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

Decision Rationale
Total Maximum Daily Loads
Watts Branch
For Total Suspended Solids

Approved

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Date: 12/19/03

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December 19, 2003

I. Introduction

The Clean Water Act (CWA) requires that Total Maximum Daily Loads (TMDLs) be developed for those water bodies that will not attain water quality standards after application of technology-based and other required controls. A TMDL sets the quantity of a pollutant that may be introduced into a waterbody without exceeding the applicable water quality standard. EPA's regulations define a TMDL as the sum of the wasteload allocations (WLAs) assigned to point sources, the load allocations (LAs) assigned to nonpoint sources and natural background, and a margin of safety.

This document sets forth the United States Environmental Protection Agency's (EPA) rationale for approving the TMDLs for total suspended sediments (TSS) in the Upper and Lower Watts Branch. These TMDLs were established to address impairment of water quality as identified in the District of Columbia's (DC) 1998 Section 303(d) list of impaired waters. The DC Department of Health, Environmental Health Administration, Bureau of Environmental Quality, Water Quality Division, submitted the *Final Total Maximum Daily Loads for Total Suspended Solids in Watts Branch,* dated June 2003 (TMDL Report), to EPA for final review which was received by EPA on June 20, 2003, with a revised version sent July 15, 2003.

Based on this review, EPA determined that the following eight regulatory requirements have been met:

1. The TMDLs are designed to implement the applicable water quality standards,
2. The TMDLs include a total allowable load as well as individual waste load allocations and load allocations,
3. The TMDLs consider the impacts of background pollutant contributions,
4. The TMDLs consider critical environmental conditions,
5. The TMDLs consider seasonal environmental variations,
6. The TMDLs include a margin of safety,
7. There is reasonable assurance that the proposed TMDLs can be met, and
8. The TMDLs have been subject to public participation.

II. Summary

Table 1 presents the 1998 Section 303(d) listing information for the water quality-limited waters of the Anacostia River and tributaries in effect at the time the consent decree was filed.

Table 1 - Section 303(d) Listing Information

1998 Section 303(d) list					
Segment No.	Waterbody	Pollutants of Concern	Priority	Ranking	Action Needed
1.	Lower Anacostia (below Pennsylvania Ave Bridge)	BOD, bacteria, organics, metals, total suspended solids, and oil & grease	High	1	Control CSO, Point and Nonpoint Source (NPS) pollution
2.	Upper Anacostia (above Pennsylvania Ave Bridge)	BOD, bacteria, organics, metals, total suspended solids, and oil & grease	High	2	Control CSO, Point and Nonpoint Source (NPS) pollution
3.	Hickey Run	Organics, bacteria, oil & grease	High	3	Control NPS pollution
4.	Upper Watts Branch (above tidal boundary)	Organics, bacteria, and total suspended soilids	High	4	Control Upstream, Point, and NPS pollution
5.	Lower Watts Branch (below tidal boundary)	Organics, bacteria, and solids	High	5	Control NPS pollution
7.	Fort Dupont Creek	Bacteria and metals	High	7	Control NPS pollution
8.	Fort Chaplin	Metals and bacteria	High	8	Control NPS pollution
9.	Fort Davis Tributary	BOD, metals and bacteria	Medium	9	Control NPS
10.	Fort Stanton Tributary	Organics, metals and bacteria	Medium	10	Control NPS pollution
11.	Nash Run	Organics, metals and bacteria	Medium	11	Control NPS pollution
13.	Popes Branch (Hawes Run)	Organics, metals and bacteria	Medium	13	Control NPS pollution
14.	Texas Ave. Tributary	Organics, metals and bacteria	Medium	14	Control NPS pollution

Watts Branch was listed on the District's 1996, 1998, and 2002 Section 303(d) lists of impaired waters because excessive channel erosion had degraded aquatic habitat. The division between the Upper and Lower Watts Branch is identified on the Section 303(d) list as above and below the point of tidal influence, approximately at 36th Street, NE, according to the FWS assessment report.

The TMDL is a written plan and analysis established to ensure that a waterbody will attain and maintain water quality standards. The TMDL is a scientifically-based strategy which considers current and foreseeable conditions, the best available data, and accounts for uncertainty with the inclusion of a margin of safety value. TMDLs may be revised in order to address new water quality data, better understanding of natural processes, refined modeling assumptions or analysis and/or reallocation.

Table 2 - Summary of Upper and Lower Watts Branch TSS TMDLs , Average Annual Load - Tons/Year

Segment	Existing	TMDL /Allocated	WLA	LA	Upstream Load	MOS
Maryland	168.0	15.0				
Upper Watts Branch	277.5	39.2	14.8	9.2	15.0	0.12
Lower Watts Branch	318.0	483.0	5.6	3.8	39.2	0.03

III. Background

Watts Branch Watershed

Watts Branch is the largest tributary to the tidal Anacostia River. The TMDL Report used as its source the U.S. Fish & Wildlife Service (FWS) *Watts Branch, Washington, D.C., Watershed and Stream Assessment, CBFO-SO2-03,* Report dated 2002, for existing conditions in Watts Branch. For Watts Branch, as a part of the Anacostia River watershed, a considerable amount of information is available. Prior to the twentieth century, large portions of the Anacostia watershed was converted from forests and meadows to crop land. In the 1920s, urban development was occurring in the Watts Branch watershed and its development increased from 1945 through the 1970s. By the 1980s, most of the available land within the D.C. portion of the watershed was urbanized. Currently, the Prince George's portion of the watershed is continuing with new residential developments.

Watts Branch watershed is 3.75 square miles with 47 percent of the area in the District and 53 percent in Princes George's County, Maryland. The total length of Watts Branch is approximately four miles, sectioned into Lower Watts Branch (one mile), Upper Watts Branch (two miles), and Maryland (one mile).

A USGS gaging station Number 0161800, Watts Branch at Washington, D.C., is located 200 feet upstream of Minnesota Street and covers a drainage area of 3.24 square miles. Unfortunately, the gaging station became operational after the 1988 -1990 time frame used for the Anacostia River TMDLs. Data is available from July 1992 to the present.

The FWS found that man-made changes to the natural Watts Branch stream began in 1895, stemming from the inspection of an 1895 map which showed channelization of the steam. Today the District's portion of Watts Branch is 100 percent channelized or altered. The FWS compared the 1895 map to today's stream system, which disclosed a significant loss in stream miles (primarily old tributaries but also from straightening the channel) and wetlands, and a significant increase in drainage density resulting from storm sewer construction. Storm water control was intended to collect the water and get it out of the area as soon as possible, thus increasing rate and the volume at which water reaches the stream. The changing land uses increased the impermeable cover, increased the runoff potential and decreased the amount of storm water which could infiltrate to become groundwater. The FWS estimates that 32 percent of the entire watershed and 36 percent of the watershed within the District is impervious. However, based on soil descriptions, the FWS estimates the percent imperviousness within the District could be as high as 70 percent.

The Anacostia River Watershed covers 176 square miles in the District of Columbia and Maryland.[1] The watershed lies in two physiographic provinces, the Atlantic Coastal Plain and the Piedmont. The division between the provinces lies roughly along the boundary between Prince George County and Montgomery County, both located in Maryland. The Basin is highly urbanized, with a population of 804,500 and a population density of 4,570 per square mile in 1990[2]. Only 25 percent of the watershed is forested and another three percent is wetlands. The Anacostia River is formed by the confluence of two branches, the Northeast Branch and the Northwest Branch at Bladensburg, MD. For all practical purposes the tidal portion of the Anacostia River can be considered to begin at their confluence, although the Northeast and Northwest Branches are tidally-influenced up to the location of the United States Geological Survey (USGS) gages on each branch: Station 01649500 at Riverdale Road on the Northeast Branch and Station 01651000 at Queens Chapel Road on the Northwest Branch.

The length of the tidal portion of the Anacostia River is 8.4 miles. The average tidal variation in water surface elevation is 2.9 feet all along the tidal river. The average depth at Bladensburg is six feet, while the average depth at the Anacostia's confluence with the Potomac River is 20 feet. The average width of the river increases from 375 feet at Bladensburg to

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[1]Much of the Anacostia River background information is taken from *The TAM/WASP Model: A Modeling Framework for the Total Maximum Daily Load Allocation in the Tidal Anacostia River Final Report*, ICPRB, October 6, 2000.

[2]Warner, A., D. Shepp, K. Corish, and J. Galli, *An Existing Source Assessment of Pollutants to the Anacostia Watershed.* Metropolitan Washington Council of Governments (MWCOG), Washington, DC., 1997.

1,300 feet at the mouth. Average discharge to the tidal river from the Northeast and Northwest Branches is 133 cubic feet per second (cfs). Under average flow conditions, the mean volume of the tidal river is approximately 415 million cubic feet. Detention time in the tidal Anacostia under average conditions is thus over 36 days and longer detention times can be expected under low-flow conditions in summer months.

Just over 25 percent of the Anacostia Basin drains into the tidal river below the confluence of the Northwest and Northeast Branches. Much of this drainage is controlled by storm sewers or combined (storm and sanitary) sewers. The two largest tributaries are Lower Beaverdam Creek (15.7 sq. mi.), and Watts Branch (3.75 sq. mi.). Table 3 shows the breakdown of land uses in Watts Branch Watershed and Table 4 divides the land uses into percent of area. The FWS study indicated slightly more residential use and slightly less forest.

As Table 3 shows, Watts Branch Watershed is heavily urbanized and can be expected to have the water quality problems associated with urban streams.

Table 3 - Landuse in the Watts Branch Watershed (acres)

	Residential	Commercial	Industrial	Parks	Forest	Agriculture	Other
Watts Branch	1,691	116	23	190	289	0	96

(Interstate Commission on Potomac River Basin (ICPRB), 2000)

The FWS reported the land use as:

Table 4 - Watts Branch Land Use/Land Cover Summary

Land Use/Land cover Category	Percent of Watershed
Low and Medium Density Residential	73.2
Deciduous Forest	11.0
Parks and Open Space	8.2
Commercial, Industrial, and Government Lands	7.3
Open Water and Wetlands	0.3
Total Percentage	100.0

(FWS,2002)

Table 5 presents a summary of the Watts Branch impairments. Appendix A contains pictures of Watts Branch illustrating problems. WB-01, WB-02, etc. are cross-section designations used in the FWS stream assessment report. WB-01 is approximately 1,300 feet downstream of the Maryland line, WB-07 and WB-08 bracket Watts Branch Park, and WB-16 is at the confluence of Watts Branch with the Anacostia River.

Table 5 - Watts Branch Problem Identification

	Upper Watts Branch												Lower Watts Branch			
	WB-1	WB-2	WB-3	WB-4	WB-5	WB-6	WB-7	WB-8	WB-9	WB-10	WB-11	WB-12	WB-13	WB-14	WB-15	WB-16
Poor Water Quality	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Sewage Leaks	x	x						x				x				
Channelization or Alteration	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Revetments - Single Bank	x	x	x	x	x			x	x	x	x					
Revetments - Both Banks	x	x		x						x	x	x		x		
Revetments - Entire Reach							x					x				
Bank Erosion	x	x	x	x	x	x		x	x	x	x		x		x	x
Bed Erosion	x	x	x	x	x	x		x	x							
Stream Aggradation								x	x				x	x	x	x
Floodplain Loss	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Stream Confinement	x	x	x	x	x	x	x	x	x	x	x	x				
Storm Water Outfalls	x	x	x			x	x	x	x	x	x	x	x	x	x	
Utility Lines and Crossings	x		x		x	x		x	x			x				
Poor Aquatic Habitat	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Obstacles to Fish Passage	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Poor Riparian Buffer	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Urban Debris	x	x	x	x	x	x	x	x	x	x	x	x	x	x		

(FWS, 2002)

Anacostia River TMDLs

The District's draft TSS TMDL required a smaller reduction in existing loads than the established TMDL. The Watts Branch TSS TMDL, in addition to achieving water quality standards in Watts Branch, must be consistent with the Anacostia River TMDLs.

The consent decree requires total suspended solids (TSS) TMDLs be established or approved by EPA to address the impairment for the Anacostia River mainstem on or before December 15, 2001 (this completion date was later extended to March 1, 2002, through a consent decree modification). The District submitted a TMDL Report which was eventually disapproved by EPA and EPA established a TSS TMDL on March 1, 2002.

EPA disapproved the District's TMDL Report because it was written to a water quality criterion which was not then an applicable water quality standard (WQS). The District had adopted a criterion on an emergency basis in January 2002 that was the endpoint for its TMDL. Since EPA had not reviewed or approved it as required by 40 CFR 131.21 the criteria was not an applicable WQS for purposes of the CWA. Subsequent to EPA establishment of its TSS TMDL and disapproval of the District's TSS TMDL, the District permanently adopted, and EPA approved, the criterion that the growing season average Anacostia River instream water clarity be equal to or less than 0.8 m secchi depth.

EPA based its TSS TMDLs on interpretation of the District's narrative standards, relying upon scientific work completed by the Chesapeake Bay Program to establish a numeric endpoint of a growing season median instream TSS concentration of less than 15 mg/l. The two approaches result in different instream TSS concentrations being used as the endpoint for the TMDLs: the District's approach resulted in an instream TSS value of about 7 mg/l; while EPA's approach resulted in a TSS concentration of less than 15 mg/l. Further, flows at which these concentrations apply also vary between the two approaches - the District's new water quality standards for secchi depth do not apply at flows greater than the long-term seasonal average flow, and for Chlorophyll *a,* the design flow is the average seasonal flow for July through September. In the EPA approach, the TSS concentration of less than 15 mg/l applies to all flows during the growing season of April 1 through October 31.

To develop the Anacostia River TSS TMDLs, the District had ICPRB modify the TAM/WASP model to include sediment transport and develop a water clarity model where the endpoint is measured by secchi depth. Three size classes of sediment were simulated as shown in the following table. EPA's TMDL selected the critical wet year 1989 median, growing season TSS concentration and the endpoint. Reductions were made to the sediment transport input load files until the endpoint was met.

Table 6 - Sediment Grain Size Fractions Simulated

Size Fraction	Diameter (µm)	Relative Proportion of Bed Sediment	Description
Fine grained sediments	<30	0.54	Clays and fine silts
Medium grained sediments	30 < X < 120	0.24	Fine silts to very fine sands
Course grained sediments	X > 120	0.22	Fine sands to gravel

(ICPRB 2001)

The District's TSS TMDL used the output from the sediment transport model as input to the water clarity model to obtain a secchi depth value for comparison to their selected endpoint, 0.8 m secchi depth.

Table 7 - Established Anacostia River TSS TMDL (77 Percent Reduction Required)

TSS	Anacostia Average (mg/l)	Anacostia in DC Average (mg/l)	Upper Segment Average (mg/l)	Lower Segment Average (mg/l)	Anacostia Median (mg/l)	Anacostia in DC Median (mg/l)	Upper Segment Median (mg/l)	Lower Segment Median (mg/l)
1989 to 1990	14.19	13.61	15.42	11.39	10.52	10.60	10.67	10.54
1988	13.55	12.92	14.63	10.82	10.22	10.28	10.53	10.12
1989	14.88	14.26	16.24	11.81	11.02	11.10	11.38	10.91
1990	14.14	13.66	15.40	11.52	10.36	10.48	10.29	10.63
1989 to 1990 Growing Season	14.63	14.02	15.83	11.80	10.84	10.90	10.96	10.87
1988 Growing Season	13.15	12.51	14.02	10.66	10.06	10.13	10.26	10.05
1989 Growing Season	16.85	16.08	18.63	12.94	12.78	12.75	14.72	11.87
1990 Growing Season	13.67	13.31	14.55	11.80	9.46	9.57	8.67	10.68
TSS Model Segments	1-35	7-35	7-22	23-35	1-35	7-35	7-22	23-35

Table 8 - Comparison of Anacostia River TSS TMDLs for April - October Growing Season

	EPA's Established Anacostia River TSS TMDL	The District's Draft Anacostia River Water Clarity TMDL (TSS)
	Critical Conditions, 1989	Average Annual, 1988 - 1990
Existing Sediment Loads		
Upper Anacostia River	61,886,807 lbs/yr	42,492,001 lbs/yr
Watts Branch	1,374,438 lbs/yr	932,546 lbs/yr
TMDL Sediment Loads		
Selected Endpoint	Less than 15 mg/l median seasonal value	Less than 0.8 m secchi depth average seasonal value
Required Reduction	77 Percent	64 Percent
Upper Anacostia River	14,233,966 lbs/yr	15,297,120 lbs/yr
Watts Branch	316,120 lbs/yr	71,155 lbs/yr (35 tons/yr)

Calculated from TAM/WASP Sediment Transport Model load files.

Expressing the established TMDL/allocations as average annual loads growing season provides the values for direct comparison with the District's draft TMDL:

Average annual growing season Upper Anacostia River	9,773,160 lbs/yr
Average annual growing season Watts Branch	214,486 lbs/yr

Expressing the Watts Branch sediment load allocation (77 percent reduction) as a yearly load yields:

Average annual Watts Branch loads	331,960 lbs/yr
1989 Watts Branch loads	1,878,145 lbs/yr (939 tons/yr)

EPA finds that the District's Watts Branch TSS TMDL is consistent with the EPA's established, and the District's draft, Anacostia River TSS TMDL's allocation to Watts Branch. The numerical endpoint selected by the District for the Watts Branch TMDLs is the same as the District's Anacostia River TSS TMDL's allocation to Watts Branch, or 35 tons/year.

IV. Technical Approach

The technical approach is described in the District's Watts Branch TMDL Report as the following:

"Using the flows generated by the HEC-6 model and the sediment discharge curve, with some adjustment, the following rationale was used estimate the sediment loads from channel erosion.

"Storm flows of less than 10 cfs daily average will have an instantaneous peak of about 100 cfs which is bank full and will deliver about 2 tons per day.

"Storm flows greater than 10 cfs daily average will have instantaneous flows of greater than 200 cfs and will deliver about 8 tons per day; except that, about twice a year rainfall patterns will cause instantaneous peaks of about 1,000 cfs and will deliver about 32 tons per day."

The District performed subsequent calculations/evaluations based on the growing season consistent with the both Anacostia River TSS TMDLs although, as the TMDL Report and the provided FWS watershed and stream assessment report demonstrated, the problem is stream bank erosion which is not limited to the growing season. However, as shown above, the selected growing season Watts Branch TMDL correlates with the yearly Watts Branch TMDL load estimated for both Anacostia River TSS TMDL.

The Watts Branch TSS TMDL Report discusses *Reasonable Assurance* in a section titled, *Implementation*. A 1999 agreement, *Anacostia Watershed Restoration Agreement,* with Maryland, Prince George's and Montgomery Counties, and EPA, includes as one of the pollutant loads requiring control, sediment. In addition, the Chesapeake Bay 2000 Agreement of which the District is a signatory member, adopted a goal of 2010 by which the pollution loads to the Anacostia River would be achieved. For further information regarding those significant efforts and considerable resources committed to restore the Anacostia River and Chesapeake Bay see *http://www.chesapeakebay.net* , *http://www.chesapeakebay.net/c2k.htm* , *http://www.chesapeakebay.net/restrtn.htm*.

The TMDL Report further identifies two activities leading to the improvement in the aquatic life habitat in Watts Branch, *Parks and People,* and "DOH has an ongoing bank stabilization program for Watts Branch. The FWS watershed and stream assessment report was written, apparently, with the understanding that the FWS would design a stream stabilization plan. However, the US Corps of Engineers is engaged in the stream stabilization design.[3] It is anticipated that the Corps will let a contract in February 2004 and that the design will take approximated eight months to complete with construction shortly after. The object of the design is to restore Watts Branch to a natural channel configuration, to the extent conditions allow. Although the FWS assessment report identified removal of the storm water outfalls as an important step in reducing runoff and recharging the groundwater, the District concluded it is not possible to remove storm water outfalls. Any mitigation of the outfall effects will need to be the as a result of upstream measures.

[3]Personal communication with Peter Hill with the District's nonpoint source program.

So far, *Parks and People,* have planted 1,600 native trees, shrubs, and plants to create and extend the Watts Branch riparian buffer, assisted by the Anacostia River Business Coalition and the Earth Conservation Corps, and funded in large part through a EPA 319 nonpoint source grant.

In addition, the Washington Area Sewer Authority (WASA) has selected a contractor to perform an evaluation of the D.C. sewer system.[4] The estimated cost is approximately $12 million and will take about five years. This effort includes an evaluation of capacity and condition of the collection system, identifying rehabilitation needs, and developing capital improvement program elements and schedules for rehabilitation.

V. Discussions of Regulatory Requirements

EPA has determined that these TMDLs are consistent with statutory and regulatory requirements and EPA policy and guidance. EPA's review included the submitted Watts Branch TSS TMDL, the District's draft Anacostia River TSS TMDL, EPA's established Anacostia River TSS TMDL, combined with an independent evaluation of the Watts Branch TSS TMDLs. EPA's rationale for approval is set forth according to the regulatory requirements listed below.

The TMDL is the sum of the individual waste load allocations (WLAs) for point sources and the load allocations (LAs) for nonpoint sources and natural background (upstream) and must include a margin of safety (MOS). The TMDL is commonly expressed as:

$$TMDL = \sum WLAs + \sum LAs + MOS + \text{Upstream Loads}$$

where

WLA = waste load allocation
LA = load allocation
MOS = margin of safety

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

The TMDL Report states that the Anacostia River and tributaries are on the District's 1998 Section 303(d) list of impaired waters for TSS because of stream bank erosion and subsequent habitat destruction.

The TMDL Report the District recites the Anacostia's beneficial water uses as well as the general and specific water quality criteria designed to protect those uses. The District identifies the designated uses for Watts Branch as:

Class B. Secondary contact recreation and aesthetic enjoyment,
Class C. Protection and propagation of fish, shellfish and wildlife, and
Class D. Protection of human health related to consumption of fish and shellfish.

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[4]WASA's August 15, 2002, letter from Cuthbert Breaveboy, Director of Sewer Services, to Jerusalem Bekele, Program Manager, Water Quality ?Division, Department of Health.

The majority of the Watts Branch Watershed lies in Maryland. Therefore, consistent with the Clean Water Act, the Anacostia River waters crossing the DC/Maryland border must meet the District's water quality standards at the border between the jurisdictions.

The TMDL Report uses the District's narrative standards as the basis for these TMDLs. The selected endpoint is based on the DC Water Quality Standards section 1104.5 identified as:

> *Class C streams shall be maintained to support aquatic life and shall not be placed in pipes.*

The TMDL Report also states:

> *The pollutant of total suspended solids was used to represent a habitat problem caused by severe channel erosion during high flows. The District of Columbia does not have criteria for total suspended solids. The end point is the reduction of stream bank erosion to provide a stable channel for the aquatic life. This end point also achieves the loadings needed for water quality standards in the main stem Anacostia TSS TMDL. Calculating loadings for Watts Branch on the summer period has little effect on the end point because it is a channel stability problem that must be corrected.*

EPA concurs that when the stream banks are stabilized, together with a design to reduce bed erosion, the water quality standards will be achieved.

2. The TMDLs include a total allowable load as well as individual waste load allocations and load allocations.

The TMDL Report lumps all storm water discharges together whether or not the storm water source has a NPDES permit. EPA guidance memorandum clarifies existing EPA regulatory requirements for establishing wasteload allocations (WLAs) for storm water discharges in TMDLs approved or established by EPA.[5] Therefore, this document identifies WLAs for storm water discharges subject to NPDES permitting.

The key points established in the memorandum are:

- NPDES-regulated storm water discharges must be addressed by the wasteload allocation component of a TMDL.
- NPDES-regulated storm water discharges may not be addressed by the load allocation (LA) component of a TMDL.
- Storm water discharges from sources that are not currently subject to NPDES regulation may be addressed by the load allocation component of a TMDL.

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[5]Memorandum *Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs*, from Robert H. Wayland, III, Director, Office of Wetlands, Oceans and Watersheds, and James A. Hanlon, Director, Office of Wastewater Management, to Water Division Directors, Regions 1 - 10, dated November 22, 2002.

- It may be reasonable to express allocations for NPDES-regulated storm water discharges from multiple point sources as a single categorical wasteload allocation when data and information are insufficient to assign each source or outfall individual WLAs.
- The wasteload allocations for NPDES-regulated municipal storm water discharge effluent limits should be expressed as best management practices.

The November 2002 memorandum does recognize that WLA/LA allocations may be fairly rudimentary because of data limitations. The Anacostia River tributaries' drainage area determined by ICPRB includes the sewershed areas as estimated from sewer maps. EPA divided the tributaries' TMDLs into wasteload allocations and load allocations based on an estimated ratio of sewered to unsewered areas.

The TMDL Report states that although the Section 303(d) list of impaired waters divides Watts Branch into upper and lower segments, the water quality standards do not divide the river into segments but specify water quality standard attainment over the entire length. EPA believes that because the District's Section 303(d) list and the Consent Decree divide the Anacostia River into upper and lower segments, TMDLs need to be developed for each segment. Water quality standards are attained for the entire length of the river. Therefore, EPA has used the TMDLs developed by the District, together with information contained in ICPRB's technical documents and WASA's LTCP to divide the TMDLs into WLAs and LAs and Upper and Lower Watts Branch.

Table 9 - Upper and Lower Watts Branch Growing Season TSS TMDLs

Average Annual Growing Season Loads - Total Suspended Solids - Tons/Year					
	Existing	Allocated/ TMDLs	MOS	Storm Water	
				WLA	LA
Maryland Loads			Maryland Load Reduction - 91%		
Storm Water	34.3		DC Load Reduction - 78%		
Stream Bank Erosion	77.0		DC Storm Water Load Reduction - 54%		
Base Flow	1.3		DC Stream Bank Erosion Reduction - 90%		
Total	112.0	10.0			
DC Loads					
Upper Watts Branch					
Upstream	112.0	10.0			
Storm Water	22.2	10.1		9.9	0.2
Base Flow	0.9	0.9			0.9
Stream Bank Erosion	49.6	5.0			5.0
Upper Watts Branch -	73.0	16.0			
MOS		0.07			
Upper Watts Branch	185.0	26.1	0.08	9.9	6.1
Lower Watts Branch					
Upstream	185.0	26.1			
Storm Water	8.2	3.8		3.7	0.3
Base Flow	0.3	0.3			0.3
Stream Bank Erosion	18.4	1.8			1.8
Upper Watts Branch -	27.0	31.7			
MOS		0.03			
Lower Watts Branch	212.0	32.0	0.03	3.7	2.5

Values in shaded areas are taken from the TMDL Report.

In the above TMDLs, WLAs, and LAs are for the growing season. Assuming the distribution of the rainfall for the years used by the District is similar to the three-year period of analysis used for the Anacostia River TMDLs, average annual values for the above TMDLs, WLAs, and LAs may be obtained by multiplying by 1.5. The following summary table converts the growing season values to year round or average annual loads.

Table 10 - Summary Upper and Lower Watts Branch TSS TMDL Table, Average Annual Loads - Tons/Year

Segment	Existing	TMDL /Allocated	WLA	LA	Upstream Load	MOS
Maryland	168.0	15.0				
Upper Watts Branch	277.5	39.2	14.8	9.2	15.0	0.12
Lower Watts Branch	318.0	483.0	5.6	3.8	39.2	0.03

Because most of the loading to the Anacostia River and its tributaries is precipitation induced, TMDL, WLA, and LA loads are shown as average annual loads. EPA believes that this representation is appropriate.

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

All of Maryland's pollutant loads are "background" to the District's portion of Watts Branch. Maryland's contribution to the pollutant loads has been estimated based on available information.

4. The TMDLs consider critical environmental conditions.

Because the Watts Branch USGS gaging station record begins in 1993, these TMDLs were not developed for the 1988 - 1990 period as were previous TMDLs. For the available period of record, the District selected a dryer and a wetter than average year, years that ranked third and eighth, respectively.

5. The TMDLs consider seasonal environmental variations.

The District may have considered seasonal variations because short, intense rainfalls, as opposed to long, soaking rains for a given rainfall are likely the most destructive with respect to stream bank erosion. The District's growing season TMDLs are more likely to have short, intense rainfalls than the rest of the year.[6] However, EPA believes because stream bank erosion can occur throughout the year, the TMDLs should be expressed in annual loads.

6. The TMDLs include a margin of safety.

The Clean Water Act and federal regulations require TMDLs to include a margin of safety (MOS) to take into account any lack of knowledge concerning the relationship between effluent limitations and water quality. EPA guidance suggest two approaches to satisfy the MOS requirement. First, it can be met implicitly by using conservative model assumptions to develop

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[6]Technical Paper No. 40, *Rainfall Frequency Atlas of the United States for Durations from 30 Minutes to 24 Hours and Return Periods from 1 to 100 Years*, May 1961, Weather Bureau.

the allocations. Alternately, it can be met explicitly by allocating a portion of the allowable load to the MOS.

The District has chosen to use an explicit margin of safety equal to one-tenth of a ton.

7. There is reasonable assurance that the proposed TMDLs can be met.

The MS4 (municipal separate storm sewer system) permit and the NPDES storm water permits both provide regulatory authority to require storm water load reductions, providing reasonable assurance that the TMDLs will be implemented. EPA permitting regulations require that the NPDES permits have effluent limits consistent with approved TMDL wasteload allocations. Such effluent limits may be numeric or in the form of BMPs as provided in 40 CFR 122.44. Additional NPDES permit requirements may extend to Maryland NPDES permittees if determined that their discharge causes or contributes to the impairment measured at the border between the District and Maryland.

The TMDL Report, under *Implementation,* identifies two other specific activities discussed above in Section IV provide additional assurance that the aquatic life use can be restored.. Although retaining walls have been installed in the past, many of them have already failed or are failing. More recent projects, such as the recent Natural Resource Conservation Service project, employ additional stream bank protection measures in conjunction with rip-rap. Flow deflectors, rock vanes, and "J" hooks are used to deflect stream flow away from the banks.

8. The TMDLs have been subject to public participation.

DC public noticed a February 2003 version of these TMDLs February 28, 2003, with comments due the beginning of March but extended the public comment period to March 31, 2003. The TMDLs was placed in the Martin Luther King Jr. Library. Although the public notice was published in the D.C. Register, a subscription is required to access the Register on line. Any notice in the Washington Post would be easy to miss and such notices are not included in the on-line version of the newspaper. In an effort to provide wider distribution of the TMDLs, EPA posted the public notice and TMDL Report on the Region III web site. In addition, EPA requested the District to use their e-mail list for the TMDL meetings to notify the interested parties of public comment period extensions and future postings on the Region III web site. EPA believes all interested parties have had adequate time to comment on these TMDLs.

The District and WASA held monthly technical (modeling) meetings where interested parties were briefed on the technical progress toward the District's TMDLs and WASA's LTCP.

As part of DC's TMDL submittal, a response to comments document was submitted to EPA via e-mail. In addition to EPA's comments, comments were received from Earthjustice Legal Defense Fund, Fish and Wildlife Service, Department of the Navy, the District of Columbia Water and Sewer Authority, and NRDC. EPA finds that the District considered the comments provided.

The Fish and Wildlife Service's March 18, 2003, letter to EPA identified the threatened bald eagle as nesting approximately three-quarters of a mile from the Lower Anacostia River and recommended that EPA prepare a Biological Evaluation analyzing potential impacts to bald eagles. EPA prepared and sent the Biological Evaluation on June 17, 2003.

Appendix A - Pictures

Picture taken from the District's TMDL Report. High flows probably scoured under the wall's footing causing the collapse.

Watts Branch in the vicinity of Watts Branch Park.

Watts Branch, note the vandal resistant 2 ft. x 3 ft. x 6 ft imbricated rip-rap.

Watts Branch, wide channel, low flow.