

**Comment Response Document  
Regarding the Water Quality Analysis of Eutrophication for Langford Creek  
Kent County, MD**

**Introduction**

The Maryland Department of the Environment (MDE) has conducted a public review of the proposed Water Quality Analysis (WQA) of eutrophication for Langford Creek. The public comment period was open from October 17, 2002 to November 15, 2002. MDE received one set of written comments.

Below is a list of commentors, their affiliation, the date comments were submitted, and the numbered references to the comments submitted. In the pages that follow, comments are summarized and listed with MDE's response.

**List of Commentors**

<b>Author</b>	<b>Affiliation</b>	<b>Date</b>	<b>Comment Number</b>
Eileen McLellan, Ph.D.	Chester River Association	November 11, 2002	1 - 5

**Comments and Responses**

1. The commentor requested a public hearing regarding the WQA of eutrophication for Langford Creek.

**Response:** This request for a public hearing is the only one received. Public hearings are offered by the Department in order to provide multiple commentors, who have made such requests, the opportunity to discuss the draft document at a single time and location and to allow the Department to consolidate such requests accordingly. The Department determined that, having received only a single such request, that insufficient broader interest in this WQA exists to warrant a formal public hearing; therefore, the request has been denied. However, because this single commentor raises pertinent issues on behalf of a larger community organization, the Department welcomes the opportunity to meet with the commentor to discuss their comments.

2. The commentor disputed MDE's interpretation that Langford Creek is not nutrient impaired, because the determination was based upon data from only one year (1999). The commentor added that 1999 was a drought year; therefore, the data may not represent higher flow years when greater nutrient runoff might be anticipated. The commentor noted that volunteer monitoring data collected by the Chester Testers has recorded at least one low dissolved oxygen event each year since 1995, except 1998 and 1999.

**Response:** MDE is charged with considering all readily available data when developing TMDLs, and considers data from the past five years when conducting water quality analyses. To that end, MDE conducted a data solicitation in Fall 2001 to request available data and information to support the establishment of TMDLs for impairments in a number of areas,

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including the Upper Eastern Shore watersheds. The data solicitation letters – which were sent to non-profit organizations, permitted dischargers, educational institutions, local government contacts, tributary team members, and federal/state agencies – requested data pertaining to nutrients, and toxic substances. The solicitation mentioned Langford Creek as a waterbody of interest. Among the recipients of these letters were Mr. Dick Doherty, Ms. Pat Nielsoen, and Ms. Elizabeth Zucker of the Chester River Association, as well as Mr. George Radcliffe of the Chester Volunteer Monitoring Program. Despite the data solicitation effort, no data was provided with regard to Langford Creek; therefore, the analysis was conducted based upon existing sampling data from 1999.

The mention of excursions of dissolved oxygen below 5.0 mg/l cited by the commentor appear to be infrequent events. EPA guidance for interpreting numeric criteria make allowances for infrequent excursions beyond the criterion threshold, provided that designated uses are protected (U.S. Environmental Protection Agency, Guidelines for preparation of the 1996 state water quality assessments (305(b) reports), Office of Water, Washington, DC. EPA 841-B-95-001, 1995).

The weight of evidence does not clearly demonstrate that the tidal Langford Creek is impaired by nutrients. This said, the proposed water quality analysis for Langford Creek states, that “Barring any contradictory future data, this information provides sufficient justification to revise Maryland’s 303(d) list to remove nutrients as an impairing substance in relation to Langford Creek.” This leaves open the potential that additional data might come to light prior to the 2004 revision of the 303d list, which could change the outcome of the current analysis.

3. The commentor disputed MDE’s interpretation that Langford Creek is not nutrient impaired, because an inappropriate chlorophyll *a* threshold was used. The commentor stated that the determination made based upon the Department’s peak acceptable chlorophyll *a* level of 50 µg/l, which is less stringent than the levels proposed by the Chesapeake Bay Program (20 – 25 µg/l, depending upon season and salinity) and the U.S. Environmental Protection Agency (EPA) (3.75 µg/l for the Atlantic Coastal Plain). The commentor stated that when the 1999 data is compared against the Chesapeake Bay Program and EPA levels, Langford Creek is impaired.

**Response:** States are required to make water quality determinations based on existing water quality standards. Those cited in the comments are all proposed values, and they do not address poorly flushed tidal waters. Threshold values of chlorophyll *a* have been used for over a decade, under authority of the State's narrative criteria, to evaluate eutrophic conditions and set water quality endpoints consistent with the designated uses of a water body. This has allowed the State to make water quality management decisions that support the mandatory water quality standards and are consistent among the regulated community. Through common usage and public review, literature and other published material, and site-specific data, Maryland has found that 50 ug/l provides adequate protection of a water body's designated uses in poorly flushed tidal systems, which applies to the present case (Thomann, R.V. and Mueller, J.A. 1987. Principles of Surface Water Quality Modeling and Control. Harper and Row, Publishers, New York).

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Draft criteria for chlorophyll *a*, being considered by the EPA Chesapeake Bay Program, are not going forward as numeric criteria at this time due to technical considerations. EPA will pursue numeric criteria in future.

4. The commentor disputed MDE's interpretation that Langford Creek is not nutrient impaired, because nitrogen and phosphorus concentrations were not considered. The commentor stated that when the 1999 data is compared against EPA's proposed total nitrogen and total phosphorus standards of 0.71 ppm and 31.25 ppb, respectively, Langford is impaired.

**Response:** Maryland is sensitive to elevated levels of nutrients in waters of the State; however, the determination of impairment is based on the secondary effects of nutrients, such as over enrichment reflected by excessive algal growth, and low dissolved oxygen (the exception is nitrogen in the form of ammonia, for which numeric criteria apply due to the toxic effects of ammonia on aquatic life). Thus, Maryland has not adopted numeric criteria for total phosphorus and total nitrogen. Since Langford Creek is a tidal water, the Chesapeake Bay water quality standards, when promulgated, will apply. However, the Bay standards do not include numeric nitrogen and phosphorus limits. Rather, designated use determinations will be made on the basis of dissolved oxygen initially, and chlorophyll eventually. Nutrient load reductions will be driven by the more stringent of the Bay water quality model or TMDL analyses for local conditions. Nevertheless, in view of the potential downstream effects of nutrients, the water quality analysis document states that, "Although the waters of Langford Creek do not display signs of eutrophication, the State reserves the right to require future controls in the Langford Creek watershed if evidence suggests nutrients from the basin are contributing to downstream water quality problems."

5. The commentor disputed MDE's interpretation that Langford Creek is not nutrient impaired, because biological criteria were not considered. The commentor cited the relationship between nutrient enrichment, growth of epiphytic algae, shading of submerged aquatic vegetation (SAV), and subsequent SAV decline. Because SAV populations in Langford Creek have declined, the commentor stated that MDE's determination that Langford Creek is not nutrient impaired is premature.

**Response:** The factors influencing SAV growth and decline are not well understood. Although water clarity and epiphytic growth can be a factor in regulatory decision making under the interpretation of narrative standards, systematic methods for interpreting this information are not currently in use in Maryland. At this time, there is not compelling evidence of a cause-effect relationship upon which to make a regulatory determination of impairment. A systematic method for addressing water clarity is being developed by the EPA Chesapeake Bay Program that will require the designation of areas for shallow water/submerged aquatic vegetation habitat and then application of a water clarity criterion. The promulgation process will begin this summer. If such a criterion is adopted, Maryland will consider the information in future periodic reviews of water quality.