APPENDIX G

PRELIMINARY POND SIZING & CONTROLS

Appendix G1:
SWM Pond 3

Project Name:	Solmar
Project Number:	1401
Designed By:	LH
Checked By:	AVN
Date	21-Aug-25

DSEL
David Schaeffer Engineering Limited
600 Alden Road, Suite 606
Markham, ON L3R 0E7

ALLOWABLE POND VOLUME AND DISCHARGE RATES - POND 03 - Chicago 4hr

Pre Drainage Area	39.88	ha
Post Drainage Area	36.75	ha
Post Imp %	70.6%	%

Pond Component	Unitary Discharge Rate Formula (1) (2)	Total Target Outflow	Target Volume	Pond Outflow	Pond Storage Volume (3)	Pond Elevation
	L/s/ha	m^3/s	m^3	m^3/s	m^3	masl
Permanent Pool	N/A	N/A	6799	N/A	8685	238.35
Quality Control	N/A	N/A	1470	0.024	1470	238.52
Erosion Control/Extended Det.	N/A	N/A	6740	0.067	6973	239.05
2 Year Design Storm	9.506-0.719 x ln(A)	0.273	N/A	0.156	8378	239.17
5 Year Design Storm	14.652-1.136 x ln(A)	0.417	N/A	0.403	11655	239.44
10 Year Design Storm	17.957-1.373 x ln(A)	0.514	N/A	0.503	13933	239.62
25 Year Design Storm	22.639-1.741 x ln(A)	0.647	N/A	0.619	17494	239.89
50 Year Design Storm	26.566-2.082 x ln(A)	0.753	N/A	0.685	20033	240.07
100 Year Design Storm	29.912-2.316 x ln(A)	0.852	N/A	0.749	23007	240.27
Regional Design Storm	70	2.792	N/A	2.727	41824	241.41

(1) Unitary Discharge Rate Formula for 2-year to 100-year design storms based on Final Report, Humber River Hydrology Update, 2015, TRCA

(2) Unitary Discharge Rate for Regional storm, based on Local Subwatershed Study, Wildfield Village Plan, Phase 1-Subwatershed Characterization and Integration, 2024

(3) Design storm volumes measured above Permanent Pool volume

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ALLOWABLE POND VOLUME AND DISCHARGE RATES - POND 03 - SCS 12hr

Pre Drainage Area	39.88	ha
Post Drainage Area	36.75	ha
Post Imp %	70.60%	%

Pond Component	Unitary Discharge Rate Formula (1) (2)	Total Target Outflow	Pond Outflow	Pond Storage Volume (3)	Pond Elevation
	L/s/ha	m^3/s	m^3/s	m^3	masl
2 Year Design Storm	9.506-0.719 x ln(A)	0.273	0.148	8260	239.16
5 Year Design Storm	14.652-1.136 x ln(A)	0.417	0.379	11160	239.40
10 Year Design Storm	17.957-1.373 x ln(A)	0.514	0.472	13166	239.56
25 Year Design Storm	22.639-1.741 x ln(A)	0.647	0.588	16397	239.81
50 Year Design Storm	26.566-2.082 x ln(A)	0.753	0.637	18185	239.94
100 Year Design Storm	29.912-2.316 x ln(A)	0.852	0.697	20615	240.11

(1) Unitary Discharge Rate Formula for 2-year to 100-year design storms based on Final Report, Humber River Hydrology Update, 2015, TRCA

(2) Unitary Discharge Rate for Regional storm, based on Local Subwatershed Study, Wildfield Village Plan, Phase 1-Subwatershed Characterization and Integration, 2024

(3) Design storm volumes measured above Permanent Pool volume

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ALLOWABLE POND VOLUME AND DISCHARGE RATES - POND 03 - AES 6hr

Pre Drainage Area	39.88	ha
Post Drainage Area	36.75	ha
Post Imp %	70.60%	%

Pond Component	Unitary Discharge Rate Formula (1) (2)	Total Target Outflow	Pond Outflow	Pond Storage Volume (3)	Pond Elevation
	L/s/ha	m^3/s	m^3/s	m^3	masl
2 Year Design Storm	9.506-0.719 x ln(A)	0.273	0.170	8497	239.18
5 Year Design Storm	14.652-1.136 x ln(A)	0.417	0.370	11037	239.39
10 Year Design Storm	17.957-1.373 x ln(A)	0.514	0.458	12786	239.53
25 Year Design Storm	22.639-1.741 x ln(A)	0.647	0.552	15362	239.73
50 Year Design Storm	26.566-2.082 x ln(A)	0.753	0.613	17358	239.88
100 Year Design Storm	29.912-2.316 x ln(A)	0.852	0.666	19315	240.02

(1) Unitary Discharge Rate Formula for 2-year to 100-year design storms based on Final Report, Humber River Hydrology Update, 2015, TRCA

(2) Unitary Discharge Rate for Regional storm, based on Local Subwatershed Study, Wildfield Village Plan, Phase 1-Subwatershed Characterization and Integration, 2024

(3) Design storm volumes measured above Permanent Pool volume

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PERMANENT POOL AND EXTENDED DETENTION - [POND 3]

Pond Drainage Catchment & Design

Area	
36.75	ha

Treatment Level :	Enhanced	
Treatment Percentage:	80%	
SWM Facility :	Wet Pond	
Imperviousness :	70.6	%

Permanent Pool Requirements

MOE 2003 Table 3.2 Interpolated Water Quality Volume :	225	m^3/ha
Unitary Permanent Pool (Less 40 m^3/ha for active storage) :	185	m^3/ha

Extended Detention and Erosion Control Requirements

Maximum of :	**MOE 2003 Active Storage =**	40	m^3/ha
	25mm Storm Runoff Volume =	6.74	ML
	OR		
	Unitary Erosion Control Volume =	0	m^3/imp-ha

Quality Control Summary

	Volume (m^3)
Required Permanent Pool Volume	6799
Provided Permanent Pool Volume	8685
Required Extended Detention/Erosion Control	
MOE 2003 Active Storage	*1470*
25mm Storm Runoff Volume	*6740*
Unitary Erosion Control Volume	*0*
Maximum Required ED/Erosion Control	6740
Provided ED/Erosion Control	6973

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SWM FACILITY STORAGE CALCULATIONS - [POND 3]

Permanent Pool Volume Required:	6799 m^3	
Permanent Pool Volume Provided:	8685 m^3	**128% of Required Permanent Pool**
Extended Detention/Erosion Control Volume Required:	6740 m^3	
Extended Detention/Erosion Control Volume Provided:	6973 m^3	**103% of Required Extended Detention**
Bottom of Pond:	236.85 m	
Permanent Pool:	238.35 m	
Incremental Depth:	0.05 m	

Pond Characteristic	Elevation (m)	Stage (m)	Area (m2)	Average Area (m^2)	Incremental Storage (m^3)	Cumulative Storage (m^3)	Cumulative Storage above Permanent Pool (m^3)
Bottom of Pond = 236.85	236.85	0.00	4051.10		0	**0**	**0**
	236.90	0.05	4145.48	4098	205	**205**	**0**
	236.95	0.10	4240.86	4193	210	**415**	**0**
	237.00	0.15	4336.91	4289	214	**629**	**0**
	237.05	0.20	4433.63	4385	219	**848**	**0**
	237.10	0.25	4531.01	4482	224	**1072**	**0**
	237.15	0.30	4629.06	4580	229	**1301**	**0**
	237.20	0.35	4727.78	4678	234	**1535**	**0**
	237.25	0.40	4827.17	4777	239	**1774**	**0**
	237.30	0.45	4927.22	4877	244	**2018**	**0**
	237.35	0.50	5027.95	4978	249	**2267**	**0**
	237.40	0.55	5129.34	5079	254	**2521**	**0**
	237.45	0.60	5231.39	5180	259	**2780**	**0**
	237.50	0.65	5334.13	5283	264	**3044**	**0**
	237.55	0.70	5437.52	5386	269	**3313**	**0**
	237.60	0.75	5541.58	5490	274	**3588**	**0**
	237.65	0.80	5646.31	5594	280	**3867**	**0**
	237.70	0.85	5751.71	5699	285	**4152**	**0**
	237.75	0.90	5857.78	5805	290	**4443**	**0**
	237.80	0.95	5964.52	5911	296	**4738**	**0**
	237.85	1.00	6078.47	6021	301	**5039**	**0**
	237.90	1.05	6471.74	6275	314	**5353**	**0**
	237.95	1.10	6675.67	6574	329	**5682**	**0**
	238.00	1.15	6881.00	6778	339	**6021**	**0**
	238.05	1.20	7087.63	6984	349	**6370**	**0**
	238.10	1.25	7295.73	7192	360	**6729**	**0**
	238.15	1.30	7505.12	7400	370	**7099**	**0**
	238.20	1.35	7715.93	7611	381	**7480**	**0**
	238.25	1.40	7928.20	7822	391	**7871**	**0**
	238.30	1.45	8141.68	8035	402	**8273**	**0**
Permanent Pool = 238.35	238.35	1.50	8355.52	8249	412	**8685**	**0**
	238.40	1.55	8569.43	8462	423	**9108**	**423**
	238.45	1.60	8783.89	8677	434	**9542**	**857**
	238.50	1.65	8999.06	8891	445	**9987**	**1302**
	238.55	1.70	9214.91	9107	455	**10442**	**1757**
	238.60	1.75	9431.47	9323	466	**10908**	**2223**
	238.65	1.80	9648.74	9540	477	**11385**	**2700**
	238.70	1.85	9866.70	9758	488	**11873**	**3188**
	238.75	1.90	10085.36	9976	499	**12372**	**3687**
	238.80	1.95	10304.73	10195	510	**12882**	**4196**
	238.85	2.00	10528.98	10417	521	**13403**	**4717**
	238.90	2.05	11244.51	10887	544	**13947**	**5262**
	238.95	2.10	11353.69	11299	565	**14512**	**5827**
	239.00	2.15	11463.13	11408	570	**15082**	**6397**
Erosion Control Water Level = 239.05	239.05	2.20	11573.12	11518	576	**15658**	**6973**
	239.10	2.25	11683.27	11628	581	**16240**	**7554**
2-Year Storm Water Level = 239.17	239.15	2.30	11794.19	11739	587	**16827**	**8141**
	239.20	2.35	11905.40	11850	592	**17419**	**8734**
	239.25	2.40	12017.01	11961	598	**18017**	**9332**
	239.30	2.45	12129.09	12073	604	**18621**	**9935**
	239.35	2.50	12241.19	12185	609	**19230**	**10545**
	239.40	2.55	12354.16	12298	615	**19845**	**11160**
5-Year Storm Water Level = 239.44	239.45	2.60	12467.56	12411	621	**20465**	**11780**
	239.50	2.65	12581.44	12524	626	**21092**	**12406**
	239.55	2.70	12695.64	12639	632	**21724**	**13038**
	239.60	2.75	12810.35	12753	638	**22361**	**13676**
10-Year Storm Water Level = 239.62	239.65	2.80	12925.58	12868	643	**23005**	**14319**
	239.70	2.85	13041.16	12983	649	**23654**	**14969**

	239.75	2.90	13157.12	13099	655	**24309**	**15624**
	239.80	2.95	13273.73	13215	661	**24970**	**16284**
	239.85	3.00	13392.32	13333	667	**25636**	**16951**
25-Year Storm Water Level = 239.89	239.90	3.05	13776.95	13585	679	**26315**	**17630**
	239.95	3.10	13985.42	13881	694	**27010**	**18324**
	240.00	3.15	14191.34	14088	704	**27714**	**19029**
50-Year Storm Water Level = 240.07	240.05	3.20	14394.94	14293	715	**28429**	**19743**
	240.10	3.25	14596.02	14495	725	**29153**	**20468**
	240.15	3.30	14794.58	14695	735	**29888**	**21203**
	240.20	3.35	14990.88	14893	745	**30633**	**21947**
100-Year Storm Water Level = 240.27	240.25	3.40	15184.51	15088	754	**31387**	**22702**
	240.30	3.45	15375.83	15280	764	**32151**	**23466**
	240.35	3.50	15566.61	15471	774	**32925**	**24239**
	240.40	3.55	15660.59	15614	781	**33705**	**25020**
	240.45	3.60	15755.43	15708	785	**34491**	**25806**
	240.50	3.65	15850.64	15803	790	**35281**	**26596**
	240.55	3.70	15946.10	15898	795	**36076**	**27391**
	240.60	3.75	16041.76	15994	800	**36876**	**28190**
	240.65	3.80	16137.79	16090	804	**37680**	**28995**
	240.70	3.85	16234.11	16186	809	**38489**	**29804**
	240.75	3.90	16330.73	16282	814	**39303**	**30618**
	240.80	3.95	16427.66	16379	819	**40122**	**31437**
	240.85	4.00	16524.85	16476	824	**40946**	**32261**
	240.90	4.05	16622.36	16574	829	**41775**	**33090**
	240.95	4.10	16720.16	16671	834	**42608**	**33923**
	241.00	4.15	16818.28	16769	838	**43447**	**34762**
	241.05	4.20	16916.58	16867	843	**44290**	**35605**
	241.10	4.25	17015.31	16966	848	**45139**	**36453**
	241.15	4.30	17114.25	17065	853	**45992**	**37307**
	241.20	4.35	17213.55	17164	858	**46850**	**38165**
	241.25	4.40	17313.12	17263	863	**47713**	**39028**
	241.30	4.45	17412.92	17363	868	**48581**	**39896**
	241.35	4.50	17513.12	17463	873	**49455**	**40769**
Regional Storm Water Level = 241.41	241.40	4.55	17613.59	17563	878	**50333**	**41647**
	241.45	4.60	17714.31	17664	883	**51216**	**42531**
	241.50	4.65	17815.39	17765	888	**52104**	**43419**
	241.55	4.70	17916.63	17866	893	**52997**	**44312**
	241.60	4.75	18018.24	17967	898	**53896**	**45211**
	241.65	4.80	18120.24	18069	903	**54799**	**46114**
	241.70	4.85	18222.46	18171	909	**55708**	**47023**
	241.75	4.90	18324.99	18274	914	**56622**	**47936**
	241.80	4.95	18427.73	18376	919	**57540**	**48855**
	241.85	5.00	18532.85	18480	924	**58464**	**49779**
	241.90	5.05	19499.91	19016	951	**59415**	**50730**
Top of Pond Berm = 241.95	241.95	5.10	20504.69	20002	1000	**60415**	**51730**

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Orifice 1		Orifice 2		Orifice 3	
Dia. (mm)	200	Height (m)	0.22	Height (m)	0.5
Cross Sect. Area (m^2)	0.0314	Length (m)	1	Length (m)	1.3
Orifice Coeff.	0.62	Cross Sect. Area (m^2)	0.22	Cross Sect. Area (m^2)	0.65
Inv. Elev. (m)	238.35	Orifice Coeff.	0.62	Orifice Coeff.	0.62
		Inv. Elev. (m)	239.05	Inv. Elev. (m)	240.27

SWM FACILITY DISCHARGE CALCULATIONS - [POND 3]

Pond Characteristic	Elevation	Orifice 1		Orifice 2		Orifice 3		Total Discharge From Pond
		Head	Discharge	Head	Discharge	Head	Discharge	
	(m)	(m)	(m^3/s)	(m)	(m^3/s)	(m)	(m^3/s)	(m^3/s)
Permanent Pool = 238.35	238.35	0.00	0.000	0.00	0.000	0.00	0.000	0.000
	238.40	0.05	0.002	0.00	0.000	0.00	0.000	0.002
	238.45	0.10	0.008	0.00	0.000	0.00	0.000	0.008
	238.50	0.15	0.019	0.00	0.000	0.00	0.000	0.019
	238.55	0.20	0.027	0.00	0.000	0.00	0.000	0.027
	238.60	0.25	0.033	0.00	0.000	0.00	0.000	0.033
	238.65	0.30	0.039	0.00	0.000	0.00	0.000	0.039
	238.70	0.35	0.043	0.00	0.000	0.00	0.000	0.043
	238.75	0.40	0.047	0.00	0.000	0.00	0.000	0.047
	238.80	0.45	0.051	0.00	0.000	0.00	0.000	0.051
	238.85	0.50	0.055	0.00	0.000	0.00	0.000	0.055
	238.90	0.55	0.058	0.00	0.000	0.00	0.000	0.058
	238.95	0.60	0.061	0.00	0.000	0.00	0.000	0.061
	239.00	0.65	0.064	0.00	0.000	0.00	0.000	0.064
Erosion Control Water Level = 239.05	239.05	0.70	0.067	0.00	0.000	0.00	0.000	0.067
	239.10	0.75	0.070	0.05	0.020	0.00	0.000	0.090
2-Year Storm Water Level = 239.17	239.15	0.80	0.072	0.10	0.057	0.00	0.000	0.129
	239.20	0.85	0.075	0.15	0.104	0.00	0.000	0.178
	239.25	0.90	0.077	0.20	0.158	0.00	0.000	0.235
	239.30	0.95	0.080	0.25	0.226	0.00	0.000	0.306
	239.35	1.00	0.082	0.30	0.263	0.00	0.000	0.345
	239.40	1.05	0.084	0.35	0.296	0.00	0.000	0.380
5-Year Storm Water Level = 239.44	239.45	1.10	0.086	0.40	0.325	0.00	0.000	0.412
	239.50	1.15	0.088	0.45	0.352	0.00	0.000	0.441
	239.55	1.20	0.090	0.50	0.377	0.00	0.000	0.468
	239.60	1.25	0.093	0.55	0.401	0.00	0.000	0.493
10-Year Storm Water Level = 239.62	239.65	1.30	0.095	0.60	0.423	0.00	0.000	0.517
	239.70	1.35	0.096	0.65	0.444	0.00	0.000	0.540
	239.75	1.40	0.098	0.70	0.464	0.00	0.000	0.562
	239.80	1.45	0.100	0.75	0.483	0.00	0.000	0.584
	239.85	1.50	0.102	0.80	0.502	0.00	0.000	0.604
25-Year Storm Water Level = 239.89	239.90	1.55	0.104	0.85	0.520	0.00	0.000	0.624
	239.95	1.60	0.106	0.90	0.537	0.00	0.000	0.643

	240.00	1.65	0.107	0.95	0.554	0.00	0.000	0.661
50-Year Storm Water Level = 240.07	240.05	1.70	0.109	1.00	0.570	0.00	0.000	0.679
	240.10	1.75	0.111	1.05	0.586	0.00	0.000	0.697
	240.15	1.80	0.112	1.10	0.601	0.00	0.000	0.714
	240.20	1.85	0.114	1.15	0.616	0.00	0.000	0.730
100-Year Storm Water Level = 240.27	240.25	1.90	0.116	1.20	0.631	0.00	0.000	0.747
	240.30	1.95	0.117	1.25	0.645	0.03	0.012	0.775
	240.35	2.00	0.119	1.30	0.659	0.08	0.053	0.831
	240.40	2.05	0.120	1.35	0.673	0.13	0.110	0.903
	240.45	2.10	0.122	1.40	0.686	0.18	0.178	0.986
	240.50	2.15	0.124	1.45	0.699	0.23	0.255	1.077
	240.55	2.20	0.125	1.50	0.712	0.28	0.339	1.176
	240.60	2.25	0.127	1.55	0.725	0.33	0.430	1.282
	240.65	2.30	0.128	1.60	0.737	0.38	0.528	1.393
	240.70	2.35	0.129	1.65	0.750	0.43	0.630	1.509
	240.75	2.40	0.131	1.70	0.762	0.48	0.737	1.629
	240.80	2.45	0.132	1.75	0.774	0.53	0.945	1.851
	240.85	2.50	0.134	1.80	0.785	0.58	1.025	1.945
	240.90	2.55	0.135	1.85	0.797	0.63	1.100	2.032
	240.95	2.60	0.136	1.90	0.808	0.68	1.171	2.115
	241.00	2.65	0.138	1.95	0.820	0.73	1.237	2.194
	241.05	2.70	0.139	2.00	0.831	0.78	1.300	2.269
	241.10	2.75	0.140	2.05	0.842	0.83	1.359	2.341
	241.15	2.80	0.142	2.10	0.852	0.88	1.417	2.411
	241.20	2.85	0.143	2.15	0.863	0.93	1.472	2.478
	241.25	2.90	0.144	2.20	0.873	0.98	1.525	2.543
	241.30	2.95	0.146	2.25	0.884	1.03	1.577	2.606
	241.35	3.00	0.147	2.30	0.894	1.08	1.626	2.667
Regional Storm Water Level = 241.41	241.40	3.05	0.148	2.35	0.904	1.13	1.675	2.727
	241.45	3.10	0.149	2.40	0.914	1.18	1.721	2.785
	241.50	3.15	0.151	2.45	0.924	1.23	1.767	2.842
	241.55	3.20	0.152	2.50	0.934	1.28	1.812	2.898
	241.60	3.25	0.153	2.55	0.944	1.33	1.855	2.952
	241.65	3.30	0.154	2.60	0.953	1.38	1.898	3.005
	241.70	3.35	0.156	2.65	0.963	1.43	1.939	3.058
	241.75	3.40	0.157	2.70	0.972	1.48	1.980	3.109
	241.80	3.45	0.158	2.75	0.982	1.53	2.020	3.159
	241.85	3.50	0.159	2.80	0.991	1.58	2.059	3.209
	241.90	3.55	0.160	2.85	1.000	1.63	2.097	3.257
Top of Pond Berm = 241.95	241.95	3.60	0.161	2.90	1.009	1.68	2.135	3.305

Project Name:	Solmar
Project Number:	1401
Designed By:	AL
Checked By:	AVN
Date	21-Aug-25

David Schaeffer Engineering Limited
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Markham, ON L3R 0E7

DRAWDOWN TIME CALCULATION - [POND 3]

Ministry of the Environment
Stormwater Management Planning and Design Manual (March 2003)

Equation 4.11: Drawdown Time

$$t = \frac{0.66C_2h^{1.5} + 2C_3h^{0.5}}{2.75A_O} = \textbf{181,772 sec}$$

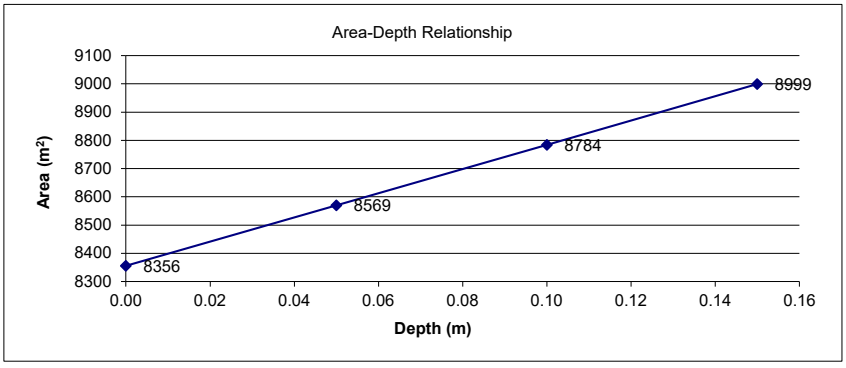
$$= \textbf{50.5 hr}$$
2.1 days

t = drawdown time (sec)
A_O = cross-sectional area of the orifice (m^2)
h = maximum water elevation above the orifice (m)
C_2 = slope coefficient from the area-depth linear regression
C_3 = intercept from the area-depth linear regression

Input Parameters:

Orifice Diameter =	0.200	m
Extended Detention Elevation =	239.05	m
Extended Detention Head, h =	0.70	m
A_O =	0.031	m^2
C_2 =	4846	
C_3 =	8266	

		X - Values	Y - Values
Pond Stage	**Elevation** (m)	**Depth** (m)	**Area** (m^2)
PP	238.35	0.00	8356
	238.40	0.05	8569
	238.45	0.10	8784
	238.50	0.15	8999
	238.55	0.20	9215
	238.60	0.25	9431
	238.65	0.30	9649
	238.70	0.35	9867
	238.75	0.40	10085
	238.80	0.45	10305
	238.85	0.50	10529
	238.90	0.55	11245
	238.95	0.60	11354
	239.00	0.65	11463
ED	239.05	0.70	11573



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OVERFLOW TRAPEZOIDAL WEIR CALCULATION - Solmar SWM Pond 3

Input Parameters

Length (L) =	60.00	m
Coefficient (C) =	1.60	
Side Slope (S):1 =	10.00	
Crest Elevation =	241.51	m
Incremental Depth =	0.01	m

Trapezoidal Weir Equation
$Q = CL(H^{1.5}) + CS(H^{2.5})$

Weir Calculation			
Water Surface Elevation (m)	**Head (H) (m)**	**Weir Flow (Q) (m^3/sec)**	**Water Surface Elevation Notes**
241.51	0.00	**0.00**	Weir Invert
241.52	0.01	**0.10**	
241.53	0.02	**0.27**	
241.54	0.03	**0.50**	
241.55	0.04	**0.77**	
241.56	0.05	**1.08**	
241.57	0.06	**1.43**	
241.58	0.07	**1.80**	
241.59	0.08	**2.20**	
241.60	0.09	**2.63**	
241.61	0.10	**3.09**	
241.62	0.11	**3.57**	
241.63	0.12	**4.07**	
241.64	0.13	**4.60**	
241.65	0.14	**5.15**	Regional Uncontrolled Peak Flow = 5.08 m3/s
241.66	0.15	**5.72**	
241.67	0.16	**6.31**	
241.68	0.17	**6.92**	
241.69	0.18	**7.55**	
241.70	0.19	**8.20**	
241.71	0.20	**8.87**	
241.72	0.21	**9.56**	
241.73	0.22	**10.27**	
241.74	0.23	**11.00**	
241.75	0.24	**11.74**	100-year Chicago Uncontrolled = 11.87 m3/s
241.76	0.25	**12.50**	
241.77	0.26	**13.28**	
241.78	0.27	**14.07**	
241.79	0.28	**14.89**	
241.80	0.29	**15.72**	
241.81	0.30	**16.56**	
241.82	0.31	**17.43**	
241.83	0.32	**18.30**	
241.84	0.33	**19.20**	
241.85	0.34	**20.11**	
241.86	0.35	**21.04**	
241.87	0.36	**21.98**	
241.88	0.37	**22.94**	
241.89	0.38	**23.91**	
241.90	0.39	**24.90**	
241.91	0.40	**25.91**	
241.92	0.41	**26.92**	
241.93	0.42	**27.96**	
241.94	0.43	**29.01**	
241.95	0.44	**30.07**	241.95 Top of Pond

Appendix G2:
SWM Pond 7

Project Name:	Solmar
Project Number:	1401
Designed By:	LH
Checked By:	AVN
Date	21-Aug-25

DSEL
David Schaeffer Engineering Limited
600 Alden Road, Suite 606
Markham, ON L3R 0E7

ALLOWABLE POND VOLUME AND DISCHARGE RATES - POND 07 - Chicago 4hr

Pre Drainage Area	75.08	ha
North Outlet Predev Area	38.23	ha
South Outlet Predev Area	36.85	ha
Post Drainage Area	76.91	ha
Post Imp %	71.6%	%

Pond Component	Unitary Discharge Rate Formula (1) (2)	Total Target Outflow	Target Volume	Pond Outflow	Pond Storage Volume (3)	Pond Elevation
	L/s/ha	m^3/s	m^3	m^3/s	m^3	masl
Permanent Pool	N/A	N/A	14357	N/A	23625	230.00
Quality Control	N/A	N/A	3076	0.021	3076	230.15
Erosion Control/Extended Det.	N/A	N/A	13960	0.144	15209	230.70
2 Year Design Storm	9.506-0.719 x ln(A)	0.509	N/A	0.226	17423	230.79
5 Year Design Storm	14.652-1.136 x ln(A)	0.778	N/A	0.655	24571	231.07
10 Year Design Storm	17.957-1.373 x ln(A)	0.958	N/A	0.822	29373	231.25
25 Year Design Storm	22.639-1.741 x ln(A)	1.206	N/A	1.017	36892	231.52
50 Year Design Storm	26.566-2.082 x ln(A)	1.404	N/A	1.248	41862	231.68
100 Year Design Storm	29.912-2.316 x ln(A)	1.589	N/A	1.571	46749	231.85
Regional Design Storm	74	5.454	N/A	4.138	96139	233.30

(1) Unitary Discharge Rate Formula for 2-year to 100-year design storms based on Final Report, Humber River Hydrology Update, 2015, TRCA

(2) Unitary Discharge Rate for Regional storm, based on Local Subwatershed Study, Wildfield Village Plan, Phase 1-Subwatershed Characterization and Integration, 2024.

(3) Design storm volumes measured above Permanent Pool volume.

Project Name:	Solmar
Project Number:	1401
Designed By:	LH
Checked By:	AVN
Date	21-Aug-25

DSEL
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Markham, ON L3R 0E7

ALLOWABLE POND VOLUME AND DISCHARGE RATES - POND 07 - SCS 12hr

Pre Drainage Area	75.08	ha
North Outlet Predev Area	38.23	ha
South Outlet Predev Area	36.85	ha
Post Drainage Area	76.91	ha
Post Imp %	71.6%	%

Pond Component	Unitary Discharge Rate Formula (1) (2)	Total Target Outflow	Pond Outflow	Pond Storage Volume (3)	Pond Elevation
	L/s/ha	m^3/s	m^3/s	m^3	masl
2 Year Design Storm	9.506-0.719 x ln(A)	0.509	0.243	17671	230.80
5 Year Design Storm	14.652-1.136 x ln(A)	0.778	0.327	23786	231.04
10 Year Design Storm	17.957-1.373 x ln(A)	0.958	0.783	28023	231.20
25 Year Design Storm	22.639-1.741 x ln(A)	1.206	0.977	35188	231.46
50 Year Design Storm	26.566-2.082 x ln(A)	1.404	1.088	38621	231.58
100 Year Design Storm	29.912-2.316 x ln(A)	1.589	1.329	43058	231.73

(1) Unitary Discharge Rate Formula for 2-year to 100-year design storms based on Final Report, Humber River Hydrology Update, 2015, TRCA

(2) Unitary Discharge Rate for Regional storm, based on Local Subwatershed Study, Wildfield Village Plan, Phase 1-Subwatershed Characterization and Integration, 2024

(3) Design storm volumes measured above Permanent Pool volume.

Project Name:	Solmar
Project Number:	1401
Designed By:	LH
Checked By:	AVN
Date	21-Aug-25

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ALLOWABLE POND VOLUME AND DISCHARGE RATES - POND 07 - AES 6hr

Pre Drainage Area	75.08	ha
North Outlet Predev Area	38.23	ha
South Outlet Predev Area	36.85	ha
Post Drainage Area	76.91	ha
Post Imp %	71.6%	%

Pond Component	Unitary Discharge Rate Formula (1) (2)	Total Target Outflow	Pond Outflow	Pond Storage Volume (3)	Pond Elevation
	L/s/ha	m^3/s	m^3/s	m^3	masl
2 Year Design Storm	9.506-0.719 x ln(A)	0.509	0.255	17921	230.81
5 Year Design Storm	14.652-1.136 x ln(A)	0.778	0.595	23006	231.01
10 Year Design Storm	17.957-1.373 x ln(A)	0.958	0.748	26952	231.16
25 Year Design Storm	22.639-1.741 x ln(A)	1.206	0.906	32391	231.36
50 Year Design Storm	26.566-2.082 x ln(A)	1.404	1.009	36320	231.50
100 Year Design Storm	29.912-2.316 x ln(A)	1.589	1.177	40373	231.64

(1) Unitary Discharge Rate Formula for 2-year to 100-year design storms based on Final Report, Humber River Hydrology Update, 2015, TRCA

(2) Unitary Discharge Rate for Regional storm, based on Local Subwatershed Study, Wildfield Village Plan, Phase 1-Subwatershed Characterization and Integration, 2024

(3) Design storm volumes measured above Permanent Pool volume.

Project Name: Solmar
Project Number: 1401
Designed By: LH
Checked By: AL
Date 21-Aug-25

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PERMANENT POOL AND EXTENDED DETENTION - [Pond 7]

Pond Drainage Catchment & Design

Area	
76.91	ha

Treatment Level :	Enhanced	
Treatment Percentage:	80%	
SWM Facility :	Wet Pond	
Imperviousness :	71.6	%

Permanent Pool Requirements

MOE 2003 Table 3.2 Interpolated Water Quality Volume :	227	m3/ha
Unitary Permanent Pool (Less 40 m3/ha for active storage) :	187	m3/ha

Extended Detention and Erosion Control Requirements

Maximum of :	**MOE 2003 Active Storage =**	40	m^3/ha
	25mm Storm Runoff Volume =	13.96	ML
	OR		
	Unitary Erosion Control Volume =	0	m^3/imp-ha

Quality Control Summary

	Volume (m^3)
Required Permanent Pool Volume	14357
Provided Permanent Pool Volume	23625
Required Extended Detention/Erosion Control	
MOE 2003 Active Storage	*3076*
25mm Storm Runoff Volume	*13960*
Unitary Erosion Control Volume	*0*
Maximum Required ED/Erosion Control	13960
Provided ED/Erosion Control	15209

Project Name:	Solmar
Project Number:	1401
Designed By:	LH
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Date	21-Aug-25

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SWM FACILITY STORAGE CALCULATIONS - [Pond 7]

Permanent Pool Volume Required:	14357 m^3	
Permanent Pool Volume Provided:	23625 m^3	**165% of Required Permanent Pool**
Extended Detention/Erosion Control Volume Required:	13960 m^3	
Extended Detention/Erosion Control Volume Provided:	15209 m^3	**109% of Required Extended Detention**
Bottom of Pond:	228.50 m	
Permanent Pool:	230.00 m	
Incremental Depth:	0.05 m	

Pond Characteristic	Elevation (m)	Stage (m)	Area (m2)	Average Area (m^2)	Incremental Storage (m^3)	Cumulative Storage (m^3)	Cumulative Storage above Permanent Pool (m^3)
Bottom of Pond = 228.5	228.50	0.00	13114.58	0	0	**0**	**0**
	228.55	0.05	13268.42	13191	660	**660**	**0**
	228.60	0.10	13422.41	13345	667	**1327**	**0**
	228.65	0.15	13576.94	13500	675	**2002**	**0**
	228.70	0.20	13731.88	13654	683	**2685**	**0**
	228.75	0.25	13887.29	13810	690	**3375**	**0**
	228.80	0.30	14043.14	13965	698	**4073**	**0**
	228.85	0.35	14199.42	14121	706	**4779**	**0**
	228.90	0.40	14356.20	14278	714	**5493**	**0**
	228.95	0.45	14513.40	14435	722	**6215**	**0**
	229.00	0.50	14671.04	14592	730	**6945**	**0**
	229.05	0.55	14829.16	14750	738	**7682**	**0**
	229.10	0.60	14987.72	14908	745	**8428**	**0**
	229.15	0.65	15146.73	15067	753	**9181**	**0**
	229.20	0.70	15306.19	15226	761	**9942**	**0**
	229.25	0.75	15466.10	15386	769	**10712**	**0**
	229.30	0.80	15626.43	15546	777	**11489**	**0**
	229.35	0.85	15787.22	15707	785	**12274**	**0**
	229.40	0.90	15948.50	15868	793	**13068**	**0**
	229.45	0.95	16110.22	16029	801	**13869**	**0**
	229.50	1.00	16276.73	16193	810	**14679**	**0**
	229.55	1.05	16726.91	16502	825	**15504**	**0**
	229.60	1.10	17015.35	16871	844	**16347**	**0**
	229.65	1.15	17305.68	17161	858	**17205**	**0**
	229.70	1.20	17598.05	17452	873	**18078**	**0**
	229.75	1.25	17892.40	17745	887	**18965**	**0**
	229.80	1.30	18188.62	18041	902	**19867**	**0**
	229.85	1.35	18486.97	18338	917	**20784**	**0**
	229.90	1.40	18787.14	18637	932	**21716**	**0**
	229.95	1.45	19089.37	18938	947	**22663**	**0**
Permanent Pool = 230	230.00	1.50	19396.47	19243	962	**23625**	**0**
	230.05	1.55	19699.11	19548	977	**24602**	**977**
	230.10	1.60	20000.39	19850	992	**25595**	**1970**
	230.15	1.65	20302.76	20152	1008	**26603**	**2977**
	230.20	1.70	20606.08	20454	1023	**27625**	**4000**
	230.25	1.75	20910.34	20758	1038	**28663**	**5038**
	230.30	1.80	21215.64	21063	1053	**29716**	**6091**
	230.35	1.85	21522.02	21369	1068	**30785**	**7160**
	230.40	1.90	21829.20	21676	1084	**31869**	**8243**
	230.45	1.95	22137.57	21983	1099	**32968**	**9343**
	230.50	2.00	22451.33	22294	1115	**34082**	**10457**
	230.55	2.05	23623.74	23038	1152	**35234**	**11609**
	230.60	2.10	23872.28	23748	1187	**36422**	**12797**
	230.65	2.15	24121.44	23997	1200	**37622**	**13996**
Erosion Control Water Level = 230.7	230.70	2.20	24370.86	24246	1212	**38834**	**15209**
2-Year Storm Water Level = 230.79	230.75	2.25	24620.94	24496	1225	**40059**	**16434**
	230.80	2.30	24871.28	24746	1237	**41296**	**17671**
	230.85	2.35	25122.15	24997	1250	**42546**	**18921**
	230.90	2.40	25373.64	25248	1262	**43808**	**20183**
	230.95	2.45	25625.66	25500	1275	**45083**	**21458**
	231.00	2.50	25877.76	25752	1288	**46371**	**22746**
5-Year Storm Water Level = 231.07	231.05	2.55	26130.57	26004	1300	**47671**	**24046**
	231.10	2.60	26383.91	26257	1313	**48984**	**25359**
	231.15	2.65	26637.54	26511	1326	**50309**	**26684**

	231.20	2.70	26891.80	26765	1338	**51648**	**28023**
10-Year Storm Water Level = 231.25	231.25	2.75	27146.42	27019	1351	**52999**	**29373**
	231.30	2.80	27401.52	27274	1364	**54362**	**30737**
	231.35	2.85	27657.08	27529	1376	**55739**	**32114**
	231.40	2.90	27913.24	27785	1389	**57128**	**33503**
	231.45	2.95	28169.67	28041	1402	**58530**	**34905**
25-Year Storm Water Level = 231.52	231.50	3.00	28428.60	28299	1415	**59945**	**36320**
	231.55	3.05	28811.31	28620	1431	**61376**	**37751**
	231.60	3.10	29198.85	29005	1450	**62826**	**39201**
50-Year Storm Water Level = 231.68	231.65	3.15	29590.39	29395	1470	**64296**	**40671**
	231.70	3.20	29985.88	29788	1489	**65785**	**42160**
	231.75	3.25	30385.52	30186	1509	**67295**	**43670**
	231.80	3.30	30789.04	30587	1529	**68824**	**45199**
100-Year Storm Water Level = 231.85	231.85	3.35	31196.60	30993	1550	**70374**	**46749**
	231.90	3.40	31608.13	31402	1570	**71944**	**48319**
	231.95	3.45	32023.72	31816	1591	**73535**	**49910**
	232.00	3.50	32445.22	32234	1612	**75146**	**51521**
	232.05	3.55	32586.49	32516	1626	**76772**	**53147**
	232.10	3.60	32728.73	32658	1633	**78405**	**54780**
	232.15	3.65	32871.20	32800	1640	**80045**	**56420**
	232.20	3.70	33013.97	32943	1647	**81692**	**58067**
	232.25	3.75	33157.11	33086	1654	**83346**	**59721**
	232.30	3.80	33300.51	33229	1661	**85008**	**61383**
	232.35	3.85	33444.24	33372	1669	**86676**	**63051**
	232.40	3.90	33588.25	33516	1676	**88352**	**64727**
	232.45	3.95	33732.46	33660	1683	**90035**	**66410**
	232.50	4.00	33877.09	33805	1690	**91726**	**68100**
	232.55	4.05	34021.94	33950	1697	**93423**	**69798**
	232.60	4.10	34167.14	34095	1705	**95128**	**71503**
	232.65	4.15	34312.66	34240	1712	**96840**	**73215**
	232.70	4.20	34458.48	34386	1719	**98559**	**74934**
	232.75	4.25	34604.52	34532	1727	**100286**	**76660**
	232.80	4.30	34750.90	34678	1734	**102019**	**78394**
	232.85	4.35	34897.65	34824	1741	**103761**	**80136**
	232.90	4.40	35044.58	34971	1749	**105509**	**81884**
	232.95	4.45	35191.94	35118	1756	**107265**	**83640**
	233.00	4.50	35339.50	35266	1763	**109028**	**85403**
	233.05	4.55	35487.40	35413	1771	**110799**	**87174**
	233.10	4.60	35635.67	35562	1778	**112577**	**88952**
	233.15	4.65	35784.10	35710	1785	**114363**	**90738**
	233.20	4.70	35932.96	35859	1793	**116156**	**92531**
	233.25	4.75	36082.00	36007	1800	**117956**	**94331**
Regional Storm Water Level = 233.3	233.30	4.80	36231.45	36157	1808	**119764**	**96139**
	233.35	4.85	36381.04	36306	1815	**121579**	**97954**
	233.40	4.90	36531.06	36456	1823	**123402**	**99777**
	233.45	4.95	36681.43	36606	1830	**125232**	**101607**
	233.50	5.00	36832.04	36757	1838	**127070**	**103445**
	233.55	5.05	36982.88	36907	1845	**128915**	**105290**
	233.60	5.10	37136.29	37060	1853	**130768**	**107143**
	233.65	5.15	38480.10	37808	1890	**132659**	**109034**
Top of Pond Berm = 233.7	233.70	5.20	39853.32	39167	1958	**134617**	**110992**

Project Name:	Solmar
Project Number:	1401
Designed By:	LH
Checked By:	AL
Date	21-Aug-25

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Orifice 1		Orifice 2		Orifice 3	
Dia. (mm)	300	Height (m)	0.25	Height (m)	0.7
Cross Sect. Area (m^2)	0.0707	Length (m)	1.4	Length (m)	1
Orifice Coeff.	0.62	Cross Sect. Area (m^2)	0.35	Cross Sect. Area (m^2)	0.7
Inv. Elev. (m)	230.00	Orifice Coeff.	0.62	Orifice Coeff.	0.62
		Inv. Elev. (m)	230.70	Inv. Elev. (m)	231.52

SWM FACILITY DISCHARGE CALCULATIONS - [POND 7]

Pond Characteristic	Elevation	Orifice 1		Orifice 2		Orifice 3		Total Discharge From Pond
		Head	Discharge	Head	Discharge	Head	Discharge	
	(m)	(m)	(m^3/s)	(m)	(m^3/s)	(m)	(m^3/s)	(m3/s)
Permanent Pool = 230	230.00	0.00	0.000	0.00	0.000	0.00	0.000	0.000
	230.05	0.05	0.003	0.00	0.000	0.00	0.000	0.003
	230.10	0.10	0.010	0.00	0.000	0.00	0.000	0.010
	230.15	0.15	0.021	0.00	0.000	0.00	0.000	0.021
	230.20	0.20	0.043	0.00	0.000	0.00	0.000	0.043
	230.25	0.25	0.061	0.00	0.000	0.00	0.000	0.061
	230.30	0.30	0.075	0.00	0.000	0.00	0.000	0.075
	230.35	0.35	0.087	0.00	0.000	0.00	0.000	0.087
	230.40	0.40	0.097	0.00	0.000	0.00	0.000	0.097
	230.45	0.45	0.106	0.00	0.000	0.00	0.000	0.106
	230.50	0.50	0.115	0.00	0.000	0.00	0.000	0.115
	230.55	0.55	0.123	0.00	0.000	0.00	0.000	0.123
	230.60	0.60	0.130	0.00	0.000	0.00	0.000	0.130
	230.65	0.65	0.137	0.00	0.000	0.00	0.000	0.137
Erosion Control Water Level = 230.7	230.70	0.70	0.144	0.00	0.000	0.00	0.000	0.144
2-Year Storm Water Level = 230.79	230.75	0.75	0.150	0.05	0.029	0.00	0.000	0.179
	230.80	0.80	0.157	0.10	0.080	0.00	0.000	0.237
	230.85	0.85	0.162	0.15	0.146	0.00	0.000	0.309
	230.90	0.90	0.168	0.20	0.224	0.00	0.000	0.392
	230.95	0.95	0.174	0.25	0.311	0.00	0.000	0.484
	231.00	1.00	0.179	0.30	0.402	0.00	0.000	0.581
5-Year Storm Water Level = 231.07	231.05	1.05	0.184	0.35	0.456	0.00	0.000	0.640
	231.10	1.10	0.189	0.40	0.504	0.00	0.000	0.693
	231.15	1.15	0.194	0.45	0.548	0.00	0.000	0.742
	231.20	1.20	0.199	0.50	0.589	0.00	0.000	0.788
10-Year Storm Water Level = 231.25	231.25	1.25	0.204	0.55	0.627	0.00	0.000	0.830
	231.30	1.30	0.208	0.60	0.662	0.00	0.000	0.871
	231.35	1.35	0.213	0.65	0.696	0.00	0.000	0.909
	231.40	1.40	0.217	0.70	0.729	0.00	0.000	0.946
	231.45	1.45	0.221	0.75	0.760	0.00	0.000	0.981
25-Year Storm Water Level = 231.52	231.50	1.50	0.226	0.80	0.790	0.00	0.000	1.015

	231.55	1.55	0.230	0.85	0.818	0.03	0.010	1.058
	231.60	1.60	0.234	0.90	0.846	0.08	0.041	1.121
50-Year Storm Water Level = 231.68	231.65	1.65	0.238	0.95	0.873	0.13	0.084	1.195
	231.70	1.70	0.242	1.00	0.899	0.18	0.135	1.276
	231.75	1.75	0.246	1.05	0.924	0.23	0.194	1.364
	231.80	1.80	0.249	1.10	0.949	0.28	0.257	1.456
100-Year Storm Water Level = 231.85	231.85	1.85	0.253	1.15	0.973	0.33	0.326	1.552
	231.90	1.90	0.257	1.20	0.997	0.38	0.398	1.652
	231.95	1.95	0.260	1.25	1.019	0.43	0.474	1.754
	232.00	2.00	0.264	1.30	1.042	0.48	0.553	1.859
	232.05	2.05	0.268	1.35	1.064	0.53	0.635	1.966
	232.10	2.10	0.271	1.40	1.085	0.58	0.718	2.075
	232.15	2.15	0.275	1.45	1.106	0.63	0.804	2.185
	232.20	2.20	0.278	1.50	1.127	0.68	0.891	2.296
	232.25	2.25	0.281	1.55	1.147	0.73	1.185	2.614
	232.30	2.30	0.285	1.60	1.167	0.78	1.261	2.713
	232.35	2.35	0.288	1.65	1.187	0.83	1.332	2.807
	232.40	2.40	0.291	1.70	1.206	0.88	1.400	2.897
	232.45	2.45	0.294	1.75	1.225	0.93	1.464	2.984
	232.50	2.50	0.298	1.80	1.244	0.98	1.526	3.067
	232.55	2.55	0.301	1.85	1.262	1.03	1.585	3.148
	232.60	2.60	0.304	1.90	1.281	1.08	1.642	3.227
	232.65	2.65	0.307	1.95	1.298	1.13	1.698	3.303
	232.70	2.70	0.310	2.00	1.316	1.18	1.751	3.378
	232.75	2.75	0.313	2.05	1.334	1.23	1.803	3.450
	232.80	2.80	0.316	2.10	1.351	1.28	1.854	3.521
	232.85	2.85	0.319	2.15	1.368	1.33	1.903	3.590
	232.90	2.90	0.322	2.20	1.385	1.38	1.951	3.657
	232.95	2.95	0.325	2.25	1.401	1.43	1.998	3.724
	233.00	3.00	0.328	2.30	1.418	1.48	2.044	3.789
	233.05	3.05	0.331	2.35	1.434	1.53	2.088	3.853
	233.10	3.10	0.333	2.40	1.450	1.58	2.132	3.915
	233.15	3.15	0.336	2.45	1.466	1.63	2.175	3.977
	233.20	3.20	0.339	2.50	1.481	1.68	2.217	4.037
	233.25	3.25	0.342	2.55	1.497	1.73	2.258	4.097
Regional Storm Water Level = 233.3	233.30	3.30	0.345	2.60	1.512	1.78	2.299	4.156
	233.35	3.35	0.347	2.65	1.527	1.83	2.339	4.213
	233.40	3.40	0.350	2.70	1.542	1.88	2.378	4.270
	233.45	3.45	0.353	2.75	1.557	1.93	2.416	4.326
	233.50	3.50	0.355	2.80	1.572	1.98	2.454	4.382
	233.55	3.55	0.358	2.85	1.587	2.03	2.492	4.436
	233.60	3.60	0.361	2.90	1.601	2.08	2.528	4.490
	233.65	3.65	0.363	2.95	1.616	2.13	2.565	4.543
Top of Pond Berm = 233.7	233.70	3.70	0.366	3.00	1.630	2.18	2.601	4.596

Project Name:	Solmar
Project Number:	1401
Designed By:	LH
Checked By:	AL
Date	21-Aug-25

David Schaeffer Engineering Limited
600 Alden Road, Suite 606
Markham, ON L3R 0E7

DRAWDOWN TIME CALCULATION - POND 7

Ministry of the Environment
Stormwater Management Planning and Design Manual (March 2003)

Equation 4.11: Drawdown Time

$$t = \frac{0.66C_2h^{1.5} + 2C_3h^{0.5}}{2.75A_O} = \mathbf{179{,}612\ sec}$$

$$= \mathbf{49.9\ hr}$$

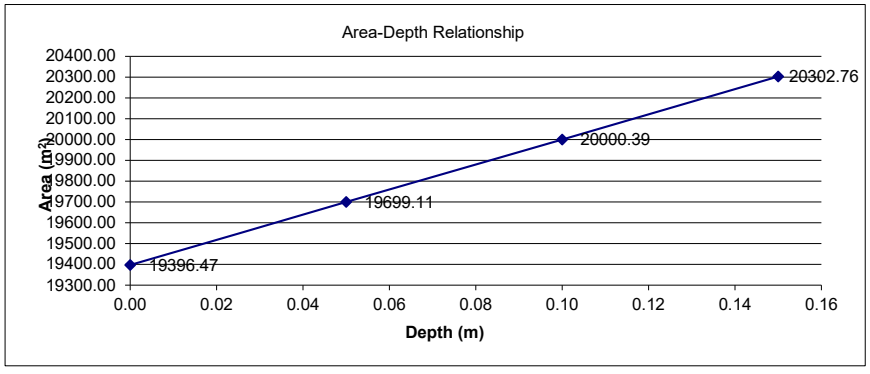
2.1 days

t = drawdown time (sec)
A_O = cross-sectional area of the orifice (m^2)
h = maximum water elevation above the orifice (m)
C_2 = slope coefficient from the area-depth linear regression
C_3 = intercept from the area-depth linear regression

Input Parameters:

Orifice Diameter =	0.300	m
Extended Detention Elevation =	230.70	m
Extended Detention Head, h =	0.70	m
A_O =	0.071	m^2
C_2 =	7329	
C_3 =	19172	

		X - Values	Y - Values
Pond Stage	**Elevation** (m)	**Depth** (m)	**Area** (m^2)
PP	230.00	0.00	19396.47
	230.05	0.05	19699.11
	230.10	0.10	20000.39
	230.15	0.15	20302.76
	230.20	0.20	20606.08
	230.25	0.25	20910.34
	230.30	0.30	21215.64
	230.35	0.35	21522.02
	230.40	0.40	21829.20
	230.45	0.45	22137.57
	230.50	0.50	22451.33
	230.55	0.55	23623.74
	230.60	0.60	23872.28
	230.65	0.65	24121.44
ED	230.70	0.70	24370.86



Project Name:	Solmar
Project Number:	1401
Designed By:	LH
Checked By:	AVN
Date	21-Aug-25

David Schaeffer Engineering Limited
600 Alden Road, Suite 606
Markham, ON L3R 0E7

OVERFLOW TRAPEZOIDAL WEIR CALCULATION - Solmar SWM Pond 7

Input Parameters

Length (L) =	70.00	m
Coefficient (C) =	1.60	
Side Slope (S):1 =	10.00	
Crest Elevation =	233.35	m
Incremental Depth =	0.01	m

Trapezoidal Weir Equation

$$Q = CL(H^{1.5}) + CS(H^{2.5})$$

Weir Calculation			
Water Surface Elevation (m)	**Head (H) (m)**	**Weir Flow (Q) (m^3/sec)**	**Water Surface Elevation Notes**
233.35	0.00	**0.00**	Weir Invert
233.36	0.01	**0.11**	
233.37	0.02	**0.32**	
233.38	0.03	**0.58**	
233.39	0.04	**0.90**	
233.40	0.05	**1.26**	
233.41	0.06	**1.66**	
233.42	0.07	**2.10**	
233.43	0.08	**2.56**	
233.44	0.09	**3.06**	
233.45	0.10	**3.59**	
233.46	0.11	**4.15**	
233.47	0.12	**4.74**	
233.48	0.13	**5.35**	
233.49	0.14	**5.98**	
233.50	0.15	**6.65**	
233.51	0.16	**7.33**	
233.52	0.17	**8.04**	
233.53	0.18	**8.77**	
233.54	0.19	**9.53**	
233.55	0.20	**10.30**	Regional Uncontrolled Peak Flow = 10.27 m^3/s
233.56	0.21	**11.10**	
233.57	0.22	**11.92**	
233.58	0.23	**12.76**	
233.59	0.24	**13.62**	
233.60	0.25	**14.50**	
233.61	0.26	**15.40**	
233.62	0.27	**16.32**	
233.63	0.28	**17.26**	
233.64	0.29	**18.22**	
233.65	0.30	**19.19**	
233.66	0.31	**20.19**	100-Year Chicago Uncontrolled = 19.82 m^3/s
233.67	0.32	**21.20**	
233.68	0.33	**22.23**	
233.69	0.34	**23.28**	
233.70	0.35	**24.35**	233.70 Top of Pond

Appendix G3:
Emergency Calculations

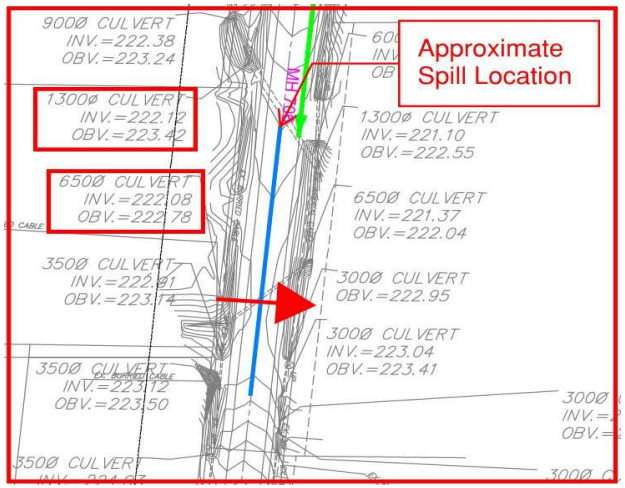
Project Name:	Solmar
Project Number:	1401
Designed By:	LH
Checked By:	AVN
Date	27-Aug-25

DSEL
David Schaeffer Engineering Limited
600 Alden Road, Suite 606
Markham, ON L3R 0E7

SUMMARY: GORE ROAD CONVEYANCE

Flow Scenario	Peak Flow (m^3/s)
Pond 7 100-Year Emergency Peak Flow	19.82
Peak Flow Captured in Emergency Grate	10.38
Peak Flow Directed to South Ditch	9.43
Capacity of South Ditch at Pond 7	9.57

LP Overflow Spill Component	Peak Flow (m^3/s)
1350mm Dia Culvert	4.68
650mm Dia. Culvert	1.37
Road Spillway	4.58
Total Flow Across Gore Road LP[1]	**10.63**



[1] Flow Conveyance is shown at an elevation 223.76m (0.2m flow depth across Gore Road)

1. The total flow conveyance provided of 10.63 m^3/s across the low point in the Gore Road at an elevation of 223.76 will convey the 9.43 m^3/s of flow from the south ditch shown above.

2. Peak Flow conveyance across Gore Road is less than 0.2m.

Project Name:	Solmar
Project Number:	1401
Designed By:	AVN
Checked By:	AVN
Date	29-Aug-25

David Schaeffer Engineering Limited
600 Alden Road, Suite 606
Markham, ON L3R 0E7

1500mm Pond 7 Outlet Pipe	
Dia. (mm)	1500
Cross Sect. Area (m^2)	1.7671
Orifice Coeff.	0.8
Inv. Elev. (m)	230.00

POND 7 EMERGENCY GRATE OUTLET

Pond Characteristic	Elevation	1500mm Pond 7 Outlet Pipe		Overflow Weir	Combined
		Head	Discharge	Discharge	Discharge
	(m)	(m)	(m^3/s)	(m^3/s)	(m^3/s)
Permanent Pool = 230	230.00	0.00	**0.00**	**0.00**	**0.00**
	230.05	0.05	**0.00**	**0.00**	**0.00**
	230.10	0.10	**0.00**	**0.00**	**0.00**
	230.15	0.15	**0.00**	**0.00**	**0.00**
	230.20	0.20	**0.00**	**0.00**	**0.00**
	230.25	0.25	**0.00**	**0.00**	**0.00**
	230.30	0.30	**0.00**	**0.00**	**0.00**
	230.35	0.35	**0.00**	**0.00**	**0.00**
	230.40	0.40	**0.00**	**0.00**	**0.00**
	230.45	0.45	**0.00**	**0.00**	**0.00**
	230.50	0.50	**0.00**	**0.00**	**0.00**
	230.55	0.55	**0.00**	**0.00**	**0.00**
	230.60	0.60	**0.00**	**0.00**	**0.00**
	230.65	0.65	**0.00**	**0.00**	**0.00**
Erosion Control Water Level = 230.7	230.70	0.70	**0.00**	**0.00**	**0.00**
2-Year Storm Water Level = 230.79	230.75	0.75	**0.00**	**0.00**	**0.00**
	230.80	0.80	**0.00**	**0.00**	**0.00**
	230.85	0.85	**0.00**	**0.00**	**0.00**
	230.90	0.90	**0.00**	**0.00**	**0.00**
	230.95	0.95	**0.00**	**0.00**	**0.00**
	231.00	1.00	**0.00**	**0.00**	**0.00**
5-Year Storm Water Level = 231.07	231.05	1.05	**0.00**	**0.00**	**0.00**
	231.10	1.10	**0.00**	**0.00**	**0.00**
	231.15	1.15	**0.00**	**0.00**	**0.00**
	231.20	1.20	**0.00**	**0.00**	**0.00**
10-Year Storm Water Level = 231.25	231.25	1.25	**0.00**	**0.00**	**0.00**
	231.30	1.30	**0.00**	**0.00**	**0.00**
	231.35	1.35	**0.00**	**0.00**	**0.00**
	231.40	1.40	**0.00**	**0.00**	**0.00**
	231.45	1.45	**0.00**	**0.00**	**0.00**
25-Year Storm Water Level = 231.52	231.50	1.50	**0.00**	**0.00**	**0.00**
	231.55	1.55	**0.00**	**0.00**	**0.00**
	231.60	1.60	**0.00**	**0.00**	**0.00**
50-Year Storm Water Level = 231.68	231.65	1.65	**0.00**	**0.00**	**0.00**
	231.70	1.70	**0.00**	**0.00**	**0.00**
	231.75	1.75	**0.00**	**0.00**	**0.00**
	231.80	1.80	**0.00**	**0.00**	**0.00**
100-Year Storm Water Level = 231.85	231.85	1.85	**0.00**	**0.00**	**0.00**
	231.90	1.90	**0.00**	**0.00**	**0.00**

Pond Characteristic	Elevation	1500mm Pond 7 Outlet Pipe		Overflow Weir	Combined
		Head	Discharge	Discharge	Discharge
	(m)	(m)	(m^3/s)	(m^3/s)	(m^3/s)
	231.95	1.95	**0.00**	**0.00**	**0.00**
	232.00	2.00	**0.00**	**0.00**	**0.00**
	232.05	2.05	**0.00**	**0.00**	**0.00**
	232.10	2.10	**0.00**	**0.00**	**0.00**
	232.15	2.15	**0.00**	**0.00**	**0.00**
	232.20	2.20	**0.00**	**0.00**	**0.00**
	232.25	2.25	**0.00**	**0.00**	**0.00**
	232.30	2.30	**0.00**	**0.00**	**0.00**
	232.35	2.35	**0.00**	**0.00**	**0.00**
	232.40	2.40	**0.00**	**0.00**	**0.00**
	232.45	2.45	**0.00**	**0.00**	**0.00**
	232.50	2.50	**0.00**	**0.00**	**0.00**
	232.55	2.55	**0.00**	**0.00**	**0.00**
	232.60	2.60	**0.00**	**0.00**	**0.00**
	232.65	2.65	**0.00**	**0.00**	**0.00**
	232.70	2.70	**0.00**	**0.00**	**0.00**
	232.75	2.75	**0.00**	**0.00**	**0.00**
	232.80	2.80	**0.00**	**0.00**	**0.00**
	232.85	2.85	**0.00**	**0.00**	**0.00**
	232.90	2.90	**0.00**	**0.00**	**0.00**
	232.95	2.95	**0.00**	**0.00**	**0.00**
	233.00	3.00	**0.00**	**0.00**	**0.00**
	233.05	3.05	**0.00**	**0.00**	**0.00**
	233.10	3.10	**0.00**	**0.00**	**0.00**
	233.15	3.15	**0.00**	**0.00**	**0.00**
	233.20	3.20	**0.00**	**0.00**	**0.00**
	233.25	3.25	**0.00**	**0.00**	**0.00**
Regional Storm Water Level = 233.3	233.30	3.30	**0.00**	**0.00**	**0.00**
	233.35	3.35	**10.10**	**0.00**	**10.10**
	233.40	3.40	**10.19**	**1.80**	**11.99**
	233.45	3.45	**10.29**	**5.11**	**15.40**
100-year Chicago Uncontrolled = 19.82m^3/s	233.50	3.50	**10.38**	**9.43**	**19.82**
	233.55	3.55	**10.48**	**14.60**	**25.08**
	233.60	3.60	**10.57**	**20.50**	**31.07**
	233.65	3.65	**10.66**	**27.08**	**37.74**
Top of Pond Berm = 233.7	233.70	3.70	**10.76**	**34.29**	**45.04**

Worksheet for Gore Road Ditch 1

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.003 m/m
Normal Depth	1,270.0 mm

Section Definitions

Station (m)	Elevation (m)
0+20	233.12
0+20	233.12
0+23	233.05
0+24	233.00
0+26	232.92
0+27	232.87
0+27	232.81
0+27	232.79
0+28	232.43
0+30	231.85
0+32	232.11
0+33	232.28
0+35	233.70

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+20, 233.12)	(0+27, 232.87)	0.013
(0+27, 232.87)	(0+35, 233.70)	0.030

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Discharge	9,574.71 L/s
Roughness Coefficient	0.024
Elevation Range	231.9 to 233.7 m
Flow Area	6.9 m²
Wetted Perimeter	14.5 m
Hydraulic Radius	473.6 mm
Top Width	13.97 m

Worksheet for Gore Road Ditch 1

Results		
Normal Depth	1,270.0	mm
Critical Depth	962.7	mm
Critical Slope	0.007	m/m
Velocity	1.39	m/s
Velocity Head	0.10	m
Specific Energy	1.37	m
Froude Number	0.635	
Flow Type	Subcritical	

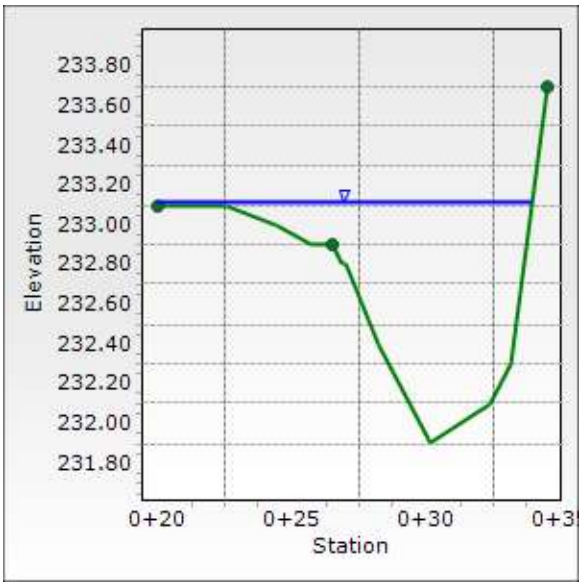
GVF Input Data		
Downstream Depth	0.0	mm
Length	0.0	m
Number Of Steps	0	

GVF Output Data		
Upstream Depth	0.0	mm
Profile Description	N/A	
Profile Headloss	0.00	m
Downstream Velocity	0.00	m/s
Upstream Velocity	0.00	m/s
Normal Depth	1,270.0	mm
Critical Depth	962.7	mm
Channel Slope	0.003	m/m
Critical Slope	0.007	m/m

Cross Section for Gore Road Ditch 1

Project Description	
Friction Method	Manning Formula
Solve For	Discharge

Input Data	
Channel Slope	0.003 m/m
Normal Depth	1,270.0 mm
Discharge	9,574.71 L/s



Project Name:	Solmar
Project Number:	1401
Designed By:	LH
Checked By:	AVN
Date	27-Aug-25

David Schaeffer Engineering Limited
600 Alden Road, Suite 606
Markham, ON L3R 0E7

Culvert 1		Culvert 2		Gore Road Low Point	
Dia. (mm)	650	Dia. (mm)	1300	Inv. Elev. (m)	223.56
Cross Sect. Area (m^2)	0.3318	Cross Sect. Area (m^2)	1.3273		
Orifice Coeff.	0.8	Orifice Coeff.	0.8		
Inv. Elev. (m)	222.08	Inv. Elev. (m)	222.12		

CULVERT DISCHARGE CALCULATIONS - [GORE ROAD]

Elevation	Culvert 1		Culvert 2				
	Head	Discharge	Head	Discharge	Combined Culvert Discharge	Gore Road Spillway Discharge	Total Road and Culvert Conveyance
(m)	(m)	(m^3/s)	(m)	(m^3/s)	(m^3/s)	(m^3/s)	(m^3/s)
222.06	0.00	0.00	0.00	0.00	**0.00**	**0.00**	**0.00**
222.11	0.03	0.00	0.00	0.00	**0.00**	**0.00**	**0.00**
222.16	0.08	0.01	0.04	0.01	**0.02**	**0.00**	**0.02**
222.21	0.13	0.03	0.09	0.02	**0.05**	**0.00**	**0.05**
222.26	0.18	0.05	0.14	0.05	**0.10**	**0.00**	**0.10**
222.31	0.23	0.08	0.19	0.08	**0.16**	**0.00**	**0.16**
222.36	0.28	0.11	0.24	0.13	**0.24**	**0.00**	**0.24**
222.41	0.33	0.08	0.29	0.19	**0.27**	**0.00**	**0.27**
222.46	0.38	0.28	0.34	0.25	**0.53**	**0.00**	**0.53**
222.51	0.43	0.38	0.39	0.32	**0.71**	**0.00**	**0.71**
222.56	0.48	0.46	0.44	0.41	**0.87**	**0.00**	**0.87**
222.61	0.53	0.53	0.49	0.50	**1.03**	**0.00**	**1.03**
222.66	0.58	0.59	0.54	0.59	**1.19**	**0.00**	**1.19**
222.71	0.63	0.65	0.59	0.70	**1.35**	**0.00**	**1.35**
222.76	0.68	0.70	0.64	0.81	**1.51**	**0.00**	**1.51**
222.81	0.73	0.75	0.69	0.94	**1.69**	**0.00**	**1.69**
222.86	0.78	0.79	0.74	1.41	**2.20**	**0.00**	**2.20**
222.91	0.83	0.84	0.79	1.76	**2.60**	**0.00**	**2.60**
222.96	0.88	0.88	0.84	2.05	**2.93**	**0.00**	**2.93**
223.01	0.93	0.91	0.89	2.30	**3.22**	**0.00**	**3.22**
223.06	0.98	0.95	0.94	2.53	**3.48**	**0.00**	**3.48**
223.11	1.03	0.99	0.99	2.74	**3.73**	**0.00**	**3.73**
223.16	1.08	1.02	1.04	2.94	**3.96**	**0.00**	**3.96**
223.21	1.13	1.06	1.09	3.12	**4.17**	**0.00**	**4.17**
223.26	1.18	1.09	1.14	3.29	**4.38**	**0.00**	**4.38**
223.31	1.23	1.12	1.19	3.46	**4.57**	**0.00**	**4.57**
223.36	1.28	1.15	1.24	3.61	**4.76**	**0.00**	**4.76**
223.41	1.33	1.18	1.29	3.76	**4.94**	**0.00**	**4.94**
223.46	1.38	1.21	1.34	3.91	**5.11**	**0.00**	**5.11**
223.51	1.43	1.24	1.39	4.05	**5.28**	**0.00**	**5.28**
223.56	1.48	1.26	1.44	4.18	**5.44**	**0.00**	**5.44**
223.61	1.53	1.29	1.49	4.31	**5.60**	**0.48**	**6.08**
223.66	1.58	1.32	1.54	4.44	**5.75**	**1.44**	**7.20**
223.71	1.63	1.34	1.59	4.56	**5.90**	**2.81**	**8.72**
223.76	1.68	1.37	1.64	4.68	**6.05**	**4.58**	**10.63**

Project Name:	Solmar
Project Number:	1401
Designed By:	LH
Checked By:	AVN
Date	26-Aug-25

David Schaeffer Engineering Limited
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OVERFLOW TRAPEZOIDAL WEIR CALCULATION - GORE ROAD LOW POINT (LP)

Input Parameters

Length (L) =	25.00	m
Coefficient (C) =	1.60	
Side Slope (S):1 =	35.00	
Crest Elevation =	223.56	m
Incremental Depth =	0.01	m

Trapezoidal Weir Equation

$$Q = CL(H^{1.5}) + CS(H^{2.5})$$

Weir Calculation			
Water Surface Elevation (m)	**Head (H) (m)**	**Weir Flow (Q) (m^3/sec)**	**Water Surface Elevation Notes**
223.560	0.000	**0.0000**	Weir Invert
223.570	0.010	**0.0406**	
223.580	0.020	**0.1163**	
223.590	0.030	**0.2166**	
223.600	0.040	**0.3379**	
223.610	0.050	**0.4785**	
223.620	0.060	**0.6373**	
223.630	0.070	**0.8134**	
223.640	0.080	**1.0065**	
223.650	0.090	**1.2161**	
223.660	0.100	**1.4420**	
223.670	0.110	**1.6840**	
223.680	0.120	**1.9421**	
223.690	0.130	**2.2161**	
223.700	0.140	**2.5060**	
223.710	0.150	**2.8118**	
223.720	0.160	**3.1334**	
223.730	0.170	**3.4710**	
223.740	0.180	**3.8245**	
223.750	0.190	**4.1940**	
223.760	0.200	**4.5795**	Combined Overflow over Gore Road