	#N/A	#N/A	#N/A
Meadows	0.09	#N/A	#N/A	#N/A	#N/A
Soil Series Total	0.166	#N/A	#N/A	#N/A	#N/A

Camperdown Condominiums
SWM Pond Volume Table

Designed: AS
Checked: RS
Date: Nov 2019

Wet Pond Characteristics:

Side Slope: 5 :1
Top Elevation: 190.80 m
Bottom Elev: 188.50 m
Permanent Pool: 189.50 m
Stage 0.1 m

Stormwater Management Pond								
Pond Geometry				Pond Volume (m^3)				
Elevation (m)	Depth (m)	Area (m^2)	Avg. Area (m)	Dead	Accum. Dead	Live	Accum. Live	Accum. Total
188.50	0.00	5.00	5.00	0.00	0.00		0.00	0.00
188.60	0.10	17.00	11.00	1.10	1.10		0.00	1.10
188.70	0.20	31.00	24.00	2.40	3.50		0.00	3.50
188.80	0.30	49.00	40.00	4.00	7.50		0.00	7.50
188.90	0.40	78.00	63.50	6.35	13.85		0.00	13.85
189.00	0.50	110.00	94.00	9.40	23.25		0.00	23.25
189.10	0.60	154.00	132.00	13.20	36.45		0.00	36.45
189.20	0.70	191.00	172.50	17.25	53.70		0.00	53.70
189.30	0.80	238.00	214.50	21.45	75.15		0.00	75.15
189.40	0.90	283.00	260.50	26.05	101.20		0.00	101.20
189.50	1.00	338.00	310.50	31.05	132.25	0.00	0.00	132.25
189.60	1.10	374.00	356.00		132.25	35.60	35.60	167.85
189.70	1.20	429.00	401.50		132.25	40.15	75.75	208.00
189.80	1.30	467.00	448.00		132.25	44.80	120.55	252.80
189.90	1.40	523.00	495.00		132.25	49.50	170.05	302.30
190.00	1.50	578.00	550.50		132.25	55.05	225.10	357.35
190.10	1.60	635.00	606.50		132.25	60.65	285.75	418.00
190.20	1.70	697.00	666.00		132.25	66.60	352.35	484.60
190.30	1.80	761.00	729.00		132.25	72.90	425.25	557.50
190.40	1.90	827.00	794.00		132.25	79.40	504.65	636.90
190.50	2.00	894.00	860.50		132.25	86.05	590.70	722.95
190.60	2.10	963.00	928.50		132.25	92.85	683.55	815.80
190.70	2.20	1034.00	998.50		132.25	99.85	783.40	915.65
190.80	2.30	1106.00	1070.00		132.25	107.00	890.40	1022.65

Camperdown Condominiums
SWM Pond Volume Table

Designed: AS
Checked: RS
Date: Nov 2019

Pond Discharge Table:

Orifice #1:		**Orifice #2:**			Overflow Weir:		
Diameter:	300	Diameter:	0	mm	Bottom Length:	3.5	m
Area:	0.0707	Area:	0.0000	m^2	Sill Elevation:	190.4	m
C:	0.63	C:	0.63		D/S Weir Length:	10	m
Invert:	189.50	Invert:		m	Side Slopes (H:V)	5	:1

	Orifice #1		Orifice #2		Overflow Weir			
Elevation (m)	Head (m)	Discharge (m)	Head (m)	Discharge (m)	Head (m)	Discharge (m)	Hydraulic Control	Discharge (m^3/s)
188.50	0.000	0.000	188.500	0.000	0	0	Orifice	0.000
188.60	0.000	0.000	188.600	0.000	0	0	Orifice	0.000
188.70	0.000	0.000	188.700	0.000	0	0	Orifice	0.000
188.80	0.000	0.000	188.800	0.000	0	0	Orifice	0.000
188.90	0.000	0.000	188.900	0.000	0	0	Orifice	0.000
189.00	0.000	0.000	189.000	0.000	0	0	Orifice	0.000
189.10	0.000	0.000	189.100	0.000	0	0	Orifice	0.000
189.20	0.000	0.000	189.200	0.000	0	0	Orifice	0.000
189.30	0.000	0.000	189.300	0.000	0	0	Orifice	0.000
189.40	0.000	0.000	189.400	0.000	0	0	Orifice	0.000
189.50	0.000	0.000	189.500	0.000	0	0	Orifice	0.000
189.60	0.000	0.000	189.600	0.000	0	0	Orifice	0.000
189.70	0.050	0.044	189.700	0.000	0	0	Orifice	0.044
189.80	0.150	0.076	189.800	0.000	0	0	Orifice	0.076
189.90	0.250	0.099	189.900	0.000	0	0	Orifice	0.099
190.00	0.350	0.117	190.000	0.000	0	0	Orifice	0.117
190.10	0.450	0.132	190.100	0.000	0	0	Orifice	0.132
190.20	0.550	0.146	190.200	0.000	0	0	Orifice	0.146
190.30	0.650	0.159	190.300	0.000	0	0	Orifice	0.159
190.40	0.750	0.171	190.400	0.000	0	0	Orifice	0.171
190.50	0.850	0.182	190.500	0.000	0.1	0.17	Orifice	0.352
190.60	0.950	0.192	190.600	0.000	0.20	0.53	Orifice/Weir	0.722
190.70	1.050	0.202	190.700	0.000	0.30	1.09	Orifice/Weir	1.292
190.80	1.150	0.212	190.800	0.000	0.40	1.85	Orifice/Weir	2.062

Comments:

1 0.15 - Calculation based on prefered NVCA weir flow spreadsheet
2 N/A - Not Applicable
3 Orifice Equation is: Q = C x A x (2gH)^0.5

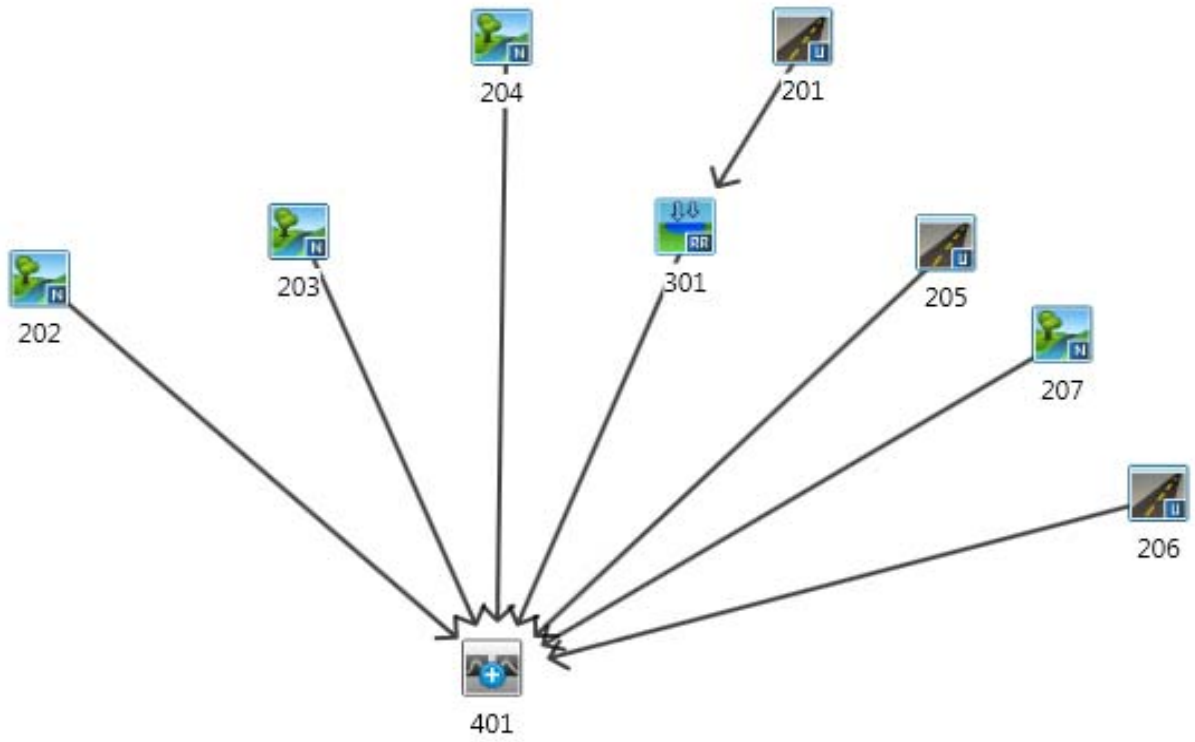
Where:
Q = flow rate (cms)
C = constant
A = area of opening(sq. m)
H = net head on the orifice
g = Acceleration due to gravity

Camperdown Condominiums
Stage-Storage-Discharge

Designed:	AS
Checked:	RS
Date:	Nov 2019

Stormwater Management Pond								
Pond Geometry				Pond Volume (m^3)				Discharge (m^3/s)
Elevation (m)	Depth (m)	Area (m^2)	Avg. Area (m)	Dead	Accum. Dead	Live	Accum. Live	
188.50	0.00	5.00	5.00	0.00	0.00	0.00	0.00	0.000
188.60	0.10	17.00	11.00	1.10	1.10	0.00	0.00	0.000
188.70	0.20	31.00	24.00	2.40	3.50	0.00	0.00	0.000
188.80	0.30	49.00	40.00	4.00	7.50	0.00	0.00	0.000
188.90	0.40	78.00	63.50	6.35	13.85	0.00	0.00	0.000
189.00	0.50	110.00	94.00	9.40	23.25	0.00	0.00	0.000
189.10	0.60	154.00	132.00	13.20	36.45	0.00	0.00	0.000
189.20	0.70	191.00	172.50	17.25	53.70	0.00	0.00	0.000
189.30	0.80	238.00	214.50	21.45	75.15	0.00	0.00	0.000
189.40	0.90	283.00	260.50	26.05	101.20	0.00	0.00	0.000
189.50	1.00	338.00	310.50	31.05	132.25	0.00	0.00	0.000
189.60	1.10	374.00	356.00	0.00	132.25	35.60	35.60	0.000
189.70	1.20	429.00	401.50	0.00	132.25	40.15	75.75	0.044
189.80	1.30	467.00	448.00	0.00	132.25	44.80	120.55	0.076
189.90	1.40	523.00	495.00	0.00	132.25	49.50	170.05	0.099
190.00	1.50	578.00	550.50	0.00	132.25	55.05	225.10	0.117
190.10	1.60	635.00	606.50	0.00	132.25	60.65	285.75	0.132
190.20	1.70	697.00	666.00	0.00	132.25	66.60	352.35	0.146
190.30	1.80	761.00	729.00	0.00	132.25	72.90	425.25	0.159
190.40	1.90	827.00	794.00	0.00	132.25	79.40	504.65	0.171
190.50	2.00	894.00	860.50	0.00	132.25	86.05	590.70	0.352
190.60	2.10	963.00	928.50	0.00	132.25	92.85	683.55	0.722
190.70	2.20	1034.00	998.50	0.00	132.25	99.85	783.40	1.292
190.80	2.30	1106.00	1070.00	0.00	132.25	107.00	890.40	2.062

CAMPERDOWN CONDOMINIUM
PROPOSED CONDITIONS



1	Nashyd	1	Route Pipe	1	Duhyd
1	Standhyd	1	Route Channel	1	Diverthyd
1	Addhyd	1	Route Reservoir		

TATHAM ENGINEERING

Project:	Camperdown Condominium
File No.:	117304
Subject:	Otthymo Flow Schematic
Date:	Nov 2019 **Figure:** 1

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


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

        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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                  *****  S U M M A R Y   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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3c6-b5d2-4c09-926e-f7cc23e787ce\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\faa30
3c6-b5d2-4c09-926e-f7cc23e787ce\scen


DATE: 11/07/2019                          TIME: 02:49:06

USER:


COMMENTS: _____________________________________________________________


  ***********************************************
  ** SIMULATION : Run 01                       **
  ***********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    READ STORM                 6.0
    [ Ptot= 24.97 mm ]
    fname :
C:\Users\aschoof\AppData\Local\Temp\84d968cf-1737-45f8-844e-6493335852b2\395184f1-35
bb-4c48-8e68-693
    remark: OWEN SOUND 25 mm (from a 2 year-4hr storm)

*
 *  CALIB STANDHYD       0201  1  5.0    2.20    0.10  1.92  10.38 0.42   0.000
    [I%=22.0:S%= 1.00]
*
    RESRVR [ 2:  0201]   0301  1  5.0    2.20    0.00  0.00   0.00  n/a   0.000
      {ST=  0.00 ha.m }
*
```



```
 *  CALIB STANDHYD       0206  1  5.0    0.73    0.02  1.92   6.36 0.25   0.000
    [I%=12.0:S%= 2.00]
*
 *  CALIB NASHYD         0203  1  2.0    2.89    0.01  2.17   0.72 0.03   0.000
    [CN=42.9        ]
    [ N = 3.0:Tp 0.18]
*
 *  CALIB NASHYD         0202  1  2.0    1.63    0.00  2.17   0.70 0.03   0.000
    [CN=44.1        ]
    [ N = 3.0:Tp 0.17]
*
 *  CALIB STANDHYD       0205  1  5.0    0.03    0.00  1.92  10.55 0.42   0.000
    [I%=28.0:S%= 1.00]
*
 *  CALIB NASHYD         0207  1  5.0    0.78    0.01  2.17   2.13 0.09   0.000
    [CN=61.0        ]
    [ N = 3.0:Tp 0.21]
*
 *  CALIB NASHYD         0204  1  2.0    0.64    0.00  2.37   0.86 0.03   0.000
    [CN=48.1        ]
    [ N = 3.0:Tp 0.33]
*
    ADD [  0202+  0203]  0401  3  2.0    4.52    0.01  2.17   0.71  n/a   0.000
*
    ADD [  0401+  0204]  0401  1  2.0    5.16    0.01  2.17   0.73  n/a   0.000
*
    ADD [  0401+  0205]  0401  3  2.0    5.19    0.01  2.13   0.79  n/a   0.000
*
    ADD [  0401+  0206]  0401  1  2.0    5.92    0.03  2.17   1.47  n/a   0.000
*
    ADD [  0401+  0207]  0401  3  2.0    6.70    0.04  2.17   1.55  n/a   0.000
*
    ADD [  0401+  0301]  0401  1  2.0    8.90    0.04  2.17   1.17  n/a   0.000
*
 FINISH

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

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


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat
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Output filename:
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Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\9d8a2525-1597-4cef-bbf6-aa461870bb58\scen

DATE: 11/07/2019 TIME: 02:49:06

USER:

COMMENTS: _____

```
  ************************************************
  ** SIMULATION : Run 02                        **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    CHIC STORM                15.0
    [ Ptot= 31.36 mm ]
*
 *  CALIB STANDHYD       0201  1  5.0    2.20    0.14  1.25  13.13 0.42   0.000
    [I%=22.0:S%= 1.00]
*
    RESRVR [ 2:  0201]   0301  1  5.0    2.20    0.00  0.00   0.00  n/a   0.000
      {ST=  0.01 ha.m }
*
 *  CALIB STANDHYD       0206  1  5.0    0.73    0.03  1.25   8.71 0.28   0.000
    [I%=12.0:S%= 2.00]
*
 *  CALIB NASHYD         0203  1  2.0    2.89    0.01  1.43   1.39 0.04   0.000
    [CN=42.9        ]
    [ N = 3.0:Tp 0.18]
*
 *  CALIB NASHYD         0202  1  2.0    1.63    0.00  1.43   1.38 0.04   0.000
    [CN=44.1        ]
    [ N = 3.0:Tp 0.17]
*
 *  CALIB STANDHYD       0205  1  5.0    0.03    0.00  1.25  12.94 0.41   0.000
    [I%=28.0:S%= 1.00]
*
 *  CALIB NASHYD         0207  1  5.0    0.78    0.01  1.42   3.60 0.11   0.000
    [CN=61.0        ]
    [ N = 3.0:Tp 0.21]
*
 *  CALIB NASHYD         0204  1  2.0    0.64    0.00  1.70   1.65 0.05   0.000
    [CN=48.1        ]
    [ N = 3.0:Tp 0.33]
*
    ADD [  0202+  0203]  0401  3  2.0    4.52    0.01  1.43   1.39  n/a   0.000
*
    ADD [  0401+  0204]  0401  1  2.0    5.16    0.01  1.47   1.42  n/a   0.000
*
    ADD [  0401+  0205]  0401  3  2.0    5.19    0.01  1.43   1.48  n/a   0.000
*
    ADD [  0401+  0206]  0401  1  2.0    5.92    0.04  1.37   2.37  n/a   0.000
```



```
*
    ADD [  0401+  0207]  0401  3  2.0    6.70    0.05  1.37   2.52  n/a   0.000
*
    ADD [  0401+  0301]  0401  1  2.0    8.90    0.05  1.37   1.89  n/a   0.000
*
================================================================================
======================


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\e0528f64-f610-4af9-b2cc-c17c96b2f2f3\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\e0528f64-f610-4af9-b2cc-c17c96b2f2f3\scen

DATE: 11/07/2019                          TIME: 02:49:06

USER:

COMMENTS: _____

  ************************************************
  ** SIMULATION : Run 03                        **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    CHIC STORM                15.0
    [ Ptot= 41.81 mm ]
*
 *  CALIB STANDHYD       0201  1  5.0    2.20    0.22  1.25  20.51 0.49   0.000
    [I%=22.0:S%= 1.00]
*
    RESRVR [ 2:  0201]   0301  1  5.0    2.20    0.00  0.00   0.00  n/a   0.000
      {ST=  0.01 ha.m }
*
```

```
 *  CALIB STANDHYD       0206  1  5.0    0.73    0.06  1.25  14.46 0.35   0.000
    [I%=12.0:S%= 2.00]
*
 *  CALIB NASHYD         0203  1  2.0    2.89    0.02  1.40   2.91 0.07   0.000
    [CN=42.9        ]
    [ N = 3.0:Tp 0.18]
*
 *  CALIB NASHYD         0202  1  2.0    1.63    0.01  1.40   2.93 0.07   0.000
    [CN=44.1        ]
    [ N = 3.0:Tp 0.17]
*
 *  CALIB STANDHYD       0205  1  5.0    0.03    0.00  1.25  20.64 0.49   0.000
    [I%=28.0:S%= 1.00]
*
 *  CALIB NASHYD         0207  1  5.0    0.78    0.01  1.42   6.70 0.16   0.000
    [CN=61.0        ]
    [ N = 3.0:Tp 0.21]
*
 *  CALIB NASHYD         0204  1  2.0    0.64    0.00  1.67   3.46 0.08   0.000
    [CN=48.1        ]
    [ N = 3.0:Tp 0.33]
*
    ADD [  0202+  0203]  0401  3  2.0    4.52    0.03  1.40   2.92  n/a   0.000
*
    ADD [  0401+  0204]  0401  1  2.0    5.16    0.03  1.40   2.98  n/a   0.000
*
    ADD [  0401+  0205]  0401  3  2.0    5.19    0.03  1.40   3.09  n/a   0.000
*
    ADD [  0401+  0206]  0401  1  2.0    5.92    0.09  1.33   4.48  n/a   0.000
*
    ADD [  0401+  0207]  0401  3  2.0    6.70    0.10  1.33   4.74  n/a   0.000
*
    ADD [  0401+  0301]  0401  1  2.0    8.90    0.10  1.33   3.57  n/a   0.000
*
================================================================================
======================


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\b69a1
566-71c7-40a3-81c1-16e605128619\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\b69a1
```



```
566-71c7-40a3-81c1-16e605128619\scen

DATE: 11/07/2019                          TIME: 02:49:06

USER:

COMMENTS: _____________________________________________________________

  ************************************************
  ** SIMULATION : Run 04                        **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm           cms

     START @  0.00 hrs
     --------------------
    CHIC STORM               15.0
    [ Ptot= 48.78 mm ]
*
 *  CALIB STANDHYD       0201  1  5.0    2.20    0.28  1.25  26.53 0.54   0.000
    [I%=22.0:S%= 1.00]
*
    RESRVR [ 2:  0201]   0301  1  5.0    2.20    0.00  0.00   0.00  n/a   0.000
      {ST=  0.01 ha.m }
*
 *  CALIB STANDHYD       0206  1  5.0    0.73    0.07  1.25  18.64 0.38   0.000
    [I%=12.0:S%= 2.00]
*
 *  CALIB NASHYD         0203  1  2.0    2.89    0.03  1.40   4.20 0.09   0.000
    [CN=42.9        ]
    [ N = 3.0:Tp 0.18]
*
 *  CALIB NASHYD         0202  1  2.0    1.63    0.02  1.37   4.25 0.09   0.000
    [CN=44.1        ]
    [ N = 3.0:Tp 0.17]
*
 *  CALIB STANDHYD       0205  1  5.0    0.03    0.01  1.25  27.14 0.56   0.000
    [I%=28.0:S%= 1.00]
*
 *  CALIB NASHYD         0207  1  5.0    0.78    0.02  1.42   9.18 0.19   0.000
    [CN=61.0        ]
    [ N = 3.0:Tp 0.21]
*
 *  CALIB NASHYD         0204  1  2.0    0.64    0.01  1.63   4.99 0.10   0.000
    [CN=48.1        ]
    [ N = 3.0:Tp 0.33]
*
    ADD [  0202+  0203]  0401  3  2.0    4.52    0.05  1.40   4.22  n/a   0.000
*
    ADD [  0401+  0204]  0401  1  2.0    5.16    0.05  1.40   4.31  n/a   0.000
*
    ADD [  0401+  0205]  0401  3  2.0    5.19    0.05  1.40   4.44  n/a   0.000
*
    ADD [  0401+  0206]  0401  1  2.0    5.92    0.12  1.33   6.19  n/a   0.000
*
    ADD [  0401+  0207]  0401  3  2.0    6.70    0.14  1.33   6.53  n/a   0.000
*
    ADD [  0401+  0301]  0401  1  2.0    8.90    0.14  1.33   4.92  n/a   0.000
*
```

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


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\de882
b0a-435f-40f6-bc51-5789219b519e\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\de882
b0a-435f-40f6-bc51-5789219b519e\scen


DATE: 11/07/2019                          TIME: 02:49:06

USER:


COMMENTS: _____________________________________________________________


  ***********************************************
  ** SIMULATION : Run 05                       **
  ***********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    CHIC STORM               15.0
    [ Ptot= 57.56 mm ]
*
 *  CALIB STANDHYD       0201  1  5.0    2.20    0.35  1.25  34.59 0.60   0.000
    [I%=22.0:S%= 1.00]
*
    RESRVR [ 2:  0201]   0301  1  5.0    2.20    0.00  0.00   0.00  n/a   0.000
      {ST=  0.02 ha.m }
*
 *  CALIB STANDHYD       0206  1  5.0    0.73    0.12  1.25  24.99 0.43   0.000
    [I%=12.0:S%= 2.00]
*
 *  CALIB NASHYD         0203  1  2.0    2.89    0.04  1.40   6.11 0.11   0.000
    [CN=42.9         ]
```



```
    [ N = 3.0:Tp 0.18]
*
 *  CALIB NASHYD         0202  1  2.0    1.63    0.03  1.37   6.22 0.11   0.000
    [CN=44.1         ]
    [ N = 3.0:Tp 0.17]
*
 *  CALIB STANDHYD       0205  1  5.0    0.03    0.01  1.25  35.73 0.62   0.000
    [I%=28.0:S%= 1.00]
*
 *  CALIB NASHYD         0207  1  5.0    0.78    0.02  1.42  12.71 0.22   0.000
    [CN=61.0         ]
    [ N = 3.0:Tp 0.21]
*
 *  CALIB NASHYD         0204  1  2.0    0.64    0.01  1.63   7.25 0.13   0.000
    [CN=48.1         ]
    [ N = 3.0:Tp 0.33]
*
    ADD [  0202+  0203]  0401  3  2.0    4.52    0.07  1.37   6.15  n/a   0.000
*
    ADD [  0401+  0204]  0401  1  2.0    5.16    0.08  1.40   6.29  n/a   0.000
*
    ADD [  0401+  0205]  0401  3  2.0    5.19    0.08  1.37   6.46  n/a   0.000
*
    ADD [  0401+  0206]  0401  1  2.0    5.92    0.18  1.30   8.74  n/a   0.000
*
    ADD [  0401+  0207]  0401  3  2.0    6.70    0.20  1.33   9.20  n/a   0.000
*
    ADD [  0401+  0301]  0401  1  2.0    8.90    0.20  1.33   6.92  n/a   0.000
*
================================================================================
======================


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\9aeee
e6d-ae35-4491-96bb-d4fad8984bd1\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\9aeee
e6d-ae35-4491-96bb-d4fad8984bd1\scen


DATE: 11/07/2019                          TIME: 02:49:06
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USER:

COMMENTS: _____

```
  ************************************************
  ** SIMULATION : Run 06                        **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      ---------------------
    CHIC STORM                 15.0
    [ Ptot= 63.93 mm ]
*
 *  CALIB STANDHYD       0201  1  5.0    2.20    0.47  1.25  40.72 0.64   0.000
    [I%=22.0:S%= 1.00]
*
    RESRVR [ 2:  0201]   0301  1  5.0    2.20    0.00  0.00   0.00  n/a   0.000
      {ST=  0.02 ha.m }
*
 *  CALIB STANDHYD       0206  1  5.0    0.73    0.14  1.25  30.35 0.47   0.000
    [I%=12.0:S%= 2.00]
*
 *  CALIB NASHYD         0203  1  2.0    2.89    0.06  1.37   7.69 0.12   0.000
    [CN=42.9         ]
    [ N = 3.0:Tp 0.18]
*
 *  CALIB NASHYD         0202  1  2.0    1.63    0.03  1.37   7.84 0.12   0.000
    [CN=44.1         ]
    [ N = 3.0:Tp 0.17]
*
 *  CALIB STANDHYD       0205  1  5.0    0.03    0.01  1.25  42.14 0.66   0.000
    [I%=28.0:S%= 1.00]
*
 *  CALIB NASHYD         0207  1  5.0    0.78    0.03  1.42  15.53 0.24   0.000
    [CN=61.0         ]
    [ N = 3.0:Tp 0.21]
*
 *  CALIB NASHYD         0204  1  2.0    0.64    0.01  1.60   9.10 0.14   0.000
    [CN=48.1         ]
    [ N = 3.0:Tp 0.33]
*
    ADD [  0202+  0203]  0401  3  2.0    4.52    0.09  1.37   7.75  n/a   0.000
*
    ADD [  0401+  0204]  0401  1  2.0    5.16    0.10  1.40   7.91  n/a   0.000
*
    ADD [  0401+  0205]  0401  3  2.0    5.19    0.10  1.37   8.11  n/a   0.000
*
    ADD [  0401+  0206]  0401  1  2.0    5.92    0.22  1.30  10.85  n/a   0.000
*
    ADD [  0401+  0207]  0401  3  2.0    6.70    0.25  1.33  11.39  n/a   0.000
*
    ADD [  0401+  0301]  0401  1  2.0    8.90    0.25  1.33   8.58  n/a   0.000
*
================================================================================
======================
```



```
      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
```


***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\7b8f4fbf-99ea-42f2-b2a9-8c05dc2d42f9\scen
Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\7b8f4fbf-99ea-42f2-b2a9-8c05dc2d42f9\scen

DATE: 11/07/2019 TIME: 02:49:06

USER:

COMMENTS: _____

```
  ************************************************
  ** SIMULATION : Run 07                        **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      ---------------------
    CHIC STORM                 15.0
    [ Ptot= 70.29 mm ]
*
 *  CALIB STANDHYD       0201  1  5.0    2.20    0.54  1.25  46.97 0.67   0.000
    [I%=22.0:S%= 1.00]
*
    RESRVR [ 2:  0201]   0301  1  5.0    2.20    0.00  0.00   0.00  n/a   0.000
      {ST=  0.03 ha.m }
*
 *  CALIB STANDHYD       0206  1  5.0    0.73    0.16  1.25  35.96 0.51   0.000
    [I%=12.0:S%= 2.00]
*
 *  CALIB NASHYD         0203  1  2.0    2.89    0.07  1.37   9.42 0.13   0.000
    [CN=42.9         ]
    [ N = 3.0:Tp 0.18]
*
 *  CALIB NASHYD         0202  1  2.0    1.63    0.04  1.37   9.63 0.14   0.000
    [CN=44.1         ]
    [ N = 3.0:Tp 0.17]
```

```
*
 *  CALIB STANDHYD       0205  1  5.0    0.03    0.01  1.25  48.36 0.69   0.000
    [I%=28.0:S%= 1.00]
*
 *  CALIB NASHYD         0207  1  5.0    0.78    0.04  1.42  18.55 0.26   0.000
    [CN=61.0        ]
    [ N = 3.0:Tp 0.21]
*
 *  CALIB NASHYD         0204  1  2.0    0.64    0.01  1.60  11.13 0.16   0.000
    [CN=48.1        ]
    [ N = 3.0:Tp 0.33]
*
    ADD [  0202+  0203]  0401  3  2.0    4.52    0.11  1.37   9.49  n/a   0.000
*
    ADD [  0401+  0204]  0401  1  2.0    5.16    0.12  1.40   9.70  n/a   0.000
*
    ADD [  0401+  0205]  0401  3  2.0    5.19    0.13  1.37   9.92  n/a   0.000
*
    ADD [  0401+  0206]  0401  1  2.0    5.92    0.26  1.30  13.12  n/a   0.000
*
    ADD [  0401+  0207]  0401  3  2.0    6.70    0.30  1.33  13.76  n/a   0.000
*
    ADD [  0401+  0301]  0401  1  2.0    8.90    0.30  1.33  10.36  n/a   0.000
*
================================================================================
======================


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\ae8e6
add-3119-4302-958a-8c44339408e0\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\ae8e6
add-3119-4302-958a-8c44339408e0\scen


DATE: 11/07/2019                          TIME: 02:49:06

USER:


COMMENTS: _____________________________________________________________
```



```
  ************************************************
  ** SIMULATION : Run 08                        **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     ---------------------
    READ STORM                12.0
    [ Ptot=193.00 mm ]
    fname :
C:\Users\aschoof\AppData\Local\Temp\84d968cf-1737-45f8-844e-6493335852b2\4c311f83-81
af-42c6-ab26-d9d
    remark: TIMMINS REGIONAL 12 HOUR DURATION STORM

*
 *  CALIB STANDHYD       0201  1  5.0    2.20    0.24  7.00 140.97 0.73   0.000
    [I%=22.0:S%= 1.00]
*
    RESRVR [ 2:  0201]   0301  1  5.0    2.20    0.06 11.00  64.50  n/a   0.000
      {ST=  0.22 ha.m }
*
 *  CALIB STANDHYD       0206  1  5.0    0.73    0.08  7.00 116.88 0.61   0.000
    [I%=12.0:S%= 2.00]
*
 *  CALIB NASHYD         0203  1  2.0    2.89    0.14  7.03  64.91 0.34   0.000
    [CN=42.9        ]
    [ N = 3.0:Tp 0.18]
*
 *  CALIB NASHYD         0202  1  2.0    1.63    0.08  7.00  66.59 0.35   0.000
    [CN=44.1        ]
    [ N = 3.0:Tp 0.17]
*
 *  CALIB STANDHYD       0205  1  5.0    0.03    0.00  7.00 144.09 0.75   0.000
    [I%=28.0:S%= 1.00]
*
 *  CALIB NASHYD         0207  1  5.0    0.78    0.06  7.00 100.47 0.52   0.000
    [CN=61.0        ]
    [ N = 3.0:Tp 0.21]
*
 *  CALIB NASHYD         0204  1  2.0    0.64    0.03  7.10  73.74 0.38   0.000
    [CN=48.1        ]
    [ N = 3.0:Tp 0.33]
*
    ADD [  0202+  0203]  0401  3  2.0    4.52    0.22  7.00  65.51  n/a   0.000
*
    ADD [  0401+  0204]  0401  1  2.0    5.16    0.25  7.03  66.53  n/a   0.000
*
    ADD [  0401+  0205]  0401  3  2.0    5.19    0.25  7.00  66.98  n/a   0.000
*
    ADD [  0401+  0206]  0401  1  2.0    5.92    0.33  7.00  73.14  n/a   0.000
*
    ADD [  0401+  0207]  0401  3  2.0    6.70    0.38  7.00  76.32  n/a   0.000
*
    ADD [  0401+  0301]  0401  1  2.0    8.90    0.38  7.00  73.40  n/a   0.000
*
```

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


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\0c294
54e-def1-4102-89c6-6aa30643fe2c\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\0c294
54e-def1-4102-89c6-6aa30643fe2c\scen


DATE: 11/07/2019                          TIME: 02:49:27

USER:


COMMENTS: _____________________________________________________________


  ***********************************************
  ** SIMULATION : Run 01                       **
  ***********************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    MASS STORM                15.0
    [ Ptot= 53.74 mm ]
*
 ** CALIB NASHYD         0202  1  2.0    1.63    0.02 11.83   5.32 0.10   0.000
    [CN=44.1        ]
    [ N = 3.0:Tp 0.17]
*
 ** CALIB NASHYD         0204  1  2.0    0.64    0.01 12.00   6.22 0.12   0.000
    [CN=48.1        ]
    [ N = 3.0:Tp 0.33]
*
 ** CALIB NASHYD         0203  1  2.0    2.89    0.04 11.83   5.24 0.10   0.000
    [CN=42.9        ]
    [ N = 3.0:Tp 0.18]
```



```
*
 ** CALIB NASHYD         0207  1  5.0    0.78    0.02 11.83  11.12 0.21   0.000
    [CN=61.0        ]
    [ N = 3.0:Tp 0.21]
*
 *  CALIB STANDHYD       0206  1  5.0    0.73    0.06 11.75  17.43 0.32   0.000
    [I%=12.0:S%= 2.00]
*
 *  CALIB STANDHYD       0205  1  5.0    0.03    0.00 11.75  23.42 0.44   0.000
    [I%=28.0:S%= 1.00]
*
 *  CALIB STANDHYD       0201  1  5.0    2.20    0.24 11.75  25.05 0.47   0.000
    [I%=22.0:S%= 1.00]
*
    RESRVR [ 2:  0201]   0301  1  5.0    2.20    0.00  0.00   0.00  n/a   0.000
      {ST=  0.02 ha.m }
*
    ADD [  0202+  0203]  0401  3  2.0    4.52    0.06 11.83   5.27  n/a   0.000
*
    ADD [  0401+  0204]  0401  1  2.0    5.16    0.06 11.83   5.39  n/a   0.000
*
    ADD [  0401+  0205]  0401  3  2.0    5.19    0.07 11.83   5.49  n/a   0.000
*
    ADD [  0401+  0206]  0401  1  2.0    5.92    0.13 11.83   6.96  n/a   0.000
*
    ADD [  0401+  0207]  0401  3  2.0    6.70    0.15 11.83   7.44  n/a   0.000
*
    ADD [  0401+  0301]  0401  1  2.0    8.90    0.15 11.83   5.60  n/a   0.000
*
================================================================================
========================


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\7f5e0
c8e-c343-4098-8160-ff3683dfafae\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\7f5e0
c8e-c343-4098-8160-ff3683dfafae\scen


DATE: 11/07/2019                          TIME: 02:49:27
```

USER:

COMMENTS: _____

```
  ************************************************
  ** SIMULATION : Run 02                        **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      ---------------------
    MASS STORM                 15.0
    [ Ptot= 71.58 mm ]
*
 ** CALIB NASHYD         0202  1  2.0    1.63    0.04 11.83  10.01 0.14   0.000
    [CN=44.1        ]
    [ N = 3.0:Tp 0.17]
*
 ** CALIB NASHYD         0204  1  2.0    0.64    0.01 12.00  11.56 0.16   0.000
    [CN=48.1        ]
    [ N = 3.0:Tp 0.33]
*
 ** CALIB NASHYD         0203  1  2.0    2.89    0.07 11.83   9.79 0.14   0.000
    [CN=42.9        ]
    [ N = 3.0:Tp 0.18]
*
 ** CALIB NASHYD         0207  1  5.0    0.78    0.04 11.83  19.19 0.27   0.000
    [CN=61.0        ]
    [ N = 3.0:Tp 0.21]
*
 *  CALIB STANDHYD       0206  1  5.0    0.73    0.13 11.75  28.39 0.40   0.000
    [I%=12.0:S%= 2.00]
*
 *  CALIB STANDHYD       0205  1  5.0    0.03    0.01 11.75  34.87 0.49   0.000
    [I%=28.0:S%= 1.00]
*
 *  CALIB STANDHYD       0201  1  5.0    2.20    0.36 11.75  36.85 0.51   0.000
    [I%=22.0:S%= 1.00]
*
    RESRVR [ 2:  0201]   0301  1  5.0    2.20    0.00  0.00   0.00  n/a   0.000
      {ST=  0.04 ha.m }
*
    ADD [  0202+  0203]  0401  3  2.0    4.52    0.11 11.83   9.87  n/a   0.000
*
    ADD [  0401+  0204]  0401  1  2.0    5.16    0.12 11.83  10.08  n/a   0.000
*
    ADD [  0401+  0205]  0401  3  2.0    5.19    0.13 11.83  10.22  n/a   0.000
*
    ADD [  0401+  0206]  0401  1  2.0    5.92    0.24 11.77  12.46  n/a   0.000
*
    ADD [  0401+  0207]  0401  3  2.0    6.70    0.27 11.80  13.24  n/a   0.000
*
    ADD [  0401+  0301]  0401  1  2.0    8.90    0.27 11.80   9.97  n/a   0.000
*
================================================================================
======================
```



```
       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
```


***** S U M M A R Y O U T P U T *****

Input filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

Output filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\e11a2aae-0f12-477c-b4d8-201ce77718da\scen
Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\e11a2aae-0f12-477c-b4d8-201ce77718da\scen

DATE: 11/07/2019 TIME: 02:49:27

USER:

COMMENTS: _____

```
  ************************************************
  ** SIMULATION : Run 03                        **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      ---------------------
    MASS STORM                 15.0
    [ Ptot= 83.55 mm ]
*
 ** CALIB NASHYD         0202  1  2.0    1.63    0.06 11.83  13.82 0.17   0.000
    [CN=44.1        ]
    [ N = 3.0:Tp 0.17]
*
 ** CALIB NASHYD         0204  1  2.0    0.64    0.02 12.00  15.85 0.19   0.000
    [CN=48.1        ]
    [ N = 3.0:Tp 0.33]
*
 ** CALIB NASHYD         0203  1  2.0    2.89    0.10 11.83  13.49 0.16   0.000
    [CN=42.9        ]
    [ N = 3.0:Tp 0.18]
*
 ** CALIB NASHYD         0207  1  5.0    0.78    0.05 11.83  25.41 0.30   0.000
    [CN=61.0        ]
    [ N = 3.0:Tp 0.21]
*
```

```
 *  CALIB STANDHYD       0206  1  5.0    0.73    0.16 11.75  35.63 0.43   0.000
    [I%=12.0:S%= 2.00]
*
 *  CALIB STANDHYD       0205  1  5.0    0.03    0.01 11.75  43.13 0.52   0.000
    [I%=28.0:S%= 1.00]
*
 *  CALIB STANDHYD       0201  1  5.0    2.20    0.48 11.75  45.13 0.54   0.000
    [I%=22.0:S%= 1.00]
*
    RESRVR [ 2:  0201]   0301  1  5.0    2.20    0.00  0.00   0.00  n/a   0.000
      {ST=  0.05 ha.m }
*
    ADD [  0202+  0203]  0401  3  2.0    4.52    0.16 11.83  13.61  n/a   0.000
*
    ADD [  0401+  0204]  0401  1  2.0    5.16    0.17 11.83  13.88  n/a   0.000
*
    ADD [  0401+  0205]  0401  3  2.0    5.19    0.18 11.83  14.05  n/a   0.000
*
    ADD [  0401+  0206]  0401  1  2.0    5.92    0.31 11.80  16.71  n/a   0.000
*
    ADD [  0401+  0207]  0401  3  2.0    6.70    0.36 11.80  17.72  n/a   0.000
*
    ADD [  0401+  0301]  0401  1  2.0    8.90    0.36 11.80  13.34  n/a   0.000
*
 FINISH

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

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


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\6a967
8e7-13ef-4779-b86c-b151dfec042d\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\6a967
8e7-13ef-4779-b86c-b151dfec042d\scen


DATE: 11/07/2019                          TIME: 02:49:27
```



```
USER:

COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : Run 04                         **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                   min     ha   '  cms   hrs     mm          cms

     START @  0.00 hrs
     --------------------
    MASS STORM                    15.0
    [ Ptot= 98.60 mm ]
*
 ** CALIB NASHYD         0202  1  2.0    1.63    0.08 11.83  19.28 0.20   0.000
    [CN=44.1        ]
    [ N = 3.0:Tp 0.17]
*
 ** CALIB NASHYD         0204  1  2.0    0.64    0.02 12.00  21.98 0.22   0.000
    [CN=48.1        ]
    [ N = 3.0:Tp 0.33]
*
 ** CALIB NASHYD         0203  1  2.0    2.89    0.14 11.83  18.80 0.19   0.000
    [CN=42.9        ]
    [ N = 3.0:Tp 0.18]
*
 ** CALIB NASHYD         0207  1  5.0    0.78    0.06 11.83  34.00 0.34   0.000
    [CN=61.0        ]
    [ N = 3.0:Tp 0.21]
*
 *  CALIB STANDHYD       0206  1  5.0    0.73    0.19 11.75  45.14 0.46   0.000
    [I%=12.0:S%= 2.00]
*
 *  CALIB STANDHYD       0205  1  5.0    0.03    0.01 11.75  53.51 0.54   0.000
    [I%=28.0:S%= 1.00]
*
 *  CALIB STANDHYD       0201  1  5.0    2.20    0.59 11.75  55.74 0.57   0.000
    [I%=22.0:S%= 1.00]
*
    RESRVR [ 2:  0201]   0301  1  5.0    2.20    0.00  0.00   0.00  n/a   0.000
      {ST=  0.07 ha.m }
*
    ADD [  0202+  0203]  0401  3  2.0    4.52    0.22 11.83  18.97  n/a   0.000
*
    ADD [  0401+  0204]  0401  1  2.0    5.16    0.24 11.83  19.34  n/a   0.000
*
    ADD [  0401+  0205]  0401  3  2.0    5.19    0.25 11.83  19.54  n/a   0.000
*
    ADD [  0401+  0206]  0401  1  2.0    5.92    0.41 11.80  22.69  n/a   0.000
*
    ADD [  0401+  0207]  0401  3  2.0    6.70    0.47 11.80  24.01  n/a   0.000
*
    ADD [  0401+  0301]  0401  1  2.0    8.90    0.47 11.80  18.08  n/a   0.000
*
================================================================================
======================

       V    V   I    SSSSS  U   U    A    L
```

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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\08796
f1a-d53a-4d1f-8f1d-5a50c28eda5a\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\08796
f1a-d53a-4d1f-8f1d-5a50c28eda5a\scen


DATE: 11/07/2019                          TIME: 02:49:27

USER:


COMMENTS: _____________________________________________________________


  ************************************************
  ** SIMULATION : Run 05                         **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

      START @  0.00 hrs
      --------------------
    MASS STORM                15.0
    [ Ptot=109.47 mm ]
*
 ** CALIB NASHYD         0202  1  2.0    1.63    0.10 11.83  23.65 0.22   0.000
    [CN=44.1        ]
    [ N = 3.0:Tp 0.17]
*
 ** CALIB NASHYD         0204  1  2.0    0.64    0.03 11.97  26.84 0.25   0.000
    [CN=48.1        ]
    [ N = 3.0:Tp 0.33]
*
 ** CALIB NASHYD         0203  1  2.0    2.89    0.17 11.83  23.05 0.21   0.000
    [CN=42.9        ]
    [ N = 3.0:Tp 0.18]
*
 ** CALIB NASHYD         0207  1  5.0    0.78    0.08 11.83  40.65 0.37   0.000
    [CN=61.0        ]
    [ N = 3.0:Tp 0.21]
*
```



```
 *  CALIB STANDHYD       0206  1  5.0    0.73    0.22 11.75  52.23 0.48   0.000
    [I%=12.0:S%= 2.00]
*
 *  CALIB STANDHYD       0205  1  5.0    0.03    0.01 11.75  61.22 0.56   0.000
    [I%=28.0:S%= 1.00]
*
 *  CALIB STANDHYD       0201  1  5.0    2.20    0.66 11.75  63.49 0.58   0.000
    [I%=22.0:S%= 1.00]
*
    RESRVR [ 2:  0201]   0301  1  5.0    2.20    0.00  0.00   0.00  n/a   0.000
      {ST=  0.08 ha.m }
*
    ADD [  0202+  0203]  0401  3  2.0    4.52    0.28 11.83  23.26  n/a   0.000
*
    ADD [  0401+  0204]  0401  1  2.0    5.16    0.30 11.83  23.71  n/a   0.000
*
    ADD [  0401+  0205]  0401  3  2.0    5.19    0.30 11.83  23.92  n/a   0.000
*
    ADD [  0401+  0206]  0401  1  2.0    5.92    0.49 11.80  27.41  n/a   0.000
*
    ADD [  0401+  0207]  0401  3  2.0    6.70    0.56 11.80  28.95  n/a   0.000
*
    ADD [  0401+  0301]  0401  1  2.0    8.90    0.56 11.80  21.79  n/a   0.000
*
================================================================================
======================


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

        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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                  *****  S U M M A R Y   O U T P U T  *****


  Input   filename: C:\Program Files (x86)\Visual OTTHYMO 5.0\VO2\voin.dat

  Output  filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\86865
4d5-43f7-4ece-987b-dd28b1573297\scen
  Summary filename:
C:\Users\aschoof\AppData\Local\Civica\VH5\8194ef53-adad-4f15-90f7-c4eafb4675c3\86865
4d5-43f7-4ece-987b-dd28b1573297\scen


DATE: 11/07/2019                          TIME: 02:49:27

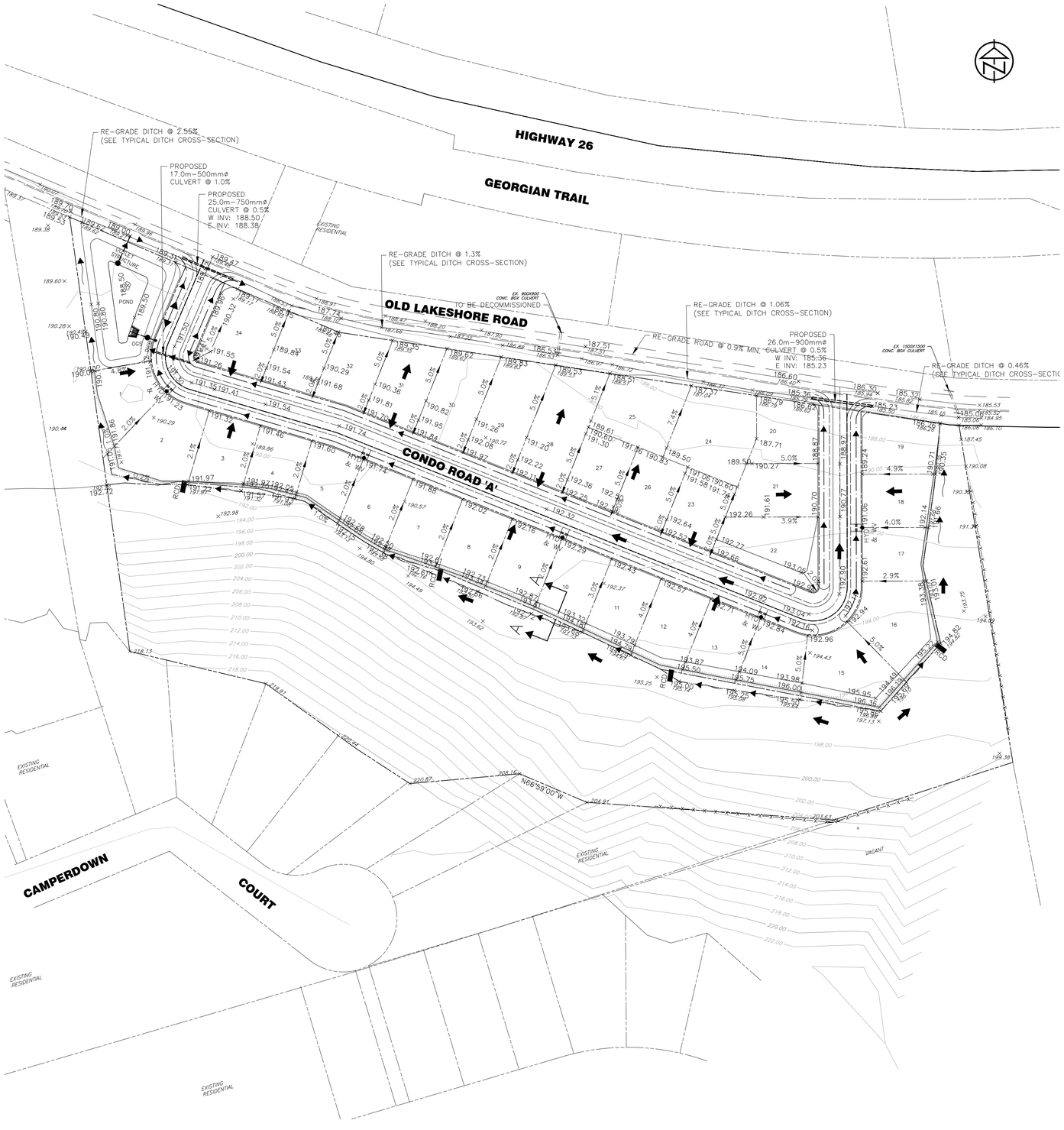
USER:


COMMENTS: _____________________________________________________________
```

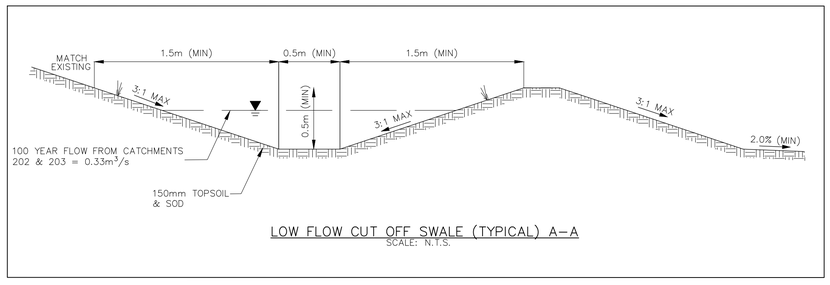
```
  ************************************************
  ** SIMULATION : Run 06                        **
  ************************************************

  W/E COMMAND             HYD ID   DT    AREA  ' Qpeak Tpeak   R.V. R.C.   Qbase
                                  min     ha   '  cms   hrs     mm          cms

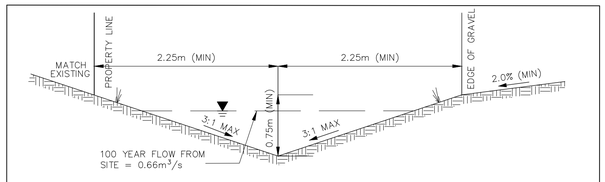
      START @  0.00 hrs
      ----------------------
    MASS STORM                15.0
    [ Ptot=120.44 mm ]
*
 ** CALIB NASHYD         0202  1  2.0    1.63    0.12 11.83  28.40 0.24   0.000
    [CN=44.1         ]
    [ N = 3.0:Tp 0.17]
*
 ** CALIB NASHYD         0204  1  2.0    0.64    0.04 11.97  32.09 0.27   0.000
    [CN=48.1         ]
    [ N = 3.0:Tp 0.33]
*
 ** CALIB NASHYD         0203  1  2.0    2.89    0.21 11.83  27.66 0.23   0.000
    [CN=42.9         ]
    [ N = 3.0:Tp 0.18]
*
 ** CALIB NASHYD         0207  1  5.0    0.78    0.09 11.83  47.69 0.40   0.000
    [CN=61.0         ]
    [ N = 3.0:Tp 0.21]
*
 *  CALIB STANDHYD       0206  1  5.0    0.73    0.25 11.75  59.37 0.49   0.000
    [I%=12.0:S%= 2.00]
*
 *  CALIB STANDHYD       0205  1  5.0    0.03    0.01 11.75  68.86 0.57   0.000
    [I%=28.0:S%= 1.00]
*
 *  CALIB STANDHYD       0201  1  5.0    2.20    0.74 11.75  71.49 0.59   0.000
    [I%=22.0:S%= 1.00]
*
    RESRVR [ 2:  0201]   0301  1  5.0    2.20    0.00  0.00   0.00  n/a   0.000
      {ST=  0.09 ha.m }
*
    ADD [  0202+  0203]  0401  3  2.0    4.52    0.33 11.83  27.92  n/a   0.000
*
    ADD [  0401+  0204]  0401  1  2.0    5.16    0.36 11.83  28.44  n/a   0.000
*
    ADD [  0401+  0205]  0401  3  2.0    5.19    0.37 11.83  28.67  n/a   0.000
*
    ADD [  0401+  0206]  0401  1  2.0    5.92    0.57 11.80  32.45  n/a   0.000
*
    ADD [  0401+  0207]  0401  3  2.0    6.70    0.66 11.80  34.23  n/a   0.000
*
    ADD [  0401+  0301]  0401  1  2.0    8.90    0.66 11.80  25.77  n/a   0.000
*
```



KEY PLAN
N.T.S.



LOW FLOW CUT OFF SWALE (TYPICAL) A-A
SCALE: N.T.S.



OLD LAKESHORE ROAD DITCH CROSS-SECTION (TYPICAL)
SCALE: N.T.S.

LEGEND

- PROPERTY LINE
- PROPOSED CENTERLINE ROAD
- EXISTING EDGE OF GRAVEL ROAD
- PROPOSED OVERLAND FLOW DIRECTION
- PROPOSED/EXISTING ELEVATIONS 190.00 / +190.00
- PROPOSED SWALE
- PROPOSED GRADE/DIRECTION 1.0%
- PROPOSED ROCK CHECK DAM RCD

BENCHMARKS

TBM1 – ELEVATION 211.950
TOP NUT FIRE HYDRANT LOCATED AT THE SOUTH WEST CORNER OF LOT 11.

NOTES

LEGAL SURVEY, TOPOGRAPHIC INFORMATION AND LOT DIMENSIONS SHOWN ON THIS PLAN ARE TAKEN FROM A SURVEY PLAN PREPARED BY ZUBEK, EMO, PATTEN & THOMSEN, WHICH MAY NOT BE FINAL AND ARE NOT GUARANTEED. THE FINAL REGISTERED PLAN OF SUBDIVISION SHALL BE REFERRED TO FOR CONFIRMATION OF THE DATA.

No.	REVISION DESCRIPTION	DATE
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	NOV/2019

ENGINEER STAMP

LICENSED PROFESSIONAL ENGINEER
19 11 06
R. S. SIMPSON
PROVINCE OF ONTARIO

CAMPERDOWN CONDOMINIUMS
TOWN OF THE BLUE MOUNTAINS

TATHAM ENGINEERING

SITE GRADING PLAN

DESIGN: AS	FILE: 117304	DWG:	SG-1
DRAWN: AC	DATE: SEPT 2017		
CHECK: RS	SCALE: 1:1000		

Drawing Name: 117304-SG01 2019-09-17.dwg, Plotted: Nov 08, 2019

HIGHWAY 26

CAMPERDOWN ROAD

OLD LAKESHORE ROAD

CAMPERDOWN COURT

BARTON BLVD.

EX. CULVERTS

EX. 900X900 CONC. BOX CULVERT

EX. 1500X1500 CONC. BOX CULVERT

EXISTING RESIDENTIAL

ADDITIONAL LANDS OWNED BY APPLICANT

VACANT

OLD POST & WIRE FENCE

OLD RAIL FENCE

EX. MINOR SYSTEM OUTLET 900mmø STM

EX. MAJOR OVERLAND FLOW OUTLET

101 | 5.92 | 52.5

102 | 2.91 | 59.7

103 | 10.63 | XX.X

104 | 24.32 | XX.X

105 | 16.80 | XX.X

182.0

185.0

190.0

200.0

210.0

270.0

280.0

290.0

295.0

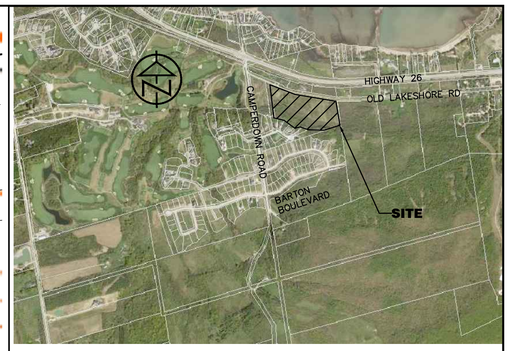
305

320.0

340.0

345.0

350.0



KEY PLAN

N.T.S.

LEGEND

- PROPERTY LINE
- EXISTING EDGE OF ASPHALT
- EXISTING DRAINAGE BOUNDARY
- EXISTING DRAINAGE AREA ID
- EXISTING DRAINAGE AREA (ha)
- EXISTING CN

(100 | 5.39 | 55.2)

- EXISTING MAJOR/OVERLAND FLOW DIRECTION
- EXISTING SWALE/DITCH
- EXISTING WATER COURSE
- EXISTING MINOR STORM FLOW DIRECTION

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BENCHMARKS

TBM1 – ELEVATION 211.950
TOP NUT FIRE HYDRANT LOCATED AT THE SOUTH WEST CORNER OF LOT 11.

NOTES

LEGAL SURVEY, TOPOGRAPHIC INFORMATION AND LOT DIMENSIONS SHOWN ON THIS PLAN ARE TAKEN FROM A SURVEY PLAN PREPARED BY ZUBEK, EMO, PATTEN & THOMSEN, WHICH MAY NOT BE FINAL AND ARE NOT GUARANTEED. THE FINAL REGISTERED PLAN OF SUBDIVISION SHALL BE REFERRED TO FOR CONFIRMATION OF THE DATA.

No.	REVISION DESCRIPTION	DATE
1.	SUBMISSION FOR DRAFT PLAN APPROVAL	NOV/2019

ENGINEER STAMP

LICENSED PROFESSIONAL ENGINEER
19 11 06
R. S. SIMPSON
PROVINCE OF ONTARIO

CAMPERDOWN CONDOMINIUMS

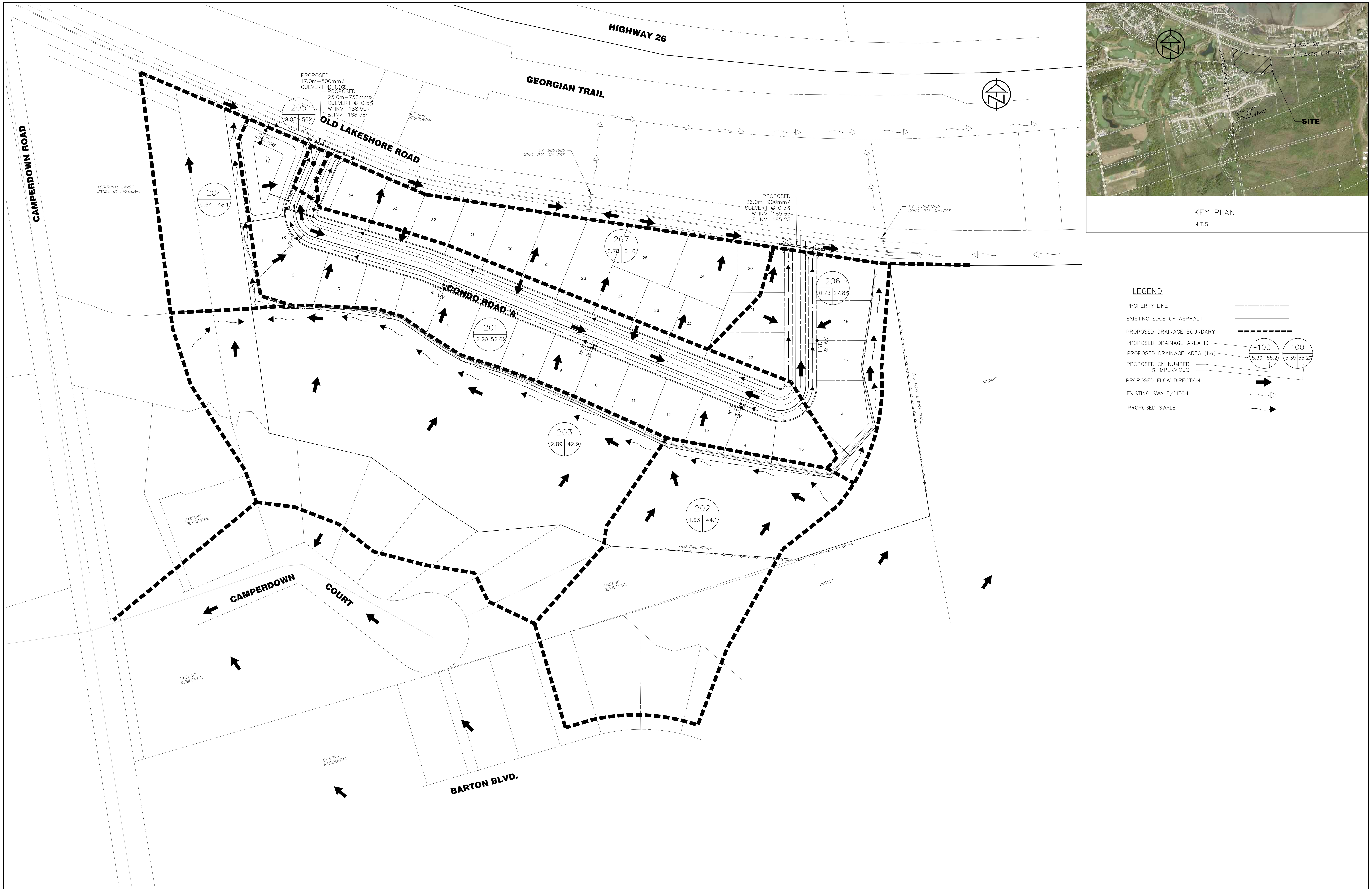
TOWN OF THE BLUE MOUNTAINS

TATHAM ENGINEERING

PRE-DEVELOPMENT DRAINAGE PLAN

DESIGN: AS	FILE: 117304	DWG: DP-1
DRAWN: RD	DATE: DEC., 2017	
CHECK: RS	SCALE: 1:2000	

Drawing Name: 117304-DP01.dwg, Plotted: Nov 07, 2019



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TATHAM ENGINEERING

POST–DEVELOPMENT DRAINAGE PLAN

DESIGN: AS	FILE: 117304	DWG: DP-2
DRAWN: RD	DATE: DEC., 2017	
CHECK: RS	SCALE: 1:1000	

Drawing Name: 117304–DP02.dwg, Plotted: Nov 07, 2019