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

SEP 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 Seneca Creek Watershed, Montgomery County, Maryland.* The TMDL report was submitted by the Maryland Department of the Environment to EPA for final review on September 10, 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 Seneca Creek Basin (MD-02140208) was included on Maryland's Section 303(d) List as impaired by sediments (1996, Clopper Lake--1998), nutrients--phosphorus (1996, Clopper Lake--1998, and Little Seneca Lake--1998), and impacts to biological communities (2002). A TMDL of phosphorus and sediments for Clopper Lake was approved by EPA in 2002 and a Water Quality Analysis for eutrophication to address the Little Seneca Lake nutrients/phosphorus listing was approved by EPA in 2006. The 2010 Integrated Report included the results of a stressor identification analysis for the listing for impacts to biological communities. The stressor analysis indicates that Total Suspended Solids (TSS), chlorides, and ammonia are major stressors affecting biological integrity. 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 Seneca Creek 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, Maryland TMDL coordinator, at 215-814-3199.

Sincerely,

Signed

Jon M. Capacasa, Director
Water Protection Division

Enclosure

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

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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1650 Arch Street
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Decision Rationale
Total Maximum Daily Load of Sediment in the Seneca Creek Watershed Montgomery County, Maryland

Signed

Jon M. Capacasa, Director
Water Protection Division

Date: 9/30/2011

Decision Rationale
Total Maximum Daily Load of
Sediment in the Seneca Creek Watershed
Montgomery 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 Seneca Creek 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 Seneca Creek Watershed, Montgomery 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 Seneca Creek Watershed as identified on Maryland's Section 303(d) List. The basin identification for the Seneca Creek Watershed is MD-02140208.

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 Seneca Creek watershed. There are 24 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 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 Seneca Creek 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 Seneca Creek 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. Seneca Creek Watershed Average Annual TMDL of Sediment/TSS (ton/yr)

TMDL (ton/year)		LA		WLA				MOS
				NPDES Stormwater WLA	+	Process Water WLA	+	
16,280.0	=	9,977.3	+	5,288.1		1,014.6		Implicit
				6,302.7				

Table 2. Seneca Creek Watershed Maximum Daily Loads of Sediment/TSS (ton/day)

MDL (ton/day)		LA		WLA				MOS
				NPDES Stormwater LA	+	Process Water WLA	+	
573.4	=	369.2	+	195.7		8.6		Implicit
				204.3				

Table 3. Wasteload Allocations for Permitted Point Sources in the Seneca Creek Watershed

Facility	NPDES ID Number	WLA (ton/yr)	MDL (ton/day)
WSSC – Seneca Wastewater Treatment Plant	MD0021491	912.0	7.8
WSSC – Damascus Wastewater Treatment Plant	MD0020982	68.4	0.6
Montgomery County Phase I MS4	MD0068349	3,185.3	117.9
Phase II Jurisdictional MS4	MDR055500	686.7	25.4
SHA Phase I MS4	MD0068276	351.7	13.0
"Other NPDES Regulated Stormwater"[1]	N/A	1,064.4	39.4
Minor Facilities[2]	--	--	--
Concrete General, Inc.	MD0064955	34.2	0.3
Poolesville WWTP	MD0023001		

[1] Although not listed in this table, some individual process water permits incorporate stormwater requirements and are accounted for within the NPDES stormwater WLA (specifically the "Other" Regulated Stormwater Allocation as well as additional Phase II permitted MS4s, such as military bases, hospitals, etc.

[2] Minor facilities are those with less than 1.0 MGD design flow. These facilities are not given individual allocations. Rather, an aggregate allocation is provided for all of the minor facilities.

Table 4. Other MDE NPDES Regulated Stormwater Permitted Point Sources Seneca Creek Watershed

Permit Number	Facility	NPDES Group
02SW0391	M-NCPPC-Black Hill Park Maintenance Yard	Phase I
02SW0014	DRS-Signal Solutions, Inc.	Phase I
02SW268	Montgomery County - Poolesville Depot	Phase I
02SW0269	Montgomery County - Damascus Depot	Phase I
02SW0290	Montgomery College - Germantown	Phase I
02SW1440	Waste Management of Maryland - Gaithersburg	Phase I
02SW1250	Gaithersburg Public Works Facility	Phase I
02SW1737	WSSC-Gaithersburg Garage	Phase I
02SW0120	WSSC- Seneca Wastewater Treatment Plant	Phase I
02SW1221	WSSC- Damascus Wastewater Treatment Plant	Phase I
02SW1322	SHA- Gaithersburg Shop	Phase I
02SW0525	Montgomery County Schools-Clarksburg	Phase I
02SW1790	Poolesville WWTP	Phase I
02SW1903	M-NCPPC-South Germantown Recreational Park	Phase I
02SW1904	M-NCPPC-Black Hill Regional Yard 2	Phase I
02SW2035	Seneca Creek State Park	Phase I
--	MDE General Permit to Construct	Phase I/II

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 Seneca Creek is a free flowing creek that originates near the city of Damascus in the northwest portion of Montgomery County, Maryland. The creek flows 27 miles in a southerly direction through the municipalities of Germantown and Gaithersburg, until it empties into the nontidal Potomac River near the town of Seneca. The watershed is located in the Middle Potomac River sub-basin of the Chesapeake Bay watershed. It is the largest watershed located entirely within Montgomery County, covering approximately 129 square miles. Three large tributary systems flow into the creek's mainstem: Little Seneca Creek, Great Seneca Creek, and Dry Seneca Creek. 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 scores greater than 4 (scale 1-5)) located within the watershed requiring the implementation of Maryland's antidegradation policy. Also, approximately 0.3% of the watershed is covered by water (i.e. streams, ponds, etc.). The Seneca Creek watershed consists primarily of urban land use (38.5%) and forest land use (37.3%). There is also considerable amount of crop (20.7%) and a small amount of pasture (3.5%). The total population in the Seneca Creek watershed is approximately 216,518.

The Seneca Creek Watershed (MD-02140208) has been identified on Maryland's 2008 §303(d) list as impaired by sediments (1996, Clopper Lake--1998); nutrients--phosphorus (1996, Clopper Lake--1998 and Little Seneca Lake--1998); and impacts to biological communities (2002). A Water Quality analysis (WQA) for eutrophication to address the nutrients/phosphorus listing was approved by EPA in 2009. A TMDL of phosphorus and sediments for Clopper Lake was approved by EPA in 2002k and a WQA for eutrophication to address the Little Seneca Lake nutrients/phosphorus listing was approved by EPA in 2006. The 2010 Integrated Report included the results of a stressor identification analysis for the listing for impacts to biological communities. The stressor analysis indicates that Total Suspended Solids (TSS), chlorides, and ammonia are major stressors affecting biological integrity. This TMDL addresses the sediment impairment only.

The designated use of the Seneca Creek mainstem and its tributaries is Use I-P (Water Contact Recreation, Protection of Aquatic Life, and Public Water Supply), except for: (1) Little Seneca Creek and its tributaries, from the outlet of Little Seneca Lake to the stream's confluence with Bucklodge Branch, and Wildcat Branch and its tributaries, which are designated as Use III-P (Nontidal Coldwater and Public Water Supply), and (2) Little Seneca Creek and its tributaries upstream of Little Seneca Lake, which are designated as Use IV-P (Recreational Trout Waters and Public Water Supply)(COMAR 2009a,b,c,d,e,f).

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/IV-P designations for the Seneca Creek 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 Seneca Creek watershed determined that the biological impairment in the Seneca Creek watershed is due to flow/sediment related stressors. Individual stressors within the sediment and habitat parameter groupings that are associated with sediment related impacts and an altered hydrologic regime were identified as being probable causes of the biological impairment. Furthermore, the degradation of biological communities in the watershed is strongly associated with urban land use and its concomitant effects. Therefore, since sediment is identified as a stressor to the biological communities in the Seneca Creek 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 Seneca Creek Watershed. Refer to Tables 1 and 2 above for a summary of allowable loads.

For this TMDL analysis, a total of 32 water quality monitoring stations were used to characterize the Seneca Creek Watershed. All stations were biological/physical habitat monitoring stations from Maryland Biological Stream Survey (MBSS) program round one and round two data collection. The BSID analysis used 14 biological/physical habitat monitoring stations from the MBSS program round two data collection collected in 2001.

The computational framework chosen for the Seneca Creek watershed TMDL was the Chesapeake Bay Program Phase 5.2 (CBP P5.2) watershed model target *edge-of-field* (EOF) land use sediment rate calculations combined with *sediment delivery ratio*. The *edge-of-stream* (EOS) sediment load is calculated per land use as the product of the land use area, land use target loading rate, and loss from the EOF to the main channel. 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 Seneca Creek watershed was evaluated using two watershed TMDL segments, consisting of one CBP P5.2 model segment each. TMDL Segment 1 (approximately 80% of the watershed) represents the sediment loads transported by Little Seneca Creek and Great Seneca Creek in the northwestern portion of the watershed. TMDL Segment 2 (approximately 20% of the watershed area) represents the sediment loads transported by Dry Seneca Creek and the Seneca Creek mainstem, including its discharge into the Potomac River, in the southwestern portion of the watershed.

The nonpoint source and NPDES stormwater baseline sediment loads generated within the Seneca Creek watershed 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. 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 Seneca Creek watershed, a reference watershed approach was used and resulted in the establishment of a sediment loading threshold for a 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 was selected as the *sediment loading threshold* to develop the TMDL as an environmentally conservative approach. The *forest normalized sediment loads* for the Seneca Creek watershed were estimated as 5.2 and 6.5 for Segments 1 and 2, respectively. This demonstrates that both Segments exceed the *sediment loading threshold*, indicating that they are receiving loads above the maximum allowable load that they 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 Seneca TMDL Segment 1 and TMDL Segment 2 *all forested sediment load.*

The current total sediment load from the Seneca Creek watershed is 27,874.3 tons per year. An overall reduction of 41.6 percent from current estimated loads was required to meet the TMDL allocation and Maryland's water quality standards. The sediment TMDL for the Seneca Creek watershed was calculated to be 16,280.0 ton/yr. The TMDL is subdivided into a nonpoint source load (9,977.3 ton/yr) and two types of point source loads: regulated stormwater load (5,288.1 ton/yr), and a regulated process water load (1,014.6 ton/yr). Section 4.0 of the TMDL report provides a thorough description of the CBP P5.2 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 Seneca Creek watershed. EPA, therefore, approves this sediment TMDL for the Seneca Creek watershed. This approval is outlined below according to the seven regulatory requirements.

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

Water Quality Standards consist of three components: designated and existing uses; narrative and/or numerical water quality criteria necessary to support those uses; and an anti-degradation Statement. The designated surface water use of the Seneca Creek mainstem and its tributaries is Use I-P (Water Contact Recreation, Protection of Aquatic Life, and Public Water Supply), except for: (1) Little Seneca Creek and its tributaries, from the outlet of Little Seneca

Lake to the streams' confluence with Bucklodge Branch, and Wildcat Branch and its tributaries, which are designated as Use III-P (Nontidal Coldwater and Public Water Supply), and (2) Little Seneca Creek and its tributaries upstream of Little Seneca Lake, which are designated as Use IV -P (Recreational Trout Waters and Public Water Supply)(COMAR 2009a,b,c,d,e,f).

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 Seneca Creek watershed is due to flow/sediment related stressors.

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 within the watershed. Since the BSID watershed analysis identifies other stressors (i.e. chlorides and ammonia) 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/IV-P designations for the Seneca Creek 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 Seneca Creek 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 Seneca Creek watershed was calculated as the product of the *sediment loading threshold* (3.3, determined from healthy biological community) and the Seneca Creek TMDL Segment 1 and TMDL Segment 2 *all forested sediment loads*. The long-term TMDL was calculated for TMDL Segment 1 and TMDL Segment 2 independently. The total

sediment TMDL for the Seneca Creek watershed was calculated to be 16,280.0 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 maximum 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 maximum 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 Seneca Creek watershed.

The nonpoint source sediment loads generated within the Seneca Creek watershed are calculated as the sum of corresponding land use EOS loads within the watershed and represent a long-term average loading rate. As indicated above, reductions were applied equally to the predominant controllable sources. Forest is the only non-controllable source, as it represents the most natural condition in the watershed. The TMDL report (Technical Memorandum, *Significant Sediment Nonpoint Sources in the Seneca Creek*) provides a possible scenario for the distribution of the annual nonpoint source loads in the Seneca Creek which includes a reduction of 47.7 and 48.6 percent for the crop and pasture land use categories, respectively.

Wasteload Allocations

There are 24 permitted point sources in this watershed and the permits can be grouped into two categories, process water and stormwater. There are four process water permits and sixteen NPDES Phase I or Phase II stormwater permits. The 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 1,014.6 ton/yr. No reductions were applied to this source, since such controls would produce no discernable water quality benefit when nonpoint sources and regulated stormwater sources comprise 95.4 percent of the total watershed sediment load.

The stormwater permits identified throughout the Seneca Creek watershed are regulated based on Best Management Practices (BMPs) and do not include TSS limits. In the absence of TSS limits, the NPDES regulated stormwater load is calculated using CBP P5.2 urban sediment edge of stream target values. The Seneca Creek 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 Seneca Creek NPDES stormwater WLA requires an overall reduction of 44.5 percent. See Tables 3 and 4 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.

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. Critical conditions are important because they describe the factors that combine to cause a violation of water quality standards and will help in identifying the actions that may have to be undertaken to meet water quality standards[1]. Critical conditions are a combination of environmental factors (e.g., flow, temperature, etc.), which have an acceptably low frequency of occurrence. In specifying critical conditions in the waterbody, an attempt is made to use a reasonable worst-case scenario

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

condition.

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 18 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 Seneca Creek watershed. The public review and comment period was open from July 7, 2010 through August 5, 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.

Maryland has several well established programs to draw upon including the Water Quality Improvement Act of 1998 (WQIA) and the Federal Nonpoint Source Management Program (§319 of the Clean Water Act). Potential funding sources available for local governments for implementation include the State Water Quality Revolving Loan Fund and the Stormwater Pollution Cost Share Program.

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 BMPs for reducing sediment loads and resulting impacts can be grouped into two general categories. The first is directed toward agricultural lands, the second towards urban (developed) land.

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.

A discussion on the funding mechanism and BMPs to achieve this TMDL is found in Section 5.0 of the TMDL report.