
APPENDIX B

SWMF A – E Design Details

East Side Design Study
Pond A



5/14/2007
PN#92422

Component	Elevation (m)	Stage Area (m ²)	Stage Volume (m ³)	Cumulative Active Storage (m ³)	Orifice		Weir 1		Total Flow (m ³ /s)	Volume for SWMHYMO (ha.m)	Drawdown Time					
					Elevation (m) = 295.50	Diameter (m) = 0.375	Area (m ²) = 0.1104	Elevation (m) = 296.18			Length (m) = 2.40	Head (m)	Flow (m ³ /s)	Head (m)	Flow ⁽⁴⁾ (m ³ /s)	Stage (Sec.)
	294.50	7335.0														
	295.40	9288.0	7480													
	295.40	10208.0	0													
Permanent Pool	295.50	23452	1683	9163												
Extended Detention	295.50	23452	0	0	0.00	0.000	0.00	0.000	0.000	0						[0.000 , 0.000]
	295.60	23840	2365	2,365	0.10	0.097	0.00	0.000	0.097	0.236	48523	13.48	13.5			[0.097 , 0.236]
	295.70	24228	2403	4,768	0.20	0.138	0.00	0.000	0.138	0.477	20429	5.67	19.2			[0.138 , 0.477]
	295.80	24616	2442	7,210	0.30	0.169	0.00	0.000	0.169	0.721	15928	4.42	23.6			[0.169 , 0.721]
	295.90	25004	2481	9,691	0.40	0.195	0.00	0.000	0.195	0.969	13642	3.79	27.4			[0.195 , 0.969]
	296.00	25392	2520	12,211	0.50	0.218	0.00	0.000	0.218	1.221	12206	3.39	30.8			[0.218 , 1.221]
Extended Detention	296.10	25780	2559	14,770	0.60	0.239	0.00	0.000	0.239	1.477	11205	3.11	33.9			[0.239 , 1.477]
Attenuation Zone	296.20	26168	2597	17,367	0.70	0.258	0.02	0.012	0.270	1.737	10213	2.84	36.7			[0.270 , 1.737]
	296.30	26556	2636	20,003	0.80	0.276	0.12	0.177	0.452	2.000	7299	2.03	38.7			[0.452 , 2.000]
	296.40	26944	2675	22,678	0.90	0.292	0.22	0.439	0.731	2.268	4520	1.26	40.0			[0.731 , 2.268]
	296.50	27332	2714	25,392	1.00	0.308	0.32	0.770	1.078	2.539	3000	0.83	40.8			[1.078 , 2.539]
	296.60	27720	2753	28,145	1.10	0.323	0.42	1.157	1.481	2.814	2152	0.60	41.4			[1.481 , 2.814]
	296.70	28108	2791	30,936	1.20	0.338	0.52	1.595	1.932	3.094	1636	0.45	41.9			[1.932 , 3.094]
	296.80	28496	2830	33,766	1.30	0.351	0.62	2.076	2.427	3.377	1298	0.36	42.2			[2.427 , 3.377]
	296.90	28884	2869	36,635	1.40	0.365	0.72	2.598	2.963	3.664	1065	0.30	42.5			[2.963 , 3.664]
	297.00	29272	2908	39,543	1.50	0.377	0.82	3.157	3.535	3.954	895	0.25	42.8			[3.535 , 3.954]
	297.10	29660	2947	42,490	1.60	0.390	0.92	3.752	4.142	4.249	768	0.21	43.0			[4.142 , 4.249]
	297.20	30048	2985	45,475	1.70	0.402	1.02	4.380	4.782	4.548	669	0.19	43.2			[4.782 , 4.548]
	297.30	30436	3024	48,499	1.80	0.414	1.12	5.040	5.454	4.850	591	0.16	43.3			[5.454 , 4.850]
	297.40	30824	3063	51,562	1.90	0.425	1.22	5.730	6.155	5.156	528	0.15	43.5			[6.155 , 5.156]
Attenuation Zone	297.50	31212	3102	54,664	2.00	0.436	1.32	6.449	6.885	5.466	476	0.13	43.6			[6.885 , 5.466]

	Pre-Development Flow Rates	Post-Pond Flow Rates
1inch	0.353	0.235
2yr	0.786	0.489
5yr	1.515	1.188
10yr	2.072	1.746
25yr	2.855	2.547
50yr	3.478	3.188
100yr	4.109	3.867
250yr	6.914	6.854

Hectares 87.80
m3/ha 99 =139-40 for 77% impervious level
Permanent Pool Volume (m3) 8,692
Extended Detention Vol (m3) 10975
Average Discharge (L/s) 121

East Side Design Study
Pond B



5/14/2007
PN#92422

Pond Storage

Orifice	Weir
Elevation (m) = 295.00	Elevation (m) = 295.60
Diameter (m) = 0.375	Length (m) = 1.20
Area (m ²) = 0.1104	

Component	Elevation (m)	Stage Area (m ²)	Stage Volume (m ³)	Cumulative Active Storage (m ³)	Orifice		Weir		Total Flow (m ³ /s)	Volume for SWMHYMO (ha.m)	Drawdown Time				
					Head (m)	Flow (m ³ /s)	Head (m)	Flow ⁽⁴⁾ (m ³ /s)			Stage (Sec.)	Stage (Hours)	Cumulative (Hours)		
	294.00	7335.0													
	294.90	9288.0	7480												
	294.90	10208.0	0												
Permanent Pool	295.00	10443	1033	8513											
Extended Detention	295.00	18432	0	0	0.00	0.000	0.00	0.000	0.000	0				[0.000 , 0.000]	
	295.10	18780	1861	1,861	0.10	0.097	0.00	0.000	0.097	0.186	38180	10.61	10.6	[0.097 , 0.186]	
	295.20	19128	1895	3,756	0.20	0.138	0.00	0.000	0.138	0.376	16111	4.48	15.1	[0.138 , 0.376]	
	295.30	19476	1930	5,686	0.30	0.169	0.00	0.000	0.169	0.569	12589	3.50	18.6	[0.169 , 0.569]	
	295.40	19824	1965	7,651	0.40	0.195	0.00	0.000	0.195	0.765	10804	3.00	21.6	[0.195 , 0.765]	
	295.50	20172	2000	9,651	0.50	0.218	0.00	0.000	0.218	0.965	9687	2.69	24.3	[0.218 , 0.965]	
	295.60	20520	2035	11,686	0.60	0.239	0.00	0.000	0.239	1.169	8911	2.48	26.7	[0.239 , 1.169]	
Attenuation Zone	295.70	20868	2069	13,755	0.70	0.258	0.10	0.067	0.325	1.376	7340	2.04	28.8	[0.325 , 1.376]	
	295.80	21216	2104	15,859	0.80	0.276	0.20	0.190	0.466	1.586	5321	1.48	30.3	[0.466 , 1.586]	
	295.90	21564	2139	17,998	0.90	0.292	0.30	0.349	0.642	1.800	3862	1.07	31.3	[0.642 , 1.800]	
	296.00	21912	2174	20,172	1.00	0.308	0.40	0.538	0.846	2.017	2922	0.81	32.1	[0.846 , 2.017]	
	296.10	22260	2209	22,381	1.10	0.323	0.50	0.752	1.075	2.238	2299	0.64	32.8	[1.075 , 2.238]	
	296.20	22608	2243	24,624	1.20	0.338	0.60	0.988	1.326	2.462	1869	0.52	33.3	[1.326 , 2.462]	
	296.30	22956	2278	26,902	1.30	0.351	0.70	1.245	1.597	2.690	1559	0.43	33.7	[1.597 , 2.690]	
	296.40	23304	2313	29,215	1.40	0.365	0.80	1.521	1.886	2.922	1328	0.37	34.1	[1.886 , 2.922]	
	296.50	23652	2348	31,563	1.50	0.377	0.90	1.815	2.193	3.156	1151	0.32	34.4	[2.193 , 3.156]	
	296.60	24000	2383	33,946	1.60	0.390	1.00	2.126	2.516	3.395	1012	0.28	34.7	[2.516 , 3.395]	
	296.70	24348	2417	36,363	1.70	0.402	1.10	2.453	2.855	3.636	900	0.25	35.0	[2.855 , 3.636]	
	296.80	24696	2452	38,815	1.80	0.414	1.20	2.795	3.208	3.882	809	0.22	35.2	[3.208 , 3.882]	
	296.90	25044	2487	41,302	1.90	0.425	1.30	3.151	3.576	4.130	733	0.20	35.4	[3.576 , 4.130]	
Attenuation Zone	297.00	25392	2522	43,824	2.00	0.436	1.40	3.522	3.958	4.382	669	0.19	35.6	[3.958 , 4.382]	

	Pre-Development Flow Rates	Post-Pond Flow Rates
1inch	0.365	0.321
2yr	0.822	0.741
5yr	1.622	1.464
10yr	2.254	2.003
25yr	3.153	2.755
50yr	3.880	3.350
100yr	4.630	3.954

Hectares	92.30
m ³ /ha	89 =129-40 for 69% impervious level
Permanent Pool Volume (m ³)	8,215
Extended Detention Vol (m ³)	11,538
Average Discharge (L/s)	121

East Side Design Study
Pond C



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5/14/2007

PN#92422

Pond Storage

Orifice		Weir 1	
Elevation =	293.50	Elevation (m) =	294.45
diameter (m) =	0.53	Length (m) =	4.80
Area (m2) =	0.22		

Component	Elevation (m)	Stage Area (m ²)	Stage Volume (m ³)	Cumulative Active Storage (m ³)	Orifice		Weir 1		Total Flow (m ³ /s)	Volume for SWMHYMO (ha.m)	Drawdown Time				
					Head (m)	Flow (m ³ /s)	Head (m)	Flow (m ³ /s)			Stage (Sec.)	Stage (Hours)	Cumulative (Hours)		
	292.50	24596.0													
	293.40	28025.0	23679												
	293.40	29601.0	0												
Permanent Pool	293.50	30000	2980	26660											
Extended Detention	293.50	30875	0	0	0.00	0.000	0.00	0.000	0.000	0				[0.000 , 0.000]	
	293.60	31315	3110	3,110	0.10	0.191	0.00	0.000	0.191	0.311	32555	9.04	9.0	[0.191 , 0.311]	
	293.70	31755	3154	6,263	0.20	0.270	0.00	0.000	0.270	0.626	13676	3.80	12.8	[0.270 , 0.626]	
	293.80	32195	3198	9,461	0.30	0.331	0.00	0.000	0.331	0.946	10640	2.96	15.8	[0.331 , 0.946]	
	293.90	32635	3242	12,702	0.40	0.382	0.00	0.000	0.382	1.270	9093	2.53	18.3	[0.382 , 1.270]	
	294.00	33075	3286	15,988	0.50	0.427	0.00	0.000	0.427	1.599	8120	2.26	20.6	[0.427 , 1.599]	
	294.10	33515	3330	19,317	0.60	0.468	0.00	0.000	0.468	1.932	7440	2.07	22.6	[0.468 , 1.932]	
	294.20	33955	3374	22,691	0.70	0.505	0.00	0.000	0.505	2.269	6932	1.93	24.6	[0.505 , 2.269]	
	294.30	34395	3418	26,108	0.80	0.540	0.00	0.000	0.540	2.611	6536	1.82	26.4	[0.540 , 2.611]	
Extended Detention	294.40	34835	3462	29,570	0.90	0.573	0.00	0.000	0.573	2.957	6218	1.73	28.1	[0.573 , 2.957]	
Attenuation Zone	294.50	35275	3506	33,075	1.00	0.604	0.05	0.095	0.699	3.308	5511	1.53	29.6	[0.699 , 3.308]	
	294.60	35715	3550	36,625	1.10	0.634	0.15	0.494	1.128	3.662	3886	1.08	30.7	[1.128 , 3.662]	
	294.70	36155	3594	40,218	1.20	0.662	0.25	1.063	1.725	4.022	2520	0.70	31.4	[1.725 , 4.022]	
	294.80	36595	3638	43,856	1.30	0.689	0.35	1.761	2.450	4.386	1743	0.48	31.9	[2.450 , 4.386]	
	294.90	37035	3682	47,537	1.40	0.715	0.45	2.567	3.282	4.754	1285	0.36	32.3	[3.282 , 4.754]	
	295.00	37475	3726	51,263	1.50	0.740	0.55	3.469	4.209	5.126	995	0.28	32.5	[4.209 , 5.126]	
	295.10	37915	3770	55,032	1.60	0.764	0.65	4.457	5.221	5.503	799	0.22	32.8	[5.221 , 5.503]	
	295.20	38355	3814	58,846	1.70	0.788	0.75	5.524	6.311	5.885	661	0.18	32.9	[6.311 , 5.885]	
	295.30	38795	3858	62,703	1.80	0.810	0.85	6.665	7.475	6.270	560	0.16	33.1	[7.475 , 6.270]	
	295.40	39235	3902	66,605	1.90	0.833	0.95	7.875	8.707	6.660	482	0.13	33.2	[8.707 , 6.660]	
Attenuation Zone	295.50	39675	3946	70,550	2.00	0.854	1.05	9.150	10.005	7.055	422	0.12	33.4	[10.005 , 7.055]	

	Pre-Development Flow Rates	Post-Pond Flow Rates
1inch	1.072	0.524
2yr	2.037	1.116
5yr	3.841	3.001
10yr	5.206	4.493
25yr	7.117	6.553
50yr	8.631	8.223
100yr	10.141	9.991

Hectares	220.80
m3/ha	98 =138-40 for an 76% impervious surface
Permanent Pool Volume (m3)	21,638
Extended Detention Vol (m3)	27,600
Average Discharge (L/s)	292

**East Side Design Study
Pond D**



5/14/2007
PN#92422

Component	Elevation (m)	Stage Area (m ²)	Stage Volume (m ³)	Cumulative Active Storage (m ³)	CatchBasin		Weir		Total Flow (m ³ /s)	Volume for SWMHYMO (ha.m)	Drawdown Time			
					Elevation (m) = 294.50 Single sag-inlet	Flow (m ³ /s)	Elevation (m) = 295.50 Length (m) = 7.20	Flow ⁽⁴⁾ (m ³ /s)			Stage (Sec.)	Stage (Hours)	Cumulative (Hours)	
	293.50	8575												
	294.40	10672	8661											
	294.40	11656	0											
Permanent Pool	294.50	11907	1178	9839										
Extended Detention	294.50	11907	0	0	0.00	0.000	0.00	0.000	0.000	0				[0.000 , 0.000]
	294.60	12179	1204	1,204	0.10	0.060	0.00	0.000	0.060	0.120	40143	11.15	11.2	[0.060 , 0.120]
	294.70	12451	1232	2,436	0.20	0.160	0.00	0.000	0.160	0.244	11195	3.11	14.3	[0.160 , 0.244]
	294.80	12723	1259	3,695	0.30	0.200	0.00	0.000	0.200	0.369	6993	1.94	16.2	[0.200 , 0.369]
	294.90	12995	1286	4,980	0.40	0.200	0.00	0.000	0.200	0.498	6430	1.79	18.0	[0.200 , 0.498]
	295.00	13267	1313	6,294	0.50	0.200	0.00	0.000	0.200	0.629	6566	1.82	19.8	[0.200 , 0.629]
	295.10	13539	1340	7,634	0.60	0.200	0.00	0.000	0.200	0.763	6702	1.86	21.7	[0.200 , 0.763]
	295.20	13811	1368	9,001	0.70	0.200	0.00	0.000	0.200	0.900	6838	1.90	23.6	[0.200 , 0.900]
	295.30	14083	1395	10,396	0.80	0.200	0.00	0.000	0.200	1.040	6974	1.94	25.5	[0.200 , 1.040]
	295.40	14355	1422	11,818	0.90	0.200	0.00	0.000	0.200	1.182	7110	1.97	27.5	[0.200 , 1.182]
Extended Detention	295.50	14627	1449	13,267	1.00	0.200	0.00	0.000	0.200	1.327	7246	2.01	29.5	[0.200 , 1.327]
Attenuation Zone	295.60	14899	1476	14,743	1.10	0.200	0.10	0.403	0.603	1.474	3675	1.02	30.5	[0.603 , 1.474]
	295.70	15171	1504	16,247	1.20	0.200	0.20	1.141	1.341	1.625	1546	0.43	30.9	[1.341 , 1.625]
	295.80	15443	1531	17,778	1.30	0.200	0.30	2.096	2.296	1.778	842	0.23	31.2	[2.296 , 1.778]
	295.90	15715	1558	19,335	1.40	0.200	0.40	3.227	3.427	1.934	544	0.15	31.3	[3.427 , 1.934]
	296.00	15987	1585	20,921	1.50	0.200	0.50	4.510	4.710	2.092	390	0.11	31.4	[4.710 , 2.092]
	296.10	16259	1612	22,533	1.60	0.200	0.60	5.929	6.129	2.253	297	0.08	31.5	[6.129 , 2.253]
	296.20	16531	1640	24,172	1.70	0.200	0.70	7.471	7.671	2.417	238	0.07	31.6	[7.671 , 2.417]
	296.30	16803	1667	25,839	1.80	0.200	0.80	9.128	9.328	2.584	196	0.05	31.6	[9.328 , 2.584]
	296.40	17075	1694	27,533	1.90	0.200	0.90	10.892	11.092	2.753	166	0.05	31.7	[11.092 , 2.753]
Attenuation Zone	296.50	17347	1721	29,254	2.00	0.200	1.00	12.757	12.957	2.925	143	0.04	31.7	[12.957 , 2.925]

	Pre-Development Flow Rates	Post-Pond Flow Rates
1inch	0.425	0.548
2yr	0.910	1.944
5yr	1.720	4.378
10yr	2.360	6.213
25yr	3.260	8.803
50yr	3.990	10.725
100yr	4.742	12.678
Hectares	104.00	
m ³ /ha		94 =134-40 for 73% impervious level
Permanent Pool Volume (m ³)	9,776	
Extended Detention Vol (m ³)	13,000	
Average Discharge (L/s)	125	

**East Side Design Study
Pond E**



5/14/2007
PN#92422

Component	Elevation (m)	Stage Area (m ²)	Stage Volume (m ³)	Cumulative Active Storage (m ³)	CatchBasin		Weir		Total Flow (m ³ /s)	Volume for SWMHYMO (ha.m)	Drawdown Time				
					Head (m)	Flow (m ³ /s)	Head (m)	Flow ⁽⁴⁾ (m ³ /s)			Stage (Sec.)	Stage (Hours)	Cumulative (Hours)		
	293.80	7216.0													
	294.70	9169.0	7373												
	294.70	10089.0	0												
Permanent Pool	295.00	10800	3133	10507											
Extended Detention	295.00	10800	0	0	0.00	0.000	0.00	0.000	0.000	0				[0.000 , 0.000]	
	295.10	11058	1093	1,093	0.10	0.060	0.00	0.000	0.060	0.109	36430	10.12	10.1	[0.060 , 0.109]	
	295.20	11316	1119	2,212	0.20	0.160	0.00	0.000	0.160	0.221	10170	2.83	12.9	[0.160 , 0.221]	
	295.30	11574	1145	3,356	0.30	0.200	0.00	0.000	0.200	0.336	6358	1.77	14.7	[0.200 , 0.336]	
	295.40	11832	1170	4,526	0.40	0.200	0.00	0.000	0.200	0.453	5852	1.63	16.3	[0.200 , 0.453]	
	295.50	12090	1196	5,723	0.50	0.200	0.00	0.000	0.200	0.572	5981	1.66	18.0	[0.200 , 0.572]	
	295.60	12348	1222	6,944	0.60	0.200	0.00	0.000	0.200	0.694	6110	1.70	19.7	[0.200 , 0.694]	
	295.70	12606	1248	8,192	0.70	0.200	0.00	0.000	0.200	0.819	6239	1.73	21.4	[0.200 , 0.819]	
	295.80	12864	1274	9,466	0.80	0.200	0.00	0.000	0.200	0.947	6368	1.77	23.2	[0.200 , 0.947]	
	295.90	13122	1299	10,765	0.90	0.200	0.00	0.000	0.200	1.076	6497	1.80	25.0	[0.200 , 1.076]	
Extended Detention	296.00	13380	1325	12,090	1.00	0.200	0.00	0.000	0.200	1.209	6626	1.84	26.8	[0.200 , 1.209]	
Attenuation Zone	296.10	13638	1351	13,441	1.10	0.200	0.10	0.336	0.536	1.344	3670	1.02	27.9	[0.536 , 1.344]	
	296.20	13896	1377	14,818	1.20	0.200	0.20	0.951	1.151	1.482	1632	0.45	28.3	[1.151 , 1.482]	
	296.30	14154	1403	16,220	1.30	0.200	0.30	1.747	1.947	1.622	906	0.25	28.6	[1.947 , 1.622]	
	296.40	14412	1428	17,648	1.40	0.200	0.40	2.689	2.889	1.765	591	0.16	28.7	[2.889 , 1.765]	
	296.50	14670	1454	19,103	1.50	0.200	0.50	3.759	3.959	1.910	425	0.12	28.8	[3.959 , 1.910]	
	296.60	14928	1480	20,582	1.60	0.200	0.60	4.941	5.141	2.058	325	0.09	28.9	[5.141 , 2.058]	
	296.70	15186	1506	22,088	1.70	0.200	0.70	6.226	6.426	2.209	260	0.07	29.0	[6.426 , 2.209]	
Attenuation Zone	296.80	15444	1532	23,620	1.80	0.200	0.80	7.607	7.807	2.362	215	0.06	29.1	[7.807 , 2.362]	

	Pre-Development Flow Rates	Post-Pond Flow Rates
1inch	0.139	0.513
2yr	0.291	1.768
5yr	0.548	3.604
10yr	0.749	4.719
25yr	1.033	6.005
50yr	1.262	6.860
100yr	1.497	7.656

Hectares	97.60
m3/ha	103 =143-40 for an 80% impervious surface
Permanent Pool Volume (m3)	10,053
Extended Detention Vol (m3)	12,200
Average Discharge (L/s)	125