



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029
6/11/2008

Richard Eskin, Ph.D.
Director, Technical and Regulatory Services Administration
Maryland Department of the Environment
1800 Washington Blvd., Suite 540
Baltimore, MD 21230-1718

Dear Dr. Eskin:

The U.S. Environmental Protection Agency (EPA) is pleased to approve Total Maximum Daily Loads (TMDLs) of Fecal Coliform for the Restricted Shellfish Harvesting area in the Nanticoke River Mainstem, Dorchester and Wicomico Counties, Maryland. The TMDL report was submitted by the Maryland Department of the Environment's (MDE) letter dated September 25, 2007, and received by EPA for review and approval on October 10, 2007. The TMDL was established and submitted in accordance with Sections 303(d)(1)(c) and (2) of the Clean Water Act to address impairments of water quality as identified in Maryland's Section 303(d) List. The Nanticoke River was identified on the State of Maryland's 1998 Section 303(d) List for water quality limited segments as being impaired by fecal coliform. An additional listing of biological impact was added in the 2004 Section 303(d) List. The TMDLs described in this document were developed to address localized water quality impairments identified within the watershed, specifically excessive bacteria concentrations in the restricted shellfish areas of the Nanticoke River Basin. The other impairments in this watershed will be addressed by MDE in separate TMDL document(s).

The TMDL analysis identifies the current loading, relates the current loading to the applicable water quality standard, and identifies the necessary reductions for a total maximum daily load that will achieve the applicable water quality standard. It also identifies individual wasteload and load allocations to the maximum extent supported by the available data.

In accordance with Federal regulations at 40 CFR §130.7, a TMDL must comply with the following requirements: (1) be designed to attain and maintain the applicable water quality standards; (2) include a total allowable loading and as appropriate, wasteload allocations for point sources and load allocations for nonpoint sources; (3) consider the impacts of background pollutant contributions; (4) take critical stream conditions into account (the conditions when water quality is most likely to be violated); (5) consider seasonal variations, (6) include a margin of safety (which accounts for uncertainties in the relationship between pollutant loads and instream water quality); and (7) be subject to public participation. In addition, these TMDLs considered reasonable assurance that the TMDL allocations assigned to the nonpoint sources can be reasonably met. The enclosure to this letter describes how the fecal coliform TMDLs for the Nanticoke River Basin satisfy each of these requirements.

As you know, all new or revised National Pollutant Discharge Elimination System permits must be consistent with the TMDL wasteload allocations pursuant to 40 CFR §122.44 (d)(1)(vii)(B). Please submit all such permits to EPA for review as per EPA's letter dated October 1, 1998.

If you have any questions or comments concerning this letter, please do not hesitate to contact Ms. Mary Kuo at (215) 814-5721 or Mr. Kuo-Liang Lai at (215) 814-5473.

Sincerely,

Signed

Jon M. Capacasa, Director
Water Protection Division

Enclosure

cc: Nauth Panday, MDE-TARSA
Melissa Chatham, MDE-TARSA



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Decision Rationale

Total Maximum Daily Loads of Fecal Coliform for the Restricted Shellfish Harvesting area of the Nanticoke River Mainstem Dorchester and Wicomico Counties, Maryland

Signed

**Jon M. Capacasa, Director
Water Protection Division**

Date: 6/11/2008



Decision Rationale

Total Maximum Daily Loads of Fecal Coliform for the Restricted Shellfish Harvesting Area of the Nanticoke River Mainstem Dorchester and Wicomico Counties, Maryland

I. Introduction

The Clean Water Act (CWA) requires a Total Maximum Daily Load (TMDL) to be developed for those waterbodies identified as impaired by the state where technology-based and other controls will not provide for attainment of water quality standards. A TMDL is a determination of the amount of a pollutant from point, nonpoint, and natural background sources, including a Margin of Safety (MOS), that may be discharged to a water quality limited waterbody.

This document sets forth the U.S. Environmental Protection Agency's (EPA) rationale for approving the TMDLs for fecal coliform in the Nanticoke River located in the 8-digit basins, (Basin No. 02130305), hereafter referred to as the Nanticoke River restricted shellfish harvesting area. The TMDLs were established to address impairments of water quality, caused by bacteria (i.e., evidenced by fecal coliform), as identified in Maryland's 1998 CWA Section 303(d) List for water quality limited segments (for further details see the TMDL report). The Maryland Department of the Environment (MDE) submitted the report, "Total Maximum Daily Loads of Fecal Coliform for the Restricted Shellfish Harvesting Area of the Nanticoke River Mainstem in Dorchester and Wicomico Counties, Maryland," dated September 25, 2007, to EPA for final review on October 10, 2007.

EPA's rationale is based on the TMDL Report, information contained in the Appendix to the report. EPA's review determined that the TMDL meets the following seven regulatory requirements pursuant to 40 CFR Part 130.

1. The TMDL is designed to implement applicable water quality standards.
2. The TMDL includes a total allowable load as well as individual wasteload allocations (WLAs) and load allocations (LAs).
3. The TMDL considers the impacts of background pollutant contributions.
4. The TMDL considers critical environmental conditions.
5. The TMDL considers seasonal environmental variations.
6. The TMDL includes a MOS.
7. The TMDL has been subject to public participation.

In addition, these TMDLs considered reasonable assurance that the TMDL allocations assigned to nonpoint sources can be reasonably met.

II. Summary

The TMDLs specifically allocate fecal coliform loadings to sources in separate load

allocations to the restricted shellfish harvesting areas in the Nanticoke River Mainstem. There are four permitted point sources that have permit limits regulating the discharge of fecal coliform into the river. The total permitted fecal coliform load from these point sources is approximately 9.84×10^9 counts per day and will be included in the wasteload allocation for the Nanticoke River (see Table 2 below). The TMDLs for each area were expressed as a median TMDL and a 90th percentile TMDL, which is consistent with the format of Maryland’s bacteriological criteria, which assign numeric threshold criteria for fecal coliform based on the median and 90th percentile. However, since the 90th percentile criterion is more stringent in this case, the allocations to point (WLA) and nonpoint sources (LA) for the TMDLs are based on the Fecal Coliform 90th Percentile Criterion indicated in Table 1.

Table 1. Fecal Coliform 90th Percentile TMDLs Summary

Area	Rate	TMDL	Wasteload Allocation (WLA)	Load Allocation (LA)	Margin of Safety (MOS)
Nanticoke River Mainstem	Counts/day	1.36×10^{14}	9.84×10^9	1.36×10^{14}	Implicit

Table 2. Permitted Fecal Coliform Wasteload Allocations

Facility Name	NPDES Permit No.	Design Flow (MGD)	Permitted FC Concentration in MPN/100 ml	Permitted FC Loads in MPN/Day	
				Median	90 th Percentile
Vienna WWTP	MD0020664	0.137	200 (monthly log mean)	1.04E+09	3.37E+09
Mardela High School WWTP	MD0024279	0.014	126 (monthly log mean for <i>E. coli</i>)	104E+08	3.37E+08
Sharptown WWTP	MD0052175	0.15	200 (monthly log mean)	1.14E+09	3.69E+09
Hebron WWTP	MD0059617	0.101	126 (monthly log mean for <i>E. coli</i>)	7.43E+08	2.42E+09

The TMDLs are written plans and analyses established to ensure that a waterbody will attain and maintain water quality standards. The TMDLs are scientifically based strategies which consider current and foreseeable conditions, the best available data, and account for uncertainty with the inclusion of a “margin of safety” value. Conditions, available data, and the understanding of the natural processes can change more than what was anticipated by the MOS. The option is always available to refine the TMDLs for resubmittal to EPA for approval.

III. Background

Nanticoke River Basin (Basin No. 02130505) is identified as the restricted shellfish areas by the MDE. The Nanticoke River has a length of approximately 20 km, with a width of 3 km at

its mouth, where it flows into the Chesapeake Bay. Additional information about restricted shellfish areas in the Nanticoke River Basin is included in Section 2.1 of the TMDL Report. Figures 2.1.1 through 2.1.2 of the TMDL report show the location of the Nanticoke River Basin, and land uses in the watershed.

The Nanticoke River Basin was originally listed in Maryland's 1998 CWA Section 303(d) List for water quality limited segments as being impaired by bacteria (listing details see the TMDL report). This document, upon EPA approval, establishes a TMDL for fecal coliform to address the listings for the Nanticoke River Basin. The listings for other impairments within these Nanticoke River Basins will be addressed at a future date.

The monitoring and analysis for these bacteria TMDLs was performed using fecal coliform data. Fecal coliform is a bacterium which can be found within the intestinal tract of all warm blooded animals. Fecal coliform in itself is generally not a pathogenic organism. However, fecal coliform indicates the presence of fecal wastes and the potential for the existence of other pathogenic bacteria. The higher concentrations of fecal coliform indicate the elevated likelihood of the presence of pathogenic organisms in shellfish that are harvested from polluted waters and subsequently consumed. Maryland's current water quality standards provide bacteriological criteria for shellfish harvesting (i.e., Use II) waters based on numeric criteria for fecal coliform.

The Surface Water Use Designation for the Nanticoke River area is Use II: Shellfish Harvesting Waters (Code of Maryland Regulations, COMAR, 26.08.02.08M). Maryland's water quality standards provide bacteriological criteria for Use II waters, stating that a public health hazard will be presumed if the most probable number (MPN) of fecal coliform organisms exceeds a median concentration of 14 MPN per 100 milliliters, or if the 90th percentile concentration exceeds 49 MPN per 100 milliliters (for a three tube decimal dilution test).

Maryland's current standards provide a classification system for Use II shellfish waters. Use II waters may be classified as approved, conditionally approved, restricted, or prohibited. Maryland's listing methodology for shellfish waters provides that approved and conditionally approved shellfish waters are not placed on the Section 303(d) List of water quality limited segments. Shellfish waters may be classified as "approved" if the median fecal coliform MPN of at least 30 water samples taken over a 3-year period to incorporate inter-annual variability does not exceed 14 per 100 milliliters; and, in areas affected by point source discharges, the 90th percentile of water samples does not exceed an MPN of 49 per 100 milliliters (for a three tube decimal dilution test). The National Shellfish Sanitation Program (NSSP), oversight by the U.S. Food and Drug Administration (FDA), continues to use the fecal coliform as the indicator organism to assess shellfish harvesting waters to protect human health due to the potential shellfish consumptions. The restricted shellfish areas of the Nanticoke River were classified as such because they do not meet shellfish water quality standards for an approved classification. The Nanticoke River was placed on Maryland's Section 303(d) List because the shellfish areas within this system, which are currently classified as restricted, violate Maryland's protective bacteriological criteria for Use II waters.

The CWA Section 303(d) and its implementing regulations require that TMDLs be developed for waterbodies identified as impaired by the state where technology-based and other required controls do not provide for attainment of the water quality standards. The TMDLs submitted by MDE are designed to attain acceptable loadings of fecal coliform in order to attain the bacteriological water quality criteria and support the Use II designation. Refer to Table 1 above for a summary of allowable loads.

For this TMDL analysis, Maryland used fecal coliform data from seven shellfish monitoring stations in the Nanticoke River Basin. Observations and data from the period 2000 to 2005 were used. Maryland selected a five-year period for TMDL development because it covers a longer time span than the 30-sample requirement and is consistent with MDE's shellfish program sanitary survey schedule. The TMDL analysis utilizes a three-dimensional, hydrodynamic, and eutrophication model (HEM-3D) in order to simulate the transport processes in the Nanticoke River. The transport of fecal coliform is most influenced by the tide and the amount of freshwater discharge into the shellfish harvesting areas. Appendix A of the TMDL report provides a thorough description of the HEM-3D model and calculations.

Maryland conducted a nonpoint source assessment by Bacteria Source Tracking (BST) and/or reviewing several sources of population and land use data to estimate the contributions of fecal coliform by the following categories: wildlife, human, pets, and livestock. Any contributions from boat discharges, resuspension from sediments, and regrowth of fecal coliform were neglected due to insufficient data. The contributions from each of these four sources were estimated by multiplying the population densities by fecal coliform production rates. For the wildlife contribution, the population density estimates for each major wildlife animal type was multiplied by the associated acreage or stream mile for that animal, and multiplied again by the estimated fecal coliform production rate for each animal type. For human contributions, Maryland used census coverage and estimated daily discharges of wastewater per person, fecal coliform concentration of the wastewater, and septic system failure rate to calculate the human loading for areas having no or partial public sewer system. Pet contributions were calculated using survey based estimates of dogs walked per household, percentage cleaned up, and estimated fecal coliform production rate per dog. Livestock contributions were derived from livestock census data and estimated fecal coliform production rates and manure washoff rates. The transport of fecal coliform from land surface to shellfish harvesting areas is dictated by the hydrology, soil type, land use, and topography of the watershed. The Bacterial Source Tracking is described in Appendix B of the TMDL report.

The results of the nonpoint assessment allowed Maryland to calculate the percentage contribution of each of the four major types of nonpoint sources, required reductions in each category in order to achieve the TMDL load allocation. This method is described further below in Section IV.

IV. Discussion of Regulatory Conditions

EPA finds that MDE has provided sufficient information to meet all of the seven basic requirements for establishing fecal coliform TMDLs for the Nanticoke River Basin. EPA, therefore, approves the TMDLs for fecal coliform in the Nanticoke River restricted shellfish harvesting area. This approval is outlined below according to the seven regulatory requirements.

1) The TMDLs are designed to implement applicable water quality standards.

Water Quality Standards consist of three components: designated and existing uses; narrative and/or numerical water quality criteria necessary to support those uses; and an anti-degradation statement.

The Surface Water Use Designation for the Nanticoke River is Use II: *Shellfish Harvesting Waters* (Code of Maryland Regulations, COMAR, 26.08.02.08M). Use II waters may be classified as approved, conditionally approved, restricted, or prohibited. Maryland's listing methodology for shellfish waters provides that approved and conditionally approved shellfish waters are not placed on the Section 303(d) List of water quality limited segments. For Use II waters, Maryland's water quality standards provide bacteriological criteria of (1) fecal coliform organisms not to exceed a median concentration of 14 MPN per 100 milliliters; and (2) no more than 10 percent of samples taken may exceed 49 MPN per 100 milliliters (for a three tube decimal dilution test). Shellfish waters may be classified as "approved" if the median fecal coliform MPN of at least 30 water samples taken over a 3-year period to incorporate inter-annual variability does not exceed 14 per 100 milliliters; and, in areas not affected by point source discharges, the 90th percentile of water samples does not exceed an MPN of 49 per 100 milliliters (for a three-tube decimal dilution test).

Maryland developed the bacteria TMDLs for the Nanticoke River in terms of fecal coliform because Maryland's current water quality standards contain specific numerical criteria for bacteria in Use II waters that are based on the concentration of fecal coliform, as described above. The TMDLs, therefore, use these applicable numerical criteria as an endpoint. The TMDLs were calculated and expressed as median TMDLs and 90th percentile TMDLs in order to meet the associated numerical criteria. EPA believes that this is a reasonable and appropriate water quality goal.

2) The TMDLs include a total allowable load as well as individual wasteload allocations and load allocations.

Total Allowable Load

As described above, MDE used as endpoints a median concentration of 14 MPN per 100 milliliters and a 90th percentile concentration of 49 MPN per 100 milliliters. Separate TMDLs were developed for each restricted shellfish area of the Nanticoke River based on these two endpoints. The TMDLs and allocations are presented as mass loading rates of counts per day.

Expressing TMDLs as daily mass loading rates is consistent with Federal regulations at 40 CFR §130.2(i), which state that TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measures.

EPA regulations at 40 CFR §130.2(i) state that the total allowable load shall be the sum of individual wasteload allocations for point sources, and load allocations for nonpoint sources, and natural background concentrations. The TMDLs for fecal coliform for the Nanticoke River are consistent with 40 CFR §130.2(i) because the total loads, provided by MDE, equal the sum of the individual wasteload allocations for point sources and the land based load allocations for nonpoint sources. Pursuant to 40 CFR §130.6 and §130.7(d)(2), these TMDLs and the supporting documentation should be incorporated into Maryland's current water quality management plan. See Table 1 for a summary of allowable loads.

Wasteload Allocations

According to the TMDL report, the watershed that drains to Nanticoke River contains four permitted point sources to discharge fecal coliform (or *E. coli*) to the river (or its tributaries). The permitted fecal coliform load from these Wastewater Treatment Plant (WWTP) point sources is approximately 9.84×10^9 counts per day and will be included in the wasteload allocation for the Nanticoke River Mainstem (see Table 1 and Sections 2.4 and 4.7 in TMDL report).

Load Allocations

The TMDL summary in Table 1 contains the load allocations for the restricted shellfish area. As described above in Section III, Maryland conducted a nonpoint source assessment in order to estimate the contributions of wildlife, humans, pets, and livestock to the overall nonpoint source loadings. Maryland considers humans, pets and livestock to be controllable sources, and therefore assigned reductions to these categories to determine if the TMDL load allocation could be achieved. If the TMDL could not be achieved, then reductions were assigned to the wildlife category. Although wildlife is considered to be a natural source of fecal coliform loadings and the TMDL does not promote changing a natural background condition by the reduction of wildlife, Maryland and EPA believe that implementation of certain measures to reduce controllable sources may also serve to reduce wildlife inputs. However, it is appropriate to assign reductions to wildlife sources where necessary to meet the TMDL goals.

As stated above, Maryland developed TMDLs for each restricted shellfish area consistent with the two numeric criteria for Use II waters that are based on median and 90th percentile data. However, larger percentage and overall mass reductions are required in the 90th percentile TMDL case based on the difference between the TMDL and the current load to each shellfish area. Note that the percentage reductions are not strictly comparable between the two TMDLs because the baseline, or current loads are different -- the loads were calculated using the corresponding median concentration or 90th percentile concentration of the current condition.

According to Federal regulations at 40 CFR §130.2(g), load allocations are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading. Wherever possible, natural and nonpoint source loadings should be distinguished. MDE has used several sources of census, population, and land use coverage data in order to estimate and account for the major types of nonpoint, natural and background sources. Table 2.4.1 of the TMDL report provides a breakdown of the TMDL load allocation by nonpoint source category, for each restricted shellfish area.

Allocations Scenarios

EPA realizes that the above breakout of the total load and load allocation for fecal coliform among the major nonpoint sources for the shellfish area is one allocation scenario. As implementation of the established TMDLs proceeds, Maryland may find that other combinations of allocations are more feasible and/or cost effective. However, any subsequent changes in the TMDLs must conform to gross wasteload and load allocations and must ensure that the biological, chemical, and physical integrity of the waterbody is preserved.

Federal regulations at 40 CFR §122.44(d)(1)(vii)(B) require that, for a National Pollutant Discharge Elimination System (NPDES) permit for an individual point source, the effluent limitations must be consistent with the assumptions and requirements of any available WLA for the discharge prepared by the State and approved by EPA. EPA has authority to object to the issuance of an NPDES permit that is inconsistent with WLAs established for that point source. To ensure consistency with these TMDLs, NPDES permits issued for a point source that discharges one or more of the pollutants of concern in the Nanticoke River watershed, any deviation from the WLAs set forth in the TMDL Report and described herein for a point source must be documented in the permit Fact Sheet and made available for public review along with the proposed draft permit and the Notice of Tentative Decision. The documentation should: (1) demonstrate that the loading change is consistent with the goals of the TMDL and will implement the applicable water quality standards; (2) demonstrate that the changes embrace the assumptions and methodology of these TMDLs; and (3) describe that portion of the total allowable loading determined in the State's approved TMDL report that remains for any other point sources (and future growth where included in the original TMDL) not yet issued a permit under the TMDL. It is also expected that Maryland will provide this Fact Sheet for review and comment to each point source included in the TMDL analysis as well as any local and State agency with jurisdiction over land uses for which LA changes may be impacted. It is also expected that MDE will require periodic monitoring of the point source(s) for fecal coliform and total suspended solids, through the NPDES permit process, in order to monitor and determine compliance with the TMDL WLAs.

In addition, EPA regulations and program guidance provides for effluent trading. Federal regulations at 40 CFR §130.2(i) state: "if Best Management Practices (BMPs) or other nonpoint source pollution controls make more stringent load allocations practicable, then wasteload allocations may be made less stringent. Thus, the TMDL process provides for nonpoint source

control tradeoffs.” The state may trade between point sources and nonpoint sources identified in this TMDL as long as three general conditions are met: (1) the total allowable load to the waterbody is not exceeded; (2) the trading of loads from one source to another continues to properly implement the applicable water quality standards and embraces the assumptions and methodology of these TMDLs; and (3) the trading results in enforceable controls for each source. Final control plans and loads should be identified in a publicly available planning document, such as the State’s water quality management plan (see 40 CFR §130.6 and §130.7(d)(2)). These final plans must be consistent with the goals of the approved TMDLs.

Based on the foregoing, EPA has determined that the TMDLs are consistent with the regulations and requirements of 40 CFR Section 130. Pursuant to 40 CFR §130.6 and §130.7(d)(2), these TMDLs and the supporting documentation, including MDE’s responses to comments, should be incorporated into Maryland’s current water quality management plan.

3) The TMDLs consider the impacts of background pollutant contributions.

The TMDLs consider the impact of background pollutants by considering the bacterial load from natural background sources such as wildlife.

4) The TMDLs consider critical environmental conditions.

EPA regulations at 40 CFR §130.7(c)(1) require TMDLs to account for critical conditions for stream flow, loading, and water quality parameters. The intent of the regulations is to ensure that the TMDLs are protective of human health, and the water quality of the waterbodies is protected during the times when they are most vulnerable.

Critical conditions are important because they describe the factors that combine to cause a violation of water quality standards and will help in identifying the actions that may have to be undertaken to meet water quality standards¹. Critical conditions are a combination of environmental factors (e.g., flow, temperature, etc.), which have an acceptably low frequency of occurrence. In specifying critical conditions in the waterbody, an attempt is made to use a reasonable “worst case” scenario condition. MDE modeled the 90th percentile current load and allowable load. The 90th percentile concentration is that which one would expect to see exceeded no more than 10% of the time. For the shellfish area, the actual 90th percentile concentration from the most recent data set (i.e., 2005) was used in these calculations, thereby incorporating the critical condition. Further, Maryland compared the 90th percentile and median TMDLs to determine which value represented the critical condition and to determine the basis for the critical condition. Greater reductions that are driven by the median TMDL suggest that, on average, water column concentrations are very high with limited variation. Greater

¹EPA memorandum regarding EPA Actions to Support High Quality TMDLs from Robert H. Wayland III, Director, Office of Wetlands, Oceans, and Watersheds to the Regional Management Division Directors, August 9, 1999.

reductions that are driven by the 90th percentile TMDL suggest a less frequent occurrence of high fecal coliform concentrations due to the variation of hydrological conditions.

5) The TMDLs consider seasonal environmental variations.

Seasonal variations involve changes in flow as a result of hydrologic and climatological patterns. Generally, water column data for fecal coliform may sometimes exhibit seasonal trends. For example, bacteria levels tend to be lower during the colder months in some areas, but this is not always the case. In order to account for seasonal variation and inter-annual variability, Maryland's shellfish monitoring program collects samples on a monthly basis and a minimum dataset of 30 samples over three years (in this case, five years) is used. The monitoring design and the statistical analysis used to evaluate water quality attainment, therefore, implicitly include the effect of seasonality. Further, Maryland's water quality standard itself reflects the need to account for seasonal variation in assigning both a median (i.e., average condition) criterion and 90th percentile criterion (i.e., to account for fluctuations around the median).

The Bacteria Source Tracking (BST) study was conducted by Maryland in conjunction with these TMDLs has generated additional information as to the seasonality of loadings by the types of nonpoint sources investigated in the study.

6) The TMDLs include a Margin of Safety.

The requirement for an MOS is intended to add a level of conservatism to the modeling process in order to account for uncertainty. Based on EPA guidance, the MOS can be achieved through two approaches. One approach is to reserve a portion of the loading capacity as a separate term, and the other approach is to incorporate the MOS as part of the design conditions. MDE has adopted an implicit MOS for these TMDLs. The decay rate is one of the most sensitive parameters of the HEM-3D model. A decay rate of 0.7 per day was used as a conservative estimate in the TMDL calculation; therefore, the MOS is implicitly included in this calculation.

7) The TMDL has been subject to public participation.

MDE provided an opportunity for public review of and comment on the fecal coliform TMDLs for the Nanticoke River Mainstem. The public review and comment period was open from August 1, 2007 to August 30, 2007. No comment was submitted to MDE after the close of the comment period.

V. Discussion of Reasonable Assurance

There is a reasonable assurance that the TMDLs can be met. EPA requires that there be a reasonable assurance that the TMDLs can be implemented. Wasteload allocations will be implemented through the NPDES permit process. According to 40 CFR §122.44(d)(1)(vii)(B), the effluent limitations for an NPDES permit must be consistent with the assumptions and

requirements of any available wasteload allocation for the discharge prepared by the State and approved by EPA. Furthermore, EPA has the authority to object to issuance of an NPDES permit that is inconsistent with WLAs established for that point source.

Nonpoint source controls to achieve load allocations will be implemented in an iterative process that places priority on those sources having the largest impact on water quality, with consideration given to ease of implementation and cost. BMPs can be implemented through a number of existing programs and funding sources, including: Maryland's Agricultural Cost Share Program, Environmental Quality and Incentives Program, State Water Quality Revolving Loan Fund, and Stormwater Pollution Cost Share Program. Also, low interest loans are available through MDE to address failing septic systems. Also, sources of fecal coliform stemming from boats and marinas can be addressed through the Clean Marina Program, No Discharge Zone Program, and grant funds available through the Maryland Department of Natural Resources to install a pumpout station. Under existing Maryland law, certain new and existing marinas are required to have a pumpout station.

Pursuant to the National Shellfish Sanitation Program, Maryland will continue to monitor shellfish waters and classify harvesting areas. In addition to water quality monitoring and shoreline surveys, MDE also conducted the BST study that was used to confirm the source estimates presented in the TMDL report.

As mentioned above, Maryland and EPA acknowledge that while the TMDL does not promote changing natural background conditions due to wildlife, it is possible that implementation measures taken to reduce nonpoint controllable sources will also reduce wildlife loadings. In areas where wildlife is the dominant source of fecal coliform inputs to the shellfish waters, and where water quality standards cannot be attained following TMDL implementation for controllable sources, then MDE would consider conducting either a risk based water quality assessment or a Use Attainability Analysis to recognize these natural conditions.