

Technical Memorandum

Nutrient Point Sources in the Back River Watershed

The U.S. Environmental Protection Agency requires that Total Maximum Daily Load (TMDL) allocations account for all significant sources of the impairing pollutant or pollutants. The TMDL analysis for Back River addresses the total nitrogen (TN) and total phosphorus (TP) loads during the low flow conditions (May – October) and average annual flow conditions. This technical memorandum identifies, in detail, the significant surface water discharges of TN and TP used as modeling input when computing the TMDLs. The Maryland Department of the Environment (MDE) expressly reserves the right to allocate the loads among different sources in any manner that is reasonably calculated to achieve water quality standards.

Waste load allocations have been made to NPDES-regulated wastewater treatment plants and municipal separate stormwater discharges in the Back River Watershed. There is one wastewater treatment plant contributing nutrient loads to the Back River: the Back River WWTP. Waste load allocations have been made to this point source based on its permitted flow. Annual waste load allocations are also given to two jurisdictions with municipal stormwater discharges in the Back River Watershed to address nutrient loads from urban sources during storm events. Baltimore City and Baltimore County are both covered under NPDES Phase I stormwater permits. Annual waste load allocations have been made to these stormwater discharges based on the HSPF model of the watershed from 1995 to 1997. The stormwater nutrient loads account for contributions from urban land. The land use information was based on 1997 Maryland Department of Planning data.

Table 1 and 2 below provides the allocation of the nutrients - nitrogen and phosphorus - attributed to the point sources (Back River WWTP and NPDES stormwater discharges) in the Back River used in the Back River Eutrophication Model (BREM) simulation for low flow and average annual flow conditions.

Table 1**Loads Attributed to Point Sources Used to Compute the
Low Flow TMDL (May 1st - October 31st)**

<i>Point Source Name</i>	<i>Permit Number</i>	<i>Nutrient Loads (lbs/month)</i>		<i>Flow (MGD)</i>	<i>Concentration (mg/l)</i>	
		TN	TP		TN	TP
Back River WWTP	MD0021555	99,782	6,652	130	3	0.2
Baltimore City For Low Flow TMDL		4,621	496	N/A	N/A	N/A
Baltimore County For Low Flow TMDL		6,896	740	N/A	N/A	N/A
Total Monthly Load		111,299	7,888			

Table 2**Loads Attributed to Point Sources Used to Compute
the Average Annual Flow TMDL**

<i>Point Source Name</i>	<i>Permit Number</i>	<i>Nutrient Loads (lbs/year)</i>		<i>Flow (MGD)</i>	<i>Concentration (mg/l)</i>	
		TN	TP		TN	TP
Back River WWTP	MD0021555	1,582,055	79,277	130	4	0.2
Baltimore City For Average Annual Flow TMDL		62,415	7,069	N/A	N/A	N/A
Baltimore County For Average Annual Flow TMDL		93,156	10,550	N/A	N/A	N/A
Total Annual Load		1,737,626	96,896			

The nutrient limits for point sources, reflected in the TMDL analysis, are designed to protect water quality in the Back River and the Chesapeake Bay. It is likely, however, that future Chesapeake Bay Agreement nutrient reduction goals will entail more ambitious point source nutrient limits to protect the water quality of the bay. Nonpoint sources were estimated on the basis of observed in-stream data. The nonpoint source loads used in the model account for both “natural” and human-induced components.