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

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

Dear ~~Dr.~~ Rich Eskin:

The Environmental Protection Agency (EPA), Region III, has conducted a complete review of Maryland's 2008 Section 303(d) List, and supporting documentation and information. Based on this review, EPA has determined that Maryland's list of water quality limited segments still requiring Total Maximum Daily Loads (TMDLs), meets the requirements of Section 303(d) of the Clean Water Act and EPA's implementing regulations. Therefore, by this order, EPA hereby approves Maryland's 2008 Section 303(d) List. The statutory and regulatory requirements, and EPA's review of Maryland's compliance with each requirement, are described in the enclosure.

EPA is pleased to approve Maryland's 2008 Section 303(d) List and we commend you and your staff for the thorough work and exemplary effort in establishing the list and in responding to the comments received.

If you have any questions or concerns regarding this decision, please feel free to contact Mr. Robert Koroncai, Associate Director, at 215-814-5730, or koroncai.robert@epa.gov.

Sincerely,

Jon M. Capacasa, Director
Water Protection Division

Enclosure

EPA Region III Approval Rationale of Maryland's 2008 303 (d) List

EPA has conducted a complete review of Maryland's 2008 Section 303(d) List and supporting documentation and information. Based on this review, EPA has determined that Maryland's list of water quality limited segments (WQLSs) still requiring Total Maximum Daily Loads (TMDLs) meets the requirements of Section 303(d) of the Clean Water Act ("CWA" or "the Act") and EPA's implementing regulations. Therefore, by this order, EPA hereby approves Maryland's Section 303(d) List. The statutory and regulatory requirements, and EPA's review of Maryland's compliance with each requirement, are described in detail below.

Statutory and Regulatory Background

Identification of WQLSs for Inclusion on Section 303(d) List

Section 303(d)(1) of the Act directs each State to identify those waters within its jurisdiction for which effluent limitations required by Section 301(b)(1)(A) and (B) are not stringent enough to implement any applicable water quality standard, and to establish a priority ranking for such waters. The Section 303(d) listing requirement applies to waters impaired by point and/or nonpoint sources, pursuant to EPA's long-standing interpretation of Section 303(d).

EPA regulations provide that States do not need to list waters where the following controls are adequate to implement applicable standards: (1) technology based effluent limitations required by the Act: (2) more stringent effluent limitations required by State or local authority; and (3) other pollution control requirements required by State, local, or federal authority. See 40 CFR 130.7(b)(1). The EPA review and action on Maryland's 2008 list is consistent with *Guidance for 2006 Assessment, Listing, and Reporting Requirements Pursuant to Sections 303(d), 305(b), and 314 of the Clean Water Act* (July 29, 2005) as supplemented by the memorandum titled *Information Concerning 2008 Clean Water Act Sections 303(d), 305(b) and 314 Integrated Reporting and Listing Decisions*.

Consideration of Existing and Readily Available Water Quality Related Data and Information

In developing Section 303(d) lists, States are required to assemble and evaluate all existing and readily available water quality related data and information, including, at a minimum, consideration of existing and readily available data and information about the following categories of waters: (1) waters identified as partially meeting or not meeting designated uses, or as threatened, in the State's most recent Section 305(b) report; (2) waters for which dilution calculations or predictive modeling indicate non-attainment of applicable standards; (3) waters for which water quality problems have been reported by governmental agencies, members of the public, or academic institutions; and (4) waters identified as impaired or threatened in any Section 319 nonpoint assessment submitted to EPA. See 40 CFR 130.7(b)(5). In addition to these minimum categories, States are required to consider any other data and information that is existing and readily available. EPA's 1991 Guidance for Water

Quality Based Decisions describes categories of water quality related data and information that may be existing and readily available. See Guidance for Water Quality Based Decisions: The TMDL Process, EPA Office of Water, 1991, Appendix C ("EPA's 1991 Guidance").

While States are required to evaluate all existing and readily available water quality related data and information, States may decide to rely or not rely on particular data or information in determining whether to list particular waters.

In addition to requiring States to assemble and evaluate all existing and readily available water quality related data and information, EPA regulations at 40 CFR 130.7(b)(6) require States to include as part of their submissions to EPA, documentation to support decisions to rely or not rely on particular data, information and decisions to list or not list waters. Such documentation needs to include, at a minimum, the following information: (1) a description of the methodology used to develop the list; (2) a description of the data and information used to identify waters; and (3) any other reasonable information requested by the Region.

Priority Ranking

EPA regulations also codify and interpret the requirement in Section 303(d)(1)(A) of the Act that States establish a priority ranking for listed waters. The regulations at 40 CFR 130.7(b)(4) require States to prioritize waters on their Section 303(d) lists for TMDL development, and also to identify those WQLSs targeted for TMDL development activities in the next two years. In prioritizing and targeting waters, States must, at a minimum, take into account the severity of the pollution and the uses to be made of such waters. See Section 303(d)(1)(A). As long as these factors are taken into account, the Act provides that States establish priorities. States may consider other factors relevant to prioritizing waters for TMDL development, including immediate programmatic needs, vulnerability of particular waters as aquatic habitats, recreational, economic, and aesthetic importance of particular waters, degree of public interest and support, and State or national policies and priorities. See 57 FR 33040, 33045 (July 24, 1992), and EPA's 1991 Guidance.

Analysis of Maryland's Submission

Identification of Waters and Consideration of Existing and Readily Available Water Quality-Related Data and Information.

EPA has approved Section 303(d) lists submitted by Maryland including, but not limited to, Section 303(d) lists, for the years 1996, 1998, 2002, 2004 and 2006. To the extent that these prior lists have been incorporated into the 2008 Section 303(d) list, EPA's rationale for approving those lists remains operative. EPA's review of the 2008 Section 303(d) list focused on changes from the prior lists and areas where the Maryland Department of the Environment (MDE) had promised additional follow-up.

On March 12, 2008, MDE public noticed the draft 2008 303(d) list for a comment period

of 45 days, from March 12, 2008 through April 28, 2008. The draft list was posted on MDE's internet world-wide Web page and also advertised in the Maryland Register. Copies were also available at some branches of county libraries, and the list could be requested by writing to MDE. MDE held three informational public meetings at Baltimore, Salisbury, and Hagerstown, Maryland, to receive comments on the draft document. EPA, Region III, provided comments on the Draft list by memo dated April 23, 2008.

EPA received MDE's draft final 2008 303(d) list package on July 28, 2008. This package included: (1) an overview of the process for development of the 2008 303(d) list; (2) surface water monitoring strategy, assessment units, the listing methodologies for the following kinds of data: non-tidal biological, bacteria and toxics assessment methodology related to fish tissue – these methodologies have undergone public review; (3) assessment results associated with non-tidal biological impairments, toxics, bacteria, and solids for rivers/streams, lakes/ponds, estuarine and ocean waters; (4) the public process related to the 303(d) list; (5) the integrated Section 305(b) Report and Section 303(d) list, consisting of parts 2, 3, 4, and 5; and (6) the following Appendices: Appendix 1 – Water Quality Analysis of Copper in Jones Falls Watershed; and Appendix 2 – Water Quality Analysis of Copper and Lead in Lower North Branch Patapsco River Watershed. MDE also provided a list of TMDLs approved (Table 16) and anticipated for completion (Table 17), an explanation of how listings from the historical Chesapeake Bay watershed based assessment units were transferred to the new salinity based Chesapeake Bay assessment units (Table 20). The package also included a responsiveness summary of comments received during the public review period including a side-by-side comparison of impaired waters from the 2006 IR/12-digit watershed listings, the 2008 impaired waters listing at the 8-digit watershed scale, and a table of the high priority listings to be addressed in the next cycle.

EPA has reviewed Maryland's description of the data and information it considered, its methodology for identifying waters, and additional information provided in response to comments raised by EPA and other parties. EPA concludes that the State properly assembled and evaluated all existing and readily available data and information, including data and information relating to the categories of waters specified in 40 CFR 130.7(b)(5).

In addition, the State provided its rationale for not relying on particular existing and readily available water quality related data and information as a basis for listing waters.

A. Description of the methodology used to develop this list, Section 130.7(b)(6)(i).

For this 2008 reporting cycle, MDE has included numerous changes. MDE has completed additional database reformatting to be more compatible with EPA's assessment database (ADB). The 2008 report includes the proposed revised assessment methodologies that are currently under review including new biological (for non-tidal waters), bacterial, and fish tissue (toxics). A brief summary of the changes in listing and assessment methodologies is described below.

The change in non-tidal biological listing methodology is primarily due to the scale of the

listing, calculation of watershed impairment and how estimates of impaired stream miles are determined. The proposed methodology determines the proportion of degraded stream miles that is significantly different from a reference watershed. The assessment and listing is done at the 8-digit watershed scale only, and is consistent with the Maryland Biological Stream Survey (MBSS) probabilistic monitoring design. The impairment description is characterized at the 8-digit watershed scale, based a minimum sample size of eight.

MDE's non-tidal biological watershed assessment tests the null hypothesis that the waters to be assessed do not violate the narrative criteria for the support of aquatic life based on comparisons to reference watersheds and the fish and benthic index biological integrity (F and B - IBI) scores. The null hypothesis states the populations of streams in the assessment unit are similar to the population of reference sites, resulting in an assessment that less than 10 percent of streams are classified as degraded. A degraded site is characterized as a site whereby the benthic or fish IBI score is below the threshold value 3 or minimum allowable limit (MAL).

The 2008 303(d) List also describes a change to the bacterial assessment methodology as it pertains to how impaired listings are made for recreational waters. Maryland includes a description of the methodology and its basis for interpretation of the fecal coliform data. A two process is undertaken for interpretation of bacterial data for general recreational use. Step 1 requires that data from the previous year (from at least 5 representative sampling events) be used to calculate a geometric mean. If the steady state geometric mean exceeds the threshold, the waterbody will be included for further assessment. Step 2 incorporates data from the previous 2 to 5 years to calculate the geometric mean for the waters identified in Step 1. The data used include only samples collected during steady-state, dry weather conditions and during beach season to represent the critical condition. If the geometric mean resulting from this analysis is greater than 35 cfu/100 ml *enterococci* in marine/estuarine waters, 33 cfu/100 ml *enterococci* in freshwater or 126 cfu/100 ml *E. coli* in freshwater, the waterbody will be listed in Category 3. When waters are listed in Category 3, a sanitary survey must be conducted to ascertain the source of bacteria and then remedied. These remedied waters can then be moved to Category 2. Should these waters fail to be remedied, they will be moved to Category 5. Once on the Category 5 list of impaired waters, a sanitary survey must be conducted (if not done before). Waters can be removed from Category 5, if is meets the steady state geometric mean and if the sanitary survey is conducted at the water and results in no sources of pathogenic bacteria, or the sources have been remedied.

The third methodology open for public review and comment is a change to the toxics listing methodology which uses a more conservative polychlorinated biphenyl (PCB) threshold for making fish tissue listings. The PCB concentration for fish tissue is reduced from 88 ppb to 39 ppb to gain more human health protection.

B. Description of the data and information used to identify waters, including a description of the data and information used by Maryland as required by Section 130.7(b)(5).

1. Section 130.7(b)(5)(i), Waters identified by Maryland in its most recent Section 305(b) report as "partially meeting" or not meeting designated uses or as threatened."

Maryland's 303(d) list is mostly defined by the data collection and assessment contained in the 305(b) report of the State's water quality. In Maryland, responsibility for collection and compilation of this information is shared between the Maryland Department of Natural Resources (DNR) and MDE. MDNR compiles Maryland's Inventory of the Water Quality, the 305(b) Report, every two years pursuant to Section 305(b) of the CWA. MDE sets water quality standards, regulates discharges to Maryland waters through environmental permitting, enforcement and compliance activities, identifies waters for inclusion on the Section 303(d) list, and develops TMDLs. Since 2002 and consistent with EPA guidance, Maryland has submitted an integrated report combining the Section 303(d) list and the Section 305(b) report ("Integrated Report"). The following categories are used to describe water quality in Maryland's Integrated Report. Category 1 of the Integrated Report identifies waters that meet all water quality standards and no use is threatened. Category 2 identifies waters meeting some water quality standards, but with insufficient information to determine if other water quality standards are being met. Category 3 identifies waters where there is insufficient information to determine if any water quality standard is being attained, and includes subcategories for insufficient data quantity and insufficient data quality. Category 4 identifies waters where one or more water quality standards are impaired or threatened, but for which a TMDL is not required because a TMDL has already been approved or established by EPA (Subcategory 4a), other pollution control requirements are expected to attain water quality standards (Subcategory 4b), or the impairment is not caused by a pollutant (Subcategory 4c). Categories 1-4 comprise the Section 305(b) portion of the integrated report. Category 5 is the Section 303(d) list and identifies waters that are not attaining water quality standards and for which a TMDL may be necessary.

Maryland considers a waterbody as "impaired" (and therefore subject to listing pursuant to Section 303(d)) when it does not attain its designated use pursuant to Maryland's water quality standards. Maryland has developed numerous methodologies for assessing whether waters are achieving their designated uses. MDE generally has provided the public with notice and an opportunity to comment on its assessment methodologies as they are developed and/or amended.

In September 2004, Maryland updated its Comprehensive Water Quality Monitoring Strategy for all State waters consistent with current EPA guidance (see "Elements of a Water Monitoring and Assessment Program," EPA document 841-B-03-003). This Strategy describes Maryland's water quality monitoring framework and covers all State waters, including rivers and streams, lakes, tidal waters, ground water and wetlands. These water quality monitoring programs support the assessment of Maryland's designated uses as well as integrated reporting activities under Sections 303(d) and 305(b) of the CWA.

2. **Section 130.7(b)(5)(ii), Waters for which dilution calculations or predictive models indicate non-attainment of applicable water quality standards.**

Maryland supports the use of computer models and other innovative approaches to water quality monitoring and assessment. Maryland has relied heavily on the Chesapeake Bay model to develop loading allocations, assess the effectiveness of best management practices, and guide implementation of water quality programs. Several different modeling approaches have also been used in TMDL development. With the growing number of biological impairments in Category 5 of the List, Maryland will be relying more heavily on land use analyses, Geographic Information System (GIS) modeling, data mining, and other non-traditional approaches to identify stressors, define ecological processes, and develop TMDLs. Maryland considered the results of a predictive model for the Chesapeake Bay where applicable.

3. **Section 130.7(b)(5)(iii), Waters for which water quality problems have been reported by local, state, or federal agencies; members of the public; or academic institutions.**

A joint MDE/MDNR data request letter was widely advertised for the solicitation of data for the 2008 list. With the integration of Sections 305(b) and 303(d) of the CWA and the adoption of a multi-category reporting structure, Maryland has developed a two-tiered approach to data quality. Tier 1 data is used to determine impaired waters (e.g., Category 5 waters or the traditional 303(d) List) and is subject to the highest data quality standards. Maryland waters identified as impaired using Tier 1 data may require a TMDL or other regulatory actions on the part of the State. These data should be accompanied by a Quality Assurance Project Plan (QAPP) consistent with EPA data guidance specified in *Guidance for Quality Assurance Project Plans (Dec 2002. EPA /240/R-02/009* available at http://www.epa.gov/quality/qs-docs/g5-final.pdf. Tier 1 data interpretation must also be consistent with Maryland's Listing Methodologies.

Tier 2 data are used to assess the general condition of surface waters in Maryland and may include volunteer monitoring, land use data, visual observations of water quality condition, or data not consistent with the Maryland's Listing Methodologies. Such data may not have a Quality Assurance Project Plan (QAPP) or may have one that is not consistent with EPA guidance. Tier 2 data alone are not used to make impairment decisions (i.e., category 5 listings requiring a TMDL) because the data are of insufficient quantity and/or quality.

Maryland has increased its efforts to make Integrated Reporting data available to the public in a real time environment. The Integrated Report database is now available online at http://www.mde.state.md.us/Programs/WaterPrograms/TMDL/Maryland%20303%20dli t/303d_ search/. References to and summaries of the data used for impairment determinations are also included to give the public a better understanding of why specific decisions were made.

4. **Section 130.7(b)(5)(iv), Waters identified by Maryland as impaired or threatened in a nonpoint assessment submitted to EPA under section 319 of the CWA or in any updates of the assessment.**

MDE considered waters identified in a Section 319 assessment during the development of the 1996 Section 303(d) list, which is incorporated into the 2008 list. The Clean Water Action Plan of 1998 required a statewide Unified Watershed Assessment which set priorities for Section 319 activities. Maryland's Unified Watershed Assessment, Category I assignments were based on the 1998 303(d) list.

5. **Other data and information used to identify waters (besides items 1-4 discussed above).**

In addition to waters identified as impaired on the 2006 Section 303(d) List that have not been delisted, the 2008 Section 303(d) list forty-seven impaired waters in addition to those listed on the 2006 303(d) list. Eighteen of the listings are due to the new lower PCB threshold (39 parts per billion) adopted by MDE for human health protection. Twelve listings are due to Chesapeake Bay (CB) assessments of submerged aquatic vegetation based on the new CB segmentation. Eight listings are related to acid mine drainage impairments in the Upper North Branch Potomac River and George's Creek. There are four fecal coliform listings in nonbeach areas, two CB listings resulting from bioassessments and two listings on the Nanticoke River Oligohaline open water designated use, and one new listing in Baltimore Harbor for trash. These additional impairment listings reflect increased monitoring and improved assessment techniques, and do not necessarily indicate a decline in the State's overall water quality.

The 2008 303(d) list also reflects the completed transition to the new Chesapeake Bay Water Quality Standards for the Bay and its tidal tributaries that introduces a salinity based water segmentation scheme. The segmentation reflects a better understanding of the complex Bay ecosystem, tidal flow and salinity gradients. The water quality standards that support this new segmentation replace a uniform dissolved oxygen criterion with several criteria (dissolved oxygen, water clarity, acres of submerged aquatic vegetation) and will be applied according to designated use, seasonality and segment that better protect the living resources of the Chesapeake Bay. As a result of these changes, the new segment boundaries may vary from the previously used watershed segments. As a result, the 2008 303(d) list reflects 56 revised listings for impairments that are the result of the new Chesapeake Bay assessment methodologies and designated uses.

C. A rationale for any decision to not use any existing and readily available data and information for any one of the categories of waters as described in Sections 130.7(b)(5) and 130.7(b)(6)(iii).

Starting in 2002, Maryland developed and published for public review of the Listing Methodologies to document the State's interpretation of its water quality standards (WQS) and

establish scientifically defensible approaches for determining water body impairment. Listing Methodologies are not considered rules, but rather provide a means to provide consistency and transparency in Integrated Reporting so that the public and other interested stakeholders understand why listing decisions are made and can independently verify listing decisions. The methodologies are living documents that are revised as new statistical approaches, technologies, or other improved methods are adopted by the State. When changes are proposed to the Listing Methodologies, Maryland advertises the revised methodologies for public review via the biennial Integrated Report.

In Maryland's 305(b) Report, certain waterbodies are conditionally approved shellfish areas. A sub-set of these waterbodies are restricted because they are closed for administrative reason under guidance of the National Shellfish Sanitation Program. Typically, these waters are restricted due to their vicinity to wastewater treatment plants and the restriction is precautionary against the potential treatment system failure, rather than an expression of failure to meet water quality standards. In accordance with MDE's listing methodology, both administratively restricted and conditionally approved shellfish waters are not listed on the Section 303(d) list.

D. Rationale for delisting of waterbodies from the previous 303(d) list.

Maryland has indicated, in the Integrated Report (Table 15), that 52 delistings have occurred during this cycle, primarily based on new assessments and data or water quality analyses (WQAs). Fifteen delistings are in the Chesapeake Bay segments, indicating that the SAV or benthic designated uses are being met. EPA requested the clarity data to support MDE's delisting of several of the CB segments. In consultation with EPA's Chesapeake Bay Program office, EPA confirmed that the segments in question are meeting the SAV restoration goal.

Data for the Jones Falls and Patapsco River Lower North Branch WQAs were included in Appendices 1 and 2 of the report.

Two delistings result from the correction of original listing errors (Scott Creek and Lower Chester River). Scott Creek impairments were located in the PA portion of the watershed and the Lower Chester River PCB listing was based on Middle River data, inappropriately. Segment MD-CHSMH-Bogles_Wharf_Beach was moved to Category 3 as it is not a public beach and has no apparent source of bacteria.

The tidal portion of Elk River was delisted for PCBs -- fish tissue because the previous 6-digit basin code has changed to an 8-digit basin code. The Elk River listing has now been split into 4 separate listings.

The tidal portion of Bodkin Creek was delisted for Copper because it is now incorporated in the new Chesapeake Bay segmentation scheme. The Bodkin Creek listing can now be included in Chesapeake Bay segment PATMH.

Maryland has demonstrated, to EPA's satisfaction, its rationale for these delistings.

E. Rationale for Maryland's decision not to list waters pursuant to 40 CFR 130.7(b)(1) because they are expected to meet water quality standards.

Due to the new non-tidal biological assessments and listings based on an 8-digit watershed scale (versus the previous 12-digit watershed scale), 340 stream segments that were previously listed are now aggregated into 70 larger watershed areas. States may select the spatial resolution of their assessment units, provided that: (1) the State document its selection; and (2) the assessment unit is larger than the sampling station, but small enough to represent a homogenous standard attainment within the assessment unit. Maryland has documented its selection and explained that its selection of a larger assessment unit is to reflect a greater confidence level in the data. Accordingly, EPA will not disapprove Maryland's Section 303(d) list based on the selection of a larger assessment unit. Nevertheless, because Maryland previously used a smaller assessment unit in connection with prior Section 303(d) lists, EPA urges MDE to track progress toward attaining water quality standards at a more localized level, consistent with the goals of Section 305(b).

Priority Ranking and Targeting

MDE carried over its priority ranking methodology from its 2006 list. Within the Section 303(d) list, Maryland has provided both a priority ranking of high, medium, or low, and a separate indication for waters targeted for TMDL development in the next two years. In general, criteria that affect human health or have an extreme effect on natural resources are ranked high, criteria that indicate a continuing downward trend in the loss of a significant resource, create a serious nuisance, or constitute a significant loss of a natural resources are ranked as medium, and the remaining cases rank low.

EPA concludes that the State properly took into account the severity of pollution and the uses to be made of such waters. Scheduling, however, takes into account additional considerations other than priority designations, such as programmatic considerations (e.g., efficient allocation of resources, basin planning cycles, coordination with other programs or states) and technical considerations (e.g., data availability, problem complexity, availability of technical tools). This is consistent with EPA guidance. In addition, EPA reviewed the State's identification of WQLSs targeted for TMDL development in the next two years (i.e., those targeted as a high priority), and concludes that the targeted waters are appropriate for TMDL development in this timeframe.

Consultation with Other Agencies

EPA initiated informal consultation through fax correspondence on April 22, 2008. The Services were provided the website link to the draft list on April 22, 2008. A copy of the final 2008 Integrated Report and Section 303(d) list was sent to the Services on July 31, 2008. Biological Evaluations (BE) were sent to the Services on August 13, 2008 and August 21, 2008. EPA concluded that the approval of the 303(d) List would not adversely affect threatened or endangered species or their critical habitat in Maryland. Concurrence with EPA's findings was