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

Ms. Marie Halka, Acting Director
Science Services Administration
Maryland Department of the Environment
1800 Washington Blvd., Suite 540
Baltimore, Maryland 21230-1718

NOV 09 2012

Dear Ms. Halka:

The U.S. Environmental Protection Agency (EPA), Region III, has conducted a complete review of Maryland's 2012 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, 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 2012 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.

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 regarding this decision, please feel free to contact Mr. Larry Merrill, Associate Director, at 215-814-5452, or merrill.larry@epa.gov.

Sincerely,

Jon M. Capacasa, Director
Water Protection Division

Enclosure

**EPA Region III Approval Rationale of Maryland's 2012 Section 303 (d) List**

EPA has conducted a complete review of Maryland's 2012 Section 303(d) list and supporting documentation and information and, 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 States 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, taking into account the severity of the pollution and the uses to be made of such waters. The Section 303(d) listing requirement applies to waters impaired by point and/or non-point 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, local, or federal authority. See 40 CFR 130.7(b)(1). The EPA review and action on Maryland's 2012 list is generally consistent with EPA guidance, including *Guidance for 2010 Assessment, Listing, and Reporting Requirements Pursuant to Sections 303(d), 305(b), and 314 of the Clean Water Act* (July 29, 2005) and the memorandum titled *Information Concerning 2008 Clean Water Act Section 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, 2006, 2008, and 2010. To the extent that these prior lists have been incorporated into the 2012 Section 303(d) list, EPA's rationale for approving those lists remains operative. EPA's review of the 2012 Section 303(d) list focused on changes from the prior lists.

On February 13, 2012, Maryland Department of the Environment (MDE) public noticed the draft 2012 Section 303(d) list for a comment period of 30 business days, from February 13, 2012 through March 26, 2012. The draft list was posted on MDE's internet world-wide-web page and also advertised in the Maryland Register. MDE held an informational public

meeting on March 12, 2012, at MDE Headquarters in Baltimore, Maryland, to receive comments on the draft document. In response to questions raised during the public information meeting held on March 12, and in two letters written to the Department, MDE decided to hold an additional informational meeting on April 19, 2012. This meeting consisted of a 45 minute presentation as well as a question and answer session designed to address specific technical questions relating to the Chesapeake Bay TMDL and how it impacted the Draft 2012 Integrated Report of Surface Water Quality. In conjunction with this meeting, the public comment period was extended until April 26, 2012, so as to allow for additional public comment that might result from this meeting.

EPA received MDE's draft final 2012 Section 303(d) list package on July 23, 2012. The 2012 Section 303(d) package included: (1) an overview of the process for development of the 2012 Section 303(d) list; (2) surface water monitoring strategy, assessment units, the listing methodologies for the following kinds of data: bacteria, and biological-these methodologies have undergone public review; (3) assessment results associated with biological impairments, toxics, bacteria, and solids from rivers/streams, lakes/ponds, estuarine and ocean waters; (4) the public process related to the 303(d) list; and (5) the integrated Section 305(b) Report and Section 303(d) list, consisting of parts 2,3,4, and 5. MDE also provided a list of TMDLs approved (Table 14) and anticipated for completion for Fiscal Year 2012 and 2013 (Table 15 and 16, respectively). Tables 15 and 16 also indicate which of these TMDLs are part of the *Memorandum of Understanding between the State of Maryland and the United States Environmental Protection Agency Region III regarding Sections 303(d) and 303(e) of the Clean Water Act* for 1998 listings. The package also included a responsiveness summary of comments received during the public review.

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 2012 reporting cycle MDE has included a few changes. MDE has increased the use of volunteer data, implementation of revised assessment methodologies for bacteria and biology, and the first submission of Integrated Report information in a geographic information system (GIS) format. A brief summary of the changes in listing and assessment methodologies is described below.

The biology listing methodology went essentially unchanged with the exception of adding language that clarifies an existing assessment rule. Another important change regarding the biological assessment methodology is the use of Category 4C (impaired, impairment not caused by pollutant) for several non-pollutant impairments. In the 2010 IR, MDE implemented

the Biological Stressor Identification (BSID) analysis approach to identify the cause of biological community degradation. As BSID analyses were completed, the generic "cause unknown" listings for non-tidal watersheds were replaced by listings for specific impairing pollutants. Common pollutants identified were substances such as chlorides, sulfates, and nutrients. In 2012, several of these analyses, for select watersheds, indicated that at least a portion of the impact to biological communities could be attributed to stream and riparian habitat modifications. More specifically, biological impacts were found to be due to lack of riparian stream buffering (having vegetated buffer areas, 50 meters) and channelization of stream banks (which includes the hardening of banks or even straightening of stream channels). As a result, the 2012 IR has 13 new Category 4c listings for channelization and 5 new Category 4c listings for lack of a riparian buffer.

The second methodology that has been revised is Maryland's bacterial Listing Methodology. The methodology specifically details the scale of assessment used for the Shellfish Waters, Beaches and the Recreational Waters.

**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 Section 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 (MDNR) and MDE. MDNR compiles Maryland's Inventory of the Water Quality, the Section 305(b) Report, every two years pursuant to Section 305(b) of the CWA. MDE sets water quality standards (WQS), 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 WQS 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 WQS 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 WQS (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 WQS 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 WQS. 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.

In the Fall of 2007, MDE initiated monitoring strategy discussion with MDNR in anticipation of a revised strategy for 2009-2010. This 2009 Strategy has been completed and submitted to EPA.

EPA concludes that the Section 303(d) list identifies waters identified by Maryland on its Section 305(b) report as "partially meeting" or not meeting designated uses.

**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 modeling efforts being undertaken in coordination with EPA's Chesapeake Bay Program office 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 is and intends to continue to rely 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.

**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 2012 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 is available at http://www.epa.gov/quality/qs-docs/g5-final.fdf). Tier 1 data interpretation must also be

consistent with Maryland's Listing Methodologies. As a result of the data solicitation, eighteen organizations/programs submitted water quality data for consideration in the 2012 IR. Data from eleven programs/organizations submitted Tier 1 data, and all of these data was used in the evaluation of water impairments.

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 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, user-friendly environment. To accomplish this goal, Maryland created a searchable IR database and clickable map to make it easier to find water quality assessments for a particular geographic area. This application is available online at http://www.mde.maryland.gov/programs/water/tmdl/integrated303dreports/pages/303d.aspx.

**4. Section 130.7(b)(5)(iv), Waters identified by Maryland as impaired or threatened in a non-point 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, and all such water segments were included in the watersheds on that list which is incorporated into all subsequent lists, including the 2012 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 Section 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 2010 Section 303(d) List that have not been delisted, the 2012 Section 303(d) lists thirty-seven impaired waters. Twenty four of these new listings resulted from MDE's Biological Stressor Identification Analyses. The purpose of these analyses is to identify the primary pollutants that are responsible for impairing watershed biological integrity. Of these 24 new 'biostressor' listings, nine are for total suspended solids, seven are for chlorides, seven are for sulfates, and one is listed for total phosphorus. In addition, there are nine new fecal coliform listings in shellfish harvesting waters, two Chesapeake Bay segment listings as a result of updated bioassessments, and two new PCB listings for fish tissue.

**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 describe the State's interpretation of its 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 Section 305(b) Report, certain water bodies are conditionally approved shellfish areas. A sub-set of these water bodies 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 WQS. 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 10), that thirty four (34) delistings have occurred during this cycle. Twenty one of these were generic biological listings (cause unknown) that did not specify a particular pollutant or stressor as the cause of impairment. These listings have now been replaced by specific pollutant/stressor listings enumerated by the Biological Stressor Identification analyses (Table 12). The remaining thirteen delistings resulted from approved WQAs, reassessments using newer data, or a refined assessment scale.

Three of the thirteen delistings resulted from recently completed total phosphorus WQAs. Another two listings for fecal coliform, were delisted because recently collected monitoring data indicated attainment of the shellfish harvesting designated use. Two more listings came off Category 5 due to new estuarine bioassessments showing aquatic life use support. Two other listings were delisted for total suspended solids, one based on a WQA and the other one based on new water clarity data. An additional two delistings occurred as a result of refining the assessment unit scale used for assessing PCB levels in fish tissue. Another listing was delisted for ammonia after a more extensive data analysis was completed. Lastly, a listing for total phosphorus impairment was moved to Category 3 (insufficient data to determine impairment). This listing will be prioritized for future monitoring to properly assess for nutrient enrichment.

Maryland has demonstrated, to EPA's satisfaction, its rationale for these de-listings.

**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.**

Maryland's decision not to include waters on its 2012 Section 303(d) list due to other required pollution controls is consistent with EPA regulations at 40 CFR 130.7(b)(1). These waters were identified in Category 4b of the Integrated Report. Under 40 CFR 130.7(b)(1), states are not required to list WQLSs still requiring TMDLs where effluent limitations required

by the CWA, more stringent effluent limitations required by state or local authority, or other pollution control requirements required by state, local, or federal authority, are stringent enough to implement applicable WQS. The regulation does not specify the timeframe in which these various requirements must implement applicable WQS to support a state's decision not to list particular waters. EPA expects that required controls will result in attainment in a reasonable time, based on the nature of the pollutant and actions that need to be taken to achieve attainment.

Monitoring should be scheduled for these waters to verify that the water quality standard is attained as expected in a reasonable time frame. Where standards will not be attained through implementation of the requirements listed in 40 CFR 130.7(b)(1) in a reasonable time, it is appropriate for the water to be placed on the Section 303(d) list to ensure that implementation of the required controls, and progress towards compliance with applicable standards, is tracked. If it is determined that the water is, in fact, meeting applicable standards when the next Section 303(d) list is developed, it would be appropriate for the state to remove the water from the list at that time.

One Category 4b assessment for mercury, in the tidal portion of the Patapsco River (PATMH), has been removed from the IR. This assessment, referencing a specific industrial point source (Erachem Comilog, Inc), was originally listed due to the facility's presence on Maryland's 304(l) list in the late 1980's. Currently, this facility does not use mercury in any of its industrial processes. Recent discharge monitoring report (DMR) data has also shown that effluent from this facility does not contain measureable quantities of mercury. For these reasons, this listing has been removed from the IR. Consistent with a program of continuous assessment, EPA encourages MDE to continue efforts, including monitoring as appropriate, to provide updates on the status of the segment and to confirm that the delisting remains supportable. Given the basis for the original listing, EPA agrees with the basis for de-listing. As part of the 2014 Integrated Report, MDE would review the remainder of waters identified in Category 4b to determine whether the water quality standard is expected to be attained in a reasonable time or whether the waters need to be moved to Part 5. EPA recommends that MDE collect and analyze ambient water quality data as part of its analysis.

**Priority Ranking and Targeting**

MDE used the same priority ranking methodology used in previous lists. 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 indicated 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 consideration (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 with the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS) (collectively the Services) through a letter sent on March 2, 2012. This letter included a hard copy of the draft 2012 Integrated Report as well as the website link. NMFS responded to this communication and indicated agreement that EPA's approval of Maryland's 2012 Section 303(d) list was not likely to jeopardize listed species and was not likely to have an adverse effect listed species and their critical habitat. A copy of the final 2012 Integrated Report and a Biological Evaluation (BE) was sent to the Services on September 11, 2012. EPA concluded that approval of the 2012 Maryland Section 303(d) List will result in the identification of impaired waters, which may in turn lead to establishment of TMDLs or other measures to attain and/or maintain applicable WQS. Therefore, EPA approval of the Section 303(d) List would benefit, and is not likely to adversely affect, listed species and their critical habitat.

However, EPA encourages MDE to consider the presence of endangered and threatened species when setting priorities for monitoring and/or TMDL development.

**Biological Evaluation for the**
**Approval of Maryland's 2012 Section 303(d) List by the**
**U.S. Environmental Protection Agency, Region III**

**Federal Action:**

The Federal action being evaluated is the U.S. Environmental Protection Agency's (EPA), Region III, approval of the Maryland Department of the Environment's (MDE) 2012 Section 303(d) List.

**Regulatory Background:**

The Clean Water Act (CWA) requires States to assess the quality of their waters every two years and periodically to publish a list of "water quality limited segments" (WQLSs) for which technology-based effluent limits are insufficient to achieve the applicable water quality. This list of WQLSs is otherwise referred to as the "303(d) List" for the applicable Section of the CWA. EPA must take action on the final Section 303(d) List (either approve the list or disapprove the list and identify WQLSs that should be on the list) in a timely manner as prescribed by regulation. Inclusion of a waterbody on the Section 303(d) List may result in further action, including the development of Total Maximum Daily Loads (TMDLs) or other measures to meet water quality standards. To the extent that the identification of Section 303(d) waters impacts the environmental baseline, this action adds a framework toward restoration of impaired and threatened waters insofar as the State may eventually develop and implement TMDLs or other water quality improvement measures for these waters, as appropriate.

The process to develop the Section 303(d) List includes identifying the applicable water quality standards for all jurisdictional surface waters; assessing of these waters; and identifying and listing those waters not meeting water quality standards. A water quality standard is the combination of a designated use for a particular body of water, the water quality criteria designed to protect that use and the antidegradation policy. Designated uses include activities such as fishing, swimming, drinking water supply, and oyster propagation and harvest. Each use has associated water quality criteria, which may be numeric, narrative or both.

The MDE published its draft 2012 Section 303(d) List in the Maryland Register on February 13, 2012. The draft List was also posted on MDE's internet Web page on the same date. MDE held an informational public hearing on March 12, 2012, concerning the draft Section 303(d) List to solicit comments on the draft document. In response to questions raised during the public information meeting and in two letters written to MDE, an additional informational meeting was held on April 19, 2012.

On March 2, 2012, EPA corresponded with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) in order to initiate informal consultation pursuant to Section 7 of the Endangered Species Act. A copy of the final Section 303(d) List was sent on September 11, 2012.

**Action Area:**

The area evaluated for action are the waters of the State of Maryland, defined in Maryland water quality standards COMAR Section 26.08.01.O1B(103) as: "(a) Both surface and underground waters within the boundaries of this State subject to its jurisdiction, including that part of the Atlantic Ocean within the boundaries of this State, the Chesapeake Bay and its tributaries, and all ponds, lakes, rivers, streams, tidal and nontidal wetlands, public ditches, tax ditches, and public drainage systems within this State, other than those designed and used to collect, convey, or dispose of sanitary sewage; and (b) The flood plain of free flowing waters determined by the Department of Natural Resources on the Basis of the 100-year flood frequency."

It should be noted that the 2012 Section 303(d) List incorporates modifications from the 2010 Section 303(d) List to reflect Maryland's revised assessment methodologies for bacteria and biology. Maryland also made minor changes to the pH, sediment, toxics, and DO and Chlorophyll a in Reservoirs assessment methodologies. A paragraph was added to these four methodologies that discussed the scale of assessment and how listings would be georeferenced. These changes were not included in the 2012 Integrated Report (IR) because that does not change the meaning of the methodologies or have any direct impact on the 303(d) List.

The biology listing methodology went essentially unchanged with the exception of adding language that clarifies an existing assessment rule. Another important change regarding the biological assessment methodology is the use of Category 4C (impaired, pollution not caused by pollutant) for several non-pollutant impairments. In the 2010 IR, MDE implemented the Biological Stressor Identification Analyses (BSID) analysis approach to identify the cause of biological community degradation. As BSID analyses were completed, the generic "cause unknown" listings for non-tidal watersheds were replaced by listings for specific impairing pollutants. Common pollutants identified were substances such as chlorides, sulfates, and nutrients. In 2012, several of these analyses, for select watersheds, indicated that at least a portion of the impact to biological communities could be attributed to stream and riparian habitat modifications. More specifically, biological impacts were found to be due to lack of riparian stream buffering (having vegetated buffer areas, 50 meters) and channelization of stream banks (which includes the hardening of banks or even straightening of stream channels). As a result, the 2012 IR has thirteen new Category 4c listings for channelization and 5 new Category 4c listings for lack of a riparian buffer.

In addition, one Category 4b assessment for mercury, in the tidal portion of the Patapsco River (PATMH), has been removed from the IR. This assessment, referencing a specific industrial point source (Erachem Comilog, Inc), was erroneously transferred from Maryland's 304(l) list in late 1980. Currently, this facility does not use mercury in any of its industrial processes. Recent discharge monitoring report (DMR) data has also shown that effluent from this facility does not contain measureable quantities of mercury. For these reasons, this listing has been removed from the IR.

The bacterial assessment methodology's change is the addition of a discussion of the type of geographic scale used in the assessment of the three distinct water uses: shellfish harvesting; recreational waters; and beaches.

Maryland has summarized changes to the Section 303(d) List from 2008 to 2012 in Tables 1 and 2 of the Integrated Report and as follows:

> There are 37 additions to the list of Category 5 waters in 2012. Twenty four of these new Category 5 waterbody-pollutant combinations (also referred to as listings) resulted from MDE's BSID. The purpose of these analyses, as discussed in the Biological Assessment Methodology for Non-tidal Streams, is to identify the primary pollutants that are responsible for impairing watershed biological integrity. Of these 24 new 'biostressor' listings, nine are for total suspended solids, seven are for chlorides, seven are sulfates, and one is listed for total phosphorus. In addition, there are nine new fecal coliform listings in shellfish harvesting waters, two Chesapeake Bay segment listings as a result of updated bioassessments, and two new PCB listings for fish tissue.
>
> Thirty-four waterbody-pollutant combinations were removed or revised from the list of impaired waters (delistings) in 2012. Twenty-one biological listings without a specified impairing substance have been replaced by specific pollutant listings enumerated by the BSID. Another two have been delisted as a result of PCB levels that are now supporting the fishing designated use. Two others have been delisted for fecal coliform as they now support the shellfish harvesting designated use. The remaining nine delistings are a combination of waters that meet aquatic life standards for total phosphorus (four delistings), biological evaluations (2 delistings), sediment-related parameters (two delistings), and ammonia (one delisting). Since early listings were based on limited data (especially from 1996 and 1998), in many cases, it is not possible to attribute these waters now meeting standards to a particular restoration action. It is possible that the extensive restoration practices that have been applied statewide might be playing a contributory role but it may also be true that these listings were made based upon insufficient data.
>
> In addition, one Category 4b assessment for mercury, in the tidal portion of the Patapsco River (PATMH), has been removed from the IR. This assessment, referencing a specific industrial point source (Erachem Comilog, Inc), was erroneously transferred from Maryland's 304(l) list in the late 1980's. Currently, this facility does not use mercury in any of its industrial processes. Recent discharge monitoring report data has also shown that effluent from this facility does not contain measureable quantities of mercury. For these reasons, this listing has been removed from the IR.

**List of Federally Listed Species Which May be Found Within the Action Area:**

The list below includes all threatened and endangered species compiled by the U.S. FWS and the NMFS for the State of Maryland. The list includes the species identified by the NMFS for the 2012 Section 303(d) List. In an abundance of caution, we are also including species that were not identified by the NMFS for the 2012 Section 303(d) List, but which had

been identified by both Services in connection with previous years' Section 303(d) Lists.[1] The species listed include plants, mollusks, fishes, reptiles, birds, insects, and mammals. The level of information for each species varies. Only a limited number of threatened or endangered species are aquatic organisms. For this evaluation we are considering the aquatically dependent species that still occur in Maryland.

- Plants: Small whorled Pogonia, Canby's Dropwort, Swamp Pink, Harperella, Sandplain Geradia, Northeastern Bulrush, Sensitive Joint-vetch, and Pigweed Seabeach.
- Mammals: Delmarva Fox Squirrel, Indiana Bat, Humpback Whale, Finback Whale, Blue Whale, Right Whale, Sie Whale, and Sperm Whale.
- Birds: Piping Plover
- Fish: Shortnose Sturgeon and Maryland Darter.
- Reptiles: Bog Turtle, Loggerhead Sea Turtle, Kemp's Ridley Sea Turtle, Leatherback Sea Turtle, and Green Sea Turtle.
- Mollusks: Dwarf Wedge Mussel.
- Insects: Puritan Tiger Beetle, Northeastern Beach Tiger Beetle.

**Plants:**

The **Northeastern Bulrush** *(Scipus anclstrochaetus)* is listed as endangered and is found in Washington County. It is found at the edge of ponds, wet depressions, or shallow sinkholes within small (generally less than one acre) wetland complexes. These wetlands are generally characterized by seasonally variable water levels. Populations are subject to threats ranging from habitat degradation or loss caused by development and land use practices to natural threats such as succession and herbivore. Maryland's single population is located on private property in Washington County, within the acquisition boundary of a State Wildlife Management Area.

Possible threats to this population include residential development and succession (invasion of woody plants). Its aquatic dependence is wetland habitat.

Another plant is the **Small-whorled Pogonia** *(Isotria medeolides)* that is listed by the service as occurring in Montgomery County in Maryland, but is probably extirpated. It occurs on upland sites in mixed-deciduous/coniferous forests that are generally in second or third-growth successional stages. Characteristics common to most of its sites include sparse to moderate

[1] We note that, effective August 8, 2007, under the authority of the Endangered Species Act of 1973, as amended, the U.S. Fish and Wildlife Service removed (delisted) the bald eagle in the lower 48 States of the United States from the Federal List of Endangered and Threatened Wildlife. However, the bald eagle will still be protected by the Bald and Golden Eagle Protection Act, Lacey Act and the Migratory Bird Treaty Act. We conclude that the proposed action will not cause "disturbance" to the bald eagle.

ground cover in the species' micro habitat, a relatively open understory canopy, and proximity to features that create long-persisting breaks in the forest canopy (i.e., streams). Soils at most sites are highly acidic and nutrient poor, with moderately high soil moisture values. Its aquatic dependence is its proximity to streams.

The **Swamp Pink** *(Helonias bullata)* is found in Anne Arundel, Cecil, and Dorchester Counties. The swamp pink is a distinctive perennial plant with thick stocky rhizomes. It inhabits a variety of freshwater wetlands, including spring seepages, swamps, bogs, wet meadows and margins of small streams. The swamp pink does not usually inhabit tidal wetland areas (*L. Arroyo, personal communication, 2002*). Although known to inhabit a variety of wetlands, swamp pink is only found in patchy distribution because of its restrictive habitat requirements. The major threat to the species is loss and degradation of its wetland habitat due to encroaching development, sedimentation, pollution, succession, and wetland drainage. Activities that increase sedimentation, pollutant runoff, or cause flooding of habitat should, therefore, be avoided. Habitat loss, fragmentation, and degradation, collection, trampling and other biological and physical factors threaten swamp pink. Human foot traffic or vehicle traffic, as well as beaver dam building constitute other threats to the swamp pink. All extant sites are on private lands in Maryland, although the recovery plan reports that negotiations are underway between the Maryland Natural Heritage Program and individual landowners to secure site protection. The maximum buffer required around swamp pink in wetlands is limited to 150 feet (*Freshwater Wetlands Protection Act of 1987*). Site conservation is the primary recovery plan for the swamp pink.

**Canby's Dropwort** *(Oxypolis canbyi)* is found in Queen Anne's County. The Canby's dropwort is native to the coastal plain. It is a perennial herb that occurs in pond cypress savannas, the shallows and edges of cypress pond pine ponds, sloughs, and wet pine savannas. The largest and most vigorous populations have been found to occur in open bays or ponds which are wet throughout most of the year, but which have little or no canopy. Soil types associated with canby's dropwort habitat are usually characterized by medium to high organic content and high water table; they are also deep, poorly drained, and acidic.

The most serious threat to canby's dropwort is the loss or degradation of the wetland habitats in which it occurs. Highway construction and predation by various insects are also threats to this species survival. Since most of the existing populations are located on private land, agreements must be reached with the landowners for permanent protection of the species on theses sites, and owners of rights-of-way. Its aquatic dependence is wetland habitat.

**Harperella** *(Ptillmnium nodosum)* is found in Allegheny and Washington Counties. It is a rare plant native to seasonally flooded rocky mountain streams and coastal plain ponds. One site occurs on a granite outcrop. In both its riverine and pond environments (and its outcrop occupance), the plant occurs only in a narrow range of water depths; it is intolerant of deep water or conditions that are too dry. The riverine form is found in micro sites that are sheltered from rapidly moving water. The Plant is threatened by small population sizes and hydrological manipulations of the habitat. Its aquatic dependence is aquatic habitat. The Recovery Plan calls for protection of existing populations through habitat protection and watershed conservation measures, increased understanding and implementation of management and propagation techniques, and increased public awareness.

The **Sandplain Gerardia** *(Agalinis acuta)* is an annual pale green herb with pink or purple flowers is found in Baltimore County. Sandplain gerardia typically occurs on dry, sandy, poor nutrient soils of sparsely vegetated sandplain environments and serpentine barrens, whose harshness may eliminate potentially competitive species. It has also been known to occur in small openings within pin-oak forests. The primary threats to the Maryland populations appear to be trampling by people and competition from successional species associated with canopy closure, possibly due to fire suppression. Its decline can be attributed to the loss and degradation of suitable habitat, caused by increased development, and vegetative succession.

The **Sensitive Joint-vetch** *(Aeschynomene virginica)* is found in Prince Georges, Calvert, and Somerset Counties. It is an annual legume native to the eastern United States, growing on the fringe of marshes or shores. The species occurs in freshwater tidal river systems, within the intertidal zone where populations are flooded twice daily. Its presence in a given marsh may be a factor of suppressed competition, hydrological conditions, salinity tolerances, and/or other parameters. Sensitive joint-vetch seems to favor microhabitats where there is a reduction in competition from other plant species. Bare to sparsely vegetated substrates appear to be a habitat feature of critical importance for establishment and growth of this species. Almost every population of sensitive joint-vetch is susceptible to hydrological changes (e.g., water withdrawal projects), habitat loss and modification (e.g., through bank erosion), or other stressors caused by development.

The **Pigweed Seabeach** *(Amaranthus pumilus)* is found at Atlantic coastal beaches in Worcester County. The species is native to the barrier island beaches of the Atlantic Coast. An annual plant, this species appears to need extensive areas of barrier island beaches and inlets, functioning in a relatively natural and dynamic manner, allowing it to move around in the landscape, occupying suitable habitat as it becomes available. It often grows in the same areas selected for nesting by shorebirds, such as plovers, terns, and skimmers. Threats include beach stabilization efforts (particularly the use of beach armoring, such as sea walls and riprap), intensive recreational use, and herbivory by webworms. Aquatic dependence for dune and islanded flat habitat.

**Fish:**

The **Shortnose Sturgeon** (*Acipenser brevirostrum*) is a federally listed species. Shortnose sturgeon was listed as endangered on March 11, 1967, (32 FR 4001), and they remained on the endangered species list with the enactment of the Endangered Species Act in 1973 (NOAA National Marine Fisheries Service 1998a, 2002). The National Oceanic and Atmospheric Administration's National Marine Fisheries Service Shortnose Sturgeon Recovery Plan (Recovery Plan) indicates reports of its occurrence in the Chesapeake system in 1876 (NOAA National Marine Fisheries Service 1998a). The National Marine Fisheries Service Biological Opinion for the Washington Aqueduct Permit (NOAA National Marine Fisheries Service 2002) states that other historical records of shortnose sturgeon in the Chesapeake Bay include: the Potomac River (Smith and Bean 1899), the upper Chesapeake Bay near the mouth of the Susquehanna River in the early 1980s, and the lower Bay. EPA believes there is a potential that the *Dadswell* et. al. *1984* referenced observations at the mouths of the James and Rappahannock are incorrect. The authors misidentify the York (as the James) on the map

presented in Figure 7 and give two markings, represented by dots in very up-estuary regions (one in York and one in the Mattaponi). No details were given on the number of observations or source. The U.S. Fish and Wildlife Service Reward Program for Atlantic Sturgeon began in 1996. Shortnose sturgeons have been incidentally captured via this program. According to the National Marine Fisheries Service, through March 2008, the incidental capture of 73 individual shortnose sturgeon in Maryland waters of the Chesapeake Bay has been reported via the FWS reward program. Two fish were recaptured within one to two weeks of their initial capture date (February 1999 in the mainstem of the Bay and then in the Sassafras river and May/June 2000 in the mainstem of the Bay). All of these fish were captured alive in either commercial or recreational fisheries. Most of the shortnose sturgeon, documented in the reward program have been caught in the upper Bay, from Kent Island to the mouth of the Susquehanna River and the C&D Canal, in Fishing Bay and around Hoopers Island in the middle Bay, and in the Potomac River (Litwiler 2001, Skjeveland et al, 2000; Welsh et al, 2002). Twelve shortnose sturgeon have been captured in the Potomac river since 1996. The eleven shortnose sturgeon captured in the Potomac river and reported via the FWS reward program were documented in the following locations: six at the mouth of the river (May 3, 2000, March 26, 2001, two on March 8, 2002, December 10, 2004, May 22, 2005); one at the mouth of the Saint Mary's river (April 21, 1998); one at the mouth of Potomac Creek (May 17, 1996); one at rkm 63 (March 22, 2006); one at rkm 57 (cobb Bar; December 23, 2007); and, one at rkm 48 (March 14, 2008). Additionally, 1 adult female was captured by USGS researchers within the Potomac River (at 4km 103) in September 2005. An ongoing tagging and telemetry study of shortnose sturgeon in the Potomac River began in 2004 (Kynard 2007). Three shortnose sturgeon (the 9/22/05, 3/22/06 and 3/14/08 fish mentioned above) have been tagged with Combined Acoustic and Radio Transmitting (CART) tags. While the sex and reproductive status of the 2008 fish is unknown, the 2005 and 2006 fish were both females with late stage eggs. The occurrence of pre-spawning females in the Potomac River, combined with documented habitat that is consistent with preferred shortnose sturgeon spawning habitat, suggests that a spawning population of shortnose sturgeon continues to exist in this river system. The 2005 female migrated upstream in spring 2006 to a 2-km reach (river km 187-185) containing habitat determined to be suitable for spawning (Kynard *et al.* 2007). The fish tagged in 2008 has not been detected by the telemetry array that is within the Potomac River. This suggests that the fish either shed the tag or that the fish left the Potomac River. In many river systems, shortnose sturgeon appears to spend most of their life in their natal river systems, only occasionally entering higher salinity environments. They are benthic omnivores and continuously feed on benthic and epibenthic invertebrates including molluscs, crustaceans and oligochaete worms (*Dadswell 1979*). Shortnose sturgeon depends on free-flowing rivers and seasonal floods to provide suitable spawning habitat. For Shortnose sturgeon, spawning grounds have been found to consist mainly of gravel or ruble substrate in regions of fast flow. Flowing water provides oxygen, allows for the dispersal of eggs, and assists in excluding predators. Seasonal floods scour substrates free of sand and silt, which might suffocate eggs (*Beamesderfer and Far 1997*). Shortnose sturgeon spawn in upper, freshwater sections of rivers, feed and overwinter in both fresh and saline habitats. In populations that have free access to the total length of a river (absent of dams), spawning areas are located at the farthest accessible upstream reach of the river, often just below the fall line (NOAA National Marine Fisheries Service 1998a). Tributaries of the Chesapeake Bay that appear to have suitable spawning habitat for the Chesapeake Bay shortnose sturgeon include the Potomac, Rappahannock, James, York, Susquehanna, Gunpowder and Patuxent Rivers (*J. Nichols, personal communication, 2002*). Still other scientists believe that very little if any suitable spawning habitat remain for shortnose

sturgeon due to past sedimentation in tidal freshwater spawning reaches (*Secor, personal communication 2003; J. Musick, personal communication, 2003*). According to the Recovery Plan, shortnose sturgeon are affected by habitat degradation or loss (resulting, for example, from dams, bridge construction, channel dredging, and pollutant discharges) and mortality (resulting, for example, from impingement on cooling water intake screens, dredging and incidental capture in other fisheries) as principal threats to the species' survival (NOAA National Marine Fisheries Service 1998a). The recovery goal is identified as delisting shortnose sturgeon populations throughout their range, and the recovery objective is to ensure that a minimum population size is provided such that genetic diversity is maintained and extinction is avoided.

In 2005, researchers conducting a survey for shortnose sturgeon in the Potomac River captured one mature egg bearing female and an additional mature egg bearing female in the same location in March 2006. Both fish were outfitted with sonic tags and their activity is tracked by researchers. Information to date indicates that the fish have remained in the Potomac River since they were tagged.

All five Distinct Population Segments (DPS) of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) (Gulf of Maine (GOM) listed as threatened, and the New York Bight (NYB), Chesapeake Bay (CB), Carolina, and South Atlantic (SA) as endangered) may be present in the Chesapeake Bay and its tributaries. Presently, the only known spawning river for the CB DPS is the James River in Virginia. The CB DPS constitutes the largest contingent of fish observed in the Chesapeake Bay and its tributaries. However, adults and sub-adults from other DPSS range widely throughout the marine environment and will utilize non-natal river systems and the Bay for forage activities.

From 1996-2004, as part of the FWS Atlantic Sturgeon reward program, over 600 captures of Atlantic sturgeon occurred throughout Maryland waters of the Chesapeake Bay and its tributaries. Individuals were adults and sub-adults, most likely in the rivers and bay to forage in suitable habitat areas. Atlantic sturgeons were captured in the mainstem of the bay, Hoopers Straits, as well as in the Potomac, Susquehanna, Nanticoke, Severn, Little Choptank, and Choptank Rivers.

The **Maryland Darter** (*Etheostoma sellare*) occurs in Harford County. Darters are known to inhabit riffle sites slightly upstream from stream mouths. The substrate of darter habitat can be composed of rubble, rocks, gravel and/or silts, with rooted aquatic plants and water moss possibly present. Some threats to the Maryland darter include impoundments; runoff containing excessive nutrients, organic wastes, ammonia, pesticides, herbicides, and other toxic substances; construction projects with the potential for spills and lethal runoff, and prolonged periods of high turbidity. Recovery plans include coordination with appropriate agencies to reduce agricultural pollution and sedimentation, and enforcement of water quality regulations for point and nonpoint discharges.

**Reptiles:**

The **Bog Turtle** (*Clemmys muhlenbergii*) is listed as threatened. It is currently found in Carroll, Baltimore, Harford, and Cecil Counties. This species has a fairly wide distribution on the eastern coast of the United States (*Buhlmann,* et.al., *1997*). Bog turtles live in relatively open

portions of sphagnum bogs, swamps or marshy meadows with slow moving, spring fed streams or spring runs with soft bottoms. Although more often associated with land habitats, research has shown that 72 percent of the known bog turtle sites are located in riverine drainage areas (*Buhlmann*, et.al., *1997*). The primary threat to bog turtles is the draining or destruction of its habitat. Many have also been removed for commercial purposes. The bog turtle's aquatic dependence is wetland and stream habitat.

Marine sea turtles include the **Loggerhead Sea Turtle** (*Caretta caretta*); **Kemp's Ridley Sea Turtle** (*Lepidochelys kempi*); **Leatherback Sea Turtle** (*Dermochelys coriacea*); **Hawksbill Sea Turtle** (*Eretmochelys imbricata*); and **Green Sea Turtle** (*Chelonia mydas*). Leatherback sea turtles are present off the Maryland coast but are predominantly pelagic. Loggerhead, Kemp's Ridley, and Green sea turtles are present in the Mid-Atlantic region mainly during late spring, summer, and early fall when water temperatures are relatively warm. Aerial surveys of loggerhead turtles North of Cape Hatteras indicate that they are most common in waters from 22 to 49m deep, although they range from beaches to waters beyond the continental shelf. In the Chesapeake Bay area, Kemp's Ridleys frequently forage in shallow embayments, particularly in areas supporting submerged aquatic vegetation. Green sea turtles are known to occur in estuarine and oceanic waters along the East Coast from Long Island to the tropics. Recent data from sightings and incidental captures in fishing gear indicate that Loggerhead and Kemp's Ridley are the species of sea turtles most likely to be found in the waters of the Chesapeake Bay, while Leatherback and Green sea turtles may also be in the area (NMFS, 2003). An estimated 3,000 to as many as 10,000 Loggerhead turtles, and perhaps 500 Kemp's Ridley sea turtles, use the Chesapeake Bay (*J. Musick, personal communication, 2002*). Approximately 95 percent of the loggerheads found in the Chesapeake Bay are juveniles, and the area from the mouth of the Bay to the Potomac River serves as an important foraging area for this life stage. Loggerhead sea turtles tend to forage along channel edges in the Bay and tidal rivers while Kemp's Ridley sea turtles feed in the water flats. Sea turtles in the Chesapeake Bay forage on crustaceans (e.g., crabs) and mollusks. Threats to the turtles include, incidental takes, poaching, pollution and marine habitat degradation. Sea turtles are expected to be present in the Chesapeake Bay between April 1 and November 30. In Maryland waters of the Chesapeake Bay, sea turtles are most often documented in the waters below the Bay's confluence with the Potomac River. Recovery plans include protection of nesting habitats, eliminating mortality from incidental catch in commercial fishing, and reduction of marine pollution (NOAA National Marine Fisheries Service and U.S. Fish and Wildlife Service 1991a, 1991b, 1992, 1993; U.S. Fish and Wildlife Service and NOAA National Marine Fisheries\Service 1992). No critical habitat has been designated in Maryland, Virginia or D.C. waters for species under NOAA NMFS jurisdiction, and none is currently proposed for designation.

**Mollusks:**

Historically, the **Dwarf Wedge Mussel** *(Alasmidonta heterodon)* was widely but discontinuously distributed in Atlantic drainages from Canada to North Carolina. It is located in Caroline, Queen Anne's, St. Mary's, and Charles Counties in Maryland. The dwarf wedge mussel is an Atlantic Coast freshwater mussel, usually found in sand, firm muddy sand, and gravel bottoms in rivers of varying sizes with slow to moderate current. Threats to this species include impoundment, siltation, pollution of its aquatic habitat, and competition from exotic mollusks. To survive they need silt-free, stable streambeds and well oxygenated water that is pollutant free.

They are mainly found in Connecticut and are not found in tidal areas (*E.Davis, personal communication, 2002*). Habitat degradation is the greatest cause of this species' decline. Industrial pollution, intensive recreational development, urban and agricultural development, and siltation have adverse effects on this species. Recovery plans include habitat protection through acquisition, registry management agreements, the establishment of stream buffer zones, and regulations to protect water quality. Its aquatic dependence is aquatic habitat.

**Birds:**

The **Piping Plover** (*Charadrius melodus*) is listed as threatened federally, and is also State listed as threatened in Assateague Island, Worcester County. They breed on sandy, gravel and/or cobbled coastal beaches in areas with little or no vegetation. Wintering plovers are generally found near coastal inlets. Piping plovers nest on coastal beaches above the high tide line, sandflats at the ends of sandspits and barrier islands, and around dunes. They may also nest on areas where suitable dredge spoil has been deposited. Piping plovers forage in intertidal zones and wrack lines of ocean beaches, washover areas, mudflats, sandflats, coastal ponds, lagoons and salt marshes, eating marine worms, fly larvae, beetles, crustaceans, mollusks and other invertebrates. Its numbers were drastically reduced in the 20th century because of uncontrolled commercial and recreational hunting and egg collecting in the 1900s, and dune stabilization and beachfront development after World War II. Aquatic dependence is oceanic and estuarine habitats. Today the populations are limited by predators (including dogs and cats), flooding of the nest by rain or tidal overwash, development and beach stabilization, and pedestrian and off-road vehicle traffic that inadvertently crush eggs or chicks. Habitat loss and degradation, disturbance by humans and domestic animals, and increased predation are important causes of the current downtrend.

**Mammals:**

The **Indiana Bat** *(Myotis sodlis)* is listed as endangered and occurs in Allegany, Garrett, and Washington Counties. While hibernating through the winter months, bats require specific roost sites in caves or mines that have stable temperatures below 10 degrees Celsius. Summer colonies have been known to form in riparian and floodplain areas of small to medium-sized streams, but more recently have been found in upland forest. Indiana bats forage for aquatic insects while flying under riparian and floodplain trees. The main threats to this species' survival are natural hazards, human disturbance and vandalism, deforestation and stream channelization, and pesticide poisoning. Causes of decline listed in the recovery plan include natural hazards, such as the flooding of hibernation caves, and human causes, such as disturbance during hibernation, and habitat destruction. Aquatic dependence is aquatic foraging areas.

The **Delmarva Fox Squirrel** *(Sciurus niger cinereus)* occurs in Wicomico, Caroline, Queen Anne's, Talbot, Somerset, Worchester, Dorchester, and Kent Counties. The Fox squirrel is found in pine and oak forests, both bottom land and upland, with a relatively open understory. Therefore, destruction of forest habitat due to development is a threat to the Fox squirrel. The Fox squirrel relies on the forest to provide food (nuts, seeds, and fruit) and shelter in tree hollows. Food abundance, disease, predation, and destruction of forest habitat due to development affect squirrel numbers from year to year. Implementing appropriate forest management practices to maintain suitable habitat for the squirrel is essential to its recovery. Aquatic dependence is

bottom land forest habitat.

Various marine mammals such as the **Blue Whale** (*Balaenoptera musculus*); **Sei Whale** (*Balaenoptera borealis*); **Sperm Whale** (*Physeter catodon*); **Right Whale** (*Balaena glacialis*); **Humpback Whale** (*Megaptera novaeangliae*); and **Finback Whale** (*Balaenoptera physalus*) occur in ocean waters off the coast of Maryland (NOAA National Marine Fisheries Service 1991a, 1991b, 1998b, 1998c). There is some evidence that healthy whales occasionally use bay waters. For example, in 1994, two humpback whales were reported lunge fishing under the Chesapeake Bay Bridge, according to David Scofield, Manager of Ocean Health Programs at the Baltimore Aquarium (*D. Scofield, personal communication, 2002*). While whales are indeed occasionally seen in the Chesapeake Bay, it is not considered critical habitat for them. Recovery plans include maintaining and enhancing whale habitats, and identifying and reducing death, injury or disturbance to whales caused by humans. Recovery plans include maintaining and enhancing whale habitats, and identifying and reducing death, injury or disturbance to whales caused by humans.

**Insects:**

The **Puritan Tiger Beetle** (*Cicindela uritana*) was listed as federally threatened in 1990, and is endangered in Maryland (U.S. Fish and Wildlife Service 1993). It is found in Kent, Cecil, and Calvert Counties. It occurs on open sand flats, dunes, water edges, beaches, woodland paths, and sparse grassy areas. Populations have declined due to habitat alterations associated with human population growth, as well as inundation and disturbance of its shoreline habitat from dam construction, riverbank stabilization, and other human activities. The beetle larvae, in particular, are sensitive to natural and human-induced changes to beaches and bluffs, as well as human traffic and waterborne pollution.

The **Northeastern Beach Tiger Beetle** (*Cicindela dorsalis dorsalis*) is listed as threatened in Maryland, and proposed threatened in Virginia (U.S. Fish and Wildlife Service 1994). It is found in Calvert and Somerset Counties. It occurs in over 50 sites within the Chesapeake Bay region. Northeastern Beach tiger beetles are rare beach dwellers that occur on open sand flats, dunes, water edges, beaches, woodland paths, and sparse grassy areas. The beetle is most vulnerable to disturbance in the larval stage, which lasts two years. Larvae live in vertical burrows generally in the beach intertidal zone, where they are particularly sensitive to destruction by high levels of pedestrian traffic, ORVs, and other factors such as beach changes due to coastal development and beach stabilization structures. It is tolerant to aquatic changes and is more dependent on beach conditions for survival (*B. Knisley, personal communication, 2002*).

**Manner in Which the Action May Affect Listed Species:**

EPA proposes to approve the final Maryland 2012 Section 303(d) List of impaired waters submitted by the State on July 15, 2012. This is a list of impaired waters that may result in the development of TMDLs or other measures to attain and/or maintain applicable water quality standards. EPA believes that this action of identification of impaired waters and any subsequent development and implementation of TMDLs will result in improved water quality. To the extent that the identification of Section 303(d) waters impacts the

environmental baseline, this action adds a framework toward restoration of impaired and threatened waters insofar as the State may eventually develop and implement TMDLs or other water quality improvement measures for these waters, as appropriate. Because the many listed aquatic or aquatic-dependent species will benefit from improvements in water quality, EPA concludes that approval of these waters on the State's list is not likely to adversely affect listed species and their critical habitat because the effects of the action would be beneficial to the species.

**Summary:**

EPA's approval of the 2012 Maryland Section 303(d) List will result in the identification of impaired waters, which may in turn lead to establishment of TMDLs or other measures to attain and/or maintain applicable water quality standards. Therefore, EPA finds that approval of the Section 303(d) List would benefit, and is not likely to adversely affect, listed species and their critical habitat.

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**Attachment:**

A. NMFS Listed Species in Maryland – April 06, 2012, correspondence from Daniel S. Morris, Acting Regional Administrator, National Marine Fisheries Service, NE Region, Gloucester, MA.