Technical Memorandum

Nonpoint Sources of Sediment in the Non-Tidal South River Watershed

The U.S. Environmental Protection Agency (USEPA) requires that Total Maximum Daily Load (TMDL) allocations account for all sources of each impairing pollutant (CFR 2012). This technical memorandum identifies the nonpoint sources of sediment in the South River watershed. Detailed allocations are provided for those nonpoint sources included within the South River Sediment TMDL Load Allocations (LAs). These are conceptual values that are designed to meet the TMDL thresholds. The State reserves the right to allocate the sediment TMDL among different sources in any manner that is reasonably calculated to protect the designated uses of the non-tidal South River from sediment related impacts.

The non-tidal South River Sediment TMDL is presented in terms of an average annual load established to ensure the support of aquatic life. Since there are no specific numeric criteria in Maryland that quantify the impact of sediment on the aquatic life of non-tidal stream systems, a reference watershed approach will be used to establish the TMDL. In order to use a reference watershed approach for this TMDL, sediment loads are estimated using a watershed model. For this analysis, the Chesapeake Bay Program Phase 5.3.2 (CBP P5.3.2) watershed model was chosen. The nonpoint source sediment loads generated within the South River watershed are calculated as edge-of-stream (EOS) loads and represent a long-term average loading rate.

Individual land-use EOS baseline loads are calculated as a product of the land-use acreage and the average annual simulated sediment loading rates (lbs/ac/yr) from the 2009 Progress Scenario (USEPA 2010). The 2009 Scenario represents land-use, loading rates, and best management practice (BMP) implementation simulated using precipitation and other meteorological inputs from the period 1991 - 2000 to represent variable hydrological conditions. The 1991 – 2000 simulation period represents the baseline loading rates in the TMDL for Chesapeake Bay segments. Further details of the nonpoint source sediment load calculations can be found in Sections 2.2, 4.2, and 4.3 of the main TMDL report.

Individual LAs for each nonpoint land-use sector were calculated using the allocation methodology in the MD Phase I WIP, which was designed to be equitable, effective, and consistent with water quality standards. (MDE 2010) The allocations were calculated by applying equal reductions to the *reducible* loads of all predominant land use sectors. The *reducible* load is defined as the difference between the No Action (NA) scenario and the "Everything, Everyone, Everywhere" (E3) scenario. The NA scenario represents current land-uses without any sediment controls applied, while the E3 scenario represents application of all possible BMPs and control technologies to current land-use. For more detailed information regarding the calculation of the LA, please see "*Maryland's Phase I Watershed Implementation Plan for the Chesapeake Bay Total Maximum Daily Load.* "

In the South River watershed, cropland was identified as the only nonpoint source requiring reductions. Other land uses that contributed less than 1% of the total load were not reduced as they would produce no discernible reductions. Forest is not assigned reductions, as it represents the most

natural condition in the watershed. Sediment loads from urban lands in this watershed are regulated under the National Pollutant Discharge Elimination System (NPDES) and are considered a point source that must be included in the Waste Load Allocation (WLA) portion of a TMDL (US EPA 2002). Therefore, the reductions required from urban land sediment loads are defined in the point source technical memorandum.

Table 1 provides one possible scenario for the allocations of the nonpoint source sediment loads that will allow the total TMDL to be met in the South River watershed.

Table 1: South River Watershed Sediment TMDL Allocation by Nonpoint Source Category[1]

General Land Use	Detailed Land-Use	Baseline Load (ton/yr)	TMDL (ton/yr)	Reduction (%)
Forest	Forest	222	222	0
	Harvested Forest	16	16	0
AFOs	Animal Feeding Operations	1	1	0
Pasture	Pasture	9	9	0
Crop	Crop	288	246	15
Nursery	Nursery	1	1	0
Total		**537**	**495**	**8**

[1]The source categories represent aggregates of multiple sources (e.g., crop is an aggregate of conventional till, conservation till, and hay).

REFERENCES

CFR (Code of Federal Regulations). 2012. *40 CFR* 130.2(i). http://edocket.access.gpo.gov/cfr_2011/julqtr/40cfr130.2.htm (Accessed April, 2012).

USEPA (U.S. Environmental Protection Agency). 2002. *Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs*. Washington, DC: U.S. Environmental Protection Agency.

_____. 2010. *Chesapeake Bay Phase 5.3 Phase 5.3 Community Watershed Model*. EPA 903S10002 - CBP/TRS-303-10. U.S. Environmental Protection Agency, Chesapeake Bay Program Office, Annapolis MD. December 2010. Also available at http://ches.communitymodeling.org/models/CBPhase5/documentation.php#p5modeldoc.