



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

September 30, 2011

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

Dear Dr. Eskin:

The U.S. Environmental Protection Agency (EPA), Region III, is pleased to approve the report, *Total Maximum Daily Load (TMDL) of Sediment in the Potomac River Washington County Watershed, Washington County, Maryland*. The TMDL report was submitted by the Maryland Department of the Environment to EPA for final review on September 30, 2010. Based on EPA's review, a revised TMDL report was submitted on September 15, 2011. The TMDL was established and submitted in accordance with Section 303(d)(1)(c) and (2) of the Clean Water Act to address impairments of water quality as identified in Maryland's Section 303(d) List. The Potomac River Washington County watershed (MD-02140501) was included on Maryland's Section 303(d) List as impaired by nutrients--phosphorus (1996), sediments (1996), methylmercury (2002), impacts to biological communities (2002), and polychlorinated biphenyls (PCBs) in fish tissue (2008). A Water Quality Analysis for eutrophication to address the nutrients/phosphorus listing was approved in February 2011. The 2012 Integrated Report will include the results of a stressor identification analysis for the impact to biological communities listing. The PCBs in fish tissue and methylmercury listings will be addressed at a future date. This TMDL addresses the sediment impairment only.

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

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

If you have any questions or comments concerning this letter, please do not hesitate to contact María García, at 215-814-3199.

Sincerely,

Jon M. Capacasa, Director
Water Protection Division

Enclosure

cc: Lee Currey, MDE-TARSA
Melissa Chatham, MDE-TARSA



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1650 Arch Street
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Decision Rationale
Total Maximum Daily Load of Sediment
Potomac River Washington County Watershed
Washington County, Maryland

/S/

Jon M. Capacasa, Director
Water Protection Division

Date: September 30, 2011

Decision Rationale
Total Maximum Daily Load of
Sediment in the Potomac River Washington County Watershed
Washington County, Maryland

I. Introduction

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

This document sets forth the U.S. Environmental Protection Agency's (EPA) rationale for approving the TMDL for sediment in the Potomac River Washington County Watershed. The TMDL was established to address impairments of water quality, caused by sediment, as identified in Maryland's 1996 Section 303(d) List for water quality limited segments. The Maryland Department of the Environment (MDE) submitted the report, *Total Maximum Daily Load of Sediment in the Potomac River Washington County Watershed, Washington County, Maryland*, dated September 2010 to EPA for final review on September 30, 2010. The TMDL in this report addresses the sediment impairment in the Potomac River Washington County Watershed (MD-02140501) as identified on Maryland's Section 303(d) List.

EPA's rationale is based on the TMDL Report and information in the computer files provided to EPA by MDE. EPA's review determined that the TMDL meets the following seven regulatory requirements pursuant to 40 CFR Part 130.

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

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

II. Summary

The TMDL specifically allocates the allowable sediment loading to the Potomac River Washington County watershed. There are eight permitted point sources which are included in the WLA. The fact that the TMDL does not assign WLAs to any other sources in the watershed should not be construed as a determination by either EPA or MDE that there are no additional sources in the watershed that are subject to the National Pollutant Discharge Elimination System (NPDES) program. In addition, the fact that EPA is approving this TMDL does not mean that EPA has determined whether some of the sources discussed in the TMDL, under appropriate conditions, might be subject to the NPDES program. The sediment TMDL is presented as an average annual load in tons per year because it was calculated so as to not cause any sediment related impacts to aquatic health. The long term maximum daily sediment TMDL is presented in tons per day. The calculation of the long term maximum daily TMDLs is explained in Appendix C of the TMDL report. The average annual Potomac River Washington County watershed TMDL is summarized in Table 1. The TMDL is the sum of the LAs, NPDES Stormwater WLA, Process Water WLA, and MOS. The LAs include nonpoint source loads generated within the Potomac River Washington County watershed. The long term maximum daily TMDL is presented in Table 2. Individual annual and daily WLAs for permitted point sources are provided in Table 3.

Table 1. Potomac River Washington County Watershed Average Annual TMDL of Sediment/TSS (ton/yr)

TMDL (tons/year)		LA		WLA				MOS
14,196	=	13,060	+	NPDES Stormwater WLA	+	Process Water WLA	+	Implicit
				1,060		76		
				1,136				

Table 2. Potomac River Washington County Watershed Maximum Daily Loads of Sediment/TSS (ton/day)

MDL (ton/day)		LA		WLA				MOS
46	=	42.0	+	NPDES Stormwater LA	+	Process Water WLA	+	Implicit
				3.4		0.6		
				4.0				

Table 3. Wasteload Allocations for Process Permitted Point Sources in the Potomac River, Washington County Watershed

Facility	NPDES ID Number	WLA (ton/year)	MDL (ton/day)
R. Paul Smith Power Station	MD0000582	54.7	0.5
Washington County MS4	MS4-WA-003	815	2.6
“Other NPDES Regulated Stormwater” ¹	--		
MD General Permit to Construct	03-IM-5500-046	245	0.8
Minor Facilities: ²	--	--	--
R.C. Wilson Water Filtration Plant	MD0003484	21.2	0.09
Sharpsburg WTP	MD0067784		
Clear Spring WTP	MD0069132		
Martin Marrieta – Pinesburg Quarry	MDG491405		
C. William Hetzer, Inc – Shale Pit	MD499832		

¹ The “Other NPDES Regulated Stormwater” WLA includes sediment loadings from Urban Barren land use, which represents the permitted construction site WLA within the watershed.

² Minor facilities are those with less than 1.0 Million Gallons per Day (MGD) design flow. These facilities are not given individual allocations. Rather, an aggregate allocation is provided for all of the minor facilities.

The TMDL is a written plan established to ensure that a waterbody will attain and maintain water quality standards. The TMDL is a scientifically based strategy that considers current and foreseeable conditions, the best available data, and accounts for uncertainty with the inclusion of a MOS value. The option is always available to refine the TMDL for resubmittal to EPA for approval if environmental conditions, new data, or the understanding of the natural processes change more than what was anticipated by the MOS.

III. Background

The Potomac River Washington County watershed is located in the Upper Potomac River sub-basin of the Chesapeake Bay watershed and covers approximately 58,580 acres. The Washington County portion of the Potomac River is defined as the reach that starts at the confluence of the Potomac River with the Little Tonoloway Creek and ends at the confluence with the Shenandoah River. The 68 mile southeastward journey of the river creates the border between Maryland and West Virginia. Major tributaries include Camp Spring Run, Ditch Run, Downey Branch, and Greenspring Run. The region is mostly forested and rural.

The assessment unit consists only of the Potomac River Washington County watershed and includes only those streams that drain directly to the Potomac River mainstem. There are no “high quality,” or Tier II, stream segments (Benthic Index of Biotic Integrity (BIBI) and Fish Index of Biotic Integrity (FIBI) aquatic life assessment score greater than 4 (scale 1-5)) located within the watershed requiring the implementation of Maryland’s anti-degradation policy. Approximately, 5.4 percent of the watershed area is covered by water (i.e., streams, ponds, etc.), most of which is accounted for by the mainstem Potomac River. The total population in the Potomac River Washington County watershed is approximately 23,900. The Potomac River

watershed consists primarily of forest land use (52.9%) and crop land use (26.3%). There are also smaller amounts of urban (11.9%) and pasture (8.7%) and extractive (0.1%).

The Potomac River Washington County watershed (MD-02140501) has been identified on Maryland's 2008 §303(d) list as impaired by nutrients--phosphorus (1996), sediments (1996), methylmercury (2002), impacts to biological communities (2002), and polychlorinated biphenyls (PCBs) in fish tissue (2008). A Water Quality Analysis for eutrophication to address the nutrients/phosphorus listing was approved in February 2011. The 2012 Integrated Report will include the results of a stressor identification analysis for the impact to biological communities listing. The PCBs in fish tissue and methylmercury listings will be addressed at a future date. This TMDL addresses the sediment impairment only.

The designated use of the Potomac River Washington County mainstem and its tributaries is Use I-P (Water Contact Recreation, Protection of Aquatic Life, and Public Water Supply), except for Camp Spring Run, which is designated as Use III-P (Nontidal Cold Water and Public Water Supply).

The objective of the TMDL is to ensure that there will be no sediment impacts affecting aquatic health, thereby establishing a sediment load that supports the Use I-P/III-P designations for the Potomac River Washington County watershed. Currently, in Maryland there are not specific numeric criteria that quantify the impact of sediment on the aquatic life of nontidal stream systems. Therefore, to determine whether aquatic life is impacted by elevated sediment loads, MDE's Biological Stressor Identification (BSID) methodology was applied.

The BSID identifies the most probable cause(s) of observed biological impairments throughout Maryland 8-digit watersheds by ranking the likely stressors affecting a watershed using a suite of physical, chemical, and land use data. The results of the BSID analysis for the Potomac River Washington County watershed determined that the biological communities are likely impaired due to flow/sediment related stressors. The degradation of biological communities in the watershed is strongly associated with both agricultural and urban land use and their concomitant effects. Therefore, since sediment is identified as a stressor to the biological communities in the Potomac River Washington County Watershed, a TMDL is required.

CWA Section 303(d) and its implementing regulations require that TMDLs be developed for waterbodies identified as impaired by the State where technology based and other required controls do not provide for attainment of water quality standards. The sediment TMDL submitted by MDE is designed to allow for the attainment of the designated uses and to ensure that there will be no sediment impacts affecting aquatic health in the Maryland 8-digit Potomac River Washington County watershed. Refer to Tables 1 and 2 above for a summary of allowable loads.

For this TMDL analysis, a total of 31 water quality monitoring stations were used to characterize the Potomac River Washington County watershed. Twenty nine stations were biological/physical habitat monitoring stations from Maryland Biological Stream Survey (MBSS)

program round one (1995-1997), and round two (2000-2004) data collection. The BSID analysis used 24 biological/physical habitat monitoring stations from the MBSS program round two data collection. Additionally, two biological monitoring stations from the Maryland Core/Trend monitoring network were applied within the TMDL analysis as well.

The computational framework chosen for the Potomac River Washington County watershed TMDL was the Chesapeake Bay Program Phase 5.2 (CBP P5.2) watershed model target *edge of-the-field* (EOF) land use sediment rate calculations combined with *sediment delivery ratio*. The Potomac River Washington County was evaluated using one watershed TMDL Segment consisting of eleven CBP P5.2 model segments. The spatial domain of the CBP P5.2 watershed model segmentation aggregates to the Maryland 8-digit watershed, which is consistent with the impairment listing.

The nonpoint source and NPDES stormwater baseline sediment loads generated within the Potomac River Washington County watershed are calculated as the sum of corresponding land use *Edge-of-Stream* (EOS) loads within the watershed and represent a long-term average loading rate. Individual land use EOS loads are calculated as the product of the land use area, land use target loading rate, and loss from the EOF to the main channel. The loss from the EOF to the main channel is the sediment delivery ratio and is defined as the ratio of the sediment load reaching a basin outlet to the total erosion within the basin. A *sediment delivery ratio* is estimated from each land use type based on the proximity of the land use to the main channel. Thus, as the distance to the main channel increases, more sediment is stored within the watershed (i.e., *sediment delivery ratio* increases).

In order to quantify the impact of sediment on the aquatic health of the Potomac River Washington County watershed, a reference watershed approach was used and resulted in the establishment of a sediment loading threshold for watershed within the Highland and Piedmont physiographic regions. Nine reference watersheds were selected from the Highland/Piedmont region. To reduce the variability when comparing watersheds within and across regions, the watershed sediment loads are normalized by a constant background condition, the all forested watershed condition. The new normalized load, defined as the *forest normalized sediment load* represents how many times greater the current watershed sediment load is than the all *forested sediment load*. The *forest normalized sediment load* is calculated as the current watershed sediment load divided by the *all forested sediment load*. The reference watershed *forest normalized sediment load* was calculated as 3.3 and 4.2 for the median and 75th percentile, respectively. The 3.3 median value was selected as the *sediment loading threshold* to develop the TMDL as an environmentally conservative approach. The *forest normalized sediment load* for the Potomac River Washington County watershed (estimated as 3.8) was calculated using CBP P5.2 2005 land use, to best represent current conditions. A comparison of the Potomac River Washington County watershed *forest normalized sediment load* to the *forest normalized reference sediment load* (also referred to as the *sediment loading threshold*) demonstrates that the watershed exceeds the *sediment loading threshold*, indicating that it is receiving loads above the maximum allowable load that it can sustain and still meet water quality standards. The allowable load for the impaired watershed is calculated as the product of the *sediment loading threshold* (determined from watersheds with healthy biological community) and the Potomac River

Washington County *all forested sediment load*.

To attain the TMDL loading cap, the reductions allocated in the TMDL were applied to the predominant and controllable sediment sources, therefore, constant reductions were applied to these sources. If these predominant sources are controlled, water quality standards can be achieved in the most effective, efficient, and equitable manner.

The current total sediment load from the Potomac River Washington County watershed is 16,215 tons per year. An overall reduction of 12.5 percent from current estimated loads was required to meet the TMDL allocation and Maryland's water quality standards. The sediment TMDL for the Potomac River Washington County watershed was calculated to be 14,196 ton/yr. The TMDL is subdivided into a nonpoint source load (13,060 tons per year) and two types of point source loads: NPDES regulated stormwater load (1,060 tons per year) and regulated process water load (76 tons per year). Section 4.0 of the TMDL report provides a thorough description of the CBP P5 model and calculations.

IV. Discussion of Regulatory Conditions

EPA finds that MDE has provided sufficient information to meet all seven of the basic requirements for establishing a sediment TMDL for the Potomac River Washington County watershed. EPA, therefore, approves this sediment TMDL for the Potomac River Washington County watershed. This approval is outlined below according to the seven regulatory requirements.

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

Water Quality Standards consist of three components: designated and existing uses; narrative and/or numerical water quality criteria necessary to support those uses; and an anti-degradation statement. The designated surface water use of the Potomac River Washington County mainstem and its tributaries is Use I-P (Water Contact Recreation, Protection of Aquatic Life, and Public Water Supply), except for Camp Spring Run, which is designated as Use III-P (nontidal cold water and public water supply).

Maryland does not currently have numeric criteria for sediments. Therefore, to determine whether aquatic life is impacted by elevated sediment loads, MDE's BSID methodology was applied. The BSID analysis has determined that the biological impairment in the Potomac River Washington County watershed is strongly associated with both agricultural and urban land use and their concomitant effects.

Reductions in sediment loads are expected to result from decreased watershed and streambed erosion, which will then lead to improved benthic and fish habitat conditions. Specifically, sediment load reductions are expected to result in an increase in the number of benthic sensitive species present, an increase in the available and suitable habitat for a benthic community, a possible decrease in fine sediment (fines), and improved stream habitat diversity, all of which will result in improved water quality.

The sediment TMDL, however, will not completely resolve the impairment to biological communities in the 1st and 4th order streams within the watershed. Since the BSID watershed analysis identifies other possible stressors (i.e. chlorides, and sulfates) as impacting the biological conditions, this impairment remains to be fully addressed through the Integrated Report listing process and the TMDL development process, such that all impairing substances identified as impacting biological communities in the watershed are reduced to levels that will meet water quality standards, as established in future TMDLs for those substances.

The objective of this TMDL is to ensure that there will be no sediment impacts affecting aquatic health, thereby establishing a sediment load that supports the Use I-P/III-P designations for the Potomac River Washington County watershed. EPA believes this is a reasonable and appropriate water quality goal.

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

Total Allowable Load

EPA regulations at 40 CFR §130.2(i) state that *the total allowable load shall be the sum of individual WLAs for point sources, LAs for nonpoint sources, and natural background concentrations*. The TMDL for sediment for the Potomac River Washington County watershed is consistent with 40 CFR §130.2(i) because the total loads provided by MDE equal the sum of the individual WLAs for point sources and the land based LAs for nonpoint sources.

The allowable load for the Potomac River Washington County watershed was calculated as the product of the *sediment loading threshold* (3.3, determined from healthy biological community) and the Potomac River Washington County watershed *all forested sediment loads*. The sediment TMDL for the Potomac River Washington County watershed was calculated to be 14,196 ton/yr. This load is considered the maximum allowable load the watershed can sustain and support aquatic life.

The sediment TMDL and allocations are presented as mass loading rates of tons per year for the average annual load and tons per day for the long term daily load. Expressing TMDLs as annual and daily mass loading rates is consistent with Federal regulations at 40 CFR §130.2(i), which states that TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure. The average annual and long term daily sediment TMDLs are presented in Tables 1 and 2, respectively.

Load Allocations

According to Federal regulations at 40 CFR §130.2(g), LAs are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading. Wherever possible, natural and nonpoint source loadings should be distinguished. The TMDL summary in Table 1

contains the LA for the Potomac River Washington County watershed.

The LAs for the Potomac River Washington County watershed were computed using the CBP P5.2 watershed model. The nonpoint source sediment loads are calculated as the sum of corresponding land use EOS loads within the watershed and represent a long-term average loading rate. Individual land use EOS loads are calculated as the product of the land use area, land use target loading rate, and loss from the EOF to the main channel. In the case of the Potomac River Washington County, the assessment unit is restricted to the 1st through 4th order streams in the watershed draining to the Potomac River, since the mainstem Potomac River in Washington County is supporting its aquatic life designated use, and therefore, not impaired by sediment. No loads from adjacent segments or upstream sources will be considered, since with respect to these 1st and 4th order streams there are no upstream or tributary loads.

To attain the TMDL loading cap, the reductions allocated in the TMDL were applied to the predominant and controllable sediment sources. Therefore, constant reductions were applied to these sources. Urban land, high till crops, hay, and pasture were identified as the predominant controllable sources in the watershed. Thus, constant reductions were applied to these sources. The TMDL report (Technical Memorandum, *Significant Sediment Sources in the Potomac River Washington County*) provides a possible allocation scenario for the nonpoint source category, which includes a 15 percent reduction for each: the crop (high till, low till, hay, animal feeding operations, and nursery sources), pasture, and unregulated stormwater land use categories.

Wasteload Allocations

There are eight permitted point sources in this watershed and the permits can be grouped into two categories, process water and stormwater. There are six process water permits and two NPDES Phase I or Phase II stormwater permits. The WLAs for the six process water permits are calculated based on their Total Suspended Solids (TSS) limits (average monthly or weekly concentration values) and corresponding flow information. The process water permits are further divided into minor and major facilities, based on whether their design flow is greater or less than 1.0 Millions of Gallons per Day (MGD). The minor facilities are calculated as an aggregate WLA. The total estimated TSS load from all of the process water sources is equal to 76 ton/yr. Two facilities, the R. Paul Smith Power Station (MD0000582) and Sharpsburg WTP (MD0067784), discharge into the mainstem Potomac River and have been given informational WLAs based on their design flow and permitted sediment concentrations. No reductions were applied to the process water source, since such controls would produce no discernable water quality benefit when nonpoint sources and regulated stormwater sources comprise greater than 99 percent of the total watershed sediment load of the total watershed sediment load discharging into 1st to 4th order streams.

The Potomac River Washington County NPDES stormwater WLA is based on reductions applied to the sediment load from the urban land use in the watershed and may include legacy or other sediment sources. The Potomac River Washington County NPDES stormwater WLA requires an overall reduction of 15.2 percent.

See Table 3 above for a list of facilities that have been assigned WLAs.

Federal regulations at 40 CFR §122.44(d)(1)(vii)(B) require that, for an NPDES permit for an individual point source, the effluent limitations must be consistent with the assumptions and requirements of any available WLA for the discharge prepared by the State and approved by EPA. There is no express or implied statutory requirement that effluent limitations in NPDES permits necessarily be expressed in daily terms. The CWA definition of “effluent limitation” is quite broad (effluent limitation is “any restriction on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged from point sources . . .”). See CWA §502(11). Unlike the CWA’s definition of TMDL, the CWA definition of “effluent limitation” does not contain a “daily” temporal restriction. NPDES permit regulations do not require that effluent limits in permits be expressed as maximum daily limits or even as numeric limitations in all circumstances, and such discretion exists regardless of the time increment chosen to express the TMDL. For further guidance, refer to Benjamin H. Grumbles memo (November 15, 2006) titled *Establishing TMDL Daily Loads in Light of the Decision by the U.S. Court of Appeals for the D.C. Circuit in Friends of the Earth, Inc. v. EPA, et al., No. 05-5015 (April 25, 2006) and implications for NPDES Permits.*

EPA has authority to object to the issuance of an NPDES permit that is inconsistent with WLAs established for that point source. It is expected that MDE will require periodic monitoring of the point source(s), through the NPDES permit process, in order to monitor and determine compliance with the TMDL’s WLAs. Based on the foregoing, EPA has determined that the TMDLs are consistent with the regulations and requirements of 40 CFR Part 130.

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

The TMDLs consider the impact of background pollutants by considering the sediment load from natural sources such as forested land. The CBP P5.2 model also considers background pollutant contributions by incorporating all land uses.

4) *The TMDLs consider critical environmental conditions.*

EPA regulations at 40 CFR §130.7(c)(1) require TMDLs to account for critical conditions for stream flow, loading, and water quality parameters. The intent of the regulations is to ensure that: (1) the TMDLs are protective of human health, and (2) the water quality of the waterbodies is protected during the times when they are most vulnerable.

The biological monitoring data used to determine the reference watersheds reflect the impacts of stressors (i.e., sediment impacts to stream biota) over the course of time, and therefore depict an average stream condition (i.e., captures all high and low flow events). Since the TMDL endpoint is based on the median of forest normalized loads from watersheds assessed as having good biological conditions (i.e., passing Maryland’s biocriteria), by the nature of the biological data described above, it must inherently include the critical conditions of the reference watersheds. Therefore, since the TMDL reduces the watershed sediment load to a level compatible with that of the reference watersheds, critical conditions are inherently addressed.

5) *The TMDLs consider seasonal environmental variations.*

Seasonality is considered in two components. First, it is implicitly included through the use of the biological monitoring data as biological communities reflect the impact of stressors over time, as described above. Second, the MBSS dataset included benthic sampling in the spring (March 1 - April 30) and fish sampling in the summer (June 1 - September 30). Benthic sampling in the spring allows for the most accurate assessment of the benthic population; and, therefore, provides an excellent means of assessing the anthropogenic effects of sediment impacts on the benthic community. Fish sampling is conducted in the summer when low flow conditions significantly limit the physical habitat of the fish community; and it is, therefore, most reflective of the effects of anthropogenic stressors as well.

6) *The TMDLs include a Margin of Safety.*

The requirement for a MOS is intended to add a level of conservatism to the modeling process in order to account for uncertainty. Based on EPA guidance, the MOS can be achieved through two approaches. One approach is to reserve a portion of the loading capacity as a separate term, and the other approach is to incorporate the MOS as part of the design conditions. MDE has adopted an implicit MOS for this TMDL. The estimated variability around the reference watershed group used in the analysis accounts for such uncertainty. Analysis of the reference group's *forest normalized sediment loads* indicates that approximately 75 percent of the reference watersheds have a value of less than 4.2, and that 50 percent of the reference watersheds have a value of less than 3.3. Based on this analysis, the *forest normalized reference sediment load* (also referred as the *sediment loading threshold*) was set at the median value of 3.3. This is considered an environmentally conservative estimate, since 50 percent of the reference watersheds have a load above this value, which when compared to the 75 percent value, results in an implicit MOS of approximately eighteen percent.

7) *The TMDLs have been subject to public participation.*

MDE provided an opportunity for public review and comment on the sediment TMDL for the Potomac River Washington County watershed. The public review and comment period was open from August 23, 2010 through September 21, 2010. MDE received one set of written comments. The comments were considered and addressed appropriately.

A letter was sent to the U.S. Fish and Wildlife Service pursuant to Section 7(c) of the Endangered Species Act, requesting the Service's concurrence with EPA's findings that approval of this TMDL does not adversely affect any listed endangered and threatened species, and their critical habitats.

V. Discussion of Reasonable Assurance

EPA requires that there be a reasonable assurance that the TMDLs can be implemented. WLAs will be implemented through the NPDES permit process. According to

40 CFR §122.44(d)(1)(vii)(B), the effluent limitations for an NPDES permit must be consistent with the assumptions and requirements of any available WLA for the discharge prepared by the State and approved by EPA. Furthermore, EPA has the authority to object to issuance of an NPDES permit that is inconsistent with WLAs established for that point source.

Nonpoint source controls to achieve LAs will be implemented in an iterative process that places priority on those sources having the largest impact on water quality, with consideration given to ease of implementation and cost. Potential Best Management Practices (BMPs) for reducing sediment loads and resulting impacts can be grouped into two categories. The first is directed toward agricultural lands, the second towards urban (developed) land.

In agricultural areas soil conservation plans can be developed that meet criteria of the USDA-NRCS Field Office Technical Guide. Soil conservation plans help control erosion by modifying cultural practices or structural practices. Sediment from urban areas can be reduced by stormwater retrofits that address both water quality and flow control. Also, new development will be subject to Maryland's Stormwater Management Act of 2007, and will be required to use environmental site design to the maximum extent practicable.

For the implementation of the WLA stormwater component, MDE estimates that future stormwater retrofits will have a 65 percent reduction efficiency for TSS, which is subject to change over time.

Through the use of the funding mechanisms and BMPs, there is reasonable assurance that this TMDL can be implemented.