Comment Response Document for the Phosphorus TMDL for Broadford Lake, Garrett County, MD

Introduction

The Maryland Department of the Environment (MDE) conducted a public review of the proposed Total Maximum Daily Load (TMDL) for phosphorus entering Broadford Lake in Garrett 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, and Jack D. Smith	Widener University School of Law, Environmental and Natural Resources Law Clinic, Wilmington, DE, and Omicron Associates, Inc., Portland, OR; on behalf of Sierra Club and American Littoral Society	December 6, 1999

Comments and Responses

1. The proposed TMDL fails to establish a total maximum *daily* Load.

Response: The Code of federal Regulations (40 CFR 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, an annual load makes more sense than a daily load. From a technical standpoint, nutrient loads from nonpoint sources are highly variable. Most of the loads are generated during a small number of storm events. Thus, it is essentially infeasible to establish a meaningful daily load for nutrients. To do so, in view of the large daily variability, would require the daily loading cap to be very large to accommodate the large natural peak loading events. More importantly, 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 phosphorus TMDL on the timeframe 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 TMDL fails to allocate phosphorus loadings to the various non-point sources of phosphorus listed in Table 1 of the technical memorandum. The proposed TMDL also fails to link any allocation of TMDL loads to the implementation programs currently in process. It is the task of the TMDL process to conduct these tradeoffs and to provide the necessary allocations of loadings to individual sources. The mechanism or regulatory activity outside of the TMDL that would develop the missing allocations is not specified in this technical memorandum, or anywhere else in the draft TMDL document.

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 Broadford Lake Watershed*, describes viable individual allocations to each land use category. The technical memorandum provides information that is intended to facilitate future stakeholder dialogue on implementation planning. Please also see the response to Comment #3 regarding implementation.

3. The commenters express concern that the TMDL does not provide the three programs mentioned—the Water Quality Improvement Act of 1998 (WQIA), the Clean Water Action Plan (CWAP), and the Tributary Strategies program—with specific goals to implement, with respect to the allocation of loadings and the expected reduction from each program. Additionally, the principal program described, the WQIA, is limited to nutrient management plans for agricultural lands.

Response: Neither the Clean Water Act nor EPA regulations require states to develop a detailed implementation plan as part of the TMDL development and approval process. Maryland's rationale for not including a detailed implementation plan within the TMDL documentation is to allow flexibility for those other government programs and stakeholders currently developing mechanisms to reduce nutrient and sediment loads to Broadford Lake and other waters of the state.

4. The commenters express concern over MDE's decision to manage Broadford Lake at a meso-eutrophic status, and also question MDE's interim interpretation of the dissolved oxygen criterion as applied to thermally-stratified lakes.

Response: MDE recognizes and appreciates the difficult nature of determining "natural" conditions in an artificial impoundment. However, the provision in COMAR 26.08.02.03.A(2)(b) states that the water quality goal "…is not required to be substantially different from that which *would* occur naturally [emphasis added]."

The degree and extent of oxygen depletion is related to a lake's trophic status. Thus, the first step in determining an expected dissolved oxygen profile in a lake (natural or man-made) is to determine an appropriate trophic status. A particular trophic status is neither inherently "good" nor "bad," but rather the description of a lake's condition over a period of time. The natural evolution of all lakes is toward eutrophy, and the trophic status of a particular lake is not static over the long term. For the purposes of the interim interpretation of the dissolved oxygen standard, Maryland has adopted the characterization of Broadford Lake as meso-eutrophic, previously determined by the Maryland Department of Natural Resources in 1994.

Even the most pristine natural lakes, during periods of thermal stratification, exhibit varying DO concentrations with depth. This occurs as a result of natural biological and physical processes, and is a function of depth, temperature, light penetration, mixing, and organic matter in the sediment at the bottom of the lake.

MDE has followed the established methodology of Chapra (1997) in stipulating the 10% DO saturation goal in the sub-epilimnetic waters of a lake of this trophic status. Low DO conditions can, would, and do occur naturally in stratified lakes of meso-eutrophic status. Thus, MDE interprets this condition as "that which *would* occur naturally" in Broadford Lake.

5. The department fails to provide a rationale for selecting 10% as the margin of safety.

Response: There are no explicit guidelines or methodology provided by the EPA for selecting a margin of safety (MOS). The selection of 10% as the MOS was based on other TMDLs approved by the EPA, and was made in consideration of the variability surrounding non-point source pollution as well as the empirical nature of the Vollenweider Relationship. This choice was made with the understanding that the TMDL, and MOS, may be revised in the future as better information becomes available.