



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

Dr. Lynton S. Land, PhD,
P.O. Box 539
Opelia, VA 22530

MAR 29 2005

Dear Dr. Land:

I would like to take this opportunity to respond to your comments on Virginia's bacteria Total Maximum Daily Loads (TMDLs) for shellfish restricted waters. In 1999, the United States Environmental Protection Agency (EPA) entered into a consent decree (Civil Action Number 98-979-A) with the American Canoe Association and the American Littoral Society. This consent decree established biannual commitments for the development of TMDLs on all of Virginia's 1998 Section 303(d) Listed (impaired) waters. Waters are listed on the Section 303(d) List if they fail to attain one or more of their designated uses. The 1998 Section 303(d) List identified 260 waters in Virginia which were unable to attain their designated use as identified in Virginia's Water Quality Standards (9 VAC 25-260-10A) for "... *the production of edible and marketable natural resources (e.g., fish and shellfish).*"

These 260 shellfish restricted waters on the 1998 Section 303(d) List failed to attain their designated use due elevated levels of fecal coliform. Virginia Department of Health's Division of Shellfish Sanitation (DSS) requires waters used for shellfish harvesting to attain specific fecal coliform concentrations. This is done because some viral and bacteria are human pathogens that can potentially be transmitted through the consumption of shellfish. Fecal coliform is used in this instance as an indicator organism for viral and bacteria pathogens. Although, the fecal coliform to viral and bacteria pathogen ratios are unknown, it is believed that elevated levels of fecal coliform indicate higher viral and bacteria pathogen concentrations. Waters with elevated levels of fecal coliform, the indicator organism, may house shellfish populations that are unfit for human consumption due to viral and bacterial contamination. Shellfish restricted areas are impaired and represent a threat to public health because they are unable to produce an edible natural resource without treatment. The TMDL is an attempt to determine how loads can be reduced to alleviate this impairment.

The TMDLs for shellfish restricted waters are developed using a simple approach which determines the total allowable load by multiplying the water volume by the allowable concentration and the observed load by multiplying the observed concentrations by the water volume. The difference between these two loads are the reductions that are required for the TMDL. Virginia collects water samples from the impaired waterbody for bacterial source tracking (BST). This is an attempt to determine the source organisms responsible for the fecal coliform impairment. Virginia uses the antibiotic resistance approach (ARA) as its BST methodology. There are several different types of BST methods each with its own strengths and

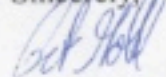


weaknesses. Some of the strengths of ARA are its speed, cost, the number of isolates analyzed and the developers are within the state's University system. The use of BST in this manner is recent and it is believed as stated in your letter that the methods and accuracy will improve in the future. ARA does provide the TMDL developer with an idea of the sources of bacteria in the watershed. It should be noted, that in addition to the ARA data, the TMDL developers can look at the DSS shoreline survey which investigates possible sources of fecal coliform, such as septic systems and animal operations, in the watershed. Municipalities such as Virginia Beach have used the information contained in the TMDL to control sources of bacteria to Lynnhaven and Linkhorn Bays.

The shellfish restricted TMDLs developed by the state specifically address fecal coliform bacteria. As your letter mentions several of these waters may have nutrient loading problems and discharge to the Chesapeake Bay which is listed for nutrients. EPA and DEQ's attempt to control bacteria to protect the public health may have limited impacts directly on the biological community. But the pollutants that are associated with bacteria namely nutrients and sediment impact the biological community directly and the controls on bacteria should control these sources as well. It is important to note that at this time, the state does not have a numeric standard for nutrients although work is currently being done to address this. Waters can be listed due to nutrients based on the narrative criteria, the health of their biological community and/or compliance with other criteria such as dissolved oxygen (DO).

The consent decree requires the state to develop a TMDL on the Chesapeake Bay by May 1, 2010 or EPA is required to develop the TMDL one year later. A TMDL on the Chesapeake requires tremendous amounts of time and effort with its large drainage area, multiple jurisdictions and wide spectrum of pollution sources. That is why EPA Region III's Water Protection Division, Chesapeake Bay Program Office and Bay Watershed States (Delaware, District of Columbia, Maryland, New York, Pennsylvania, Virginia and West Virginia) are working to address the nutrient impairment on the Chesapeake Bay now outside of the TMDL program. The states and EPA are working with the stakeholders on the development of 36 tributary strategies for the Chesapeake Bay. The tributary strategies are the river specific clean-up strategies that detail the actions that are needed to reduce the amounts of nutrients and sediment flowing to the Chesapeake Bay. Please feel free to contact me or the state contacts copied on this letter, if you have any more questions or comments on the Virginia's TMDL Program.

Sincerely,



Peter Gold
EPA Region III

cc: Mr. Chris French, VA DEQ
Mr. Chester Bigelow, VA DEQ