JFSA Canada Inc.
52 Springbrook Drive,
Ottawa, ON K2S 1B9
T 613-836-3884 F 613-836-0332

jfsa.com

November 08, 2024 Project Number: 959(03)

David Schaeffer Engineering Ltd
120 Iber Road, Unit 103
Ottawa, Ontario
K2S 1E9

Attention: **Braden Kaminski, P.Eng**

Subject: **Cardinal Creek Village South –
Preliminary Stormwater Management Plan and Stormwater Management Facility Design**

Introduction

As requested by your office, JFSA Canada Inc. (JFSA) has evaluated, based on the provided information as described below; (i) the adequacy of the proposed minor system with respect to hydraulic grade line (HGL) analysis; and (ii) the storage required in the SWM facilities to meet quality and quantity control requirements for the proposed development at Cardinal Creek Village South. Note that this is an update of the December 21, 2021, version of this memo to reflect changes to DSEL's preliminary servicing and grading design. This includes changes to the draft plan of the subdivision, drainage areas, pipe data, and the pond stage-storage curve. Furthermore, the percent increase of the Rational Method flows used in the preliminary HGL analysis was applied and model simulations were completed reflecting the increase in runoff captured into the minor system during the 100-year storm to address a City of Ottawa review comment.

The proposed Cardinal Creek Village South site has a development area of approximately **45.82 ha**. **11.35 ha** of the proposed development as well as **0.68 ha** of external drainage area are tributary to the existing SWM Pond 1 and the stormwater management system for Cardinal Creek Village Phase 4. **32.54 ha** of the site will discharge to SWM Pond 2, which will provide quality control, erosion control and quantity control up to the 100-year level of service, before discharging to the South Tributary of Cardinal Creek. **1.93 ha** consisting primarily of rear yards will drain uncontrolled to the South Tributary of Cardinal Creek. Refer to **Figure 10** for the proposed drainage areas of the subject site.

Stormwater Management Facility (Pond 2)

As noted above, SWM Pond 2 will provide quality control for **32.54 ha** of the site with an average imperviousness of **66%**. Pond 2 also requires erosion control, provided based on the detention of the 25 mm storm runoff for a drawdown time of approximately **96 hours**. The effectiveness of this erosion control was confirmed by a continuous erosion analysis, as documented in the JFSA's June 21, 2013 ***"Cardinal Creek Village / Continuous Erosion Analysis"*** memo. It is important to note that the erosion thresholds identified in the June 2013 memo have been updated during the preparation of this report based on field work conducted by Geo Morphix Ltd. The continuous SWMHYMO erosion model was re-run based on the drainage area changes to Pond 2 and the updated erosion thresholds provided by Geo Morphix. Also, due to coordination that occurred during updates to the FSR design, the total proposed drainage area to Pond 2 used in the continuous erosion model updates (**33.20 ha**) was larger than the total proposed drainage area that will actually drain to Pond 2 (**32.54 ha**) as per DSEL's latest design, which is conservative considering that the pond size has not changed based on the drainage area reduction and the pond release rates to the South Tributary are now slightly less than the ones assumed in the updated continuous erosion model. The hydrographs generated by the updated continuous erosion model were provided to Geo Morphix and they subsequently prepared a preliminary erosion analysis. Based on Geo Morphix's preliminary erosion analysis results, it is anticipated that the proposed post-development scenario is acceptable from an erosion perspective. A detailed erosion analysis will be prepared in the detailed design stage of Cardinal Creek Village South.

Pond 2, discharging to the South Tributary of Cardinal Creek, also requires 2- to 100-year post- to pre-development quantity control. Target release rates for Pond 2, as per the approved July 2013 ***"Master Servicing Study for Cardinal Creek Village"*** (MSS report) prepared by DSEL, were calculated based on existing flows simulated with AECOM's 2013 Cardinal Creek XPSWMM model for the 24-hour SCS Type II design storms, pro-rated by the existing drainage area from the subject site to the South Tributary of Cardinal Creek. This source is appropriate as it supersedes the AECOM August 2009 "***Greater Cardinal Creek Subwatershed Study - Existing Conditions***" study. These existing flows are specifically detailed in the JFSA's June 21, 2013 ***"Cardinal Creek Village/Preliminary Stormwater Management Plan and Stormwater Management Facility Design"*** included as **Appendix K** of the MSS report and reproduced in **Table A-2** of **Attachment A**.

The proposed drainage area to Pond 2 was simulated using SWMHYMO modelling software to assess its performance and ensure the design requirements were met. The SWMHYMO model and associated files are included in **Attachment A**.

A summary of the proposed SWM facility operating conditions is presented in **Tables A-1** to **A-5** of **Attachment A**, including a comparison of the existing and proposed conditions flows from the subject site to the South Tributary of Cardinal Creek. All quantity control requirements were met by the proposed outlet controls, while still providing a 0.3 m freeboard between the maximum water level in the pond and the top of bank elevation, and a maximum 100-year active storage depth of 2.0 m.

Pond 2 is equipped with one sediment forebay connected to the main cell of the pond by a standard forebay berm. Refer to **Attachment B** for preliminary calculations for the required sediment forebay dimensions for this SWM facility. Pond 2 will also be equipped with a bottom-draw outlet pipe to reduce the temperatures of the outflow to the South Tributary of Cardinal Creek.

Preliminary HGL Analysis

A preliminary hydraulic grade line analysis for the proposed Cardinal Creek Village South development was completed using PCSWMM modelling software. Pipe data, storm sewer layout and Rational Method flows in the storm sewer are as provided by DSEL. The Rational Method flows were calculated based on the 2-, 5- or 10-year level of service requirements, and the minor system flows used in the hydraulic grade line calculations were estimated as **35%** greater than the Rational Method flows, to account for the additional flows captured by catchbasin grates, lead pipes and/or inlet control devices under the higher surface water depths during the 100-year storm. The proposed storm sewer infrastructure data was provided by DSEL and incorporated into a PCSWMM model, and flows derived by DSEL's Rational Method calculations were then applied to each Maintenance Hole (MH) in the model as steady flows (using the baseline inflow option). Exit losses were applied to all storm sewer pipes in the system based on the angle of the downstream connection.

The maximum HGL obtained at each MH has been extracted and provided in **Table C1** in **Attachment C**. In absence of USF elevations for the site at this stage, the maximum HGL was compared to elevations 1.90 m below the road elevation as an assumed USF elevation. This will be updated in the detailed design stage once USF elevations are available.

An average freeboard of **2.68 m** from the top of MH was observed throughout the proposed development for the 100-year return period. With a minimum freeboard of **2.02m** at **MH-61**. As such it can be concluded that the proposed storm sewer infrastructure is sufficiently sized, to safely convey minor system flows from the development under various extreme conditions. A detailed HGL analysis will be prepared in the detailed design stage. The PCSWMM model and associated modelling files are provided electronically.

Drainage Area to Cardinal Creek Village Phase 4

As noted above, a total of **12.03 ha** (**11.35 ha** area from the northwest portion of Cardinal Creek Village South, as well as **0.68 ha** of external drainage area) is tributary to the north and is to be captured by the Phase 4 storm sewer network and drain to Pond 1. This area has an average imperviousness of **64%** according to **Figure 10**. As per the JFSA January 2020 SWM report for these lands, it was previously assumed that **15.59 ha** with an average imperviousness of **26%** would drain to the existing Cardinal Creek Village development/Pond 1.

While the proposed drainage area is less than the previously assumed drainage area, the proposed average imperviousness is more than the previously assumed average imperviousness. A preliminary analysis of the receiving storm sewer and Pond 1 within the existing Cardinal Creek Village development has been undertaken to verify the impacts on the storm sewer network and Pond 1 operation. Based on this preliminary analysis, it was found that under ultimate conditions, the receiving storm sewer network has sufficient capacity to accommodate the proposed drainage area of **12.03 ha** with an average imperviousness of **64%** with minimal impacts on the 100-yr HGL across the existing development. Additionally, based on the available design pond information, the proposed Pond 1 permanent pool, quality control and extended detention storage volumes are sufficient to provide quality treatment for the existing and proposed developments under ultimate conditions. Although Pond 1 outflows increase when compared to the previous outflows, this preliminary analysis found that the capacity of the existing culvert under Highway 174 would not be exceeded during the 100-year event.

Note that the analysis of Pond 1 under 100% blockage of the outlet controls, as well as the two sensitivity tests shown in the JFSA's December 2018 ***"Design Brief for the Interim Stormwater Management Pond 1 for Phases 1 to 5 in Cardinal Creek Village"*** are being re-evaluated based on the changes in drainage area and imperviousness to SWM Pond 1 as detailed above. These evaluations are expected to be supplemented with as-built information of Pond 1 when it becomes available. A detailed analysis of the HGL within the existing Cardinal Creek development, Pond 1 operation and peak flows to the existing culvert under Highway 174 will be prepared at the detailed design stage of the Cardinal Creek Village South development, to confirm if the existing storm sewer network, Pond 1 and culvert are sufficiently sized.

Uncontrolled Drainage Area to Cardinal Creek South Tributary

As noted above, **1.93 ha** of rear yard drainage areas with an average imperviousness of **29%** from Cardinal Creek Village South will drain uncontrolled to the southern tributary of Cardinal Creek. This area is to provide the southern tributary with clean runoff to mimic pre-development conditions. This area has been included in the SWMHYMO model and as seen in **Table A-2** of **Attachment A**, the total outflow from Cardinal Creek Village South development including this uncontrolled drainage area does not exceed the target release rates/existing outflows. A full analysis of the peak flows to the tributary will be assessed at the detailed design stage.

Cox County Road Culvert

A **74.30 ha** area has been identified as the drainage area to a **900mm** concrete culvert underneath Cox Country Rd. A SWMHYMO model of the drainage area was built to simulate peak flows at the culvert in question to assess if the existing culvert's size is sufficient. A peak flow of **1.324 m^3/s** was established by the model for the 25-year design event, the required level of service for this road.

A HY-8 model was assembled to assess the operating characteristics under the 25-year design event. Based on existing conditions, the 25-year water level was calculated to be **88.46 m**, which provides **0.81 m** of freeboard for this event. Based on the results of this analysis, this crossing has sufficient capacity to convey **2.28 m^3/s** before overtopping; the 100-year flow for this location is **1.904 m^3/s** and, as such, this culvert has greater than a 100-year level of service. See **Attachment D** for the full analysis of this crossing.

Conclusion

The memorandum confirms the following design conditions:

- Pond 2 is sufficiently sized to meet the existing release rates and erosion control requirements.
- The preliminary HGL analysis confirms the proposed storm sewer network connected to Pond 2 is sufficiently sized.
- A total of **12.03 ha** of drainage area with an average imperviousness of **64%** within the northwest portion of the proposed development will be treated by Pond 1.
- The **1.93 ha** of uncontrolled rear yard drainage areas with an average imperviousness of **29%** will discharge directly to the South Tributary of Cardinal Creek.
- The existing culvert at Cox County Rd is sufficiently sized.
- Pond 2's bottom-draw outlet pipe will reduce outflow temperatures to Cardinal Creek.

Yours truly,
JFSA Canada Inc.

Jonathon Burnett, B.Eng, P.Eng
Senior Water Resources Engineer

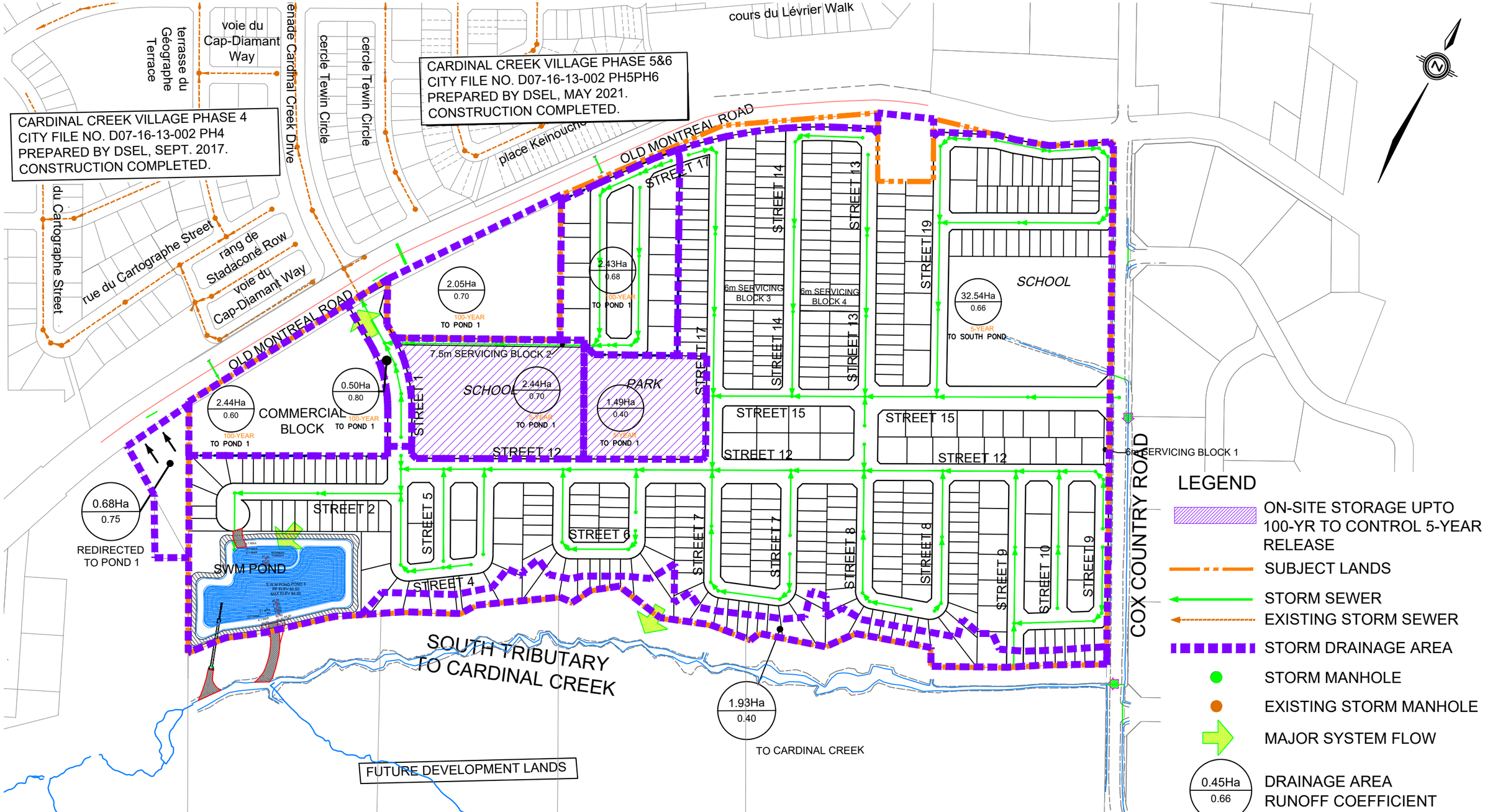
Paulo Pickart, B.Eng, P.Eng
Water Resources Project Engineer
(November 08, 2024 updates only)

cc: J.F Sabourin, M.Eng, P.Eng
Director of Water Resources Projects

Figures
Figure 12: Post-Development Drainage Area Plan (DSEL)

Attachments
Attachment A: Pond 2 Preliminary Summary Tables and Modelling Files
Attachment B: Pond 2 Preliminary Forebay Calculations
Attachment C: Storm Design Sheets (DSEL) & Preliminary HGL Analysis Results
Attachment D Cox Country Road Culvert Analysis

Modelling Files
PCSWMM: CCVS_v02.2 (Provided Electronically)



DSEL
120 Iber Road, Unit 103
Stittsville, ON K2S 1E9
TEL: (613) 836-0856
FAX: (613) 836-7183
www.DSEL.ca

POND DRAINAGE PLAN
CARDINAL CREEK VILLAGE SOUTH

PROJECT No.:	19-1153
SCALE:	1:4000
DATE:	NOVEMBER 2024
FIGURE:	10

JFSA Canada Inc.
52 Springbrook Drive,
Ottawa, ON K2S 1B9
T 613-836-3884 F 613-836-0332

jfsa.com

Attachment A

Pond 2 Preliminary Summary Tables and Modelling Files

Pond 2 - Preliminary Stage-Storage

Elevation	Volume (m3)	Volume above PP @ 95% (m3)	Area (m2)	Area @ 95% (m2)	Demarcation
80.00	0.000		2916.60	2770.77	**Pond Bottom**
80.05	147.502		2983.50	2834.33	
80.10	298.360		3050.79	2898.25	
80.15	452.594		3118.57	2962.64	
80.20	610.226		3186.72	3027.38	
80.25	771.277		3255.30	3092.54	
80.30	935.763		3324.16	3157.95	
80.35	1103.702		3393.40	3223.73	
80.40	1275.114		3463.07	3289.92	
80.45	1450.018		3533.10	3356.45	
80.50	1628.432		3603.45	3423.28	
80.55	1810.374		3674.21	3490.50	
80.60	1995.863		3745.37	3558.10	
80.65	2184.919		3816.88	3626.04	
80.70	2377.563		3888.86	3694.42	
80.75	2573.813		3961.16	3763.10	
80.80	2773.686		4033.73	3832.04	
80.85	2977.198		4106.79	3901.45	
80.90	3184.374		4180.23	3971.22	
80.95	3395.230		4254.02	4041.32	
81.00	3609.844		4330.52	4113.99	
81.05	3841.193		4675.12	4441.36	
81.10	4077.369		4771.90	4533.31	
81.15	4318.405		4869.55	4626.07	
81.20	4564.339		4967.82	4719.43	
81.25	4815.206		5066.85	4813.51	
81.30	5071.043		5166.62	4908.29	
81.35	5331.886		5267.11	5003.75	
81.40	5597.770		5368.27	5099.86	
81.45	5868.732		5470.21	5196.70	
81.50	6144.809		5572.87	5294.23	
81.55	6426.037		5676.23	5392.42	
81.60	6712.452		5780.37	5491.35	
81.65	7004.090		5885.18	5590.92	
81.70	7300.985		5990.62	5691.09	
81.75	7603.173		6096.90	5792.06	
81.80	7910.692		6203.86	5893.67	
81.85	8223.576		6311.52	5995.94	
81.90	8541.864		6419.99	6098.99	
81.95	8865.595		6529.24	6202.78	
82.00	9194.801		6639.00	6307.05	
82.05	9529.517		6749.64	6412.16	
82.10	9869.781		6860.90	6517.86	
82.15	10215.627		6972.96	6624.31	
82.20	10567.210		7090.33	6735.81	

Pond 2 - Preliminary Stage-Storage

Elevation	Volume (m3)	Volume above PP @ 95% (m3)	Area (m2)	Area @ 95% (m2)	Demarcation
82.25	10928.793		7373.01	7004.36	
82.30	11304.672		7662.14	7279.03	
82.35	11695.130		7956.19	7558.38	
82.40	12100.421		8255.44	7842.67	
82.45	12520.799		8559.66	8131.68	
82.50	**12956.631**	12308.799	**8873.63**	8429.95	**Permanent Pool**
82.55	13403.325	424.359	8994.13	8544.42	
82.60	13856.140	854.534	9118.45	8662.53	
82.65	14315.186	1290.627	9243.42	8781.25	
82.70	14780.507	1732.682	9369.41	8900.94	
82.75	15252.143	2180.736	9496.04	9021.24	
82.80	15730.258	2634.946	9628.56	9147.13	
82.85	16219.262	3099.499	9931.60	9435.02	
82.90	16718.184	3573.475	10025.25	9523.99	
82.95	17221.797	4051.908	10119.27	9613.31	
83.00	17730.121	4534.816	10213.70	9703.02	
83.05	18243.177	5022.219	10308.54	9793.11	
83.10	18760.985	5514.136	10403.77	9883.58	
83.15	19283.564	6010.586	10499.40	9974.43	
83.20	19810.937	6511.591	10595.52	10065.74	
83.25	20343.123	7017.167	10691.91	10157.31	
83.30	20880.140	7527.334	10788.78	10249.34	
83.35	21422.010	8042.110	10886.01	10341.71	
83.40	21968.752	8561.515	10983.67	10434.49	
83.45	22520.387	9085.568	11081.72	10527.63	
83.50	23076.933	9614.287	11180.16	10621.15	
83.55	23638.414	10147.694	11279.06	10715.11	
83.60	24204.845	10685.803	11378.20	10809.29	
83.65	24776.249	11228.637	11477.93	10904.03	
83.70	25352.648	11776.216	11578.03	10999.13	
83.75	25934.061	12328.559	11678.50	11094.58	
83.80	26520.508	12885.683	11779.37	11190.40	
83.85	27112.009	13447.609	11880.66	11286.63	
83.90	27708.583	14014.354	11982.30	11383.19	
83.95	28310.250	14585.938	12084.38	11480.16	
84.00	28917.031	15162.380	12186.88	11577.54	
84.05	29528.949	15743.702	12289.83	11675.34	
84.10	30146.021	16329.921	12393.05	11773.40	
84.15	30768.268	16921.055	12496.82	11871.98	
84.20	31395.709	17517.124	12600.83	11970.79	
84.25	32028.364	18118.146	12705.40	12070.13	
84.30	32666.257	18724.145	12810.30	12169.79	
84.35	33309.404	19335.134	12915.56	12269.78	
84.40	33957.825	19951.134	13021.28	12370.22	
84.45	34611.542	20572.165	13127.42	12471.05	

Pond 2 - Preliminary Stage-Storage

Elevation	Volume (m3)	Volume above PP @ 95% (m3)	Area (m2)	Area @ 95% (m2)	Demarcation
84.50	35270.636	21198.305	13236.33	12574.51	
84.55	35935.050	21829.498	13340.20	12673.19	
84.60	36604.704	22465.669	13445.96	12773.66	
84.65	37279.657	23106.875	13552.17	12874.56	
84.70	37959.936	23753.140	13658.97	12976.02	
84.75	38645.563	24404.485	13766.13	13077.82	
84.80	39336.622	25060.991	13876.21	13182.40	
84.85	40064.725	25752.689	15247.92	14485.52	
84.90	**40863.266**	**26511.303**	**16693.72**	15859.03	**Top of Pond**

Table A-1: Summary of Total Proposed Drainage Area

To SWM Facility	Area (ha)	Imperv. (%)	Area x Imp.	Required Storage [1] (m^3)		
				Perm. Pool	Qual. Control	Eros. Control
Pond 2	32.54	66	2147.6	5727	1302	4696

[1] Quality control and permanent pool requirements based on MOE guidelines for enhanced quality control for wet ponds. Erosion control based on 25 mm storm runoff volume for Pond 2, confirmed by 2013 continuous erosion analysis.

Table A-2: Simulated Release Rates and Volumes for Proposed SWM Facility 2 to South Tributary of Cardinal Creek [1]

Pond Component	Existing Outflow (m^3/s)	SWM Facility 2 (32.54 ha)			CCVS Total Outflow [4] (m^3/s)
		Pond Outflow (m^3/s)	Prelim. Pond Level [3]	Pond Storage (m^3)	
Permanent Pool [2]	N/A	N/A	82.50	12309	N/A
Extended Detention [2]	N/A	0.036	83.20	6512	N/A
2yr/24hr SCS	0.253	0.062	83.35	7977	0.151
5yr/24hr SCS	0.432	0.106	83.65	10790	0.260
10yr/24hr SCS	0.565	0.124	83.80	12800	0.335
25yr/24hr SCS	0.741	0.143	84.05	15330	0.443
50yr/24hr SCS	0.883	0.155	84.20	17260	0.523
100yr/24hr SCS	1.043	0.167	84.35	19330	0.596
July 1st, 1979	N/A	0.177	84.50	21100	N/A
August 4th, 1988	N/A	0.165	84.35	18890	N/A
August 8, 1996	N/A	0.157	84.20	17460	N/A

[1] Existing conditions flows as generated on subcatchments to south tributary as per Greater Cardinal Creek Subwatershed Study Existing Conditions XPSWMM hydrology model provided by AECOM on December 21, 2012, and pro-rated by drainage area (228.87 ha total, 31.20 ha through subject site). Post- to pre-development quantity control required for the 2- to 100-year design storms.

[2] Extended detention based on 25 mm storm runoff volume with a drawdown time of 96 hours. Volumes are active storage only for all components except the permanent pool.

[3] Preliminary elevations reported have been rounded up to the neareast 5cm.

[4] Total Cardinal Creek Village South development outflow to South Tributary of Cardinal Creek, including 1.93 ha of uncontrolled rear yard drainage area.

Table A-3: Extended Detention Parameters for SWM Facility 2

Permanent Pool Parameters			Quality Orifice Parameters		
Area (C3)	8429.95	m^2	Diameter	0.145	m
Volume	12308.80	m^3			
PP Elev	82.500	m	Area	0.017	m^2
QC Elev	82.700	m	Invert	82.500	m
h (m)	0.200	m	C_o	0.62	

Notes:
- C3 is the intercept from the area-depth linear regression.
- PP Elev indicates the elevation of the permanent pool.
- QC Elev indicates the elevation of the storage volume required by MOE for quality control.
- h is the maximum water elevation above the orifice (m).

Table A-4: Extended Detention Drawdown Time for SWM Facility 2

Elev.	Active Storage			C2	Drawdown Time	Drawdown Time	Flow	Demarcation
(m)	V (m^3)	A (m^2)	depth (m)	(m^2/m)	(h)	(days)	(m^3/s)	Point
82.50	**0.00**	**8429.95**	**0.00**				**0.000**	**PP Elev**
82.55	424.36	8544.42	0.05	2290	23.16	0.97	0.004	
82.60	854.53	8662.53	0.10	2326	32.91	1.37	0.008	
82.65	1290.63	8781.25	0.15	2342	40.49	1.69	0.013	
82.70	**1732.68**	**8900.94**	**0.20**	**2355**	**46.97**	**1.96**	**0.016**	**QC Elev**
82.75	2180.74	9021.24	0.25	2365	52.76	2.20	0.019	
82.80	2634.95	9147.13	0.30	2391	58.07	2.42	0.022	
82.85	3099.50	9435.02	0.35	2872	63.41	2.64	0.024	
82.90	3573.48	9523.99	0.40	2735	68.02	2.83	0.026	
82.95	4051.91	9613.31	0.45	2630	72.39	3.02	0.028	
83.00	4534.82	9703.02	0.50	2546	76.56	3.19	0.030	
83.05	5022.22	9793.11	0.55	2478	80.57	3.36	0.031	
83.10	5514.14	9883.58	0.60	2423	84.43	3.52	0.033	
83.15	6010.59	9974.43	0.65	2376	88.17	3.67	0.034	
83.20	**6511.59**	**10065.74**	**0.70**	**2337**	**91.81**	**3.83**	**0.036**	**Ext. Det.**
83.25	7017.17	10157.31	0.75	2303	95.41	3.98	0.042	
83.30	7527.33	10249.34	0.80	2274	98.43	4.10	0.052	
83.35	8042.11	10341.71	0.85	2249	100.92	4.20	0.063	
83.40	8561.51	10434.49	0.90	2227	102.97	4.29	0.078	
83.45	9085.57	10527.63	0.95	2208	104.75	4.36	0.086	
83.50	9614.29	10621.15	1.00	2191	106.40	4.43	0.093	
83.55	10147.69	10715.11	1.05	2176	107.95	4.50	0.099	
83.60	10685.80	10809.29	1.10	2163	109.42	4.56	0.105	
83.65	11228.64	10904.03	1.15	2151	110.82	4.62	0.110	
83.70	11776.22	10999.13	1.20	2141	112.17	4.67	0.115	
83.75	12328.56	11094.58	1.25	2132	113.48	4.73	0.120	
83.80	12885.68	11190.40	1.30	2123	114.74	4.78	0.125	
83.85	13447.61	11286.63	1.35	2116	115.97	4.83	0.129	
83.90	14014.35	11383.19	1.40	2109	117.17	4.88	0.134	
83.95	14585.94	11480.16	1.45	2104	118.33	4.93	0.138	
84.00	15162.38	11577.54	1.50	2098	119.48	4.98	0.142	
84.05	15743.70	11675.34	1.55	2094	120.60	5.03	0.146	
84.10	16329.92	11773.40	1.60	2090	121.71	5.07	0.150	
84.15	16921.06	11871.98	1.65	2086	122.79	5.12	0.153	
84.20	17517.12	11970.79	1.70	2083	123.86	5.16	0.157	
84.25	18118.15	12070.13	1.75	2080	124.91	5.20	0.160	
84.30	18724.14	12169.79	1.80	2078	125.95	5.25	0.164	
84.35	**19335.13**	**12269.78**	**1.85**	**2076**	**126.97**	**5.29**	**0.167**	**100-year**
84.40	19951.13	12370.22	1.90	2074	127.99	5.33	0.171	
84.45	20572.17	12471.05	1.95	2072	128.99	5.37	0.174	

Table A-4: Extended Detention Drawdown Time for SWM Facility 2

Elev.	Active Storage			C2	Drawdown Time	Drawdown Time	Flow	Demarcation
(m)	V (m^3)	A (m^2)	depth (m)	(m^2/m)	(h)	(days)	(m^3/s)	Point
84.50	21198.30	12574.51	2.00	2072	129.98	5.42	0.177	
84.55	21829.50	12673.19	2.05	2070	130.96	5.46	0.180	
84.60	22465.67	12773.66	2.10	2068	131.94	5.50	0.183	
84.65	23106.87	12874.56	2.15	2067	132.59	5.52	0.363	
84.70	23753.14	12976.02	2.20	2066	132.93	5.54	0.688	
84.75	24404.49	13077.82	2.25	2066	133.13	5.55	1.107	
84.80	25060.99	13182.40	2.30	2066	133.27	5.55	1.602	
84.85	25752.69	14485.52	2.35	2577	133.37	5.56	2.163	
84.90	26511.30	15859.03	2.40	3095	112.47	4.69	2.781	

Notes:

- C2 is the slope coefficient from the area-depth linear regression.
- PP Elev indicates the elevation of the permanent pool.
- QC Elev indicates the elevation of the storage volume required by MOE for quality control.
- Ext. Det. indicates the elevation of extended detention provided based on the detention of the 25 mm storm for a 96 hour drawdown time.
- Drawdown time is calculated based on Equation 4.11 of the MOE Guidelines up to the extended detention WSE. Above the extended detention WSE, the drawdown time is calculated based on the difference in incremental volumes divided by the average pond outflow, with the resulting time added to the previous drawdown time.

Table A-5: Stage-Storage-Outflow Curve for SWM Facility 2

			Quality Control 1		Quantity Control 1		Emergency Spillway			
			Vertical Orifice		Vertical Rect. Orifice		Broad Crested Weir			
			Dia (m)	0.145	Width (m)	0.250	L (m)	10.000		
					Height (m)	0.150				
			Area (m^2)	0.017	Area (m^2)	0.038				
			Invert (m)	82.50	Invert (m)	83.20	C_w	1.580		
			C_o	0.62	C_o	0.62	Invert (m)	84.60		
			Q @ D	0.012	C_w	1.800	n contr.	2		
Elevation	Active Sto.	Demarkation	Head	Outflow	Depth	Outflow	Head	Outflow	Outflow	Storage
(m)	(m^3)	Points	(m)	(m^3/s)	(m)	(m^3/s)	(m)	(m^3/s)	(m^3/s)	(ha·m)
82.50	**0**	**PP Elev**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
82.55	424		0.050	0.004	0.000	0.000	0.000	0.000	0.004	0.042
82.60	855		0.100	0.008	0.000	0.000	0.000	0.000	0.008	0.085
82.65	1291		0.150	0.013	0.000	0.000	0.000	0.000	0.013	0.129
82.70	**1733**	**QC Elev**	**0.200**	**0.016**	**0.000**	**0.000**	**0.000**	**0.000**	**0.016**	**0.173**
82.75	2181		0.250	0.019	0.000	0.000	0.000	0.000	0.019	0.218
82.80	2635		0.300	0.022	0.000	0.000	0.000	0.000	0.022	0.263
82.85	3099		0.350	0.024	0.000	0.000	0.000	0.000	0.024	0.310
82.90	3573		0.400	0.026	0.000	0.000	0.000	0.000	0.026	0.357
82.95	4052		0.450	0.028	0.000	0.000	0.000	0.000	0.028	0.405
83.00	4535		0.500	0.030	0.000	0.000	0.000	0.000	0.030	0.453
83.05	5022		0.550	0.031	0.000	0.000	0.000	0.000	0.031	0.502
83.10	5514		0.600	0.033	0.000	0.000	0.000	0.000	0.033	0.551
83.15	6011		0.650	0.034	0.000	0.000	0.000	0.000	0.034	0.601
83.20	**6512**	**Ext. Det.**	**0.700**	**0.036**	**0.000**	**0.000**	**0.000**	**0.000**	**0.036**	**0.651**
83.25	7017		0.750	0.037	0.050	0.005	0.000	0.000	0.042	0.702
83.30	7527		0.800	0.039	0.100	0.013	0.000	0.000	0.052	0.753
83.35	8042		0.850	0.040	0.150	0.023	0.000	0.000	0.063	0.804
83.40	8562		0.900	0.041	0.200	0.036	0.000	0.000	0.078	0.856
83.45	9086		0.950	0.042	0.250	0.043	0.000	0.000	0.086	0.909
83.50	9614		1.000	0.044	0.300	0.049	0.000	0.000	0.093	0.961
83.55	10148		1.050	0.045	0.350	0.054	0.000	0.000	0.099	1.015
83.60	10686		1.100	0.046	0.400	0.059	0.000	0.000	0.105	1.069
83.65	11229		1.150	0.047	0.450	0.063	0.000	0.000	0.110	1.123
83.70	11776		1.200	0.048	0.500	0.067	0.000	0.000	0.115	1.178
83.75	12329		1.250	0.049	0.550	0.071	0.000	0.000	0.120	1.233
83.80	12886		1.300	0.050	0.600	0.075	0.000	0.000	0.125	1.289
83.85	13448		1.350	0.051	0.650	0.078	0.000	0.000	0.129	1.345
83.90	14014		1.400	0.052	0.700	0.081	0.000	0.000	0.134	1.401
83.95	14586		1.450	0.053	0.750	0.085	0.000	0.000	0.138	1.459
84.00	15162		1.500	0.054	0.800	0.088	0.000	0.000	0.142	1.516
84.05	15744		1.550	0.055	0.850	0.091	0.000	0.000	0.146	1.574
84.10	16330		1.600	0.056	0.900	0.094	0.000	0.000	0.150	1.633
84.15	16921		1.650	0.057	0.950	0.096	0.000	0.000	0.153	1.692
84.20	17517		1.700	0.058	1.000	0.099	0.000	0.000	0.157	1.752

Table A-5: Stage-Storage-Outflow Curve for SWM Facility 2

			Quality Control 1		Quantity Control 1		Emergency Spillway			
			Vertical Orifice		Vertical Rect. Orifice		Broad Crested Weir			
			Dia (m)	0.145	Width (m)	0.250	L (m)	10.000		
					Height (m)	0.150				
			Area (m^2)	0.017	Area (m^2)	0.038				
			Invert (m)	82.50	Invert (m)	83.20	C_w	1.580		
			C_o	0.62	C_o	0.62	Invert (m)	84.60		
			Q @ D	0.012	C_w	1.800	n contr.	2		
Elevation	Active Sto.	Demarkation	Head	Outflow	Depth	Outflow	Head	Outflow	Outflow	Storage
(m)	(m^3)	Points	(m)	(m^3/s)	(m)	(m^3/s)	(m)	(m^3/s)	(m^3/s)	(ha·m)
84.25	18118		1.750	0.059	1.050	0.102	0.000	0.000	0.160	1.812
84.30	18724		1.800	0.060	1.100	0.104	0.000	0.000	0.164	1.872
84.35	**19335**	**100-year**	**1.850**	**0.060**	**1.150**	**0.107**	**0.000**	**0.000**	**0.167**	**1.934**
84.40	19951		1.900	0.061	1.200	0.109	0.000	0.000	0.171	1.995
84.45	20572		1.950	0.062	1.250	0.112	0.000	0.000	0.174	2.057
84.50	21198		2.000	0.063	1.300	0.114	0.000	0.000	0.177	2.120
84.55	21829		2.050	0.064	1.350	0.116	0.000	0.000	0.180	2.183
84.60	**22466**	**Ovf Elev**	**2.100**	**0.065**	**1.400**	**0.119**	**0.000**	**0.000**	**0.183**	**2.247**
84.65	23107		2.150	0.065	1.450	0.121	0.050	0.176	0.363	2.311
84.70	23753		2.200	0.066	1.500	0.123	0.100	0.499	0.688	2.375
84.75	24404		2.250	0.067	1.550	0.125	0.150	0.915	1.107	2.440
84.80	25061		2.300	0.068	1.600	0.127	0.200	1.408	1.602	2.506
84.85	25753		2.350	0.068	1.650	0.129	0.250	1.965	2.163	2.575
84.90	26511		2.400	0.069	1.700	0.131	0.300	2.581	2.781	2.651

Notes : - PP Elev indicates the elevation of the permanent pool.
- QC Elev indicates the elevation of the storage volume required by MOE for quality control.
- Ext. Det. indicates the elevation of extended detention provided based on the detention of the 25 mm storm.
- Ovf Elev indicates the elevation of the emergency overflow provided above the 100-year water level.

```
00001> 20     Metric units / ID Numbers OFF
00002> *$**************************************************************************
00003> *#  SWMHYMO Ver:5.5/Feb 2015 / INPUT DATA FILE
00004> *$**************************************************************************
00005> *#  Project Name  : [Cardinal Creek Village South]
00006> *#  Project Number: [959(03)]
00007> *#  Date          : [2024/10/29]
00008> *#  Modeller      : [PP]
00009> *#  Company       : J.F. Sabourin and Associates
00010> *#  License #     : 2549237
00011> *$**************************************************************************
00012> *%  25 mm Storm based on 2-Year, 3-Hour Chicago Storm
00013> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[001]
00014> *%                   ["25MMC3H.stm"] <--storm filename, one per line for NSTORM time
00015> *%-----------------|-------------------------------------------------------|
00016> READ STORM          STORM_FILENAME=["storm.001"]
00017> *%-----------------|-------------------------------------------------------|
00018> DEFAULT VALUES      ICASEdef=[1],  read and print values
00019>                     DEFVAL_FILENAME=["Ottawa.val"]
00020> *%-----------------|-------------------------------------------------------|
00021> *##########################################################################
00022> *# PROPOSED CONDITIONS
00023> *##########################################################################
00024> *# Lumped drainage to Cardinal Creek Village South Pond 2
00025> CALIB STANDHYD       NHYD=["CCVS"], DT=[1](min), AREA=[32.54](ha), XIMP=[0.56], TIMP=[0.66], DWF=[0](cms),
00026>                     LOSS=[1] Horton Equ: Fo=[76.2](mm/hr), Fc=[13.2](mm/hr), DCAY=[4.14](/hr), F=[0.00](mm),
00027>                     Pervious   areas: IAper=[4.67](mm), SLPP=[2.0](%), LGP=[40](m), MNP=[0.25], SCP=[0](min),
00028>                     Impervious areas: IAimp=[1.57](mm), SLPI=[0.9](%), LGI=[466](m), MNI=[0.013], SCI=[0](min),
00029>                     RAINFALL=[ ,  ,  -1](mm/hr)
00030> *%-----------------|-------------------------------------------------------|
00031> *%-----------------|-------------------------------------------------------|
00032> *# Estimated Pond Volumes for SWM Facility
00033> ROUTE RESERVOIR      NHYDout=["Pout"] ,NHYDin=["CCVS"] ,
00034>                     RDT=[1](min),
00035>                           TABLE of ( OUTFLOW-STORAGE ) values
00036>                                          (cms) - (ha-m)
00037>                                    [ 0 , 0 ]
00038>                                    [ 0.004 , 0.042 ]
00039>                                    [ 0.008 , 0.085 ]
00040>                                    [ 0.013 , 0.129 ]
00041>                                    [ 0.016 , 0.173 ]
00042>                                    [ 0.019 , 0.218 ]
00043>                                    [ 0.022 , 0.263 ]
00044>                                    [ 0.024 , 0.31 ]
00045>                                    [ 0.026 , 0.357 ]
00046>                                    [ 0.028 , 0.405 ]
00047>                                    [ 0.03 , 0.453 ]
00048>                                    [ 0.031 , 0.502 ]
00049>                                    [ 0.033 , 0.551 ]
00050>                                    [ 0.034 , 0.601 ]
00051>                                    [ 0.036 , 0.651 ]
00052>                                    [ 0.042 , 0.702 ]
00053>                                    [ 0.052 , 0.753 ]
00054>                                    [ 0.063 , 0.804 ]
00055>                                    [ 0.078 , 0.856 ]
00056>                                    [ 0.086 , 0.909 ]
00057>                                    [ 0.093 , 0.961 ]
00058>                                    [ 0.099 , 1.015 ]
00059>                                    [ 0.105 , 1.069 ]
00060>                                    [ 0.11 , 1.123 ]
00061>                                    [ 0.115 , 1.178 ]
00062>                                    [ 0.12 , 1.233 ]
00063>                                    [ 0.125 , 1.289 ]
00064>                                    [ 0.129 , 1.345 ]
00065>                                    [ 0.134 , 1.401 ]
00066>                                    [ 0.138 , 1.459 ]
00067>                                    [ 0.142 , 1.516 ]
00068>                                    [ 0.146 , 1.574 ]
00069>                                    [ 0.15 , 1.633 ]
00070>                                    [ 0.153 , 1.692 ]
00071>                                    [ 0.157 , 1.752 ]
00072>                                    [ 0.16 , 1.812 ]
00073>                                    [ 0.164 , 1.872 ]
00074>                                    [ 0.167 , 1.934 ]
00075>                                    [ 0.171 , 1.995 ]
00076>                                    [ 0.174 , 2.057 ]
00077>                                    [ 0.177 , 2.12 ]
00078>                                    [ 0.18 , 2.183 ]
00079>                                    [ 0.183 , 2.247 ]
00080>                                    [ 0.363 , 2.311 ]
00081>                                    [ 0.688 , 2.375 ]
00082>                                    [ 1.107 , 2.44 ]
00083>                                    [ 1.602 , 2.506 ]
00084>                                    [ 2.163 , 2.575 ]
00085>                                    [ 2.781 , 2.651 ]
00086>                                    [ -1    ,  -1   ]  (max twenty pts)
00087>                           NHYDovf=["Povf"] ,
00088> *%-----------------|-------------------------------------------------------|
00089> *# Uncontrolled rear yard drainage area to South Tributary
00090> CALIB STANDHYD       NHYD=["CCVSunc"], DT=[1](min), AREA=[1.93](ha), XIMP=[0.19], TIMP=[0.29], DWF=[0](cms),
00091>                     LOSS=[1] Horton Equ: Fo=[76.2](mm/hr), Fc=[13.2](mm/hr), DCAY=[4.14](/hr), F=[0.00](mm),
00092>                     Pervious   areas: IAper=[4.67](mm), SLPP=[2.0](%), LGP=[40](m), MNP=[0.25], SCP=[0](min),
00093>                     Impervious areas: IAimp=[1.57](mm), SLPI=[0.9](%), LGI=[113](m), MNI=[0.013], SCI=[0](min),
00094>                     RAINFALL=[ ,  ,  -1](mm/hr)
00095> *%-----------------|-------------------------------------------------------|
00096> *# Total Pond 2 Outflow to South Tributary
00097> ADD HYD             NHYDsum=["Pout-T"], NHYDs to add=["Pout" + "Povf"]
00098> *%-----------------|-------------------------------------------------------|
00099> *# Total CCV South Outflow to South Tributary (Controlled + Uncontrolled)
00100> ADD HYD             NHYDsum=["CCVS-T"], NHYDs to add=["Pout" + "Povf" + "CCVSunc"]
00101> *%-----------------|-------------------------------------------------------|
00102> *##########################################################################
00103> *# STORMS
00104> *##########################################################################
00105> *%  25 mm Storm based on 2-Year, 3-Hour Chicago Storm
00106> *%START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[001]
00107> *%                    ["25MMC3H.stm"] <--storm filename, one per line for NSTORM time
00108> *%-----------------|-------------------------------------------------------|
00109> *%  2-Year, 3-Hour Chicago Storm
00110> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[002]
00111>                     ["002YC3H.stm"] <--storm filename, one per line for NSTORM time
00112> *%-----------------|-------------------------------------------------------|
00113> *%  5-Year, 3-Hour Chicago Storm
00114> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[005]
00115>                     ["005YC3H.stm"] <--storm filename, one per line for NSTORM time
00116> *%-----------------|-------------------------------------------------------|
00117> *%  10-Year, 3-Hour Chicago Storm
00118> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[010]
00119>                     ["010YC3H.stm"] <--storm filename, one per line for NSTORM time
00120> *%-----------------|-------------------------------------------------------|
00121> *%  25-Year, 3-Hour Chicago Storm
00122> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[025]
00123>                     ["025YC3H.stm"] <--storm filename, one per line for NSTORM time
00124> *%-----------------|-------------------------------------------------------|
00125> *%  50-Year, 3-Hour Chicago Storm
00126> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[050]
00127>                     ["050YC3H.stm"] <--storm filename, one per line for NSTORM time
00128> *%-----------------|-------------------------------------------------------|
00129> *%  100-Year, 3-Hour Chicago Storm
00130> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[099]
00131>                     ["100YC3H.stm"] <--storm filename, one per line for NSTORM time
00132> *%-----------------|-------------------------------------------------------|
00133> *%  2-Year, 24-Hour SCS Storm
00134> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[102]
00135>                     ["SC24002x.stm"] <--storm filename, one per line for NSTORM time
00136> *%-----------------|-------------------------------------------------------|
00137> *%  5-Year, 24-Hour SCS Storm
00138> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[105]
00139>                     ["SC24005x.stm"] <--storm filename, one per line for NSTORM time
00140> *%-----------------|-------------------------------------------------------|
00141> *%  10-Year, 24-Hour SCS Storm
00142> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[110]
00143>                     ["SC24010x.stm"] <--storm filename, one per line for NSTORM time
00144> *%-----------------|-------------------------------------------------------|
00145> *%  25-Year, 24-Hour SCS Storm
00146> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[125]
00147>                     ["SC24025x.stm"] <--storm filename, one per line for NSTORM time
00148> *%-----------------|-------------------------------------------------------|
00149> *%  50-Year, 24-Hour SCS Storm
00150> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[150]
00151>                     ["SC24050x.stm"] <--storm filename, one per line for NSTORM time
00152> *%-----------------|-------------------------------------------------------|
00153> *%  100-Year, 24-Hour SCS Storm
00154> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[199]
00155>                     ["SC24100x.stm"] <--storm filename, one per line for NSTORM time
00156> *%-----------------|-------------------------------------------------------|
00157> *%  July 1st, 1979 Storm - Ottawa International Airport
00158> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[979]
00159>                     ["19790701.stm"] <--storm filename, one per line for NSTORM time
00160> *%-----------------|-------------------------------------------------------|
00161> *%  August 4th, 1988 Storm - Ottawa International Airport
00162> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[988]
00163>                     ["19880804.stm"] <--storm filename, one per line for NSTORM time
00164> *%-----------------|-------------------------------------------------------|
00165> *%  August 8th, 1996 Storm - Ottawa International Airport
00166> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[996]
00167>                     ["19960808.stm"] <--storm filename, one per line for NSTORM time
00168> *%-----------------|-------------------------------------------------------|
00169> *%  100-Year, 3-Hour Chicago Storm + 20%
00170> START               TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[999]
00171>                     ["100YC3H+.stm"] <--storm filename, one per line for NSTORM time
00172> *%-----------------|-------------------------------------------------------|
00173> *%-----------------|-------------------------------------------------------|
00174> FINISH
```

```
00001>  ================================================================================
00002>
00003>  SSSSS   W   W   M   M   H   H   Y   Y   M   M    OOO          222     000    11   5555   ========
00004>  S       W W W   MM MM   H   H    Y Y    MM MM   O   O          2   2   0  0  111   5
00005>  SSSSS   W W W   M M M   HHHHH     Y     M M M   O   O          2   2   0  0   11   5       Ver 5.500
00006>      S   W W W   M   M   H   H     Y     M   M   O   O        222   0  0   11   555     FEB  2015
00007>  SSSSS    W W    M   M   H   H     Y     M   M    OOO         2     0  0   11     5   ========
00008>                                                               2     0  0   11     5   # 2549237
00009>         StormWater Management HYdrologic Model                222     000    11   555    ========
00010>
00011>  ************************************************************************************************
00012>  ***************************************  SWMHYMO Ver 5.500  ********************************
00013>  ***************************  A single event and continuous hydrologic simulation model  ********
00014>  ***************************       based on the principles of HYMO and its successors    ********
00015>  ***************************              OTTHYMO-83 and OTTHYMO-89.                      ********
00016>  ************************************************************************************************
00017>  ***************************  Distributed by:  J.F. Sabourin and Associates Inc.          ********
00018>  ***************************                   Ottawa, Ontario: (613) 836-3884            ********
00019>  ***************************                   Gatineau, Quebec: (819) 243-6858           ********
00020>  ***************************                   E-Mail: swmhymo@jfsa.com                   ********
00021>  ************************************************************************************************
00022>
00023>  ************************************************************************************************
00024>  ++++++++++++++++++  Licensed user: JFSAinc.                                  ++++++++++++++++++
00025>  ++++++++++++++++++                  Ottawa                  SERIAL#:2549237  ++++++++++++++++++
00026>  ************************************************************************************************
00027>
00028>  ************************************************************************************************
00029>  ***************************                ++++++ PROGRAM ARRAY DIMENSIONS ++++++  ********
00030>  ***************************  Maximum value for ID numbers  :    11                 ********
00031>  ***************************  Max. number of rainfall points: 105408                ********
00032>  ***************************  Max. number of flow points   : 105408                 ********
00033>  ************************************************************************************************
00034>
00035>
00036>  ******************************  S U M M A R Y   O U T P U T  ******************************
00037>  ************************************************************************************************
00038>  *                     RUN DATE: 2024-10-29     TIME: 17:07:39     RUN COUNTER: 012065       *
00039>  ************************************************************************************************
00040>  * Input   file: C:\Temp\SWMHYMO\Pond 2\CCVS_v02.dat                                           *
00041>  * Output  file: C:\Temp\SWMHYMO\Pond 2\CCVS_v02.out                                           *
00042>  * Summary file: C:\Temp\SWMHYMO\Pond 2\CCVS_v02.sum                                           *
00043>  * User comments:                                                                             *
00044>  * 1:_____________________________________________________________________________________    *
00045>  * 2:_____________________________________________________________________________________    *
00046>  * 3:_____________________________________________________________________________________    *
00047>  ************************************************************************************************
00048>
00049>
00050> #*************************************************************************
00051> #  SWMHYMO Ver:5.5/Feb 2015 / INPUT DATA FILE
00052> #*************************************************************************
00053> #  Project Name  : [Cardinal Creek Village South]
00054> #  Project Number: [959(03)]
00055> #  Date          : [2024/10/29]
00056> #  Modeller      : [PP]
00057> #  Company       : J.F. Sabourin and Associates
00058> #  License #     : 2549237
00059> #*************************************************************************
00060>  RUN#:COMMAND#
00061> R0001:C00001------------------------------------------------------------------------------
00062>      START
00063>       [TZERO =    .00 hrs on        0]
00064>       [METOUT=   2    (1=imperial, 2=metric output)]
00065>       [NSTORM=   1 ]
00066>       [NRUN  = 0001 ]
00067> R0001:C00002------------------------------------------------------------------------------
00068>      READ STORM
00069>       Filename = storm.001
00070>       Comment  = 25 MM BASED ON CHICAGO STORM 2 Year, 3 Hours
00071>       [SDT=10.00:SDUR=   3.00:PTOT=  25.00]
00072> R0001:C00003------------------------------------------------------------------------------
00073>      DEFAULT VALUES
00074>       Filename = C:\Temp\SWMHYMO\Pond 2\Ottawa.val
00075>       ICASEdv  = 1 (read and print data)
00076>       FileTitle= File comment: [Parameters for City of Ottawa Projects]
00077>                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00078>       Horton's infiltration equation parameters:
00079>       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
00080>       Parameters for PERVIOUS surfaces in STANDHYD:
00081>       [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
00082>       Parameters for IMPERVIOUS surfaces in STANDHYD:
00083>       [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
00084>       Parameters used in NASHYD:
00085>       [Ia=   4.67 mm] [N= 3.00]
00086>       Average monthly Pan Evaporation data in    (mm)
00087>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00088>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00089>       Average monthly Potential Evapotranspiration in    (mm)
00090>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00091>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00092> ################################################################################
00093> # PROPOSED CONDITIONS
00094> ################################################################################
00095> # Lumped drainage to Cardinal Creek Village South Pond 2
00096> R0001:C00004------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00097>     CALIB STANDHYD          1.0 01:CCVS          32.54    2.143 No_date   1:04   14.43 .577     .000
00098>       [XIMP=.56:TIMP=.66]
00099>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00100>       [Pervious      area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00101>       [Impervious    area: IAimp= 1.57:SLPI= .90:LGI= 466.:MNI=.013:SCI=   .0]
00102> # Estimated Pond Volumes for SWM Facility
00103> R0001:C00005------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00104>     ROUTE RESERVOIR ->      1.0 02:CCVS          32.54    2.143 No_date   1:04   14.43  n/a     .000
00105>                         out <=    1.0 01:Pout          32.54    .030 No_date   3:14   14.43  n/a     .000
00106>                   overflow <=     1.0 03:Povf           .00    .000 No_date   0:00    .00  n/a     .000
00107>      (MxStoUsed=.4464E+00  m3, TotOvfVol=.0000E+00  m3, N-Ovf=    0, TotDurOvf=    0.hrs)
00108> # Uncontrolled rear yard drainage area to South Tributary
00109> R0001:C00006------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00110>     CALIB STANDHYD          1.0 01:CCVSunc        1.93    .059 No_date   1:00    5.88 .235     .000
00111>       [XIMP=.19:TIMP=.29]
00112>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00113>       [Pervious      area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00114>       [Impervious    area: IAimp= 1.57:SLPI= .90:LGI= 113.:MNI=.013:SCI=   .0]
00115> # Total Pond 2 Outflow to South Tributary
00116> R0001:C00007------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00117>     ADD HYD                 1.0 02:Pout          32.54    .030 No_date   3:14   14.43  n/a     .000
00118>                       +     1.0 02:Povf           .00    .000 No_date   0:00    .00  n/a     .000
00119>                     SUM=    1.0 01:Pout-T        32.54    .030 No_date   3:14   14.43  n/a     .000
00120> # Total CCV South Outflow to South Tributary (Controlled + Uncontrolled)
00121> R0001:C00008------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00122>     ADD HYD                 1.0 02:Pout          32.54    .030 No_date   3:14   14.43  n/a     .000
00123>                       +     1.0 02:Povf           .00    .000 No_date   0:00    .00  n/a     .000
00124>                       +     1.0 02:CCVSunc        1.93    .059 No_date   1:00    5.88  n/a     .000
00125>                     SUM=    1.0 01:CCVS-T        34.47    .067 No_date   1:00   13.95  n/a     .000
00126> ################################################################################
00127> # STORMS
00128> ################################################################################
00129>  ** END OF RUN :    1
00130>
00131> ************************************************************************************************
00132>
00133>
00134>
00135>
00136>
00137>  RUN#:COMMAND#
00138> R0002:C00001------------------------------------------------------------------------------
00139>      START
00140>       [TZERO =    .00 hrs on        0]
00141>       [METOUT=   2    (1=imperial, 2=metric output)]
00142>       [NSTORM=   1 ]
00143>       [NRUN  = 0002 ]
00144> #*************************************************************************
00145> #  SWMHYMO Ver:5.5/Feb 2015 / INPUT DATA FILE
00146> #*************************************************************************
00147> #  Project Name  : [Cardinal Creek Village South]
00148> #  Project Number: [959(03)]
00149> #  Date          : [2024/10/29]
00150> #  Modeller      : [PP]
00151> #  Company       : J.F. Sabourin and Associates
00152> #  License #     : 2549237
00153> #*************************************************************************
00154> R0002:C00002------------------------------------------------------------------------------
00155>      READ STORM
00156>       Filename = storm.001
00157>       Comment  = CHICAGO STORM 2 Year, 3 Hours
00158>       [SDT=10.00:SDUR=   3.00:PTOT=  31.86]
00159> R0002:C00003------------------------------------------------------------------------------
00160>      DEFAULT VALUES
00161>       Filename = C:\Temp\SWMHYMO\Pond 2\Ottawa.val
00162>       ICASEdv  = 1 (read and print data)
00163>       FileTitle= File comment: [Parameters for City of Ottawa Projects]
00164>                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00165>       Horton's infiltration equation parameters:
00166>       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
00167>       Parameters for PERVIOUS surfaces in STANDHYD:
00168>       [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
00169>       Parameters for IMPERVIOUS surfaces in STANDHYD:
00170>       [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
00171>       Parameters used in NASHYD:
00172>       [Ia=   4.67 mm] [N= 3.00]
00173>       Average monthly Pan Evaporation data in    (mm)
00174>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00175>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00176>       Average monthly Potential Evapotranspiration in    (mm)
00177>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00178>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00179> ################################################################################
00180> # PROPOSED CONDITIONS

00181> ################################################################################
00182> # Lumped drainage to Cardinal Creek Village South Pond 2
00183> R0002:C00004------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00184>     CALIB STANDHYD          1.0 01:CCVS          32.54    3.003 No_date   1:03   19.77 .620     .000
00185>       [XIMP=.56:TIMP=.66]
00186>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00187>       [Pervious      area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00188>       [Impervious    area: IAimp= 1.57:SLPI= .90:LGI= 466.:MNI=.013:SCI=   .0]
00189> # Estimated Pond Volumes for SWM Facility
00190> R0002:C00005------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00191>     ROUTE RESERVOIR ->      1.0 02:CCVS          32.54    3.003 No_date   1:03   19.77  n/a     .000
00192>                         out <=    1.0 01:Pout          32.54    .035 No_date   3:13   19.77  n/a     .000
00193>                   overflow <=     1.0 03:Povf           .00    .000 No_date   0:00    .00  n/a     .000
00194>      (MxStoUsed=.6161E+00  m3, TotOvfVol=.0000E+00  m3, N-Ovf=    0, TotDurOvf=    0.hrs)
00195> # Uncontrolled rear yard drainage area to South Tributary
00196> R0002:C00006------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00197>     CALIB STANDHYD          1.0 01:CCVSunc        1.93    .091 No_date   1:01    9.82 .308     .000
00198>       [XIMP=.19:TIMP=.29]
00199>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00200>       [Pervious      area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00201>       [Impervious    area: IAimp= 1.57:SLPI= .90:LGI= 113.:MNI=.013:SCI=   .0]
00202> # Total Pond 2 Outflow to South Tributary
00203> R0002:C00007------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00204>     ADD HYD                 1.0 02:Pout          32.54    .035 No_date   3:13   19.77  n/a     .000
00205>                       +     1.0 02:Povf           .00    .000 No_date   0:00    .00  n/a     .000
00206>                     SUM=    1.0 01:Pout-T        32.54    .035 No_date   3:13   19.77  n/a     .000
00207> # Total CCV South Outflow to South Tributary (Controlled + Uncontrolled)
00208> R0002:C00008------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00209>     ADD HYD                 1.0 02:Pout          32.54    .035 No_date   3:13   19.77  n/a     .000
00210>                       +     1.0 02:Povf           .00    .000 No_date   0:00    .00  n/a     .000
00211>                       +     1.0 02:CCVSunc        1.93    .091 No_date   1:01    9.82  n/a     .000
00212>                     SUM=    1.0 01:CCVS-T        34.47    .105 No_date   1:01   19.21  n/a     .000
00213> ################################################################################
00214> # STORMS
00215> ################################################################################
00216>  ** END OF RUN :    4
00217>
00218> ************************************************************************************************
00219>
00220>
00221>
00222>
00223>
00224>  RUN#:COMMAND#
00225> R0005:C00001------------------------------------------------------------------------------
00226>      START
00227>       [TZERO =    .00 hrs on        0]
00228>       [METOUT=   2    (1=imperial, 2=metric output)]
00229>       [NSTORM=   1 ]
00230>       [NRUN  = 0005 ]
00231> #*************************************************************************
00232> #  SWMHYMO Ver:5.5/Feb 2015 / INPUT DATA FILE
00233> #*************************************************************************
00234> #  Project Name  : [Cardinal Creek Village South]
00235> #  Project Number: [959(03)]
00236> #  Date          : [2024/10/29]
00237> #  Modeller      : [PP]
00238> #  Company       : J.F. Sabourin and Associates
00239> #  License #     : 2549237
00240> #*************************************************************************
00241> R0005:C00002------------------------------------------------------------------------------
00242>      READ STORM
00243>       Filename = storm.001
00244>       Comment  = CHICAGO STORM  5 Year, 3 Hours
00245>       [SDT=10.00:SDUR=   3.00:PTOT=  42.51]
00246> R0005:C00003------------------------------------------------------------------------------
00247>      DEFAULT VALUES
00248>       Filename = C:\Temp\SWMHYMO\Pond 2\Ottawa.val
00249>       ICASEdv  = 1 (read and print data)
00250>       FileTitle= File comment: [Parameters for City of Ottawa Projects]
00251>                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00252>       Horton's infiltration equation parameters:
00253>       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
00254>       Parameters for PERVIOUS surfaces in STANDHYD:
00255>       [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
00256>       Parameters for IMPERVIOUS surfaces in STANDHYD:
00257>       [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
00258>       Parameters used in NASHYD:
00259>       [Ia=   4.67 mm] [N= 3.00]
00260>       Average monthly Pan Evaporation data in    (mm)
00261>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00262>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00263>       Average monthly Potential Evapotranspiration in    (mm)
00264>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00265>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00266> ################################################################################
00267> # PROPOSED CONDITIONS
00268> ################################################################################
00269> # Lumped drainage to Cardinal Creek Village South Pond 2
00270> R0005:C00004------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00271>     CALIB STANDHYD          1.0 01:CCVS          32.54    4.651 No_date   1:04   28.74 .676     .000
00272>       [XIMP=.56:TIMP=.66]
00273>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00274>       [Pervious      area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00275>       [Impervious    area: IAimp= 1.57:SLPI= .90:LGI= 466.:MNI=.013:SCI=   .0]
00276> # Estimated Pond Volumes for SWM Facility
00277> R0005:C00005------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00278>     ROUTE RESERVOIR ->      1.0 02:CCVS          32.54    4.651 No_date   1:04   28.74  n/a     .000
00279>                         out <=    1.0 01:Pout          32.54    .082 No_date   3:08   28.74  n/a     .000
00280>                   overflow <=     1.0 03:Povf           .00    .000 No_date   0:00    .00  n/a     .000
00281>      (MxStoUsed=.8829E+00  m3, TotOvfVol=.0000E+00  m3, N-Ovf=    0, TotDurOvf=    0.hrs)
00282> # Uncontrolled rear yard drainage area to South Tributary
00283> R0005:C00006------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00284>     CALIB STANDHYD          1.0 01:CCVSunc        1.93    .191 No_date   1:02   16.88 .397     .000
00285>       [XIMP=.19:TIMP=.29]
00286>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00287>       [Pervious      area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00288>       [Impervious    area: IAimp= 1.57:SLPI= .90:LGI= 113.:MNI=.013:SCI=   .0]
00289> # Total Pond 2 Outflow to South Tributary
00290> R0005:C00007------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00291>     ADD HYD                 1.0 02:Pout          32.54    .082 No_date   3:08   28.74  n/a     .000
00292>                       +     1.0 02:Povf           .00    .000 No_date   0:00    .00  n/a     .000
00293>                     SUM=    1.0 01:Pout-T        32.54    .082 No_date   3:08   28.74  n/a     .000
00294> # Total CCV South Outflow to South Tributary (Controlled + Uncontrolled)
00295> R0005:C00008------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00296>     ADD HYD                 1.0 02:Pout          32.54    .082 No_date   3:08   28.74  n/a     .000
00297>                       +     1.0 02:Povf           .00    .000 No_date   0:00    .00  n/a     .000
00298>                       +     1.0 02:CCVSunc        1.93    .191 No_date   1:02   16.88  n/a     .000
00299>                     SUM=    1.0 01:CCVS-T        34.47    .212 No_date   1:02   28.08  n/a     .000
00300> ################################################################################
00301> # STORMS
00302> ################################################################################
00303>  ** END OF RUN :    9
00304>
00305> ************************************************************************************************
00306>
00307>
00308>
00309>
00310>
00311>  RUN#:COMMAND#
00312> R0010:C00001------------------------------------------------------------------------------
00313>      START
00314>       [TZERO =    .00 hrs on        0]
00315>       [METOUT=   2    (1=imperial, 2=metric output)]
00316>       [NSTORM=   1 ]
00317>       [NRUN  = 0010 ]
00318> #*************************************************************************
00319> #  SWMHYMO Ver:5.5/Feb 2015 / INPUT DATA FILE
00320> #*************************************************************************
00321> #  Project Name  : [Cardinal Creek Village South]
00322> #  Project Number: [959(03)]
00323> #  Date          : [2024/10/29]
00324> #  Modeller      : [PP]
00325> #  Company       : J.F. Sabourin and Associates
00326> #  License #     : 2549237
00327> #*************************************************************************
00328> R0010:C00002------------------------------------------------------------------------------
00329>      READ STORM
00330>       Filename = storm.001
00331>       Comment  = CHICAGO STORM 10 Year, 3 Hours
00332>       [SDT=10.00:SDUR=   3.00:PTOT=  49.50]
00333> R0010:C00003------------------------------------------------------------------------------
00334>      DEFAULT VALUES
00335>       Filename = C:\Temp\SWMHYMO\Pond 2\Ottawa.val
00336>       ICASEdv  = 1 (read and print data)
00337>       FileTitle= File comment: [Parameters for City of Ottawa Projects]
00338>                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00339>       Horton's infiltration equation parameters:
00340>       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
00341>       Parameters for PERVIOUS surfaces in STANDHYD:
00342>       [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
00343>       Parameters for IMPERVIOUS surfaces in STANDHYD:
00344>       [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
00345>       Parameters used in NASHYD:
00346>       [Ia=   4.67 mm] [N= 3.00]
00347>       Average monthly Pan Evaporation data in    (mm)
00348>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00349>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00350>       Average monthly Potential Evapotranspiration in    (mm)
00351>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00352>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00353> ################################################################################
00354> # PROPOSED CONDITIONS
00355> ################################################################################
00356> # Lumped drainage to Cardinal Creek Village South Pond 2
00357> R0010:C00004------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00358>     CALIB STANDHYD          1.0 01:CCVS          32.54    5.919 No_date   1:03   34.94 .706     .000
00359>       [XIMP=.56:TIMP=.66]
00360>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
```

```
00361>       [Pervious    area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00362>       [Impervious  area: IAimp= 1.57:SLPI= .90:LGI= 466.:MNI=.013:SCI=   .0]
00363> # Estimated Pond Volumes for SWM Facility
00364> R0010:C00005------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00365>     ROUTE RESERVOIR ->     1.0 02:CCVS          32.54     5.919 No_date    1:03   34.94  n/a     .000
00366>                out <=     1.0 01:Pout          32.54      .105 No_date    3:06   34.93  n/a     .000
00367>           overflow <=     1.0 03:Povf           .00      .000 No_date    0:00     .00  n/a     .000
00368>     (MxStoUsed=.1066E+01  m3, TotOvfVol=.0000E+00  m3, N-Ovf=    0, TotDurOvf=    0.hrs)
00369> # Uncontrolled rear yard drainage area to South Tributary
00370> R0010:C00006------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00371>     CALIB STANDHYD         1.0 01:CCVSunc        1.93      .268 No_date    1:02   22.02 .445     .000
00372>       [XIMP=.19:TIMP=.29]
00373>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00374>       [Pervious    area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00375>       [Impervious  area: IAimp= 1.57:SLPI= .90:LGI= 113.:MNI=.013:SCI=   .0]
00376> # Total Pond 2 Outflow to South Tributary
00377> R0010:C00007------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00378>     ADD HYD                1.0 02:Pout          32.54      .105 No_date    3:06   34.93  n/a     .000
00379>                        +   1.0 02:Povf           .00      .000 No_date    0:00     .00  n/a     .000
00380>                    SUM=    1.0 01:Pout-T        32.54      .105 No_date    3:06   34.93  n/a     .000
00381> # Total CCV South Outflow to South Tributary (Controlled + Uncontrolled)
00382> R0010:C00008------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00383>     ADD HYD                1.0 02:Pout          32.54      .105 No_date    3:06   34.93  n/a     .000
00384>                        +   1.0 02:Povf           .00      .000 No_date    0:00     .00  n/a     .000
00385>                        +   1.0 02:CCVSunc        1.93      .268 No_date    1:02   22.02  n/a     .000
00386>                    SUM=    1.0 01:CCVS-T        34.47      .292 No_date    1:02   34.21  n/a     .000
00387> ##############################################################################
00388> # STORMS
00389> ##############################################################################
00390>   ** END OF RUN :   24
00391>
00392> ********************************************************************************************************
00393>
00394>
00395>
00396>
00397>
00398>  RUN#:COMMAND#
00399> R0025:C00001------------------------------------------------------------------------------------------
00400>       START
00401>       [TZERO =     .00 hrs on        0]
00402>       [METOUT=   2    (1=imperial, 2=metric output)]
00403>       [NSTORM=   1 ]
00404>       [NRUN  = 0025 ]
00405> #*****************************************************************************
00406> #  SWMHYMO Ver:5.5/Feb 2015 / INPUT DATA FILE
00407> #*****************************************************************************
00408> #  Project Name  : [Cardinal Creek Village South]
00409> #  Project Number: [959(03)]
00410> #  Date          : [2024/10/29]
00411> #  Modeller      : [PP]
00412> #  Company       : J.F. Sabourin and Associates
00413> #  License #     : 2549237
00414> #*****************************************************************************
00415> R0025:C00002------------------------------------------------------------------------------------------
00416>       READ STORM
00417>       Filename = storm.001
00418>       Comment  = CHICAGO STORM   25 Year, 3 Hours
00419>       [SDT=10.00:SDUR=   3.00:PTOT=  58.23]
00420> R0025:C00003------------------------------------------------------------------------------------------
00421>       DEFAULT VALUES
00422>       Filename = C:\Temp\SWMHYMO\Pond 2\Ottawa.val
00423>       ICASEdv  = 1 (read and print data)
00424>       FileTitle= File comment: [Parameters for City of Ottawa Projects]
00425>                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00426>       Horton's infiltration equation parameters:
00427>       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
00428>       Parameters for PERVIOUS surfaces in STANDHYD:
00429>       [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
00430>       Parameters for IMPERVIOUS surfaces in STANDHYD:
00431>       [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
00432>       Parameters used in NASHYD:
00433>       [Ia=   4.67 mm] [N= 3.00]
00434>       Average monthly Pan Evaporation data in    (mm)
00435>     JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00436>    .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00437>       Average monthly Potential Evapotranspiration in    (mm)
00438>     JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00439>    .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00440> ##############################################################################
00441> # PROPOSED CONDITIONS
00442> ##############################################################################
00443> # Lumped drainage to Cardinal Creek Village South Pond 2
00444> R0025:C00004------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00445>     CALIB STANDHYD         1.0 01:CCVS          32.54     7.482 No_date    1:03   42.74 .734     .000
00446>       [XIMP=.56:TIMP=.66]
00447>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00448>       [Pervious    area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00449>       [Impervious  area: IAimp= 1.57:SLPI= .90:LGI= 466.:MNI=.013:SCI=   .0]
00450> # Estimated Pond Volumes for SWM Facility
00451> R0025:C00005------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00452>     ROUTE RESERVOIR ->     1.0 02:CCVS          32.54     7.482 No_date    1:03   42.74  n/a     .000
00453>                out <=     1.0 01:Pout          32.54      .126 No_date    3:06   42.74  n/a     .000
00454>           overflow <=     1.0 03:Povf           .00      .000 No_date    0:00     .00  n/a     .000
00455>     (MxStoUsed=.1303E+01  m3, TotOvfVol=.0000E+00  m3, N-Ovf=    0, TotDurOvf=    0.hrs)
00456> # Uncontrolled rear yard drainage area to South Tributary
00457> R0025:C00006------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00458>     CALIB STANDHYD         1.0 01:CCVSunc        1.93      .362 No_date    1:01   29.01 .498     .000
00459>       [XIMP=.19:TIMP=.29]
00460>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00461>       [Pervious    area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00462>       [Impervious  area: IAimp= 1.57:SLPI= .90:LGI= 113.:MNI=.013:SCI=   .0]
00463> # Total Pond 2 Outflow to South Tributary
00464> R0025:C00007------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00465>     ADD HYD                1.0 02:Pout          32.54      .126 No_date    3:06   42.74  n/a     .000
00466>                        +   1.0 02:Povf           .00      .000 No_date    0:00     .00  n/a     .000
00467>                    SUM=    1.0 01:Pout-T        32.54      .126 No_date    3:06   42.74  n/a     .000
00468> # Total CCV South Outflow to South Tributary (Controlled + Uncontrolled)
00469> R0025:C00008------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00470>     ADD HYD                1.0 02:Pout          32.54      .126 No_date    3:06   42.74  n/a     .000
00471>                        +   1.0 02:Povf           .00      .000 No_date    0:00     .00  n/a     .000
00472>                        +   1.0 02:CCVSunc        1.93      .362 No_date    1:01   29.01  n/a     .000
00473>                    SUM=    1.0 01:CCVS-T        34.47      .388 No_date    1:01   41.97  n/a     .000
00474> ##############################################################################
00475> # STORMS
00476> ##############################################################################
00477>   ** END OF RUN :   49
00478>
00479> ********************************************************************************************************
00480>
00481>
00482>
00483>
00484>
00485>  RUN#:COMMAND#
00486> R0050:C00001------------------------------------------------------------------------------------------
00487>       START
00488>       [TZERO =     .00 hrs on        0]
00489>       [METOUT=   2    (1=imperial, 2=metric output)]
00490>       [NSTORM=   1 ]
00491>       [NRUN  = 0050 ]
00492> #*****************************************************************************
00493> #  SWMHYMO Ver:5.5/Feb 2015 / INPUT DATA FILE
00494> #*****************************************************************************
00495> #  Project Name  : [Cardinal Creek Village South]
00496> #  Project Number: [959(03)]
00497> #  Date          : [2024/10/29]
00498> #  Modeller      : [PP]
00499> #  Company       : J.F. Sabourin and Associates
00500> #  License #     : 2549237
00501> #*****************************************************************************
00502> R0050:C00002------------------------------------------------------------------------------------------
00503>       READ STORM
00504>       Filename = storm.001
00505>       Comment  = CHICAGO STORM  50 Year, 3 Hours
00506>       [SDT=10.00:SDUR=   3.00:PTOT=  64.81]
00507> R0050:C00003------------------------------------------------------------------------------------------
00508>       DEFAULT VALUES
00509>       Filename = C:\Temp\SWMHYMO\Pond 2\Ottawa.val
00510>       ICASEdv  = 1 (read and print data)
00511>       FileTitle= File comment: [Parameters for City of Ottawa Projects]
00512>                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00513>       Horton's infiltration equation parameters:
00514>       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
00515>       Parameters for PERVIOUS surfaces in STANDHYD:
00516>       [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
00517>       Parameters for IMPERVIOUS surfaces in STANDHYD:
00518>       [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
00519>       Parameters used in NASHYD:
00520>       [Ia=   4.67 mm] [N= 3.00]
00521>       Average monthly Pan Evaporation data in    (mm)
00522>     JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00523>    .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00524>       Average monthly Potential Evapotranspiration in    (mm)
00525>     JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00526>    .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00527> ##############################################################################
00528> # PROPOSED CONDITIONS
00529> ##############################################################################
00530> # Lumped drainage to Cardinal Creek Village South Pond 2
00531> R0050:C00004------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00532>     CALIB STANDHYD         1.0 01:CCVS          32.54     8.760 No_date    1:02   48.84 .754     .000
00533>       [XIMP=.56:TIMP=.66]
00534>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00535>       [Pervious    area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00536>       [Impervious  area: IAimp= 1.57:SLPI= .90:LGI= 466.:MNI=.013:SCI=   .0]
00537> # Estimated Pond Volumes for SWM Facility
00538> R0050:C00005------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00539>     ROUTE RESERVOIR ->     1.0 02:CCVS          32.54     8.760 No_date    1:02   48.84  n/a     .000
00540>                out <=     1.0 01:Pout          32.54      .140 No_date    3:05   48.84  n/a     .000
00541>           overflow <=     1.0 03:Povf           .00      .000 No_date    0:00     .00  n/a     .000
00542>     (MxStoUsed=.1490E+01  m3, TotOvfVol=.0000E+00  m3, N-Ovf=    0, TotDurOvf=    0.hrs)
00543> # Uncontrolled rear yard drainage area to South Tributary
00544> R0050:C00006------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00545>     CALIB STANDHYD         1.0 01:CCVSunc        1.93      .448 No_date    1:01   34.26 .529     .000
00546>       [XIMP=.19:TIMP=.29]
00547>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00548>       [Pervious    area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00549>       [Impervious  area: IAimp= 1.57:SLPI= .90:LGI= 113.:MNI=.013:SCI=   .0]
00550> # Total Pond 2 Outflow to South Tributary
00551> R0050:C00007------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00552>     ADD HYD                1.0 02:Pout          32.54      .140 No_date    3:05   48.84  n/a     .000
00553>                        +   1.0 02:Povf           .00      .000 No_date    0:00     .00  n/a     .000
00554>                    SUM=    1.0 01:Pout-T        32.54      .140 No_date    3:05   48.84  n/a     .000
00555> # Total CCV South Outflow to South Tributary (Controlled + Uncontrolled)
00556> R0050:C00008------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00557>     ADD HYD                1.0 02:Pout          32.54      .140 No_date    3:05   48.84  n/a     .000
00558>                        +   1.0 02:Povf           .00      .000 No_date    0:00     .00  n/a     .000
00559>                        +   1.0 02:CCVSunc        1.93      .448 No_date    1:01   34.26  n/a     .000
00560>                    SUM=    1.0 01:CCVS-T        34.47      .478 No_date    1:01   48.02  n/a     .000
00561> ##############################################################################
00562> # STORMS
00563> ##############################################################################
00564>   ** END OF RUN :   98
00565>
00566> ********************************************************************************************************
00567>
00568>
00569>
00570>
00571>
00572>  RUN#:COMMAND#
00573> R0099:C00001------------------------------------------------------------------------------------------
00574>       START
00575>       [TZERO =     .00 hrs on        0]
00576>       [METOUT=   2    (1=imperial, 2=metric output)]
00577>       [NSTORM=   1 ]
00578>       [NRUN  = 0099 ]
00579> #*****************************************************************************
00580> #  SWMHYMO Ver:5.5/Feb 2015 / INPUT DATA FILE
00581> #*****************************************************************************
00582> #  Project Name  : [Cardinal Creek Village South]
00583> #  Project Number: [959(03)]
00584> #  Date          : [2024/10/29]
00585> #  Modeller      : [PP]
00586> #  Company       : J.F. Sabourin and Associates
00587> #  License #     : 2549237
00588> #*****************************************************************************
00589> R0099:C00002------------------------------------------------------------------------------------------
00590>       READ STORM
00591>       Filename = storm.001
00592>       Comment  = CHICAGO STORM   100 Year, 3 Hours
00593>       [SDT=10.00:SDUR=   3.00:PTOT=  71.66]
00594> R0099:C00003------------------------------------------------------------------------------------------
00595>       DEFAULT VALUES
00596>       Filename = C:\Temp\SWMHYMO\Pond 2\Ottawa.val
00597>       ICASEdv  = 1 (read and print data)
00598>       FileTitle= File comment: [Parameters for City of Ottawa Projects]
00599>                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00600>       Horton's infiltration equation parameters:
00601>       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
00602>       Parameters for PERVIOUS surfaces in STANDHYD:
00603>       [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
00604>       Parameters for IMPERVIOUS surfaces in STANDHYD:
00605>       [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
00606>       Parameters used in NASHYD:
00607>       [Ia=   4.67 mm] [N= 3.00]
00608>       Average monthly Pan Evaporation data in    (mm)
00609>     JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00610>    .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00611>       Average monthly Potential Evapotranspiration in    (mm)
00612>     JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00613>    .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00614> ##############################################################################
00615> # PROPOSED CONDITIONS
00616> ##############################################################################
00617> # Lumped drainage to Cardinal Creek Village South Pond 2
00618> R0099:C00004------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00619>     CALIB STANDHYD         1.0 01:CCVS          32.54     9.948 No_date    1:02   55.14 .769     .000
00620>       [XIMP=.56:TIMP=.66]
00621>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00622>       [Pervious    area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00623>       [Impervious  area: IAimp= 1.57:SLPI= .90:LGI= 466.:MNI=.013:SCI=   .0]
00624> # Estimated Pond Volumes for SWM Facility
00625> R0099:C00005------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00626>     ROUTE RESERVOIR ->     1.0 02:CCVS          32.54     9.948 No_date    1:02   55.14  n/a     .000
00627>                out <=     1.0 01:Pout          32.54      .153 No_date    3:05   55.14  n/a     .000
00628>           overflow <=     1.0 03:Povf           .00      .000 No_date    0:00     .00  n/a     .000
00629>     (MxStoUsed=.1685E+01  m3, TotOvfVol=.0000E+00  m3, N-Ovf=    0, TotDurOvf=    0.hrs)
00630> # Uncontrolled rear yard drainage area to South Tributary
00631> R0099:C00006------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00632>     CALIB STANDHYD         1.0 01:CCVSunc        1.93      .523 No_date    1:01   40.08 .559     .000
00633>       [XIMP=.19:TIMP=.29]
00634>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00635>       [Pervious    area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00636>       [Impervious  area: IAimp= 1.57:SLPI= .90:LGI= 113.:MNI=.013:SCI=   .0]
00637> # Total Pond 2 Outflow to South Tributary
00638> R0099:C00007------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00639>     ADD HYD                1.0 02:Pout          32.54      .153 No_date    3:05   55.14  n/a     .000
00640>                        +   1.0 02:Povf           .00      .000 No_date    0:00     .00  n/a     .000
00641>                    SUM=    1.0 01:Pout-T        32.54      .153 No_date    3:05   55.14  n/a     .000
00642> # Total CCV South Outflow to South Tributary (Controlled + Uncontrolled)
00643> R0099:C00008------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00644>     ADD HYD                1.0 02:Pout          32.54      .153 No_date    3:05   55.14  n/a     .000
00645>                        +   1.0 02:Povf           .00      .000 No_date    0:00     .00  n/a     .000
00646>                        +   1.0 02:CCVSunc        1.93      .523 No_date    1:01   40.08  n/a     .000
00647>                    SUM=    1.0 01:CCVS-T        34.47      .554 No_date    1:01   54.30  n/a     .000
00648> ##############################################################################
00649> # STORMS
00650> ##############################################################################
00651>   ** END OF RUN :  101
00652>
00653> ********************************************************************************************************
00654>
00655>
00656>
00657>
00658>
00659>  RUN#:COMMAND#
00660> R0102:C00001------------------------------------------------------------------------------------------
00661>       START
00662>       [TZERO =     .00 hrs on        0]
00663>       [METOUT=   2    (1=imperial, 2=metric output)]
00664>       [NSTORM=   1 ]
00665>       [NRUN  = 0102 ]
00666> #*****************************************************************************
00667> #  SWMHYMO Ver:5.5/Feb 2015 / INPUT DATA FILE
00668> #*****************************************************************************
00669> #  Project Name  : [Cardinal Creek Village South]
00670> #  Project Number: [959(03)]
00671> #  Date          : [2024/10/29]
00672> #  Modeller      : [PP]
00673> #  Company       : J.F. Sabourin and Associates
00674> #  License #     : 2549237
00675> #*****************************************************************************
00676> R0102:C00002------------------------------------------------------------------------------------------
00677>       READ STORM
00678>       Filename = storm.001
00679>       Comment  = 2 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00680>       [SDT=10.00:SDUR=  24.00:PTOT=  48.46]
00681> R0102:C00003------------------------------------------------------------------------------------------
00682>       DEFAULT VALUES
00683>       Filename = C:\Temp\SWMHYMO\Pond 2\Ottawa.val
00684>       ICASEdv  = 1 (read and print data)
00685>       FileTitle= File comment: [Parameters for City of Ottawa Projects]
00686>                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00687>       Horton's infiltration equation parameters:
00688>       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
00689>       Parameters for PERVIOUS surfaces in STANDHYD:
00690>       [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
00691>       Parameters for IMPERVIOUS surfaces in STANDHYD:
00692>       [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
00693>       Parameters used in NASHYD:
00694>       [Ia=   4.67 mm] [N= 3.00]
00695>       Average monthly Pan Evaporation data in    (mm)
00696>     JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00697>    .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00698>       Average monthly Potential Evapotranspiration in    (mm)
00699>     JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00700>    .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00701> ##############################################################################
00702> # PROPOSED CONDITIONS
00703> ##############################################################################
00704> # Lumped drainage to Cardinal Creek Village South Pond 2
00705> R0102:C00004------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00706>     CALIB STANDHYD         1.0 01:CCVS          32.54     2.885 No_date   12:03   31.02 .640     .000
00707>       [XIMP=.56:TIMP=.66]
00708>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00709>       [Pervious    area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00710>       [Impervious  area: IAimp= 1.57:SLPI= .90:LGI= 466.:MNI=.013:SCI=   .0]
00711> # Estimated Pond Volumes for SWM Facility
00712> R0102:C00005------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00713>     ROUTE RESERVOIR ->     1.0 02:CCVS          32.54     2.885 No_date   12:03   31.02  n/a     .000
00714>                out <=     1.0 01:Pout          32.54      .062 No_date   16:08   31.01  n/a     .000
00715>           overflow <=     1.0 03:Povf           .00      .000 No_date    0:00     .00  n/a     .000
00716>     (MxStoUsed=.7977E+00  m3, TotOvfVol=.0000E+00  m3, N-Ovf=    0, TotDurOvf=    0.hrs)
00717> # Uncontrolled rear yard drainage area to South Tributary
00718> R0102:C00006------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00719>     CALIB STANDHYD         1.0 01:CCVSunc        1.93      .124 No_date   12:01   16.80 .347     .000
00720>       [XIMP=.19:TIMP=.29]
```

```
00721>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00722>       [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00723>       [Impervious   area: IAimp= 1.57:SLPI= .90:LGI= 113.:MNI=.013:SCI=   .0]
00724> # Total Pond 2 Outflow to South Tributary
00725> R0102:C00007------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00726>    ADD HYD              1.0 02:Pout          32.54     .062 No_date   16:08   31.01  n/a     .000
00727>                    +    1.0 02:Povf           .00     .000 No_date    0:00     .00  n/a     .000
00728>                 SUM=    1.0 01:Pout-T        32.54     .062 No_date   16:08   31.01  n/a     .000
00729> # Total CCV South Outflow to South Tributary (Controlled + Uncontrolled)
00730> R0102:C00008------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00731>    ADD HYD              1.0 02:Pout          32.54     .062 No_date   16:08   31.01  n/a     .000
00732>                    +    1.0 02:Povf           .00     .000 No_date    0:00     .00  n/a     .000
00733>                    +    1.0 02:CCVSunc        1.93    .124 No_date   12:01   16.80  n/a     .000
00734>                 SUM=    1.0 01:CCVS-T        34.47     .151 No_date   12:01   30.22  n/a     .000
00735> ##############################################################################
00736> # STORMS
00737> ##############################################################################
00738>  ** END OF RUN :  104
00739>
00740> ********************************************************************************************************
00741>
00742>
00743>
00744>
00745>
00746>  RUN#:COMMAND#
00747> R0105:C00001------------------------------------------------------------------------------------------
00748>      START
00749>       [TZERO =    .00 hrs on        0]
00750>       [METOUT=   2    (1=imperial, 2=metric output)]
00751>       [NSTORM=   1 ]
00752>       [NRUN  = 0105 ]
00753> *******************************************************************************
00754> #  SWMHYMO Ver:5.5/Feb 2015 / INPUT DATA FILE
00755> *******************************************************************************
00756> #  Project Name  : [Cardinal Creek Village South]
00757> #  Project Number: [959(03)]
00758> #  Date          : [2024/10/29]
00759> #  Modeller      : [PP]
00760> #  Company       : J.F. Sabourin and Associates
00761> #  License #     : 2549237
00762> *******************************************************************************
00763> R0105:C00002------------------------------------------------------------------------------------------
00764>      READ STORM
00765>       Filename = storm.001
00766>       Comment  = 5 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00767>       [SDT=10.00:SDUR=  24.00:PTOT=  64.11]
00768> R0105:C00003------------------------------------------------------------------------------------------
00769>      DEFAULT VALUES
00770>       Filename = C:\Temp\SWMHYMO\Pond 2\Ottawa.val
00771>       ICASEdv  = 1 (read and print data)
00772>       FileTitle= File comment: [Parameters for City of Ottawa Projects]
00773>                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00774>       Horton's infiltration equation parameters:
00775>       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
00776>       Parameters for PERVIOUS surfaces in STANDHYD:
00777>       [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
00778>       Parameters for IMPERVIOUS surfaces in STANDHYD:
00779>       [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
00780>       Parameters used in NASHYD:
00781>       [Ia=   4.67 mm] [N= 3.00]
00782>       Average monthly Pan Evaporation data in    (mm)
00783>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00784>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00785>       Average monthly Potential Evapotranspiration in    (mm)
00786>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00787>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00788> ##############################################################################
00789> # PROPOSED CONDITIONS
00790> ##############################################################################
00791> # Lumped drainage to Cardinal Creek Village South Pond 2
00792> R0105:C00004------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00793>    CALIB STANDHYD       1.0 01:CCVS          32.54    4.357 No_date   12:02   42.89 .669     .000
00794>       [XIMP=.56:TIMP=.66]
00795>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00796>       [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00797>       [Impervious   area: IAimp= 1.57:SLPI= .90:LGI= 466.:MNI=.013:SCI=   .0]
00798> # Estimated Pond Volumes for SWM Facility
00799> R0105:C00005------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00800>    ROUTE RESERVOIR ->      1.0 02:CCVS          32.54    4.357 No_date   12:02   42.89  n/a     .000
00801>                    out <=  1.0 01:Pout          32.54     .106 No_date   14:15   42.89  n/a     .000
00802>                overflow <= 1.0 03:Povf           .00     .000 No_date    0:00     .00  n/a     .000
00803>       (MxStoUsed=.1079E+01  m3, TotOvfVol=.0000E+00  m3, N-Ovf=    0, TotDurOvf=    0.hrs)
00804> # Uncontrolled rear yard drainage area to South Tributary
00805> R0105:C00006------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00806>    CALIB STANDHYD       1.0 01:CCVSunc        1.93     .226 No_date   12:01   25.03 .390     .000
00807>       [XIMP=.19:TIMP=.29]
00808>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00809>       [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00810>       [Impervious   area: IAimp= 1.57:SLPI= .90:LGI= 113.:MNI=.013:SCI=   .0]
00811> # Total Pond 2 Outflow to South Tributary
00812> R0105:C00007------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00813>    ADD HYD              1.0 02:Pout          32.54     .106 No_date   14:15   42.89  n/a     .000
00814>                    +    1.0 02:Povf           .00     .000 No_date    0:00     .00  n/a     .000
00815>                 SUM=    1.0 01:Pout-T        32.54     .106 No_date   14:15   42.89  n/a     .000
00816> # Total CCV South Outflow to South Tributary (Controlled + Uncontrolled)
00817> R0105:C00008------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00818>    ADD HYD              1.0 02:Pout          32.54     .106 No_date   14:15   42.89  n/a     .000
00819>                    +    1.0 02:Povf           .00     .000 No_date    0:00     .00  n/a     .000
00820>                    +    1.0 02:CCVSunc        1.93    .226 No_date   12:01   25.03  n/a     .000
00821>                 SUM=    1.0 01:CCVS-T        34.47     .260 No_date   12:01   41.89  n/a     .000
00822> ##############################################################################
00823> # STORMS
00824> ##############################################################################
00825>  ** END OF RUN :  109
00826>
00827> ********************************************************************************************************
00828>
00829>
00830>
00831>
00832>
00833>  RUN#:COMMAND#
00834> R0110:C00001------------------------------------------------------------------------------------------
00835>      START
00836>       [TZERO =    .00 hrs on        0]
00837>       [METOUT=   2    (1=imperial, 2=metric output)]
00838>       [NSTORM=   1 ]
00839>       [NRUN  = 0110 ]
00840> *******************************************************************************
00841> #  SWMHYMO Ver:5.5/Feb 2015 / INPUT DATA FILE
00842> *******************************************************************************
00843> #  Project Name  : [Cardinal Creek Village South]
00844> #  Project Number: [959(03)]
00845> #  Date          : [2024/10/29]
00846> #  Modeller      : [PP]
00847> #  Company       : J.F. Sabourin and Associates
00848> #  License #     : 2549237
00849> *******************************************************************************
00850> R0110:C00002------------------------------------------------------------------------------------------
00851>      READ STORM
00852>       Filename = storm.001
00853>       Comment  = 10 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00854>       [SDT=10.00:SDUR=  24.00:PTOT=  74.35]
00855> R0110:C00003------------------------------------------------------------------------------------------
00856>      DEFAULT VALUES
00857>       Filename = C:\Temp\SWMHYMO\Pond 2\Ottawa.val
00858>       ICASEdv  = 1 (read and print data)
00859>       FileTitle= File comment: [Parameters for City of Ottawa Projects]
00860>                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00861>       Horton's infiltration equation parameters:
00862>       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
00863>       Parameters for PERVIOUS surfaces in STANDHYD:
00864>       [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
00865>       Parameters for IMPERVIOUS surfaces in STANDHYD:
00866>       [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
00867>       Parameters used in NASHYD:
00868>       [Ia=   4.67 mm] [N= 3.00]
00869>       Average monthly Pan Evaporation data in    (mm)
00870>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00871>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00872>       Average monthly Potential Evapotranspiration in    (mm)
00873>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00874>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00875> ##############################################################################
00876> # PROPOSED CONDITIONS
00877> ##############################################################################
00878> # Lumped drainage to Cardinal Creek Village South Pond 2
00879> R0110:C00004------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00880>    CALIB STANDHYD       1.0 01:CCVS          32.54    5.324 No_date   12:02   50.74 .682     .000
00881>       [XIMP=.56:TIMP=.66]
00882>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00883>       [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00884>       [Impervious   area: IAimp= 1.57:SLPI= .90:LGI= 466.:MNI=.013:SCI=   .0]
00885> # Estimated Pond Volumes for SWM Facility
00886> R0110:C00005------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00887>    ROUTE RESERVOIR ->      1.0 02:CCVS          32.54    5.324 No_date   12:02   50.74  n/a     .000
00888>                    out <=  1.0 01:Pout          32.54     .124 No_date   14:13   50.73  n/a     .000
00889>                overflow <= 1.0 03:Povf           .00     .000 No_date    0:00     .00  n/a     .000
00890>       (MxStoUsed=.1280E+01  m3, TotOvfVol=.0000E+00  m3, N-Ovf=    0, TotDurOvf=    0.hrs)
00891> # Uncontrolled rear yard drainage area to South Tributary
00892> R0110:C00006------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00893>    CALIB STANDHYD       1.0 01:CCVSunc        1.93     .294 No_date   12:01   30.79 .414     .000
00894>       [XIMP=.19:TIMP=.29]
00895>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00896>       [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00897>       [Impervious   area: IAimp= 1.57:SLPI= .90:LGI= 113.:MNI=.013:SCI=   .0]
00898> # Total Pond 2 Outflow to South Tributary
00899> R0110:C00007------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00900>    ADD HYD              1.0 02:Pout          32.54     .124 No_date   14:13   50.73  n/a     .000
00901>                    +    1.0 02:Povf           .00     .000 No_date    0:00     .00  n/a     .000
00902>                 SUM=    1.0 01:Pout-T        32.54     .124 No_date   14:13   50.73  n/a     .000
00903> # Total CCV South Outflow to South Tributary (Controlled + Uncontrolled)
00904> R0110:C00008------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00905>    ADD HYD              1.0 02:Pout          32.54     .124 No_date   14:13   50.73  n/a     .000
00906>                    +    1.0 02:Povf           .00     .000 No_date    0:00     .00  n/a     .000
00907>                    +    1.0 02:CCVSunc        1.93    .294 No_date   12:01   30.79  n/a     .000
00908>                 SUM=    1.0 01:CCVS-T        34.47     .335 No_date   12:02   49.62  n/a     .000
00909> ##############################################################################
00910> # STORMS
00911> ##############################################################################
00912>  ** END OF RUN :  124
00913>
00914> ********************************************************************************************************
00915>
00916>
00917>
00918>
00919>
00920>  RUN#:COMMAND#
00921> R0125:C00001------------------------------------------------------------------------------------------
00922>      START
00923>       [TZERO =    .00 hrs on        0]
00924>       [METOUT=   2    (1=imperial, 2=metric output)]
00925>       [NSTORM=   1 ]
00926>       [NRUN  = 0125 ]
00927> *******************************************************************************
00928> #  SWMHYMO Ver:5.5/Feb 2015 / INPUT DATA FILE
00929> *******************************************************************************
00930> #  Project Name  : [Cardinal Creek Village South]
00931> #  Project Number: [959(03)]
00932> #  Date          : [2024/10/29]
00933> #  Modeller      : [PP]
00934> #  Company       : J.F. Sabourin and Associates
00935> #  License #     : 2549237
00936> *******************************************************************************
00937> R0125:C00002------------------------------------------------------------------------------------------
00938>      READ STORM
00939>       Filename = storm.001
00940>       Comment  = 25 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00941>       [SDT=10.00:SDUR=  24.00:PTOT=  86.89]
00942> R0125:C00003------------------------------------------------------------------------------------------
00943>      DEFAULT VALUES
00944>       Filename = C:\Temp\SWMHYMO\Pond 2\Ottawa.val
00945>       ICASEdv  = 1 (read and print data)
00946>       FileTitle= File comment: [Parameters for City of Ottawa Projects]
00947>                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00948>       Horton's infiltration equation parameters:
00949>       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
00950>       Parameters for PERVIOUS surfaces in STANDHYD:
00951>       [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
00952>       Parameters for IMPERVIOUS surfaces in STANDHYD:
00953>       [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
00954>       Parameters used in NASHYD:
00955>       [Ia=   4.67 mm] [N= 3.00]
00956>       Average monthly Pan Evaporation data in    (mm)
00957>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00958>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00959>       Average monthly Potential Evapotranspiration in    (mm)
00960>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00961>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00962> ##############################################################################
00963> # PROPOSED CONDITIONS
00964> ##############################################################################
00965> # Lumped drainage to Cardinal Creek Village South Pond 2
00966> R0125:C00004------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00967>    CALIB STANDHYD       1.0 01:CCVS          32.54    6.539 No_date   12:02   60.46 .696     .000
00968>       [XIMP=.56:TIMP=.66]
00969>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00970>       [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00971>       [Impervious   area: IAimp= 1.57:SLPI= .90:LGI= 466.:MNI=.013:SCI=   .0]
00972> # Estimated Pond Volumes for SWM Facility
00973> R0125:C00005------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00974>    ROUTE RESERVOIR ->      1.0 02:CCVS          32.54    6.539 No_date   12:02   60.46  n/a     .000
00975>                    out <=  1.0 01:Pout          32.54     .143 No_date   14:13   60.45  n/a     .000
00976>                overflow <= 1.0 03:Povf           .00     .000 No_date    0:00     .00  n/a     .000
00977>       (MxStoUsed=.1533E+01  m3, TotOvfVol=.0000E+00  m3, N-Ovf=    0, TotDurOvf=    0.hrs)
00978> # Uncontrolled rear yard drainage area to South Tributary
00979> R0125:C00006------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00980>    CALIB STANDHYD       1.0 01:CCVSunc        1.93     .367 No_date   12:01   38.05 .438     .000
00981>       [XIMP=.19:TIMP=.29]
00982>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
00983>       [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
00984>       [Impervious   area: IAimp= 1.57:SLPI= .90:LGI= 113.:MNI=.013:SCI=   .0]
00985> # Total Pond 2 Outflow to South Tributary
00986> R0125:C00007------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00987>    ADD HYD              1.0 02:Pout          32.54     .143 No_date   14:13   60.45  n/a     .000
00988>                    +    1.0 02:Povf           .00     .000 No_date    0:00     .00  n/a     .000
00989>                 SUM=    1.0 01:Pout-T        32.54     .143 No_date   14:13   60.45  n/a     .000
00990> # Total CCV South Outflow to South Tributary (Controlled + Uncontrolled)
00991> R0125:C00008------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00992>    ADD HYD              1.0 02:Pout          32.54     .143 No_date   14:13   60.45  n/a     .000
00993>                    +    1.0 02:Povf           .00     .000 No_date    0:00     .00  n/a     .000
00994>                    +    1.0 02:CCVSunc        1.93    .367 No_date   12:01   38.05  n/a     .000
00995>                 SUM=    1.0 01:CCVS-T        34.47     .443 No_date   12:02   59.20  n/a     .000
00996> ##############################################################################
00997> # STORMS
00998> ##############################################################################
00999>  ** END OF RUN :  149
01000>
01001> ********************************************************************************************************
01002>
01003>
01004>
01005>
01006>
01007>  RUN#:COMMAND#
01008> R0150:C00001------------------------------------------------------------------------------------------
01009>      START
01010>       [TZERO =    .00 hrs on        0]
01011>       [METOUT=   2    (1=imperial, 2=metric output)]
01012>       [NSTORM=   1 ]
01013>       [NRUN  = 0150 ]
01014> *******************************************************************************
01015> #  SWMHYMO Ver:5.5/Feb 2015 / INPUT DATA FILE
01016> *******************************************************************************
01017> #  Project Name  : [Cardinal Creek Village South]
01018> #  Project Number: [959(03)]
01019> #  Date          : [2024/10/29]
01020> #  Modeller      : [PP]
01021> #  Company       : J.F. Sabourin and Associates
01022> #  License #     : 2549237
01023> *******************************************************************************
01024> R0150:C00002------------------------------------------------------------------------------------------
01025>      READ STORM
01026>       Filename = storm.001
01027>       Comment  = 50 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
01028>       [SDT=10.00:SDUR=  24.00:PTOT=  96.52]
01029> R0150:C00003------------------------------------------------------------------------------------------
01030>      DEFAULT VALUES
01031>       Filename = C:\Temp\SWMHYMO\Pond 2\Ottawa.val
01032>       ICASEdv  = 1 (read and print data)
01033>       FileTitle= File comment: [Parameters for City of Ottawa Projects]
01034>                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
01035>       Horton's infiltration equation parameters:
01036>       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
01037>       Parameters for PERVIOUS surfaces in STANDHYD:
01038>       [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
01039>       Parameters for IMPERVIOUS surfaces in STANDHYD:
01040>       [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
01041>       Parameters used in NASHYD:
01042>       [Ia=   4.67 mm] [N= 3.00]
01043>       Average monthly Pan Evaporation data in    (mm)
01044>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
01045>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
01046>       Average monthly Potential Evapotranspiration in    (mm)
01047>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
01048>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
01049> ##############################################################################
01050> # PROPOSED CONDITIONS
01051> ##############################################################################
01052> # Lumped drainage to Cardinal Creek Village South Pond 2
01053> R0150:C00004------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01054>    CALIB STANDHYD       1.0 01:CCVS          32.54    7.399 No_date   12:02   67.83 .703     .000
01055>       [XIMP=.56:TIMP=.66]
01056>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
01057>       [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
01058>       [Impervious   area: IAimp= 1.57:SLPI= .90:LGI= 466.:MNI=.013:SCI=   .0]
01059> # Estimated Pond Volumes for SWM Facility
01060> R0150:C00005------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01061>    ROUTE RESERVOIR ->      1.0 02:CCVS          32.54    7.399 No_date   12:02   67.83  n/a     .000
01062>                    out <=  1.0 01:Pout          32.54     .155 No_date   14:15   67.83  n/a     .000
01063>                overflow <= 1.0 03:Povf           .00     .000 No_date    0:00     .00  n/a     .000
01064>       (MxStoUsed=.1726E+01  m3, TotOvfVol=.0000E+00  m3, N-Ovf=    0, TotDurOvf=    0.hrs)
01065> # Uncontrolled rear yard drainage area to South Tributary
01066> R0150:C00006------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01067>    CALIB STANDHYD       1.0 01:CCVSunc        1.93     .431 No_date   12:01   43.67 .452     .000
01068>       [XIMP=.19:TIMP=.29]
01069>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
01070>       [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
01071>       [Impervious   area: IAimp= 1.57:SLPI= .90:LGI= 113.:MNI=.013:SCI=   .0]
01072> # Total Pond 2 Outflow to South Tributary
01073> R0150:C00007------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01074>    ADD HYD              1.0 02:Pout          32.54     .155 No_date   14:15   67.83  n/a     .000
01075>                    +    1.0 02:Povf           .00     .000 No_date    0:00     .00  n/a     .000
01076>                 SUM=    1.0 01:Pout-T        32.54     .155 No_date   14:15   67.83  n/a     .000
01077> # Total CCV South Outflow to South Tributary (Controlled + Uncontrolled)
01078> R0150:C00008------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01079>    ADD HYD              1.0 02:Pout          32.54     .155 No_date   14:15   67.83  n/a     .000
01080>                    +    1.0 02:Povf           .00     .000 No_date    0:00     .00  n/a     .000
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01081>                  +     1.0 02:CCVSunc        1.93     .431 No_date   12:01   43.67  n/a     .000
01082>                SUM=    1.0 01:CCVS-T        34.47     .523 No_date   12:01   66.47  n/a     .000
01083> ##############################################################################
01084> # STORMS
01085> ##############################################################################
01086>   ** END OF RUN :  198
01087>
01088> ********************************************************************************
01089>
01090>
01091>
01092>
01093>
01094>  RUN#:COMMAND#
01095> R0199:C00001------------------------------------------------------------------------
01096>       START
01097>         [TZERO =    .00 hrs on        0]
01098>         [METOUT=   2   (1=imperial, 2=metric output)]
01099>         [NSTORM=   1 ]
01100>         [NRUN  = 0199 ]
01101> *******************************************************************************
01102> #  SWMHYMO Ver:5.5/Feb 2015 / INPUT DATA FILE
01103> *******************************************************************************
01104> #  Project Name  : [Cardinal Creek Village South]
01105> #  Project Number: [959(03)]
01106> #  Date          : [2024/10/29]
01107> #  Modeller      : [PP]
01108> #  Company       : J.F. Sabourin and Associates
01109> #  License #     : 2549237
01110> *******************************************************************************
01111> R0199:C00002------------------------------------------------------------------------
01112>       READ STORM
01113>         Filename = storm.001
01114>         Comment  = 100 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
01115>         [SDT=10.00:SDUR=  24.00:PTOT= 106.73]
01116> R0199:C00003------------------------------------------------------------------------
01117>       DEFAULT VALUES
01118>         Filename = C:\Temp\SWMHYMO\Pond 2\Ottawa.val
01119>         ICASEdv  = 1 (read and print data)
01120>         FileTitle= File comment: [Parameters for City of Ottawa Projects]
01121>                    THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
01122>         Horton's infiltration equation parameters:
01123>         [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
01124>         Parameters for PERVIOUS surfaces in STANDHYD:
01125>         [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
01126>         Parameters for IMPERVIOUS surfaces in STANDHYD:
01127>         [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
01128>         Parameters used in NASHYD:
01129>         [Ia=   4.67 mm] [N= 3.00]
01130>         Average monthly Pan Evaporation data in    (mm)
01131>    JAN    FEB    MAR    APR    MAY    JUN    JUL    AUG    SEP    OCT    NOV    DEC
01132>    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00
01133>         Average monthly Potential Evapotranspiration in    (mm)
01134>    JAN    FEB    MAR    APR    MAY    JUN    JUL    AUG    SEP    OCT    NOV    DEC
01135>    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00
01136> ##############################################################################
01137> # PROPOSED CONDITIONS
01138> ##############################################################################
01139> # Lumped drainage to Cardinal Creek Village South Pond 2
01140> R0199:C00004------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01141>       CALIB STANDHYD       1.0 01:CCVS          32.54    8.427 No_date   12:02   75.61 .708     .000
01142>         [XIMP=.56:TIMP=.66]
01143>         [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
01144>         [Pervious    area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
01145>         [Impervious  area: IAimp= 1.57:SLPI= .90:LGI= 466.:MNI=.013:SCI=   .0]
01146> # Estimated Pond Volumes for SWM Facility
01147> R0199:C00005------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01148>       ROUTE RESERVOIR ->     1.0 02:CCVS          32.54    8.427 No_date   12:02   75.61 n/a     .000
01149>                          out <=    1.0 01:Pout          32.54     .167 No_date   14:18   75.61 n/a     .000
01150>                    overflow <=    1.0 03:Povf           .00     .000 No_date    0:00     .00 n/a     .000
01151>       (MxStoUsed=.1933E+01  m3, TotOvfVol=.0000E+00  m3, N-Ovf=    0, TotDurOvf=    0.hrs)
01152> # Uncontrolled rear yard drainage area to South Tributary
01153> R0199:C00006------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01154>       CALIB STANDHYD       1.0 01:CCVSunc        1.93     .489 No_date   12:01   49.56 .464     .000
01155>         [XIMP=.19:TIMP=.29]
01156>         [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
01157>         [Pervious    area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
01158>         [Impervious  area: IAimp= 1.57:SLPI= .90:LGI= 113.:MNI=.013:SCI=   .0]
01159> # Total Pond 2 Outflow to South Tributary
01160> R0199:C00007------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01161>       ADD HYD              1.0 02:Pout          32.54     .167 No_date   14:18   75.61 n/a     .000
01162>                      +     1.0 02:Povf           .00     .000 No_date    0:00     .00 n/a     .000
01163>                    SUM=    1.0 01:Pout-T        32.54     .167 No_date   14:18   75.61 n/a     .000
01164> # Total CCV South Outflow to South Tributary (Controlled + Uncontrolled)
01165> R0199:C00008------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01166>       ADD HYD              1.0 02:Pout          32.54     .167 No_date   14:18   75.61 n/a     .000
01167>                      +     1.0 02:Povf           .00     .000 No_date    0:00     .00 n/a     .000
01168>                      +     1.0 02:CCVSunc        1.93     .489 No_date   12:01   49.56 n/a     .000
01169>                    SUM=    1.0 01:CCVS-T        34.47     .596 No_date   12:01   74.15 n/a     .000
01170> ##############################################################################
01171> # STORMS
01172> ##############################################################################
01173>   ** END OF RUN :  978
01174>
01175> ********************************************************************************
01176>
01177>
01178>
01179>
01180>
01181>  RUN#:COMMAND#
01182> R0979:C00001------------------------------------------------------------------------
01183>       START
01184>         [TZERO =    .00 hrs on        0]
01185>         [METOUT=   2   (1=imperial, 2=metric output)]
01186>         [NSTORM=   1 ]
01187>         [NRUN  = 0979 ]
01188> *******************************************************************************
01189> #  SWMHYMO Ver:5.5/Feb 2015 / INPUT DATA FILE
01190> *******************************************************************************
01191> #  Project Name  : [Cardinal Creek Village South]
01192> #  Project Number: [959(03)]
01193> #  Date          : [2024/10/29]
01194> #  Modeller      : [PP]
01195> #  Company       : J.F. Sabourin and Associates
01196> #  License #     : 2549237
01197> *******************************************************************************
01198> R0979:C00002------------------------------------------------------------------------
01199>       READ STORM
01200>         Filename = storm.001
01201>         Comment  = July 1st, 1979 Storm (3H) - Ottawa International Airport step 5 min
01202>         [SDT= 5.00:SDUR=   3.00:PTOT=  83.99]
01203> R0979:C00003------------------------------------------------------------------------
01204>       DEFAULT VALUES
01205>         Filename = C:\Temp\SWMHYMO\Pond 2\Ottawa.val
01206>         ICASEdv  = 1 (read and print data)
01207>         FileTitle= File comment: [Parameters for City of Ottawa Projects]
01208>                    THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
01209>         Horton's infiltration equation parameters:
01210>         [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
01211>         Parameters for PERVIOUS surfaces in STANDHYD:
01212>         [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
01213>         Parameters for IMPERVIOUS surfaces in STANDHYD:
01214>         [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
01215>         Parameters used in NASHYD:
01216>         [Ia=   4.67 mm] [N= 3.00]
01217>         Average monthly Pan Evaporation data in    (mm)
01218>    JAN    FEB    MAR    APR    MAY    JUN    JUL    AUG    SEP    OCT    NOV    DEC
01219>    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00
01220>         Average monthly Potential Evapotranspiration in    (mm)
01221>    JAN    FEB    MAR    APR    MAY    JUN    JUL    AUG    SEP    OCT    NOV    DEC
01222>    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00
01223> ##############################################################################
01224> # PROPOSED CONDITIONS
01225> ##############################################################################
01226> # Lumped drainage to Cardinal Creek Village South Pond 2
01227> R0979:C00004------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01228>       CALIB STANDHYD       1.0 01:CCVS          32.54    7.062 No_date    1:34   68.14 .811     .000
01229>         [XIMP=.56:TIMP=.66]
01230>         [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
01231>         [Pervious    area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
01232>         [Impervious  area: IAimp= 1.57:SLPI= .90:LGI= 466.:MNI=.013:SCI=   .0]
01233> # Estimated Pond Volumes for SWM Facility
01234> R0979:C00005------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01235>       ROUTE RESERVOIR ->     1.0 02:CCVS          32.54    7.062 No_date    1:34   68.14 n/a     .000
01236>                          out <=    1.0 01:Pout          32.54     .177 No_date    3:04   68.14 n/a     .000
01237>                    overflow <=    1.0 03:Povf           .00     .000 No_date    0:00     .00 n/a     .000
01238>       (MxStoUsed=.2110E+01  m3, TotOvfVol=.0000E+00  m3, N-Ovf=    0, TotDurOvf=    0.hrs)
01239> # Uncontrolled rear yard drainage area to South Tributary
01240> R0979:C00006------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01241>       CALIB STANDHYD       1.0 01:CCVSunc        1.93     .387 No_date    1:35   53.15 .633     .000
01242>         [XIMP=.19:TIMP=.29]
01243>         [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
01244>         [Pervious    area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
01245>         [Impervious  area: IAimp= 1.57:SLPI= .90:LGI= 113.:MNI=.013:SCI=   .0]
01246> # Total Pond 2 Outflow to South Tributary
01247> R0979:C00007------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01248>       ADD HYD              1.0 02:Pout          32.54     .177 No_date    3:04   68.14 n/a     .000
01249>                      +     1.0 02:Povf           .00     .000 No_date    0:00     .00 n/a     .000
01250>                    SUM=    1.0 01:Pout-T        32.54     .177 No_date    3:04   68.14 n/a     .000
01251> # Total CCV South Outflow to South Tributary (Controlled + Uncontrolled)
01252> R0979:C00008------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01253>       ADD HYD              1.0 02:Pout          32.54     .177 No_date    3:04   68.14 n/a     .000
01254>                      +     1.0 02:Povf           .00     .000 No_date    0:00     .00 n/a     .000
01255>                      +     1.0 02:CCVSunc        1.93     .387 No_date    1:35   53.15 n/a     .000
01256>                    SUM=    1.0 01:CCVS-T        34.47     .503 No_date    1:38   67.30 n/a     .000
01257> ##############################################################################
01258> # STORMS
01259> ##############################################################################
01260>   ** END OF RUN :  987
01261>
01262> ********************************************************************************
01263>
01264>
01265>
01266>
01267>
01268>  RUN#:COMMAND#
01269> R0988:C00001------------------------------------------------------------------------
01270>       START
01271>         [TZERO =    .00 hrs on        0]
01272>         [METOUT=   2   (1=imperial, 2=metric output)]
01273>         [NSTORM=   1 ]
01274>         [NRUN  = 0988 ]
01275> *******************************************************************************
01276> #  SWMHYMO Ver:5.5/Feb 2015 / INPUT DATA FILE
01277> *******************************************************************************
01278> #  Project Name  : [Cardinal Creek Village South]
01279> #  Project Number: [959(03)]
01280> #  Date          : [2024/10/29]
01281> #  Modeller      : [PP]
01282> #  Company       : J.F. Sabourin and Associates
01283> #  License #     : 2549237
01284> *******************************************************************************
01285> R0988:C00002------------------------------------------------------------------------
01286>       READ STORM
01287>         Filename = storm.001
01288>         Comment  = August 4th, 1988 Storm (5H) - Ottawa International Airport step 5
01289>         [SDT= 5.00:SDUR=   5.58:PTOT=  80.59]
01290> R0988:C00003------------------------------------------------------------------------
01291>       DEFAULT VALUES
01292>         Filename = C:\Temp\SWMHYMO\Pond 2\Ottawa.val
01293>         ICASEdv  = 1 (read and print data)
01294>         FileTitle= File comment: [Parameters for City of Ottawa Projects]
01295>                    THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
01296>         Horton's infiltration equation parameters:
01297>         [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
01298>         Parameters for PERVIOUS surfaces in STANDHYD:
01299>         [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
01300>         Parameters for IMPERVIOUS surfaces in STANDHYD:
01301>         [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
01302>         Parameters used in NASHYD:
01303>         [Ia=   4.67 mm] [N= 3.00]
01304>         Average monthly Pan Evaporation data in    (mm)
01305>    JAN    FEB    MAR    APR    MAY    JUN    JUL    AUG    SEP    OCT    NOV    DEC
01306>    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00
01307>         Average monthly Potential Evapotranspiration in    (mm)
01308>    JAN    FEB    MAR    APR    MAY    JUN    JUL    AUG    SEP    OCT    NOV    DEC
01309>    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00
01310> ##############################################################################
01311> # PROPOSED CONDITIONS
01312> ##############################################################################
01313> # Lumped drainage to Cardinal Creek Village South Pond 2
01314> R0988:C00004------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01315>       CALIB STANDHYD       1.0 01:CCVS          32.54    7.452 No_date    2:03   63.99 .794     .000
01316>         [XIMP=.56:TIMP=.66]
01317>         [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
01318>         [Pervious    area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
01319>         [Impervious  area: IAimp= 1.57:SLPI= .90:LGI= 466.:MNI=.013:SCI=   .0]
01320> # Estimated Pond Volumes for SWM Facility
01321> R0988:C00005------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01322>       ROUTE RESERVOIR ->     1.0 02:CCVS          32.54    7.452 No_date    2:03   63.99 n/a     .000
01323>                          out <=    1.0 01:Pout          32.54     .165 No_date    3:35   63.98 n/a     .000
01324>                    overflow <=    1.0 03:Povf           .00     .000 No_date    0:00     .00 n/a     .000
01325>       (MxStoUsed=.1889E+01  m3, TotOvfVol=.0000E+00  m3, N-Ovf=    0, TotDurOvf=    0.hrs)
01326> # Uncontrolled rear yard drainage area to South Tributary
01327> R0988:C00006------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01328>       CALIB STANDHYD       1.0 01:CCVSunc        1.93     .408 No_date    2:00   48.69 .604     .000
01329>         [XIMP=.19:TIMP=.29]
01330>         [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
01331>         [Pervious    area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
01332>         [Impervious  area: IAimp= 1.57:SLPI= .90:LGI= 113.:MNI=.013:SCI=   .0]
01333> # Total Pond 2 Outflow to South Tributary
01334> R0988:C00007------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01335>       ADD HYD              1.0 02:Pout          32.54     .165 No_date    3:35   63.98 n/a     .000
01336>                      +     1.0 02:Povf           .00     .000 No_date    0:00     .00 n/a     .000
01337>                    SUM=    1.0 01:Pout-T        32.54     .165 No_date    3:35   63.98 n/a     .000
01338> # Total CCV South Outflow to South Tributary (Controlled + Uncontrolled)
01339> R0988:C00008------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01340>       ADD HYD              1.0 02:Pout          32.54     .165 No_date    3:35   63.98 n/a     .000
01341>                      +     1.0 02:Povf           .00     .000 No_date    0:00     .00 n/a     .000
01342>                      +     1.0 02:CCVSunc        1.93     .408 No_date    2:00   48.69 n/a     .000
01343>                    SUM=    1.0 01:CCVS-T        34.47     .528 No_date    2:01   63.13 n/a     .000
01344> ##############################################################################
01345> # STORMS
01346> ##############################################################################
01347>   ** END OF RUN :  995
01348>
01349> ********************************************************************************
01350>
01351>
01352>
01353>
01354>
01355>  RUN#:COMMAND#
01356> R0996:C00001------------------------------------------------------------------------
01357>       START
01358>         [TZERO =    .00 hrs on        0]
01359>         [METOUT=   2   (1=imperial, 2=metric output)]
01360>         [NSTORM=   1 ]
01361>         [NRUN  = 0996 ]
01362> *******************************************************************************
01363> #  SWMHYMO Ver:5.5/Feb 2015 / INPUT DATA FILE
01364> *******************************************************************************
01365> #  Project Name  : [Cardinal Creek Village South]
01366> #  Project Number: [959(03)]
01367> #  Date          : [2024/10/29]
01368> #  Modeller      : [PP]
01369> #  Company       : J.F. Sabourin and Associates
01370> #  License #     : 2549237
01371> *******************************************************************************
01372> R0996:C00002------------------------------------------------------------------------
01373>       READ STORM
01374>         Filename = storm.001
01375>         Comment  = August 8th, 1996 Storm (5H) - Ottawa International Airport step 5
01376>         [SDT= 5.00:SDUR=   5.75:PTOT=  73.90]
01377> R0996:C00003------------------------------------------------------------------------
01378>       DEFAULT VALUES
01379>         Filename = C:\Temp\SWMHYMO\Pond 2\Ottawa.val
01380>         ICASEdv  = 1 (read and print data)
01381>         FileTitle= File comment: [Parameters for City of Ottawa Projects]
01382>                    THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
01383>         Horton's infiltration equation parameters:
01384>         [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
01385>         Parameters for PERVIOUS surfaces in STANDHYD:
01386>         [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
01387>         Parameters for IMPERVIOUS surfaces in STANDHYD:
01388>         [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
01389>         Parameters used in NASHYD:
01390>         [Ia=   4.67 mm] [N= 3.00]
01391>         Average monthly Pan Evaporation data in    (mm)
01392>    JAN    FEB    MAR    APR    MAY    JUN    JUL    AUG    SEP    OCT    NOV    DEC
01393>    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00
01394>         Average monthly Potential Evapotranspiration in    (mm)
01395>    JAN    FEB    MAR    APR    MAY    JUN    JUL    AUG    SEP    OCT    NOV    DEC
01396>    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00    .00
01397> ##############################################################################
01398> # PROPOSED CONDITIONS
01399> ##############################################################################
01400> # Lumped drainage to Cardinal Creek Village South Pond 2
01401> R0996:C00004------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01402>       CALIB STANDHYD       1.0 01:CCVS          32.54    5.883 No_date    1:31   58.25 .788     .000
01403>         [XIMP=.56:TIMP=.66]
01404>         [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
01405>         [Pervious    area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
01406>         [Impervious  area: IAimp= 1.57:SLPI= .90:LGI= 466.:MNI=.013:SCI=   .0]
01407> # Estimated Pond Volumes for SWM Facility
01408> R0996:C00005------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01409>       ROUTE RESERVOIR ->     1.0 02:CCVS          32.54    5.883 No_date    1:31   58.25 n/a     .000
01410>                          out <=    1.0 01:Pout          32.54     .157 No_date    4:33   58.25 n/a     .000
01411>                    overflow <=    1.0 03:Povf           .00     .000 No_date    0:00     .00 n/a     .000
01412>       (MxStoUsed=.1746E+01  m3, TotOvfVol=.0000E+00  m3, N-Ovf=    0, TotDurOvf=    0.hrs)
01413> # Uncontrolled rear yard drainage area to South Tributary
01414> R0996:C00006------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01415>       CALIB STANDHYD       1.0 01:CCVSunc        1.93     .292 No_date    1:31   44.00 .595     .000
01416>         [XIMP=.19:TIMP=.29]
01417>         [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
01418>         [Pervious    area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
01419>         [Impervious  area: IAimp= 1.57:SLPI= .90:LGI= 113.:MNI=.013:SCI=   .0]
01420> # Total Pond 2 Outflow to South Tributary
01421> R0996:C00007------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01422>       ADD HYD              1.0 02:Pout          32.54     .157 No_date    4:33   58.25 n/a     .000
01423>                      +     1.0 02:Povf           .00     .000 No_date    0:00     .00 n/a     .000
01424>                    SUM=    1.0 01:Pout-T        32.54     .157 No_date    4:33   58.25 n/a     .000
01425> # Total CCV South Outflow to South Tributary (Controlled + Uncontrolled)
01426> R0996:C00008------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01427>       ADD HYD              1.0 02:Pout          32.54     .157 No_date    4:33   58.25 n/a     .000
01428>                      +     1.0 02:Povf           .00     .000 No_date    0:00     .00 n/a     .000
01429>                      +     1.0 02:CCVSunc        1.93     .292 No_date    1:31   44.00 n/a     .000
01430>                    SUM=    1.0 01:CCVS-T        34.47     .357 No_date    3:15   57.45 n/a     .000
01431> ##############################################################################
01432> # STORMS
01433> ##############################################################################
01434>   ** END OF RUN :  998
01435>
01436> ********************************************************************************
01437>
01438>
01439>
01440>
```

```
01441>
01442>  RUN#:COMMAND#
01443> R0999:C00001-------------------------------------------------------------------------------------------------
01444>       START
01445>       [TZERO =    .00 hrs on        0]
01446>       [METOUT=   2      (1=imperial, 2=metric output)]
01447>       [NSTORM=   1 ]
01448>       [NRUN  = 0999 ]
01449> #*******************************************************************************
01450> #  SWMHYMO Ver:5.5/Feb 2015 / INPUT DATA FILE
01451> #*******************************************************************************
01452> #  Project Name  : [Cardinal Creek Village South]
01453> #  Project Number: [959(03)]
01454> #  Date          : [2024/10/29]
01455> #  Modeller      : [PP]
01456> #  Company       : J.F. Sabourin and Associates
01457> #  License #     : 254923?
01458> #*******************************************************************************
01459> R0999:C00002-------------------------------------------------------------------------------------------------
01460>       READ STORM
01461>       Filename = storm.001
01462>       Comment  = CHICAGO STORM   100 Year, 3 Hours
01463>       [SDT=10.00:SDUR=   3.00:PTOT=  86.00]
01464> R0999:C00003-------------------------------------------------------------------------------------------------
01465>      DEFAULT VALUES
01466>       Filename = C:\Temp\SWMHYMO\Pond 2\Ottawa.val
01467>       ICASEdv  = 1 (read and print data)
01468>       FileTitle= File comment: [Parameters for City of Ottawa Projects]
01469>                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
01470>       Horton's infiltration equation parameters:
01471>       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
01472>       Parameters for PERVIOUS surfaces in STANDHYD:
01473>       [IAper=   4.67 mm] [LGP=40.00 m] [MNP=.250]
01474>       Parameters for IMPERVIOUS surfaces in STANDHYD:
01475>       [IAimp=   1.57 mm] [CLI= 1.50]   [MNI=.013]
01476>       Parameters used in NASHYD:
01477>       [Ia=   4.67 mm] [N= 3.00]
01478>       Average monthly Pan Evaporation data in    (mm)
01479>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
01480>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
01481>       Average monthly Potential Evapotranspiration in    (mm)
01482>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
01483>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
01484> ###############################################################################
01485> # PROPOSED CONDITIONS
01486> ###############################################################################
01487> # Lumped drainage to Cardinal Creek Village South Pond 2
01488> R0999:C00004-------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01489>      CALIB STANDHYD          1.0 01:CCVS          32.54   12.795 No_date    1:02   68.72 .799     .000
01490>       [XIMP=.56:TIMP=.66]
01491>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
01492>       [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
01493>       [Impervious   area: IAimp= 1.57:SLPI= .90:LGI= 466.:MNI=.013:SCI=   .0]
01494> # Estimated Pond Volumes for SWM Facility
01495> R0999:C00005-------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01496>     ROUTE RESERVOIR ->     1.0 02:CCVS          32.54   12.795 No_date    1:02   68.72  n/a     .000
01497>              out <=     1.0 01:Pout          32.54     .176 No_date    3:05   68.71  n/a     .000
01498>          overflow <=    1.0 03:Povf           .00     .000 No_date    0:00    .00  n/a     .000
01499>      {MxStoUsed=.2108E+01  m3, TotOvfVol=.0000E+00  m3, N-Ovf=    0, TotDurOvf=    0.hrs}
01500> # Uncontrolled rear yard drainage area to South Tributary
01501> R0999:C00006-------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01502>      CALIB STANDHYD          1.0 01:CCVSunc        1.93     .711 No_date    1:01   52.48 .610     .000
01503>       [XIMP=.19:TIMP=.29]
01504>       [Horton parameters: Fo= 76.20:Fc= 13.20:DCAY=4.14:  F= .00]
01505>       [Pervious     area: IAper= 4.67:SLPP=2.00:LGP=  40.:MNP=.250:SCP=   .0]
01506>       [Impervious   area: IAimp= 1.57:SLPI= .90:LGI= 113.:MNI=.013:SCI=   .0]
01507> # Total Pond 2 Outflow to South Tributary
01508> R0999:C00007-------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01509>      ADD HYD                 1.0 02:Pout          32.54     .176 No_date    3:05   68.71  n/a     .000
01510>                            + 1.0 02:Povf           .00     .000 No_date    0:00    .00  n/a     .000
01511>                    SUM=      1.0 01:Pout-T        32.54     .176 No_date    3:05   68.71  n/a     .000
01512> # Total CCV South Outflow to South Tributary (Controlled + UnconTrolled)
01513> R0999:C00008-------------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
01514>      ADD HYD                 1.0 02:Pout          32.54     .176 No_date    3:05   68.71  n/a     .000
01515>                            + 1.0 02:Povf           .00     .000 No_date    0:00    .00  n/a     .000
01516>                            + 1.0 02:CCVSunc        1.93     .711 No_date    1:01   52.48  n/a     .000
01517>                    SUM=      1.0 01:CCVS-T        34.47     .747 No_date    1:01   67.80  n/a     .000
01518> ###############################################################################
01519> # STORMS
01520> ###############################################################################
01521> R0999:C00002-------------------------------------------------------------------------------------------------
01522>      FINISH
01523> -------------------------------------------------------------------------------------------------
01524> *************************************************************************************************
01525>       WARNINGS / ERRORS / NOTES
01526>       -------------------------
01527>    Simulation ended on 2024-10-29     at 17:07:41
01528> =================================================================================================
01529>
```

JFSA Canada Inc.
52 Springbrook Drive,
Ottawa, ON K2S 1B9
T 613-836-3884 F 613-836-0332

jfsa.com

Attachment B

Pond 2 Preliminary Forebay Calculations

CALCULATION SHEET B-1: FOREBAY SIZING FOR SWM FACILITY

CARDINAL CREEK VILLAGE SOUTH
SWM Pond 2
City of Ottawa
Calculation of Forebay Size

Settling Criteria

From the SWMP Manual, the required length for settling is as follows:

$$L_{min} = \left(\frac{r\,Q_p}{V_s}\right)^{0.5}$$

where:
- r = length to width ratio, at the invert of the inlet pipe.
- Q_p = peak outflow during design quality storm
- V_s = settling velocity

Input:

r =	3.35		(67 m / 20 m)
Q_p =	0.036	m^3/s	(at elevation 83.2 m)
V_s =	0.0003	m/s	

L_{min} = 20.03 m

The peak flow rate from the pond during the quality storm is taken as the flow that would occur just below the quantity controls (Refer to Attachment A)

Dispersion Criteria

From the SWMP Manual, the required length for dispersion is as follows:

$$L_{min} = \frac{8\,Q}{d\,V_f}$$

where:
- Q = Inlet flowrate (10-Year, 24-Hour SCS Storm)
- d = depth of permanent pool (forebay)
- V_f = desired final velocity

Input:

Q =	5.324	m^3/s
d =	1.50	m
Vf =	0.5	m/s

L_{min} = 56.79 m

The minimum forebay length is determined by the larger of the settling or dispersion criteria.

Minimum Length of Forebay Required	56.79 m	
Length of Forebay Provided	**67.00 m**	(at elevation 82.5 m)

Average Forebay Velocity

From the SWMP Manual, the maximum allowable average velocity is 0.15 m/s:

$$V_{avg} = \frac{Q}{d\,W_{avg}}$$

where:
- Q = Inlet flowrate (10-Year, 24-Hour SCS Storm)
- d = depth of pond during peak 10-year inflow (12h:02min)
- W_{avg} = average width of forebay

Input:

Q =	5.324	m^3/s	
d =	2.80	m	
W_{avg} =	13	m	(5 m bottom, 20 m permanent pool)

V = 0.15 m/s ≤ 0.15 m/s

JFSA Canada Inc.
52 Springbrook Drive,
Ottawa, ON K2S 1B9
T 613-836-3884 F 613-836-0332

jfsa.com

Attachment C

Storm Design Sheets (DSEL)

Preliminary HGL Analysis Results

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Local Roads Return Frequency = 2 years
Collector Roads Return Frequency = 5 years
Manning 0.013 Arterial Roads Return Frequency = 10 years

	LOCATION		AREA (Ha)																FLOW						SEWER DATA							
			2 YEAR				5 YEAR				10 YEAR				100 YEAR				Time of	Intensity	Intensity	Intensity	Intensity	Peak Flow	DIA. (mm)	DIA. (mm)	TYPE	SLOPE	LENGTH	CAPACITY	VELOCITY	TIME OF	RATIO
			AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	Conc.	2 Year	5 Year	10 Year	100 Year										
Location	From Node	To Node	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(min)	(mm/h)	(mm/h)	(mm/h)	(mm/h)	Q (l/s)	(actual)	(nominal)		(%)	(m)	(l/s)	(m/s)	LOW (min	Q/Q full
SERVICING BLOCK 2																																
Contribution From STREET 17, Pipe 105 - 106						-2.44				0.00				0.00				4.59	13.99													
	106	113			0.00	-2.44			0.00	0.00			0.00	0.00			0.00	4.59	13.99	64.26	86.97	101.87	148.79	527	900	900	CONC	1.10	12.0	1898.6704	2.9845	0.0670	0.277
Contribution From STREET 17, Pipe 110 - 111						2.31				0.00				0.00				0.00	13.23													
	111	113	0.07	0.68	0.13	2.44			0.00	0.00			0.00	0.00			0.00	0.00	13.23	66.29	89.75	105.13	153.58	162	525	525	CONC	2.20	16.5	637.8854	2.9467	0.0933	0.253
					0.00	0.00	1.49	0.40	1.66	1.66			0.00	0.00			0.00	4.59	12.00													
	113	114			0.00	0.00			0.00	1.66			0.00	0.00			0.00	4.59	14.06	64.09	86.74	101.59	148.39	825	900	900	CONC	1.10	105.0	1898.6704	2.9845	0.5864	0.435
					0.00	0.00	2.44	0.70	4.75	6.41			0.00	0.00			0.00	4.59	12.00													
	114	115			0.00	0.00			0.00	6.41			0.00	0.00			0.00	4.59	14.64	62.63	84.73	99.23	144.92	1208	900	900	CONC	1.10	96.5	1898.6704	2.9845	0.5389	0.636
	115	119			0.00	0.00			0.00	6.41			0.00	0.00			0.00	4.59	15.18	61.34	82.98	97.17	141.89	1183	975	975	CONC	0.45	24.0	1503.3442	2.0135	0.1987	0.787
To STREET 1, Pipe 119 - 121						0.00				6.41				0.00				4.59	15.38													
STREET 5																																
	75	76	0.41	0.68	0.78	0.78			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	60	450	450	CONC	0.20	99.5	127.5033	0.8017	2.0685	0.467
To STREET 12, Pipe 76 - 78						0.78				0.00				0.00				0.00	12.07													
STREET 6																																
	65	66	0.33	0.68	0.62	0.62			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	48	450	450	CONC	0.80	46.0	255.0067	1.6034	0.4782	0.188
To STREET 12, Pipe 66 - 72						0.62				0.00				0.00				0.00	10.48													
	67	68	0.25	0.68	0.47	0.47			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	36	450	450	CONC	0.75	13.0	246.9092	1.5525	0.1396	0.147
	68	69	0.13	0.68	0.25	0.72			0.00	0.00			0.00	0.00			0.00	0.00	10.14	76.27	103.46	121.28	177.29	55	450	450	CONC	0.50	10.5	201.6005	1.2676	0.1381	0.272
	69	70	0.26	0.68	0.49	1.21			0.00	0.00			0.00	0.00			0.00	0.00	10.28	75.76	102.75	120.44	176.06	92	450	450	CONC	0.20	64.5	127.5033	0.8017	1.3409	0.719
	70	71	0.11	0.68	0.21	1.42			0.00	0.00			0.00	0.00			0.00	0.00	11.62	71.10	96.36	112.91	165.00	101	450	450	CONC	0.20	10.5	127.5033	0.8017	0.2183	0.791
	71	72	0.58	0.68	1.10	2.51			0.00	0.00			0.00	0.00			0.00	0.00	11.84	70.41	95.40	111.78	163.35	177	600	600	CONC	0.15	78.5	237.8056	0.8411	1.5556	0.744
To STREET 12, Pipe 72 - 74						2.51				0.00				0.00				0.00	13.39													
STREET 13																																
			0.43	0.68	0.81	0.81			0.00	0.00			0.00	0.00			0.00	0.00														
	16	17	0.64	0.68	1.21	2.02			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	155	450	450	CONC	2.70	87.0	468.4772	2.9456	0.4923	0.332
	17	18	0.71	0.68	1.34	3.36			0.00	0.00			0.00	0.00			0.00	0.00	10.49	74.97	101.66	119.16	174.18	252	450	450	CONC	2.80	87.0	477.0738	2.9997	0.4834	0.529
	18	20	0.66	0.68	1.25	4.61			0.00	0.00			0.00	0.00			0.00	0.00	10.98	73.25	99.31	116.39	170.11	338	675	675	CONC	0.30	87.0	460.4091	1.2866	1.1270	0.734
To STREET 15, Pipe 20 - 26						4.61				0.00				0.00				0.00	12.10													
	21	22	0.13	0.68	0.25	0.25			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	19	450	450	CONC	1.30	66.0	325.0710	2.0439	0.5382	0.058
	22	23	0.07	0.68	0.13	0.38			0.00	0.00			0.00	0.00			0.00	0.00	10.54	74.80	101.43	118.89	173.78	28	450	450	CONC	1.60	9.5	360.6339	2.2675	0.0698	0.078
	23	24	0.77	0.68	1.46	1.83			0.00	0.00			0.00	0.00			0.00	0.00	10.61	74.55	101.09	118.48	173.19	137	450	450	CONC	2.20	92.0	422.8807	2.6589	0.5767	0.323
	24	25	0.73	0.68	1.38	3.21			0.00	0.00			0.00	0.00			0.00	0.00	11.18	72.54	98.33	115.23	168.41	233	450	450	CONC	2.30	91.5	432.3849	2.7187	0.5609	0.539
	25	26	0.70	0.68	1.32	4.54			0.00	0.00			0.00	0.00			0.00	0.00	11.75	70.69	95.80	112.25	164.03	321	600	600	CONC	0.45	91.5	411.8915	1.4568	1.0468	0.779
To STREET 15, Pipe 26 - 32						4.54				0.00				0.00				0.00	12.79													
STREET 19																																
	8	9	0.05	0.68	0.09	0.09			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	7	450	450	CONC	0.60	22.0	220.8423	1.3886	0.2641	0.033
	9	10	0.03	0.68	0.06	0.15			0.00	0.00			0.00	0.00			0.00	0.00	10.26	75.81	102.82	120.52	176.18	11	450	450	CONC	1.35	13.0	331.2634	2.0829	0.1040	0.035
	10	11	0.44	0.68	0.83	0.98			0.00	0.00			0.00	0.00			0.00	0.00	10.37	75.42	102.29	119.90	175.26	74	450	450	CONC	2.10	82.5	413.1580	2.5978	0.5293	0.179
	1	2	0.40	0.68	0.76	0.76			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	58	450	450	CONC	0.20	59.5	127.5033	0.8017	1.2370	0.455
	2	3	0.18	0.68	0.34	1.10			0.00	0.00			0.00	0.00			0.00	0.00	11.24	72.36	98.08	114.95	167.99	79	450	450	CONC	0.30	53.5	156.1591	0.9819	0.9081	0.508
	3	4	0.03	0.68	0.06	1.15			0.00	0.00			0.00	0.00			0.00	0.00	12.15	69.45	94.08	110.23	161.07	80	450	450	CONC	0.60	13.0	220.8423	1.3886	0.1560	0.363
	4	5	0.22	0.68	0.42	1.57			0.00	0.00			0.00	0.00			0.00	0.00	12.30	68.97	93.43	109.47	159.94	108	450	450	CONC	2.25	63.0	427.6592	2.6890	0.3905	0.253
	5	6	0.06	0.68	0.11	1.68			0.00	0.00			0.00	0.00			0.00	0.00	12.69	67.81	91.84	107.60	157.20	114	450	450	CONC	0.25	12.5	142.5531	0.8963	0.2324	0.800
	6	7	0.58	0.68	1.10	2.78			0.00	0.00			0.00	0.00			0.00	0.00	12.92	67.14	90.92	106.52	155.62	187	600	600	CONC	0.15	86.0	237.8056	0.8411	1.7042	0.785
	7	11	0.49	0.68	0.93	3.71			0.00	0.00			0.00	0.00			0.00	0.00	14.63	62.66	84.78	99.29	145.00	232	675	675	CONC	0.15	86.0	325.5584	0.9098	1.5755	0.713
	11	12	0.48	0.68	0.91	5.60			0.00	0.00			0.00	0.00			0.00	0.00	16.20	59.07	79.86	93.50	136.51	331	675	675	CONC	1.60	94.0	1063.2692	2.9713	0.5273	0.311
	12	15	0.40	0.68	0.76	6.35			0.00	0.00			0.00	0.00			0.00	0.00	16.73	57.96	78.35	91.73	133.91	368	750	750	CONC	0.20	94.0	497.8726	1.1270	1.3902	0.739
To STREET 15, Pipe 15 - 20						6.35				0.00				0.00				0.00	18.12													

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min. Velocity = 0.80 m/s

Designed: M.S.	PROJECT: Cardinal Creek Village South FSR		
Checked: S.L.M	LOCATION: City of Ottawa		
Dwg. Reference: 2 STORM SERVCING PLAN	File Ref:	Date: 07 Nov 2024	Sheet No. SHEET 1 OF 4

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Local Roads Return Frequency = 2 years
Collector Roads Return Frequency = 5 years
Manning 0.013 Arterial Roads Return Frequency = 10 years

	LOCATION		AREA (Ha)																FLOW						SEWER DATA								
			2 YEAR				5 YEAR				10 YEAR				100 YEAR				Time of	Intensity	Intensity	Intensity	Intensity	Peak Flow	DIA. (mm)	DIA. (mm)	TYPE	SLOPE	LENGTH	CAPACITY	VELOCITY	TIME OF	RATIO
			AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	Conc.	2 Year	5 Year	10 Year	100 Year											
Location	From Node	To Node	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(min)	(mm/h)	(mm/h)	(mm/h)	(mm/h)	Q (l/s)	(actual)	(nominal)		(%)	(m)	(l/s)	(m/s)	LOW (min	Q/Q full
STREET 15																																	
	13	14	0.51	0.68	0.96	0.96			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	74	450	450	CONC	0.20	83.0	127.5033	0.8017	1.7255	0.581
					0.00	0.96	2.46	0.70	4.79	4.79			0.00	0.00			0.00	0.00	12.00														
	14	15	0.54	0.68	1.02	1.98			0.00	4.79			0.00	0.00			0.00	0.00	12.00	69.89	94.70	110.96	162.13	592	900	900	CONC	0.20	98.5	809.5958	1.2726	1.2900	0.731
Contribution From STREET 19, Pipe 12 - 15						6.35				0.00				0.00				0.00	18.12														
	15	20	0.34	0.68	0.64	8.98			0.00	4.79			0.00	0.00			0.00	0.00	18.12	55.26	74.66	87.40	127.56	854	900	900	CONC	0.80	77.5	1619.1915	2.5452	0.5075	0.527
Contribution From STREET 13, Pipe 18 - 20						4.61				0.00				0.00				0.00	12.10														
Contribution From STREET 13, Pipe 19 - 20						0.17				0.00				0.00				0.00	10.25														
	20	26	0.34	0.68	0.64	14.40			0.00	4.79			0.00	0.00			0.00	0.00	18.63	54.35	73.41	85.92	125.40	1134	1200	1200	CONC	0.15	79.0	1509.9717	1.3351	0.9862	0.751
Contribution From STREET 13, Pipe 25 - 26						4.54				0.00				0.00				0.00	12.79														
	26	32	0.35	0.68	0.66	19.60			0.00	4.79			0.00	0.00			0.00	0.00	19.61	52.66	71.11	83.22	121.43	1373	1200	1200	CONC	0.20	85.0	1743.5652	1.5417	0.9189	0.787
To STREET 17, Pipe 32 - 64						19.60				4.79				0.00				0.00	20.53														
STREET 17																																	
	107	108	0.55	0.68	1.04	1.04			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	80	450	450	CONC	0.50	74.0	201.6005	1.2676	0.9730	0.396
	108	109	0.53	0.68	1.00	2.04			0.00	0.00			0.00	0.00			0.00	0.00	10.97	73.26	99.32	116.40	170.13	150	525	525	CONC	0.20	89.5	192.3297	0.8885	1.6789	0.778
	109	110	0.14	0.68	0.26	2.31			0.00	0.00			0.00	0.00			0.00	0.00	12.65	67.93	92.00	107.79	157.47	157	525	525	CONC	0.25	10.5	215.0311	0.9933	0.1762	0.729
	110	111			0.00	2.31			0.00	0.00			0.00	0.00			0.00	0.00	12.83	67.42	91.30	106.96	156.27	155	525	525	CONC	0.25	24.0	215.0311	0.9933	0.4027	0.723
To SERVICING BLOCK 2, Pipe 111 - 113						2.31				0.00				0.00				0.00	13.23														
	100	101	0.04	0.68	0.08	0.08			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	6	450	450	CONC	2.80	18.5	477.0738	2.9997	0.1028	0.012
	101	102	0.03	0.68	0.06	0.13			0.00	0.00			0.00	0.00			0.00	0.00	10.10	76.41	103.65	121.51	177.62	10	450	450	CONC	2.05	18.0	408.2099	2.5667	0.1169	0.025
	102	103	0.06	0.68	0.11	0.25			0.00	0.00			0.00	0.00			0.00	0.00	10.22	75.97	103.05	120.79	176.58	19	450	450	CONC	0.20	43.0	127.5033	0.8017	0.8939	0.146
	103	104	0.03	0.68	0.06	0.30			0.00	0.00			0.00	0.00			0.00	0.00	11.11	72.78	98.66	115.62	168.98	22	450	450	CONC	0.20	7.0	127.5033	0.8017	0.1455	0.173
	104	105	0.46	0.68	0.87	1.17			0.00	0.00			0.00	0.00			0.00	0.00	11.26	72.29	97.98	114.83	167.81	85	450	450	CONC	0.20	76.0	127.5033	0.8017	1.5800	0.664
			-2.43	0.68	-4.59	-3.42			0.00	0.00			0.00	0.00			0.00	0.00															
			0.52	0.68	0.98	-2.44			0.00	0.00			0.00	0.00			0.00	0.00															
	105	106			0.00	-2.44			0.00	0.00			0.00	0.00	2.43	0.68	4.59	4.59	12.84	67.39	91.26	106.91	156.19	553	900	900	CONC	0.15	76.0	701.1305	1.1021	1.1493	0.789
To SERVICING BLOCK 2, Pipe 106 - 113						-2.44				0.00				0.00				4.59	13.99														
	27	28	0.05	0.68	0.09	0.09			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	7	450	450	CONC	0.20	25.0	127.5033	0.8017	0.5197	0.057
	28	29	0.08	0.68	0.15	0.25			0.00	0.00			0.00	0.00			0.00	0.00	10.52	74.87	101.53	119.00	173.94	18	450	450	CONC	0.20	7.5	127.5033	0.8017	0.1559	0.144
	29	30	0.71	0.68	1.34	1.59			0.00	0.00			0.00	0.00			0.00	0.00	10.68	74.30	100.75	118.09	172.61	118	450	450	CONC	0.50	87.5	201.6005	1.2676	1.1505	0.585
	30	31	0.72	0.68	1.36	2.95			0.00	0.00			0.00	0.00			0.00	0.00	11.83	70.44	95.44	111.84	163.43	208	450	450	CONC	0.90	87.5	270.4754	1.7006	0.8575	0.768
	31	32	0.56	0.68	1.06	4.01			0.00	0.00			0.00	0.00			0.00	0.00	12.68	67.84	91.87	107.64	157.26	272	675	675	CONC	0.20	87.5	375.9224	1.0505	1.3882	0.723
Contribution From STREET 15, Pipe 26 - 32						19.60				4.79				0.00				0.00	20.53														
	32	64	0.13	0.68	0.25	23.86			0.00	4.79			0.00	0.00			0.00	0.00	20.53	51.19	69.10	80.86	117.97	1552	1200	1200	CONC	0.75	80.0	3376.3995	2.9854	0.4466	0.460
To STREET 12, Pipe 64 - 66						23.86				4.79				0.00				0.00	20.98														
STREET 7																																	
	56	57	0.53	0.68	1.00	1.00			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	77	450	450	CONC	0.85	70.5	262.8549	1.6527	0.7109	0.293
To STREET 12, Pipe 57 - 64						1.00				0.00				0.00				0.00	10.71														
	58	59	0.44	0.68	0.83	0.83			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	64	450	450	CONC	0.75	40.0	246.9092	1.5525	0.4294	0.259
	59	60	0.09	0.68	0.17	1.00			0.00	0.00			0.00	0.00			0.00	0.00	10.43	75.19	101.98	119.53	174.73	75	450	450	CONC	0.20	13.5	127.5033	0.8017	0.2807	0.591
	60	61	0.21	0.68	0.40	1.40			0.00	0.00			0.00	0.00			0.00	0.00	10.71	74.18	100.59	117.89	172.32	104	450	450	CONC	1.45	67.5	343.3133	2.1586	0.5212	0.302
	61	62	0.09	0.68	0.17	1.57			0.00	0.00			0.00	0.00			0.00	0.00	11.23	72.38	98.11	114.98	168.04	114	450	450	CONC	0.25	12.0	142.5531	0.8963	0.2231	0.797
	62	63	0.53	0.68	1.00	2.57			0.00	0.00			0.00	0.00			0.00	0.00	11.45	71.64	97.09	113.78	166.27	184	600	600	CONC	0.15	60.5	237.8056	0.8411	1.1989	0.774
	63	64	0.39	0.68	0.74	3.31			0.00	0.00			0.00	0.00			0.00	0.00	12.65	67.93	91.99	107.78	157.47	225	675	675	CONC	0.15	60.5	325.5584	0.9098	1.1083	0.690
To STREET 12, Pipe 64 - 66						3.31				0.00				0.00				0.00	13.76														
STREET 13																																	
	19	20	0.09	0.68	0.17	0.17			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	13	450	450	CONC	1.35	31.5	331.2634	2.0829	0.2521	0.039
To STREET 15, Pipe 20 - 26						0.17				0.00				0.00				0.00	10.25														
	54	55	0.09	0.68	0.17	0.17			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	13	450	450	CONC	2.30	28.5	432.3849	2.7187	0.1747	0.030
To STREET 12, Pipe 55 - 57						0.17				0.00				0.00				0.00	10.17														

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min. Velocity = 0.80 m/s

Designed: M.S.	PROJECT: Cardinal Creek Village South FSR		
Checked: S.L.M	LOCATION: City of Ottawa		
Dwg. Reference: 2 STORM SERVCING PLAN	File Ref:	Date: 07 Nov 2024	Sheet No. SHEET 2 OF 4

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Local Roads Return Frequency = 2 years
Collector Roads Return Frequency = 5 years
Manning 0.013 Arterial Roads Return Frequency = 10 years

LOCATION			AREA (Ha)																FLOW						SEWER DATA								
			2 YEAR				5 YEAR				10 YEAR				100 YEAR				Time of	Intensity	Intensity	Intensity	Intensity	Peak Flow	DIA. (mm)	DIA. (mm)	TYPE	SLOPE	LENGTH	CAPACITY	VELOCITY	TIME OF	RATIO
			AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	Conc.	2 Year	5 Year	10 Year	100 Year										
Location	From Node	To Node	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(min)	(mm/h)	(mm/h)	(mm/h)	(mm/h)	Q (l/s)	(actual)	(nominal)		(%)	(m)	(l/s)	(m/s)	LOW (min	Q/Q full
STREET 8																																	
	46	47	0.18	0.68	0.34	0.34			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	26	450	450	CONC	0.20	11.0	127.5033	0.8017	0.2287	0.205
	47	48	0.58	0.68	1.10	1.44			0.00	0.00			0.00	0.00			0.00	0.00	10.23	75.94	103.00	120.74	176.49	109	450	450	CONC	0.25	71.5	142.5531	0.8963	1.3295	0.765
	48	49	0.52	0.68	0.98	2.42			0.00	0.00			0.00	0.00			0.00	0.00	11.56	71.30	96.62	113.23	165.47	173	600	600	CONC	0.15	71.5	237.8056	0.8411	1.4169	0.725
To STREET 12, Pipe 49 - 55						2.42				0.00				0.00				0.00	12.98														
	50	51	0.19	0.68	0.36	0.36			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	28	450	450	CONC	0.20	45.5	127.5033	0.8017	0.9459	0.216
	51	52	0.06	0.68	0.11	0.47			0.00	0.00			0.00	0.00			0.00	0.00	10.95	73.35	99.45	116.55	170.35	35	450	450	CONC	0.20	12.0	127.5033	0.8017	0.2495	0.272
	52	53	0.58	0.68	1.10	1.57			0.00	0.00			0.00	0.00			0.00	0.00	11.20	72.50	98.28	115.17	168.32	114	450	450	CONC	0.25	66.0	142.5531	0.8963	1.2272	0.798
	53	55	0.46	0.68	0.87	2.44			0.00	0.00			0.00	0.00			0.00	0.00	12.42	68.61	92.93	108.88	159.08	167	525	525	CONC	0.25	66.0	215.0311	0.9933	1.1074	0.778
To STREET 12, Pipe 55 - 57						2.44				0.00				0.00				0.00	13.53														
STREET 9																																	
	36	37	0.08	0.68	0.15	0.15			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	12	450	450	CONC	0.20	45.0	127.5033	0.8017	0.9355	0.091
Contribution From STREET 12, Pipe 35 - 37						1.15				0.00				0.00				0.00	13.53														
	37	38	0.51	0.68	0.96	2.27			0.00	0.00			0.00	0.00			0.00	0.00	13.53	65.46	88.61	103.80	151.62	148	525	525	CONC	0.20	82.0	192.3297	0.8885	1.5382	0.772
	38	45	0.50	0.68	0.95	3.21			0.00	0.00			0.00	0.00			0.00	0.00	15.07	61.60	83.32	97.58	142.49	198	600	600	CONC	0.20	82.0	274.5943	0.9712	1.4072	0.721
To STREET 12, Pipe 45 - 49						3.21				0.00				0.00				0.00	16.48														
STREET 10																																	
	39	40	0.32	0.68	0.60	0.60			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	46	450	450	CONC	0.20	66.5	127.5033	0.8017	1.3825	0.364
	40	44	0.34	0.68	0.64	1.25			0.00	0.00			0.00	0.00			0.00	0.00	11.38	71.88	97.42	114.16	166.84	90	450	450	CONC	0.20	81.5	127.5033	0.8017	1.6943	0.703
To STREET 12, Pipe 44 - 45						1.25				0.00				0.00				0.00	13.08														
STREET 12																																	
	33	34	0.22	0.68	0.42	0.42			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	32	450	450	CONC	0.20	71.5	127.5033	0.8017	1.4864	0.251
	34	35	0.06	0.68	0.11	0.53			0.00	0.00			0.00	0.00			0.00	0.00	11.49	71.53	96.95	113.61	166.02	38	450	450	CONC	0.20	12.0	127.5033	0.8017	0.2495	0.297
	35	37	0.33	0.68	0.62	1.15			0.00	0.00			0.00	0.00			0.00	0.00	11.74	70.73	95.84	112.30	164.11	82	450	450	CONC	0.20	86.5	127.5033	0.8017	1.7983	0.640
To STREET 9, Pipe 37 - 38						1.15				0.00				0.00				0.00	13.53														
	41	42	0.19	0.68	0.36	0.36			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	28	450	450	CONC	0.20	53.0	127.5033	0.8017	1.1018	0.216
	42	43	0.07	0.68	0.13	0.49			0.00	0.00			0.00	0.00			0.00	0.00	11.10	72.82	98.71	115.69	169.08	36	450	450	CONC	0.20	12.5	127.5033	0.8017	0.2599	0.281
	43	44	0.19	0.68	0.36	0.85			0.00	0.00			0.00	0.00			0.00	0.00	11.36	71.94	97.51	114.27	167.00	61	450	450	CONC	0.60	39.0	220.8423	1.3886	0.4681	0.277
Contribution From STREET 10, Pipe 40 - 44						1.25				0.00				0.00				0.00	13.08														
	44	45	0.24	0.68	0.45	2.55			0.00	0.00			0.00	0.00			0.00	0.00	13.08	66.71	90.33	105.82	154.59	170	525	525	CONC	0.25	46.5	215.0311	0.9933	0.7802	0.792
Contribution From STREET 9, Pipe 38 - 45						3.21				0.00				0.00				0.00	16.48														
	45	49	0.36	0.68	0.68	6.45			0.00	0.00			0.00	0.00			0.00	0.00	16.48	58.48	79.06	92.57	135.14	377	750	750	CONC	0.20	79.0	497.8726	1.1270	1.1683	0.757
Contribution From STREET 8, Pipe 48 - 49						2.42				0.00				0.00				0.00	12.98														
	49	55	0.31	0.68	0.59	9.45			0.00	0.00			0.00	0.00			0.00	0.00	17.65	56.15	75.88	88.82	129.64	531	900	900	CONC	0.15	85.0	701.1305	1.1021	1.2854	0.757
Contribution From STREET 8, Pipe 53 - 55						2.44				0.00				0.00				0.00	13.53														
Contribution From STREET 13, Pipe 54 - 55						0.17				0.00				0.00				0.00	10.17														
	55	57			0.00	12.06	0.39	0.68	0.74	0.74			0.00	0.00			0.00	0.00	18.93	53.81	72.68	85.07	124.14	703	900	900	CONC	0.25	79.0	905.1556	1.4228	0.9254	0.776
Contribution From STREET 7, Pipe 56 - 57						1.00				0.00				0.00				0.00	10.71														
	57	64			0.00	13.06	0.40	0.68	0.76	1.49			0.00	0.00			0.00	0.00	19.86	52.26	70.56	82.58	120.49	788	900	900	CONC	0.55	85.0	1342.5627	2.1104	0.6713	0.587
Contribution From STREET 17, Pipe 32 - 64						23.86				4.79				0.00				0.00	20.98														
Contribution From STREET 7, Pipe 63 - 64						3.31				0.00				0.00				0.00	13.76														
	64	66			0.00	40.23	0.19	0.68	0.36	6.64			0.00	0.00			0.00	0.00	20.98	50.51	68.17	79.77	116.37	2484	1500	1500	CONC	0.20	82.0	3161.2940	1.7889	0.7640	0.786
Contribution From STREET 6, Pipe 65 - 66						0.62				0.00				0.00				0.00	10.48														
	66	72			0.00	40.85	0.19	0.68	0.36	7.00			0.00	0.00			0.00	0.00	21.74	49.38	66.64	77.97	113.73	2484	1500	1500	CONC	0.20	79.0	3161.2940	1.7889	0.7360	0.786
Contribution From STREET 6, Pipe 71 - 72						2.51				0.00				0.00				0.00	13.39														
	72	74			0.00	43.37	0.20	0.68	0.38	7.38			0.00	0.00			0.00	0.00	22.48	48.36	65.24	76.32	111.32	2578	1650	1650	CONC	0.25	85.0	4557.2242	2.1313	0.6647	0.566
Contribution From STREET 1, Pipe 73 - 74						1.19				0.00				0.00				0.00	11.56														
	74	76			0.00	44.56	0.10	0.68	0.19	7.57			0.00	0.00			0.00	0.00	23.15	47.47	64.03	74.90	109.23	2599	1650	1650	CONC	0.15	44.0	3530.0106	1.6509	0.4442	0.736
Contribution From STREET 5, Pipe 75 - 76						0.78				0.00				0.00				0.00	12.07														
	76	78			0.00	45.33	0.09	0.68	0.17	7.74			0.00	0.00			0.00	0.00	23.59	46.89	63.24	73.98	107.89	2615	1650	1650	CONC	0.15	46.0	3530.0106	1.6509	0.4644	0.741
To STREET 1, Pipe 78 - 83						45.33				7.74				0.00				0.00	24.05														

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min. Velocity = 0.80 m/s

Designed: M.S.	PROJECT:	Cardinal Creek Village South FSR	
Checked: S.L.M	LOCATION:	City of Ottawa	
Dwg. Reference: 2 STORM SERVCING PLAN	File Ref:	Date: 07 Nov 2024	Sheet No. SHEET 3 OF 4

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Local Roads Return Frequency = 2 years
Collector Roads Return Frequency = 5 years
Manning 0.013 Arterial Roads Return Frequency = 10 years

	LOCATION		AREA (Ha)																FLOW						SEWER DATA							
			2 YEAR				5 YEAR				10 YEAR				100 YEAR				Time of	Intensity	Intensity	Intensity	Intensity	Peak Flow	DIA. (mm)	DIA. (mm)	TYPE	SLOPE	LENGTH	CAPACITY	VELOCITY	TIME OF	RATIO
			AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	AREA	R	Indiv.	Accum.	Conc.	2 Year	5 Year	10 Year	100 Year										
Location	From Node	To Node	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(Ha)		2.78 AC	2.78 AC	(min)	(mm/h)	(mm/h)	(mm/h)	(mm/h)	Q (l/s)	(actual)	(nominal)		(%)	(m)	(l/s)	(m/s)	LOW (min	Q/Q full
STREET 1																																
	73	74	0.63	0.68	1.19	1.19			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	91	450	450	CONC	0.30	92.0	156.1591	0.9819	1.5617	0.586
To STREET 12, Pipe 74 - 76						1.19				0.00				0.00				0.00	11.56														
	79	80	0.14	0.68	0.26	0.26			0.00	0.00			0.00	0.00			0.00	0.00	10.00	76.81	104.19	122.14	178.56	20	450	450	CONC	0.40	30.0	180.3170	1.1338	0.4410	0.113
	80	81	0.15	0.68	0.28	0.55			0.00	0.00			0.00	0.00			0.00	0.00	10.44	75.15	101.92	119.46	174.63	41	450	450	CONC	0.20	38.5	127.5033	0.8017	0.8004	0.323
	81	82	0.18	0.68	0.34	0.89			0.00	0.00			0.00	0.00			0.00	0.00	11.24	72.35	98.06	114.92	167.96	64	450	450	CONC	0.20	10.5	127.5033	0.8017	0.2183	0.504
	82	83	0.38	0.68	0.72	1.61			0.00	0.00			0.00	0.00			0.00	0.00	11.46	71.62	97.07	113.75	166.23	115	525	525	CONC	0.20	77.0	192.3297	0.8885	1.4444	0.598
To STREET 2, Pipe 83 - 84						1.61				0.00				0.00				0.00	12.90														
	116	117			0.00	0.00			0.00	0.00			0.00	0.00	0.15	0.80	0.33	0.33	10.00	76.81	104.19	122.14	178.56	60	450	450	CONC	2.80	47.0	477.0738	2.9997	0.2611	0.125
	117	118			0.00	0.00			0.00	0.00			0.00	0.00	0.08	0.80	0.18	0.51	10.26	75.82	102.83	120.54	176.21	90	450	450	CONC	2.80	32.0	477.0738	2.9997	0.1778	0.189
					0.00	0.00			0.00	0.00			0.00	0.00	2.44	0.60	4.07	4.58	12.00														
	118	119			0.00	0.00			0.00	0.00			0.00	0.00	0.07	0.80	0.16	4.74	12.00	69.89	94.70	110.96	162.13	768	675	675	CONC	1.60	26.0	1063.2692	2.9713	0.1458	0.722
Contribution From SERVICING BLOCK 2, Pipe 115 - 119					0.00					6.41				0.00				4.59	15.38														
					0.00	0.00			0.00	6.41			0.00	0.00	2.05	0.70	3.99	13.32	12.00														
	119	2000			0.00	0.00			0.00	6.41			0.00	0.00	0.20	0.80	0.44	13.76	15.38	60.89	82.35	96.43	140.81	2466	1200	1200	CONC	0.75	53.5	3376.3995	2.9854	0.2987	0.730
	77	78			0.00	0.00			0.00	0.00			0.00	0.00	0.06	0.80	0.13	0.13	10.00	76.81	104.19	122.14	178.56	24	450	450	CONC	1.80	14.5	382.5100	2.4051	0.1005	0.062
Contribution From STREET 12, Pipe 76 - 78						45.33				7.74				0.00				0.00	24.05														
	78	83	0.05	0.68	0.09	45.43			0.00	7.74			0.00	0.00			0.00	0.13	24.05	46.31	62.45	73.05	106.52	2601	1800	1800	CONC	0.10	26.5	3634.9621	1.4284	0.3092	0.716
To STREET 2, Pipe 83 - 84						45.43				7.74				0.00				0.13	24.36														
STREET 2																																
Contribution From STREET 1, Pipe 78 - 83						45.43				7.74				0.00				0.13	24.36														
Contribution From STREET 1, Pipe 82 - 83						1.61				0.00				0.00				0.00	12.90														
	83	84	0.64	0.68	1.21	48.24			0.00	7.74			0.00	0.00			0.00	0.13	24.36	45.93	61.93	72.44	105.63	2709	1800	1800	CONC	0.10	89.5	3634.9621	1.4284	1.0443	0.745
	84	85	0.71	0.68	1.34	49.59			0.00	7.74			0.00	0.00			0.00	0.13	25.41	44.70	60.25	70.47	102.74	2696	1800	1800	CONC	0.10	89.5	3634.9621	1.4284	1.0443	0.742
To POND INLET, Pipe 85 - HW1						49.59				7.74				0.00				0.13	26.45														
POND INLET																																
Contribution From STREET 2, Pipe 84 - 85						49.59				7.74				0.00				0.13	26.45														
	85	HW1	0.43	0.68	0.81	50.40			0.00	7.74			0.00	0.00			0.00	0.13	26.45	43.53	58.67	68.61	100.02	2661	1800	1800	CONC	0.10	61.0	3634.9621	1.4284	0.7117	0.732

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min. Velocity = 0.80 m/s

Designed: M.S.	PROJECT: **Cardinal Creek Village South FSR**	
Checked: S.L.M	LOCATION: **City of Ottawa**	
Dwg. Reference: 2 STORM SERVCING PLAN	File Ref:	Date: 07 Nov 2024 / Sheet No. SHEET 4 OF 4

Table C1: Cardinal Creek Village South
Preliminary 100-year HGL Analysis

SWM Pond	MH-ID	Invert Elevation (m)	Top of MH (m)	Max HGL (m)	Top of MH Freeboard (m)
Pond 1	MH-100	88.00	91.15	88.04	3.11
	MH-101	87.44	90.43	87.50	2.93
	MH-102	86.78	90.07	86.96	3.11
	MH-103	86.66	89.65	86.94	2.71
	MH-104	86.62	89.64	86.95	2.69
	MH-105	86.02	89.53	86.70	2.83
	MH-106	85.64	89.40	86.15	3.25
	MH-107	87.09	90.05	87.32	2.73
	MH-108	86.60	89.67	87.05	2.62
	MH-109	86.39	89.49	86.79	2.70
	MH-110	86.34	89.46	86.70	2.76
	MH-111	86.25	89.40	86.46	2.94
	MH-113	83.27	88.91	83.78	5.13
	MH-114	81.17	85.51	81.86	3.65
	MH-115	80.03	83.63	81.09	2.54
	MH-116	84.31	88.08	84.44	3.64
	MH-117	82.32	85.95	82.48	3.47
	MH-118	80.32	84.37	80.87	3.50
	MH-119	77.60	83.08	78.61	4.47
	MH-2000	77.20	80.90	78.40	2.50
Pond 2	MH-1	91.99	94.94	92.25	2.69
	MH-2	91.84	94.85	92.13	2.72
	MH-3	91.62	94.64	91.87	2.77
	MH-4	91.47	94.49	91.65	2.84
	MH-5	90.03	93.16	90.43	2.73
	MH-6	89.84	93.14	90.36	2.78
	MH-7	89.64	93.02	90.22	2.80
	MH-8	92.02	94.97	92.09	2.88
	MH-9	91.83	94.84	91.90	2.94
	MH-10	91.59	94.60	91.74	2.86
	MH-11	89.11	92.83	89.42	3.41
	MH-12	87.53	90.81	88.54	2.27
	MH-13	87.99	90.94	88.56	2.38
	MH-14	87.35	90.82	88.45	2.37
	MH-15	87.14	90.66	88.27	2.40
	MH-16	92.50	95.46	92.71	2.75
	MH-17	89.95	93.10	90.23	2.87
	MH-18	86.96	90.59	88.23	2.36
	MH-19	87.37	90.33	87.86	2.47
	MH-20	86.19	89.94	87.86	2.08
	MH-21	92.53	95.48	92.62	2.86
	MH-22	91.61	94.62	91.71	2.91
	MH-23	91.43	94.41	91.64	2.77
	MH-24	89.39	92.36	89.70	2.66

Table C1: Cardinal Creek Village South
Preliminary 100-year HGL Analysis

SWM Pond	MH-ID	Invert Elevation (m)	Top of MH (m)	Max HGL (m)	Top of MH Freeboard (m)
Pond 2	MH-25	87.04	90.33	88.31	2.02
	MH-26	85.93	89.79	87.69	2.10
	MH-27	88.45	91.40	88.57	2.83
	MH-28	88.34	91.36	88.57	2.79
	MH-29	88.26	91.35	88.56	2.79
	MH-30	87.80	90.79	88.19	2.60
	MH-31	86.63	89.98	87.33	2.65
	MH-32	85.49	89.66	87.17	2.49
	MH-33	87.33	90.28	87.92	2.36
	MH-34	87.15	90.17	87.89	2.28
	MH-35	87.10	90.16	87.89	2.27
	MH-36	87.15	90.10	87.73	2.37
	MH-37	86.85	90.03	87.73	2.30
	MH-38	86.61	89.91	87.55	2.36
	MH-39	87.13	90.08	87.69	2.39
	MH-40	86.98	89.98	87.66	2.32
	MH-41	87.33	90.28	87.53	2.75
	MH-42	87.19	90.20	87.50	2.70
	MH-43	87.13	90.12	87.49	2.63
	MH-44	86.74	89.86	87.47	2.39
	MH-45	86.30	89.79	87.34	2.45
	MH-46	86.94	89.89	87.51	2.38
	MH-47	86.89	89.88	87.51	2.37
	MH-48	86.56	89.77	87.32	2.45
	MH-49	85.99	89.67	87.17	2.50
	MH-50	86.95	89.90	87.49	2.41
	MH-51	86.83	89.83	87.48	2.35
	MH-52	86.77	89.82	87.47	2.35
	MH-53	86.53	89.72	87.28	2.44
	MH-54	87.28	90.24	87.34	2.90
	MH-55	85.84	89.54	87.02	2.52
	MH-56	87.05	90.00	87.25	2.76
	MH-57	85.62	89.42	86.78	2.64
	MH-58	87.04	89.99	87.23	2.76
	MH-59	86.68	89.70	86.97	2.73
	MH-60	86.58	89.61	86.89	2.72
	MH-61	85.57	88.77	86.75	2.02
	MH-62	85.39	88.75	86.69	2.06
	MH-63	85.23	88.66	86.60	2.06
	MH-64	84.31	88.57	86.47	2.10
	MH-65	85.86	88.81	86.24	2.57
	MH-66	84.13	88.45	86.21	2.24
	MH-67	85.84	88.80	86.30	2.50
	MH-68	85.71	88.69	86.30	2.39

Table C1: Cardinal Creek Village South
Preliminary 100-year HGL Analysis

SWM Pond	MH-ID	Invert Elevation (m)	Top of MH (m)	Max HGL (m)	Top of MH Freeboard (m)
Pond 2	MH-69	85.61	88.61	86.29	2.32
	MH-70	85.45	88.46	86.15	2.31
	MH-71	85.28	88.44	86.11	2.33
	MH-72	83.80	88.33	85.94	2.39
	MH-73	85.52	88.47	85.94	2.53
	MH-74	83.57	88.20	85.75	2.45
	MH-75	85.35	88.31	85.73	2.59
	MH-76	83.44	88.14	85.65	2.49
	MH-77	85.42	88.37	85.51	2.86
	MH-78	83.11	88.11	85.23	2.88
	MH-79	85.50	88.45	85.62	2.83
	MH-80	85.36	88.34	85.60	2.74
	MH-81	85.22	88.27	85.56	2.71
	MH-82	85.13	88.26	85.54	2.72
	MH-83	82.99	88.00	84.98	3.02
	MH-84	82.74	87.87	84.83	3.04
	MH-85	82.46	87.72	84.46	3.26
	HW1	82.31	-	84.35	-
				Min	2.02
				Max	5.13
				Average	2.68

Notes:

(1) Analysis assumes the use of ICDs throughout the development, therefore the Rational Method flows as per DSEL's storm design sheets were increased by 35% to account for additional flows captured into the minor system during the 100-year event.

(2) Analysis assumes a preliminary 100-year water level of 84.35m in Pond 2.

(3) Free oulet condition assumed at MH-2000 outfall, as the preliminary 100-yr HGL in this MH is below the invert of the inlet pipe (100-yr HGL of 75.652m based on the Nov. 2024 preliminary Pond 1 modelling update).

(4) Model Name: CCVS_v02.2.inp.

JFSA Canada Inc.
52 Springbrook Drive,
Ottawa, ON K2S 1B9
T 613-836-3884 F 613-836-0332

jfsa.com

Attachment D

Cox Country Road Culvert Analysis

Area ID	Area (ha)	Soil Description	Soil Group	Land Use Description	CN	CN*	Tp (h)
eCCR	74.3	F1, G4, R3	B / BC / D	50% B = 70% Woods, 30% Farm; 40% BC = 15% Imp, 25% Woods, 60% Urban Lawn; 10% D = 15% Imp, 15% Woods, 70% Urban Lawn	71.525	61	1.29

As per Ontario Soil Map 58 and the MTO Manual:

Short ID	Soil Description	Soil Group
F1	Farmington, fine sandy loam or sandy loam or loam, good drainage	B
G4	Grenville, sandy loam or loam or silt loam, mix of good and imperfect	BC
R1	Rideau, silty clay or clay, imperfect drainage	D
R3	Rideau, silty clay or clay, poor drainage	D
X1	Escarpment, marine clay or heavy clay	D
X3	Escarpment, limestone or dolomite or sandstone scarps	D

Calculation of Time to Peak (Tp)

	EXISTING CONDITIONS	
	UNITS	eCCR
	Metric	metric
Area	(ha)	74.3
Hydrologic Soil Group[1]		B / BC / D
CN[2]		72
C (as per Rational Method)[3]		0.25
Length of Channel[4]	(m)	1997
Elevation of Channel Outlet	(m)	87.31
Elevation of Channel Headwater	(m)	111.5
Average Slope of Channel	(m/m)	0.0121
Time to Peak (=2/3 Tc)		
Kirpich	(min)	25
FAA	(min)	77
SCS	(min)	111
Brainby Williams	(min)	48
		1.29

NOTES:
1- As per Ontario Soil Map
2- See CN C spreadsheet for detail
3- See CN C spreadsheet for detail
4- As measured on topographic map provided by DSEL

Tc Equations applicability

Kirpich	Best for rural watersheds with slopes ranging from 3% to10%
FAA	Best for flat drainage areas (was developped for air field drainage) but used frequently for urban watersheds
SCS	Best for Agricultural SW in general and urban SW < 2000 acres
BW	One of the best method for predicting Tc. Especially for good for small culvert design

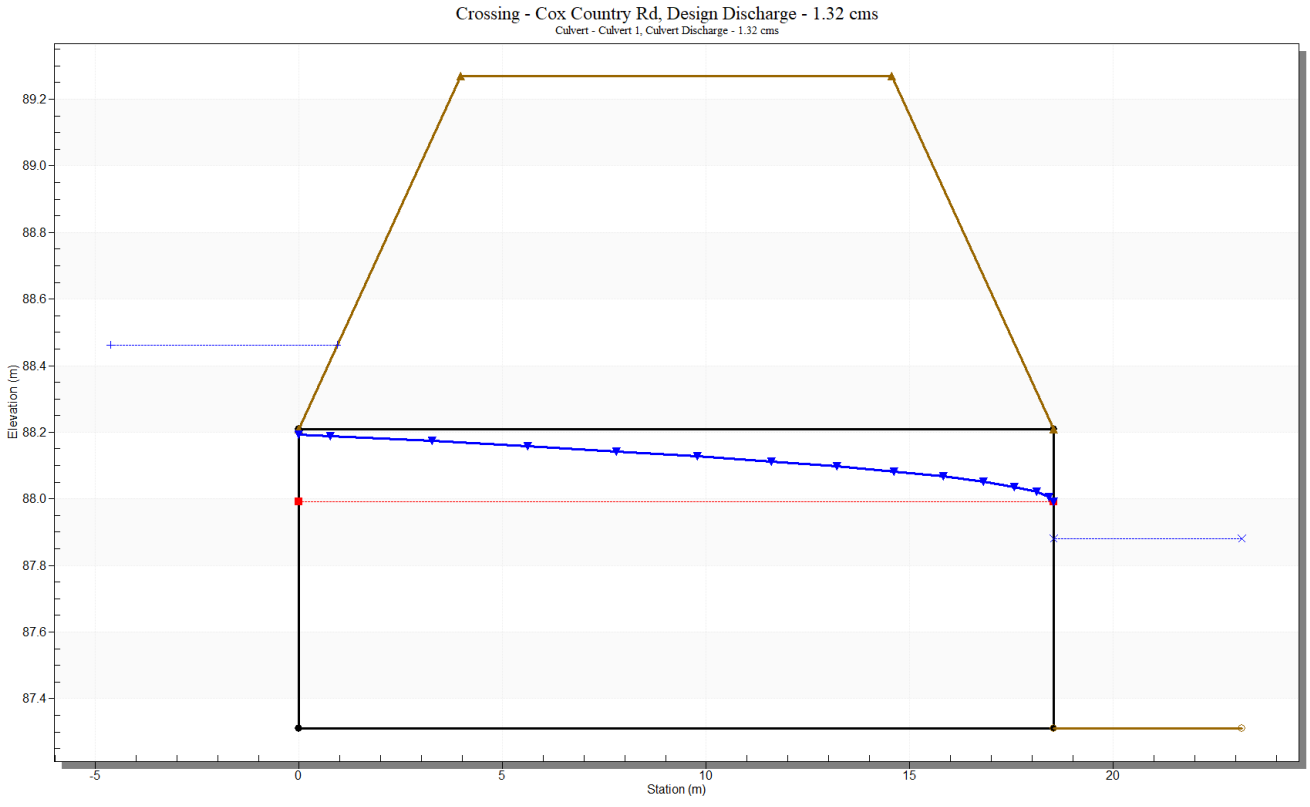
	Tc Equations and inputs (imperial unless otherwise noted)	Result in	input L as
Kirpich	$Tc = 0.0078\ L^{0.77}\ S^{-0.385}$	(min)	(ft)
FAA	$Tc = (1.8(1.1-C)L^{0.50}) / (S^{0.333})$	(min)	(ft)
SCS Lag	$Tc = (100L^{0.8}((1000/CN)-9)^{0.7} / (1900\ S^{0.5})$	(min)	(ft)
BW (metr	$Tc = (0.605L) / (S^{0.2}\ A^{0.1})$	(hrs)	(km)

HY-8 Analysis Results

Crossing Summary Table

Culvert Crossing: Cox Country Rd

Headwater Elevation (m)	Total Discharge (cms)	Culvert 1 Discharge (cms)	Roadway Discharge (cms)	Iterations
87.31	0.00	0.00	0.00	1
87.63	0.13	0.13	0.00	1
87.76	0.26	0.26	0.00	1
87.87	0.40	0.40	0.00	1
87.96	0.53	0.53	0.00	1
88.05	0.66	0.66	0.00	1
88.13	0.79	0.79	0.00	1
88.21	0.93	0.93	0.00	1
88.29	1.06	1.06	0.00	1
88.37	1.19	1.19	0.00	1
88.46	1.32	1.32	0.00	1
89.27	2.28	2.28	0.00	Overtopping



```
00001> 20     Metric units / ID Numbers OFF
00002> *$*************************************************************************
00003> *#  SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
00004> *$*************************************************************************
00005> *#  Project Name  : [Cardinal Creek Village]
00006> *#  Project Number: [959-11]
00007> *#  Date          : 2021/07/07
00008> *#  Modeller      : Laura Pipkins, P.Eng.
00009> *#  Company       : J.F. Sabourin and Associates
00010> *#  License #     : 2582634
00011> *$*************************************************************************
00012> *%  25-Year, 3-Hour Chicago Storm
00013> START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[025]
00014> *%                     ["025YC3H.stm"] <--storm filename, one per line for NSTORM time
00015> *%-------------------|-------------------------------------------------------|
00016> READ STORM            STORM_FILENAME=["storm.001"]
00017> *%-------------------|-------------------------------------------------------|
00018> DEFAULT VALUES       ICASEdef=[1],  read and print values
00019>                       DEFVAL_FILENAME=["Ottawa.val"]
00020> *%-------------------|-------------------------------------------------------|
00021> *# CN -> CN* based on Ontario Soil Map 58, Nov 1985 MTO Manual Chart H2-6A,
00022> *# Lidar data, May 2000 SWMHYMO USER's Manual, air photos, assume good condition
00023> *#
00024> *# Time to Peak = 2/3 of FAA Tc
00025> *#########################################################################
00026> *# EXISTING CONDITIONS - Drainage to South Tributary East of Cox County Road
00027> *#########################################################################
00028> *# Existing Drainage from Subject Site to Ottawa River
00029> DESIGN NASHYD         NHYD=["eCCR"], DT=[1]min, AREA=[74.3](ha),
00030>                       DWF=[0](cms), CN/C=[61], TP=[1.29]hrs,
00031>                       RAINFALL=[ ,  ,  ,  , ](mm/hr), END=-1
00032> *%-------------------|-------------------------------------------------------|
00033> *%-------------------|-------------------------------------------------------|
00034> *#########################################################################
00035> *# STORMS
00036> *#########################################################################
00037> *%  25 mm Storm based on 2-Year, 3-Hour Chicago Storm
00038> *%START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[001]
00039> *%                     ["25MMC3H.stm"] <--storm filename, one per line for NSTORM time
00040> *%-------------------|-------------------------------------------------------|
00041> *%  2-Year, 3-Hour Chicago Storm
00042> *%START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[002]
00043> *%                     ["002YC3H.stm"] <--storm filename, one per line for NSTORM time
00044> *%-------------------|-------------------------------------------------------|
00045> *%  5-Year, 3-Hour Chicago Storm
00046> *%START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[005]
00047> *%                     ["005YC3H.stm"] <--storm filename, one per line for NSTORM time
00048> *%-------------------|-------------------------------------------------------|
00049> *%  10-Year, 3-Hour Chicago Storm
00050> *%START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[010]
00051> *%                     ["010YC3H.stm"] <--storm filename, one per line for NSTORM time
00052> *%-------------------|-------------------------------------------------------|
00053> *%  25-Year, 3-Hour Chicago Storm
00054> *%START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[025]
00055> *%                     ["025YC3H.stm"] <--storm filename, one per line for NSTORM time
00056> *%-------------------|-------------------------------------------------------|
00057> *%  50-Year, 3-Hour Chicago Storm
00058> START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[050]
00059> *%                     ["050YC3H.stm"] <--storm filename, one per line for NSTORM time
00060> *%-------------------|-------------------------------------------------------|
00061> *%  100-Year, 3-Hour Chicago Storm
00062> START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[099]
00063> *%                     ["100YC3H.stm"] <--storm filename, one per line for NSTORM time
00064> *%-------------------|-------------------------------------------------------|
00065> *%  2-Year, 24-Hour SCS Storm
00066> *%START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[102]
00067> *%                     ["SC2400Zx.stm"] <--storm filename, one per line for NSTORM time
00068> *%-------------------|-------------------------------------------------------|
00069> *%  5-Year, 24-Hour SCS Storm
00070> *%START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[105]
00071> *%                     ["SC24005x.stm"] <--storm filename, one per line for NSTORM time
00072> *%-------------------|-------------------------------------------------------|
00073> *%  10-Year, 24-Hour SCS Storm
00074> *%START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[110]
00075> *%                     ["SC24010x.stm"] <--storm filename, one per line for NSTORM time
00076> *%-------------------|-------------------------------------------------------|
00077> *%  25-Year, 24-Hour SCS Storm
00078> START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[125]
00079> *%                     ["SC24025x.stm"] <--storm filename, one per line for NSTORM time
00080> *%-------------------|-------------------------------------------------------|
00081> *%  50-Year, 24-Hour SCS Storm
00082> START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[150]
00083> *%                     ["SC24050x.stm"] <--storm filename, one per line for NSTORM time
00084> *%-------------------|-------------------------------------------------------|
00085> *%  100-Year, 24-Hour SCS Storm
00086> START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[199]
00087> *%                     ["SC24100x.stm"] <--storm filename, one per line for NSTORM time
00088> *%-------------------|-------------------------------------------------------|
00089> *%  July 1st, 1979 Storm - Ottawa International Airport
00090> *%START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[979]
00091> *%                     ["19790701.stm"] <--storm filename, one per line for NSTORM time
00092> *%-------------------|-------------------------------------------------------|
00093> *%  August 4th, 1988 Storm - Ottawa International Airport
00094> *%START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[988]
00095> *%                     ["19880804.stm"] <--storm filename, one per line for NSTORM time
00096> *%-------------------|-------------------------------------------------------|
00097> *%  August 8th, 1996 Storm - Ottawa International Airport
00098> *%START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[996]
00099> *%                     ["19960808.stm"] <--storm filename, one per line for NSTORM time
00100> *%-------------------|-------------------------------------------------------|
00101> *%  100-Year, 3-Hour Chicago Storm + 20%
00102> *%START                TZERO=[0.0],  METOUT=[2],  NSTORM=[1],  NRUN=[999]
00103> *%                     ["100YC3H+.stm"] <--storm filename, one per line for NSTORM time
00104> *%-------------------|-------------------------------------------------------|
00105> *%-------------------|-------------------------------------------------------|
00106> FINISH
```

```
00001>  ================================================================================
00002>
00003>  SSSSS   W   W   M   M   H   H   Y   Y   M   M    OOO          222     000    11   5555   =========
00004>  S       W   W   MM MM   H   H    Y Y    MM MM   O   O          2     0   0   1 1   5
00005>  SSSSS   W W W   M M M   HHHHH     Y     M M M   O   O          2     0   0   11    5       Ver 5.500
00006>      S   W W W   M   M   H   H     Y     M   M   O   O        222     0   0   11   555     FEB  2015
00007>  SSSSS    W W    M   M   H   H     Y     M   M    OOO         2       0   0   11     5    =========
00008>                                                               2       0   0   11     5   # 2549237
00009>          StormWater Management HYdrologic Model                222     000    11   555    =========
00010>
00011>  ***************************************  SWMHYMO Ver 5.500  ***************************************
00012>  ***************************************************************************************************
00013>  ****************** A single event and continuous hydrologic simulation model  ***********************
00014>  ******************      based on the principles of HYMO and its successors      ***********************
00015>  ******************                  OTTHYMO-83 and OTTHYMO-89.                  ***********************
00016>  ***************************************************************************************************
00017>  ****************** Distributed by:  J.F. Sabourin and Associates Inc.          ***********************
00018>  ******************                  Ottawa,  Ontario: (613) 836-3884            ***********************
00019>  ******************                  Gatineau, Quebec: (819) 243-6858            ***********************
00020>  ******************                  E-Mail: swmhymo@jfsa.Com                    ***********************
00021>  ***************************************************************************************************
00022>
00023>  ***************************************************************************************************
00024>  ****************** Licensed user: JFSAinc.                                    ***********************
00025>  ******************         Ottawa                        SERIAL#:2549237      ***********************
00026>  ***************************************************************************************************
00027>
00028>  ***************************************************************************************************
00029>  ******************          ++++++ PROGRAM ARRAY DIMENSIONS ++++++            ***********************
00030>  ******************          Maximum value for ID numbers  :    11            ***********************
00031>  ******************          Max. number of rainfall points: 105408           ***********************
00032>  ******************          Max. number of flow points    : 105408           ***********************
00033>  ***************************************************************************************************
00034>
00035>
00036>  ********************************  S U M M A R Y   O U T P U T  ********************************
00037>  ***************************************************************************************************
00038>  *                    RUN DATE: 2021-07-19     TIME: 10:39:02     RUN COUNTER: 004037              *
00039>  ***************************************************************************************************
00040>  * Input  file: T:\PROJ\959(02)-11\202001 Subm13\Design\SWMHYMO\202107 Pre-Dev\CCV_v1.dat           *
00041>  * Output  file: T:\PROJ\959(02)-11\202001 Subm13\Design\SWMHYMO\202107 Pre-Dev\CCV_v1.out          *
00042>  * Summary file: T:\PROJ\959(02)-11\202001 Subm13\Design\SWMHYMO\202107 Pre-Dev\CCV_v1.sum          *
00043>  * User comments:                                                                                 *
00044>  * 1:_____________________________________________________________________________________________*
00045>  * 2:_____________________________________________________________________________________________*
00046>  * 3:_____________________________________________________________________________________________*
00047>  ***************************************************************************************************
00048>
00049>
00050> #*************************************************************************
00051> #  SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
00052> #*************************************************************************
00053> #  Project Name  : [Cardinal Creek Village]
00054> #  Project Number: [959-11]
00055> #  Date          : 2021/07/07
00056> #  Modeller      : Laura Pipkins, P.Eng.
00057> #  Company       : J.F. Sabourin and Associates
00058> #  License #     : 2582634
00059> #*************************************************************************
00060>   ** END OF RUN :   24
00061>
00062> ***************************************************************************************************
00063>
00064>
00065>
00066>
00067>
00068>  RUN#:COMMAND#
00069> R0025:C00001-----------------------------------------------------------------------------
00070>       START
00071>       [TZERO =    .00 hrs on        0]
00072>       [METOUT=   2    (1=imperial, 2=metric output)]
00073>       [NSTORM=   1 ]
00074>       [NRUN  = 0025 ]
00075> #*************************************************************************
00076> #  SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
00077> #*************************************************************************
00078> #  Project Name  : [Cardinal Creek Village]
00079> #  Project Number: [959-11]
00080> #  Date          : 2021/07/07
00081> #  Modeller      : Laura Pipkins, P.Eng.
00082> #  Company       : J.F. Sabourin and Associates
00083> #  License #     : 2582634
00084> #*************************************************************************
00085> R0025:C00002-----------------------------------------------------------------------------
00086>       READ STORM
00087>       Filename = storm.001
00088>       Comment  = CHICAGO STORM   25 Year, 3 Hours
00089>       [SDT=10.00:SDUR=   3.00:PTOT=  58.23]
00090> R0025:C00003-----------------------------------------------------------------------------
00091>       DEFAULT VALUES
00092>       Filename = T:\PROJ\959(02)-11\202001 Subm13\Design\SWMHYMO\202107 Pre-Dev\Ottawa.val
00093>       ICASEdv  = 1 (read and print data)
00094>       FileTitle= File comment: [Parameters for City of Ottawa Projects]
00095>                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00096>       Horton's infiltration equation parameters:
00097>       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
00098>       Parameters for PERVIOUS surfaces in STANDHYD:
00099>       [IAper=   4.67 mm] [LGP=40.00 m] [MNP=.250]
00100>      Parameters for IMPERVIOUS surfaces in STANDHYD:
00101>      [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
00102>      Parameters used in NASHYD:
00103>      [Ia=    4.67 mm] [N= 3.00]
00104>      Average monthly Pan Evaporation data in    (mm)
00105>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00106>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00107>      Average monthly Potential Evapotranspiration in    (mm)
00108>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00109>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00110> # CN -> CN* based on Ontario Soil Map 58, Nov 1985 MTO Manual Chart H2-6A,
00111> # Lidar data, May 2000 SWMHYMO USER's Manual, air photos, assume good condition
00112> #
00113> # Time to Peak = 2/3 of FAA Tc
00114> ##############################################################################
00115> # EXISTING CONDITIONS - Drainage to South Tributary East of Cox County Road
00116> ##############################################################################
00117> # Existing Drainage from Subject Site to Ottawa River
00118> R0025:C00004-----------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00119>     DESIGN NASHYD         1.0 01:eCCR          74.30     .947 No_date    2:41   13.28 .228     .000
00120>       [CN= 61.0: N= 3.00: Tp= 1.29]
00121> ##############################################################################
00122> # STORMS
00123> ##############################################################################
00124>   ** END OF RUN :   49
00125>
00126> ***************************************************************************************************
00127>
00128>
00129>
00130>
00131>
00132>  RUN#:COMMAND#
00133> R0050:C00001-----------------------------------------------------------------------------
00134>       START
00135>       [TZERO =    .00 hrs on        0]
00136>       [METOUT=   2    (1=imperial, 2=metric output)]
00137>       [NSTORM=   1 ]
00138>       [NRUN  = 0050 ]
00139> #*************************************************************************
00140> #  SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
00141> #*************************************************************************
00142> #  Project Name  : [Cardinal Creek Village]
00143> #  Project Number: [959-11]
00144> #  Date          : 2021/07/07
00145> #  Modeller      : Laura Pipkins, P.Eng.
00146> #  Company       : J.F. Sabourin and Associates
00147> #  License #     : 2582634
00148> #*************************************************************************
00149> R0050:C00002-----------------------------------------------------------------------------
00150>       READ STORM
00151>       Filename = storm.001
00152>       Comment  = CHICAGO STORM  50 Year, 3 Hours
00153>       [SDT=10.00:SDUR=   3.00:PTOT=  64.81]
00154> R0050:C00003-----------------------------------------------------------------------------
00155>       DEFAULT VALUES
00156>       Filename = T:\PROJ\959(02)-11\202001 Subm13\Design\SWMHYMO\202107 Pre-Dev\Ottawa.val
00157>       ICASEdv  = 1 (read and print data)
00158>       FileTitle= File comment: [Parameters for City of Ottawa Projects]
00159>                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00160>       Horton's infiltration equation parameters:
00161>       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
00162>       Parameters for PERVIOUS surfaces in STANDHYD:
00163>       [IAper=   4.67 mm] [LGP=40.00 m] [MNP=.250]
00164>       Parameters for IMPERVIOUS surfaces in STANDHYD:
00165>       [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
00166>       Parameters used in NASHYD:
00167>       [Ia=    4.67 mm] [N= 3.00]
00168>       Average monthly Pan Evaporation data in    (mm)
00169>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00170>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00171>       Average monthly Potential Evapotranspiration in    (mm)
00172>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00173>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00174> # CN -> CN* based on Ontario Soil Map 58, Nov 1985 MTO Manual Chart H2-6A,
00175> # Lidar data, May 2000 SWMHYMO USER's Manual, air photos, assume good condition
00176> #
00177> # Time to Peak = 2/3 of FAA Tc
00178> ##############################################################################
00179> # EXISTING CONDITIONS - Drainage to South Tributary East of Cox County Road
00180> ##############################################################################
00181> # Existing Drainage from Subject Site to Ottawa River
00182> R0050:C00004-----------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00183>     DESIGN NASHYD         1.0 01:eCCR          74.30    1.162 No_date    2:40   16.25 .251     .000
00184>       [CN= 61.0: N= 3.00: Tp= 1.29]
00185> ##############################################################################
00186> # STORMS
00187> ##############################################################################
00188>   ** END OF RUN :   98
00189>
00190> ***************************************************************************************************
00191>
00192>
00193>
00194>
00195>
00196>  RUN#:COMMAND#
00197> R0099:C00001-----------------------------------------------------------------------------
00198>       START
00199>       [TZERO =    .00 hrs on        0]
00200>       [METOUT=   2    (1=imperial, 2=metric output)]
00201>       [NSTORM=   1 ]
00202>       [NRUN  = 0099 ]
00203> #*************************************************************************
00204> #  SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
00205> #*************************************************************************
00206> #  Project Name  : [Cardinal Creek Village]
00207> #  Project Number: [959-11]
00208> #  Date          : 2021/07/07
00209> #  Modeller      : Laura Pipkins, P.Eng.
00210> #  Company       : J.F. Sabourin and Associates
00211> #  License #     : 2582634
00212> #*************************************************************************
00213> R0099:C00002-----------------------------------------------------------------------------
00214>       READ STORM
00215>       Filename = storm.001
00216>       Comment  = CHICAGO STORM   100 Year, 3 Hours
00217>       [SDT=10.00:SDUR=   3.00:PTOT=  71.66]
00218> R0099:C00003-----------------------------------------------------------------------------
00219>       DEFAULT VALUES
00220>       Filename = T:\PROJ\959(02)-11\202001 Subm13\Design\SWMHYMO\202107 Pre-Dev\Ottawa.val
00221>       ICASEdv  = 1 (read and print data)
00222>       FileTitle= File comment: [Parameters for City of Ottawa Projects]
00223>                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00224>       Horton's infiltration equation parameters:
00225>       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
00226>       Parameters for PERVIOUS surfaces in STANDHYD:
00227>       [IAper=   4.67 mm] [LGP=40.00 m] [MNP=.250]
00228>       Parameters for IMPERVIOUS surfaces in STANDHYD:
00229>       [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
00230>       Parameters used in NASHYD:
00231>       [Ia=    4.67 mm] [N= 3.00]
00232>       Average monthly Pan Evaporation data in    (mm)
00233>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00234>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00235>      Average monthly Potential Evapotranspiration in    (mm)
00236>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00237>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00238> # CN -> CN* based on Ontario Soil Map 58, Nov 1985 MTO Manual Chart H2-6A,
00239> # Lidar data, May 2000 SWMHYMO USER's Manual, air photos, assume good condition
00240> #
00241> # Time to Peak = 2/3 of FAA Tc
00242> ##############################################################################
00243> # EXISTING CONDITIONS - Drainage to South Tributary East of Cox County Road
00244> ##############################################################################
00245> # Existing Drainage from Subject Site to Ottawa River
00246> R0099:C00004-----------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00247>     DESIGN NASHYD         1.0 01:eCCR          74.30    1.402 No_date    2:39   19.57 .273     .000
00248>       [CN= 61.0: N= 3.00: Tp= 1.29]
00249> ##############################################################################
00250> # STORMS
00251> ##############################################################################
00252>   ** END OF RUN :  124
00253>
00254> ***************************************************************************************************
00255>
00256>
00257>
00258>
00259>
00260>  RUN#:COMMAND#
00261> R0125:C00001-----------------------------------------------------------------------------
00262>       START
00263>       [TZERO =    .00 hrs on        0]
00264>       [METOUT=   2    (1=imperial, 2=metric output)]
00265>       [NSTORM=   1 ]
00266>       [NRUN  = 0125 ]
00267> #*************************************************************************
00268> #  SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
00269> #*************************************************************************
00270> #  Project Name  : [Cardinal Creek Village]
00271> #  Project Number: [959-11]
00272> #  Date          : 2021/07/07
00273> #  Modeller      : Laura Pipkins, P.Eng.
00274> #  Company       : J.F. Sabourin and Associates
00275> #  License #     : 2582634
00276> #*************************************************************************
00277> R0125:C00002-----------------------------------------------------------------------------
00278>       READ STORM
00279>       Filename = storm.001
00280>       Comment  = 25 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00281>       [SDT=10.00:SDUR=  24.00:PTOT=  86.89]
00282> R0125:C00003-----------------------------------------------------------------------------
00283>       DEFAULT VALUES
00284>       Filename = T:\PROJ\959(02)-11\202001 Subm13\Design\SWMHYMO\202107 Pre-Dev\Ottawa.val
00285>       ICASEdv  = 1 (read and print data)
00286>       FileTitle= File comment: [Parameters for City of Ottawa Projects]
00287>                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00288>       Horton's infiltration equation parameters:
00289>       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
00290>       Parameters for PERVIOUS surfaces in STANDHYD:
00291>       [IAper=   4.67 mm] [LGP=40.00 m] [MNP=.250]
00292>       Parameters for IMPERVIOUS surfaces in STANDHYD:
00293>       [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
00294>       Parameters used in NASHYD:
00295>       [Ia=    4.67 mm] [N= 3.00]
00296>       Average monthly Pan Evaporation data in    (mm)
00297>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00298>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00299>      Average monthly Potential Evapotranspiration in    (mm)
00300>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00301>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00302> # CN -> CN* based on Ontario Soil Map 58, Nov 1985 MTO Manual Chart H2-6A,
00303> # Lidar data, May 2000 SWMHYMO USER's Manual, air photos, assume good condition
00304> #
00305> # Time to Peak = 2/3 of FAA Tc
00306> ##############################################################################
00307> # EXISTING CONDITIONS - Drainage to South Tributary East of Cox County Road
00308> ##############################################################################
00309> # Existing Drainage from Subject Site to Ottawa River
00310> R0125:C00004-----------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00311>     DESIGN NASHYD         1.0 01:eCCR          74.30    1.324 No_date   13:22   27.63 .318     .000
00312>       [CN= 61.0: N= 3.00: Tp= 1.29]
00313> ##############################################################################
00314> # STORMS
00315> ##############################################################################
00316>   ** END OF RUN :  149
00317>
00318> ***************************************************************************************************
00319>
00320>
00321>
00322>
00323>
00324>  RUN#:COMMAND#
00325> R0150:C00001-----------------------------------------------------------------------------
00326>       START
00327>       [TZERO =    .00 hrs on        0]
00328>       [METOUT=   2    (1=imperial, 2=metric output)]
00329>       [NSTORM=   1 ]
00330>       [NRUN  = 0150 ]
00331> #*************************************************************************
00332> #  SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
00333> #*************************************************************************
00334> #  Project Name  : [Cardinal Creek Village]
00335> #  Project Number: [959-11]
00336> #  Date          : 2021/07/07
00337> #  Modeller      : Laura Pipkins, P.Eng.
00338> #  Company       : J.F. Sabourin and Associates
00339> #  License #     : 2582634
00340> #*************************************************************************
00341> R0150:C00002-----------------------------------------------------------------------------
00342>       READ STORM
00343>       Filename = storm.001
00344>       Comment  = 50 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00345>       [SDT=10.00:SDUR=  24.00:PTOT=  96.53]
00346> R0150:C00003-----------------------------------------------------------------------------
00347>       DEFAULT VALUES
00348>       Filename = T:\PROJ\959(02)-11\202001 Subm13\Design\SWMHYMO\202107 Pre-Dev\Ottawa.val
00349>       ICASEdv  = 1 (read and print data)
00350>       FileTitle= File comment: [Parameters for City of Ottawa Projects]
00351>                  THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00352>       Horton's infiltration equation parameters:
00353>       [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
00354>       Parameters for PERVIOUS surfaces in STANDHYD:
00355>       [IAper=   4.67 mm] [LGP=40.00 m] [MNP=.250]
00356>       Parameters for IMPERVIOUS surfaces in STANDHYD:
00357>       [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
00358>       Parameters used in NASHYD:
00359>       [Ia=    4.67 mm] [N= 3.00]
00360>       Average monthly Pan Evaporation data in    (mm)
00361>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00362>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00363>      Average monthly Potential Evapotranspiration in    (mm)
00364>    JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00365>   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00366> # CN -> CN* based on Ontario Soil Map 58, Nov 1985 MTO Manual Chart H2-6A,
00367> # Lidar data, May 2000 SWMHYMO USER's Manual, air photos, assume good condition
00368> #
00369> # Time to Peak = 2/3 of FAA Tc
00370> ##############################################################################
00371> # EXISTING CONDITIONS - Drainage to South Tributary East of Cox County Road
00372> ##############################################################################
00373> # Existing Drainage from Subject Site to Ottawa River
00374> R0150:C00004-----------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm----RVmm-R.C.---DWFcms
00375>     DESIGN NASHYD         1.0 01:eCCR          74.30    1.596 No_date   13:21   33.19 .344     .000
00376>       [CN= 61.0: N= 3.00: Tp= 1.29]
00377> ##############################################################################
00378> # STORMS
```

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00379> ##############################################################################
00380>   ** END OF RUN :  198
00381>
00382> ********************************************************************************************************
00383>
00384>
00385>
00386>
00387>
00388>  RUN#:COMMAND#
00389> R0199:C00001-----------------------------------------------------------------------------------------------
00390>       START
00391>        [TZERO =    .00 hrs on        0]
00392>        [METOUT=   2     (1=imperial, 2=metric output)]
00393>        [NSTORM=   1 ]
00394>        [NRUN  = 0199 ]
00395> #*****************************************************************************
00396> #  SWMHYMO Ver:5.02/Jan 2001 <BETA> / INPUT DATA FILE
00397> #*****************************************************************************
00398> #  Project Name  : [Cardinal Creek Village]
00399> #  Project Number: [959-11]
00400> #  Date          : 2021/07/07
00401> #  Modeller      : Laura Pipkins, P.Eng.
00402> #  Company       : J.F. Sabourin and Associates
00403> #  License #     : 2582634
00404> #*****************************************************************************
00405> R0199:C00002-----------------------------------------------------------------------------------------------
00406>       READ STORM
00407>        Filename = storm.001
00408>        Comment  = 100 years SCS Type 2 Storm 24 Hours step 10 min, City of Ottawa
00409>        [SDT=10.00:SDUR=  24.00:PTOT= 106.73]
00410> R0199:C00003-----------------------------------------------------------------------------------------------
00411>       DEFAULT VALUES
00412>        Filename = T:\PROJ\959(02)-11\202001 Subml3\Design\SWMHYMO\202107 Pre-Dev\Ottawa.val
00413>        ICASEdv  = 1 (read and print data)
00414>        FileTitle= File comment: [Parameters for City of Ottawa Projects]
00415>                   THE FOLLOWING PARAMETERS ARE USED IN THE DESIGN STANDHYD COM
00416>        Horton's infiltration equation parameters:
00417>        [Fo= 76.20 mm/hr] [Fc=13.20 mm/hr] [DCAY= 4.14 /hr] [F=  .00 mm]
00418>        Parameters for PERVIOUS surfaces in STANDHYD:
00419>        [IAper=   4.67 mm] [LGP=40.00 m] [MNP= .250]
00420>        Parameters for IMPERVIOUS surfaces in STANDHYD:
00421>        [IAimp=   1.57 mm] [CLI= 1.50]   [MNI= .013]
00422>        Parameters used in NASHYD:
00423>        [Ia=      4.67 mm] [N= 3.00]
00424>        Average monthly Pan Evaporation data in    (mm)
00425>     JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00426>    .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00427>        Average monthly Potential Evapotranspiration in    (mm)
00428>     JAN   FEB   MAR   APR   MAY   JUN   JUL   AUG   SEP   OCT   NOV   DEC
00429>    .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00   .00
00430> # CN -> CN* based on Ontario Soil Map 58, Nov 1985 MTO Manual Chart H2-6A,
00431> # Lidar data, May 2000 SWMHYMO USER's Manual, air photos, assume good condition
00432> #
00433> # Time to Peak = 2/3 of FAA Tc
00434> ##############################################################################
00435> # EXISTING CONDITIONS - Drainage to South Tributary East of Cox County Road
00436> ##############################################################################
00437> # Existing Drainage from Subject Site to Ottawa River
00438> R0199:C00004-----------DTmin-ID:NHYD---------AREAha-QPEAKcms-TpeakDate_hh:mm-----RVmm-R.C.---DWFcms
00439>     DESIGN NASHYD         1.0 01:eCCR          74.30    1.904 No_date   13:21   39.39 .369     .000
00440>        [CN= 61.0: N= 3.00: Tp= 1.29]
00441> ##############################################################################
00442> # STORMS
00443> ##############################################################################
00444> R0199:C00002-----------------------------------------------------------------------------------------------
00445>     FINISH
00446> -----------------------------------------------------------------------------------------------------------
00447> ********************************************************************************************************
00448>       WARNINGS / ERRORS / NOTES
00449>       -------------------------
00450>     Simulation ended on 2021-07-19     at 10:39:03
00451> ========================================================================================================
00452>
```