

## Technical Memorandum

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### ***Significant Biochemical Oxygen Demand, Total Nitrogen and Total Phosphorus Point and Nonpoint Sources in Town Creek Watershed***

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EPA requires that Total Maximum Daily Load (TMDL) allocations account for all significant sources of the impairing pollutant. The TMDLs for Town Creek, a part of the Lower Choptank River watershed, address biochemical oxygen demand (BOD), Total Nitrogen (TN) and Total Phosphorus (TP) loads during low-flow (May – October) and average annual flow (November – April) conditions. This Technical Memorandum identifies the significant point and nonpoint sources of BOD, TN and TP used as modeling input for simulating all potentially significant sources when computing the TMDLs. BOD reflects the amount of oxygen consumed through two processes: carbonaceous biochemical oxygen demand (CBOD) and nitrogenous biochemical oxygen demand (NBOD). The water quality goal of the TMDLs is to establish allowable BOD, TN and TP concentrations that will ensure the maintenance of the dissolved oxygen and chlorophyll *a* standards. The point source allocations described in this memorandum represent viable individual allocations. However, Maryland Department of the Environment (MDE) expressly reserves the right to allocate the TMDLs among different sources in any manner that is reasonably calculated to achieve water quality standards. Table 1 and Table 2 below provide BOD, TN and TP load distributions for point and nonpoint sources for 7Q10 low-flow and average annual flow conditions.

#### **Point Sources**

**Table 1**

BOD, TN and TP Loads Attributed to Significant Point Sources Used to Compute the Low-Flow TMDLs<sup>a</sup> (May 1 – October 31)

			BOD		TN		TP	
Point Source Name	Permit Number	Flow mgd	Load lbs/month	Conc. mg/l	Load lbs/month	Conc. mg/l	Load lbs/month	Conc. mg/l
Oxford WWTP	MD0022543	0.208	780.6	15	468.4	9.0	52	1.0

<sup>a</sup> These loadings correspond to model Scenario 4 in the draft document titled “Total Maximum Daily Loads of Biochemical Oxygen Demand (BOD), Nitrogen and Phosphorus for Town Creek into which the Town of Oxford Wastewater Treatment Plant Discharges, Talbot County, Maryland, December, 2002”.

**Table 2**

BOD, TN and TP Loads Attributed to Significant Point Sources Used to Compute the Average Annual-Flow TMDLs<sup>b</sup> (November 1 – April 30)

Point Source Name	Permit Number	Flow mgd	BOD		TN		TP	
			Load lbs/year	Conc. mg/l	Load Lbs/year	Conc. mg/l	Load lbs/year	Conc. mg/l
Oxford WWTP	MD0022543	0.208	9,367.2	15	5,620.8	9.0	624.0	1.0

The loadings, concentrations, and flows represented in the table above are for illustrative purposes only. Actual effluent limits and related permit conditions will be established at the time of permit issuance or renewal and will be based upon conditions present at that time, as reflected in population projections, infrastructure needs, and appropriate concentrations and loadings needed to assure the maintenance of water quality standards.

### *Nonpoint Sources*

Nonpoint sources were estimated on the basis of intensive water quality survey data of Town Creek observed in summer 1998. Thus, it is not possible to show a distribution between different land uses. The nonpoint source loads which were used in the model account for both “natural” and human-induced components.

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<sup>b</sup> These loadings correspond to model Scenario 5 in the draft document titled “Total Maximum Daily Loads of Biochemical Oxygen Demand (BOD), Nitrogen and Phosphorus for Town into which the Town of Oxford Wastewater Treatment Plant Discharges, Talbot County, Maryland, December, 2002”.