

CATEGOR
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BMP TYPE
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Oakhampton Dry Basin

Detention Basin (Dry) - Surface Grass-Lined Basin That Empties Out After A Storm

ZIP: 21093

CITY Hampton

STATE: MD

COMMENTS:

This paper describes a large project initiated in 1984 to retrofit several flood control basins to function as water quality detention basins. Of the 24 basins targeted for retrofit, only 5 were completed because of perceived liability and maintenance issues on the part of private landowners on whose property the basins were located. Retrofit included extending the detention time of the basins for smaller flows while maintaining their flood control ability for larger flows. This was accomplished by the installation of a low flow restricting orifice at the outflow that would detain 1 yr. (or 50% of 1 yr.) storm volume for 6 to 24 hours. Larger flows bypassed the orifice. Sufficient data was collected to calculate removal efficiencies for: Suspended Solids (TSS), Dissolved Phosphorus (DP), Total Phosphorus (T-P), Nitrite+Nitrate Nitrogen (NO₃+NO₂-N), and Ammonia Nitrogen (NH₃-N) for 2 of the 5 basins. Also discussed in detail is the rationale used to select detention time for the basins.

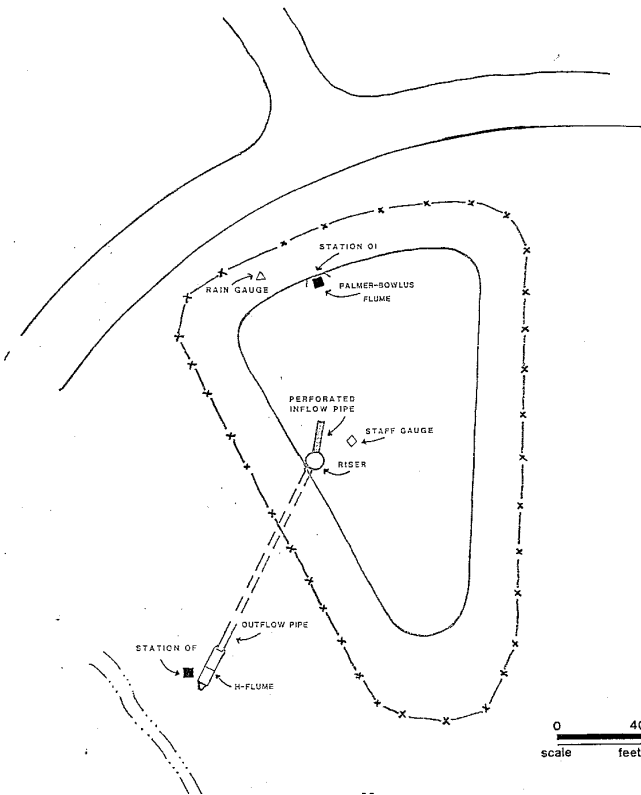
The total drainage area for the Oak Hampton basin is 16.8 acres of high density residential (town homes) area. The basin retrofit was designed so the pond would provide 29 hours of detention for a 1 year storm event. There were single inlet and outlet structures, inlet flows were measured with a Palmer Bowlus flume and outlet flows were measured with 1.5 ft. H-flume installed at the end of the outlet pipe.

The Oak Hampton dry pond showed high to moderate storm removals (median values) for suspended solids (87%), ammonia (54%), and total phosphorus (26%). Small outfluxes were measured for dissolved phosphorus (-12%) and nitrate-nitrite nitrogen (-10%).

Appendix F in the document provided the raw data used to calculate the mean pollutant concentrations. However, due to the manner in which the data was presented, individual storm events (listed by date in the raw data) could not be linked to the storm event EMC's (listed by storm number) that were given. No precipitation data could be found in the document.

BMP PLAN

Figure 6 Oakhampton Dry Pond Monitoring Stations



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Watershed Parameters	Summary of Flow and Precip. Data	Nearest Climate ID Station Data
Total Watershed Area 6.8 ha	Start Date:	Climate ID Station #: 465
Total Watershed Length	End Date:	Location: BALTIMORE WSO AP
Percent Impervious	# events monitored: 0	Average # Storms/Year: 60
% By Land Use	Sample Period (days): 0	Average Annual Precip (cm): 100.10
High Density Residential:	Minimum Depth (cm):	Average Storm Depth (cm): 1.651
Low Density Residential:	Maximum Depth (cm):	Average Storm Duration (hr): 10.6
Medium Density Residential:	Average Depth (cm):	Average Storm Intensity (cm/hr) 0.22352
100 Multi-Family Residential:	Median Depth (cm):	
Office Commercial:	Standard Deviation of Depth:	
Retail:	# Flow Events Monitored:	
Light Industrial:	Average Total Flow Volume (l):	
Rangeland:	Minimum Total Flow Volume (l):	
Unknown:	Maximum Total Flow Volume (l):	
	Standard Deviation Flow:	

Water Quality Summary

Parameter Name	Inlet Count	Outlet Count	Inlet		+ci		-ci		Outlet		Inlet COV	Outlet COV	% Removal	ANOVA P-Value
			-ci	Mean	+ci	-ci	Mean	+ci						
Solids, Total Suspended (mg/l)	10	12	64.59	100.09	204.9	8.78	12.42	20.58	0.95	0.8	88%	0		
Nitrogen, Ammonia Total (mg/l as N)	10	12	0.35	0.5	0.88	0.19	0.28	0.52	0.76	0.94	44%	0.04		
Nitrate + Nitrite, Total (mg/l as N)	10	12	0.76	1.03	1.61	0.74	0.94	1.29	0.62	0.52	9%	0.83		
Phosphorous, Total (mg/l as P)	10	12	0.22	0.33	0.66	0.15	0.22	0.37	0.9	0.8	33%	0.26		
Phosphorous, Dissolved (mg/l as P)	6	7	0.1	0.17	0.55	0.14	0.25	0.85	0.87	1.1	-47%	0.62		