

# Comment Response Document for the Nitrogen and Phosphorus TMDL for the Corsica River, a tributary of the Chester River Queen Anne's County, MD

## Introduction

The Maryland Department of the Environment (MDE) conducted a public review of the proposed Total Maximum Daily Load (TMDL) for nitrogen and phosphorus in the Corsica River, a tributary of the Chester River in Queen Anne's County, MD. The public comment period was open from November 4, 1999 through December 6, 1999. MDE received one set of written comments.

Below is a table identifying the commenters, their affiliation, and the date they submitted comments. In the pages that follow, comments are summarized in conjunction with MDE's responses.

## List of Commenters

Author	Affiliation	Date
James M. Stuhltrager Susan D. Mack James Pew	Eastern Environmental Law Center on behalf of the Sierra Club and the American Littoral Society; and by the Earthjustice Legal Defense Fund on behalf of the Chesapeake Bay Foundation	12/6/99

## Comments and Responses

1. The TMDL does not establish a daily load.

**Response:** The Code of federal Regulations (40CFR 130.2(i)) states that "TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure." No explicit time period is required.

In this case, moreover, load limits expressed over a longer time period are more appropriate than daily loads. From a technical standpoint, nutrient loads are highly variable. Most of the loads are generated during a small number of storm events. However, nutrients do not have an impact on the temporal scale of a day; rather, they act over long periods of time. For these reasons, the Department has elected to establish the TMDLs on the timeframes that it has. Nevertheless, in order to assist the reader in understanding the magnitude of the loads involved, the TMDL is expressed within the TMDL documentation both as an annual load and an average daily load.

2. The comments addressed the application of the EUTRO 5.1 model. Specifically, the comments questioned the data used in the model for the estimation of annual TMDL loads using the EPA Chesapeake Bay Model, which assumes a 9-10% reduction in nonpoint source (NPS) loads from current levels due to BMPs that have been implemented. In calculating the “average flow” TMDL, the model needs to be calibrated and validated using data collected during “average flow” or some other designated high flow period. Annual TMDL modeling was done using the assumption that point source output of nutrients will remain consistent throughout the year, even though the BNR process is apparently less efficient in periods other than the summer months. The commentators also questioned how the annual TMDL for nutrients could be protective of water quality without reducing nonpoint source load.

**Response:** Federal guidance stipulates that TMDLs are to be developed using the best readily available data, provided data is sufficient. The data used to develop the proposed TMDL meets both the criteria of being sufficient, and of being the best data readily available. MDE has demonstrated a good faith effort to solicit all readily available data, as demonstrated by the public comment process described in the preamble of this comment response document.

The data was sufficient to develop an analysis tool calibrated for the specific water body of concern. The calibration data was collected in the low flow period, which is a critical period of water quality impairments. Although the calibration data was collected in the summer, the model kinetic coefficients, which are fixed during the calibration process, are independent of season or loads. That is, these model coefficients, once fixed, are not expected to change with reasonable changes in flow, loadings, or seasonal conditions. This is borne out by the model verification process.

3. Low-Flow TMDLs are based on Flawed Assumptions. The proposed TMDL is inconsistent in stating whether the assumed BNR treatment for the Centreville treatment plant will be implemented or if both Biological Nitrogen Removal (BNR) and Chemical Phosphorus Removal (CPR) will be implemented. The low-flow TMDL also assumes the outfall of the Centreville WWTP will be moved downstream into segment 2 of the model. What assurances exist that this change in the outfall location will actually be made?

**Response:** This comment addresses a matter of detailed implementation planning that is beyond the scope of the TMDL development process. Specific issues associated with the treatment processes and location of the outfall of the Centreville WWTP will be resolved upon the renewal of the plant’s NPDES permit.

That having been said, both BNR and CPR will be implemented at Centreville WWTP for the surface discharge into the Corsica River and both will be required in the NPDES permit renewal. As one option, MDE is considering to issue an NPDES permit for the downstream location only for a year round surface discharge. As a second option, the department might consider a seasonal surface discharge for the winter months of December through February only, with both BNR and CPR at the current location and spray irrigation for other nine months of the year. This second option would eliminate the low flow, warm weather point source discharge completely and reduce the annual point source load to the Corsica River significantly (~75% below the allocated point source load).

4. The Department deemed it unnecessary to include a TMDL for CBOD because “the NPDES permits reflect limits that are protective of dissolved oxygen standards in the river.” Was any modeling done or analysis done to reach this conclusion? Part of the reason for developing TMDLs for nitrogen and phosphorus was to make sure DO standards were met. Why was it assumed that CBOD played a less significant role in impairing water quality than nitrogen and phosphorus, particularly during low-flow conditions when point source effluent dominates the water quality of the river? If the water is impaired due to CBOD, a TMDL must be developed for it.

**Response:** The watershed contains only one point source discharge to the Corsica River, which will have strict BOD permit limits upon permit renewal. The BOD discharge limit will be established to protect localized water quality near the discharge. The TMDL analysis indicates that nutrients, rather than BOD, are the limiting factor in controlling the water quality problems for which the river was identified on Maryland’s 303(d) List, specifically, downstream DO and algal blooms. It is on this basis that the TMDL has been established for nutrients.

5. Margin of Safety. The TMDL analysis failed to include a rationale for selecting 3% margin of safety. Particularly when the effects of nutrient-laden sediment create uncertainty in the TMDLs, the 3 % margin of safety seems too small to account for the possible effects of NPS pollution. Also, the MOS values presented in Table 5 and 6 do not appear to be correct, if they are supposed to be 3% of NPS loads. The TMDL analysis needs to clarify how these values were calculated.

**Response:** There are no explicit guidelines or methodology provided by the EPA for selecting a margin of safety (MOS). This choice was made with the understanding that the TMDL, and MOS, may be revised in the future as better information becomes available.

Typical BNR facility effluent averages 8 mg/l total nitrogen (TN) year round and below that in summer, and 1.5 mg/l total phosphorus (TP) year round. For the Centreville WWTP, concentrations of 10 mg/l TN and 2.0 mg/l TP were used for low and average flow TMDLs. Thus, the 10 mg/l TN and 2.0 mg/l TP incorporate an additional MOS, and the projected MOS will be much more than 3% as reflected by the loadings in Table 5 and 6.

6. How will the nonpoint source load be allocated. The TMDL analysis failed to allocate the nonpoint source (NPS) load allocation among individual sources or categories of sources.

**Response:** The calculated NPS allocation is implicitly the sum of the individual load allocations. The sub-allocation of the allowable NPS load to individual sources is a detailed implementation issue, which is beyond the scope of a TMDL. A technical memorandum, entitled *Significant Nutrient Nonpoint Sources in the Corsica River Watershed*, describes viable individual allocation to each land use category. The technical memorandum provides information that is intended to facilitate future stakeholder dialogue on implementing planning.