

DETENTION POND - PHASE IIPOND ARUNOFF SOURCE

SITE	AREA, sf	RUNOFF FACTOR	EFFECTIVE AREA
TRACT A-1-A			
Roof	59375	0.90	53438
Paving	76706	0.95	72871
Landscape	9860	0.25	2465
Earth	5372	0.40	2149
Pond	14848	1.00	14848
	166161		145771

INFLOW HYDROGRAPH

TIME, min.	FLOW, cfs	VOLUME, cf	TIME, min	FLOW, cfs	VOLUME, cf
0	0	0	180	0.24	25121
10	15.6	3421	200	0.22	25388
20	10.9	12694	220	0.20	25656
30	8.9	15981	240	0.16	25923
40	7.7	18387	270	0.13	26190
50	6.8	20525	300	0.10	26457
60	6.2	22663	360	0.07	26725
80	0.39	23126			
100	0.35	23589			
120	0.31	24052			
140	0.29	24408			
160	0.27	24765			

PEAK VOLUME

provided volume 1911.6 c.f.

CONCRETE INLET TO POND

$$Q = CLh^{3/2}$$

$$15.6 = (3)(L)(0.5)^{3/2}$$

$$L = 16.9 \text{ Use } 17'$$

OUTFLOW HYDROGRAPH

$$0.1 \text{ cfs/acre, area Tract A-1-A} = 292069$$

$$(292069)(0.1)/43560 = 0.67 \text{ cfs}$$

OUTLET PIPE

$$Q = Ca(\sqrt{2g}(\sqrt{h_1} + \sqrt{h_2} + \sqrt{h_3})), C=0.6, a=\text{area}, h_1=1.5', h_2=1', h_3=0.5'$$

$$a = 0.0475 \text{ ft}^2 \text{ use } 5\text{-}1\frac{1}{4}" \text{ O.H./level}$$

$$Q = 0.67$$

Use 10" PVC pipe outlet to Catch Basin

POND EVACUATION

orifice w/ falling head

$$t = \frac{2A}{ca\sqrt{2g}}(\sqrt{h_1} - \sqrt{h_2}) \quad h_1 = 1.5, h_2 = 0, A = 14848$$

$$t = 19.3 + 1 = 20.3 \text{ hours}$$