



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029
7/31/2009

Mr. Scott Mandirola, Acting Director
Division of Water and Waste Management
West Virginia Department of Environmental Protection
601 57th Street SE
Charleston, West Virginia 25304-2345

Dear Mr. Mandirola:

The U.S. Environmental Protection Agency (EPA), Region III, is pleased to approve West Virginia's report, *Total Maximum Daily Loads (TMDLs) for Streams in the Camp Creek of Twelvepole Creek Watershed, West Virginia*, for iron, aluminum, pH, fecal coliform and/or biological impairments on five waterbodies. The TMDLs were submitted by West Virginia in April 2009. EPA commends West Virginia on completion of these TMDLs developed under the Watershed Management Framework of the West Virginia TMDL program. We recognize the significant effort and dedication of you and your staff in developing these TMDLs.

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 any uncertainties in the relationship between pollutant loads and instream water quality); and (7) be subject to public participation. The TMDLs for the Camp Creek Watershed satisfy each of these requirements. In addition, these TMDLs considered reasonable assurance that the TMDL allocations assigned to nonpoint sources can be reasonably met. A copy of EPA's Decision Rationale for approval of these TMDLs is included with this letter.

As you know, any new or revised National Pollutant Discharge Elimination System permits must be consistent with the TMDL's wasteload allocations 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 concerning these TMDLs, please contact Mr. Kuo-Liang Lai, at 215-814-5473 or Ms. Helene Drago at 215-814-5796.

Sincerely,

/S/

Jon M. Capacasa, Director
Water Protection Division

Enclosures

cc: Mr. Patrick Campbell, WVDEP
Mr. David Montali, WVDEP



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**Decision Rationale
Total Maximum Daily Loads
For Streams in the Camp Creek of
Twelvepole Creek Watershed, West Virginia**

/S/

**Jon M. Capacasa, Director
Water Protection Division**

Date:7/31/2009

Decision Rationale
Total Maximum Daily Loads
For Streams in the Camp Creek of Twelvepole Creek Watershed
West Virginia

I. Introduction

The Clean Water Act (CWA) requires a Total Maximum Daily Load (TMDL) to be developed for those waterbodies identified as impaired by a state where technology based and other controls did 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), which may be discharged to a water quality limited waterbody.

This document will set forth the U.S. Environmental Protection Agency's (EPA) rationale for approving the TMDLs for iron, aluminum, pH, fecal coliform bacteria and/or biological impairments on selected waterbodies in the Camp Creek of Twelvepole Creek watershed. The TMDLs were developed to address impairment of water quality as identified in West Virginia's 2008 Section 303(d) Lists of impaired waters. EPA's rationale is based on the determination that the TMDLs meet the following seven regulatory conditions 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, these TMDLs considered reasonable assurance that the TMDL allocations assigned to nonpoint sources can be reasonably met.

From this point forward, all references in this approval rationale are found in West Virginia's TMDL Report *Total Maximum Daily Loads for Streams in the Camp Creek of Twelvepole Creek Watershed, West Virginia* (TMDL Report dated July 2009), unless otherwise noted.

II. Summary

Table 1 of this document presents the waterbodies and impairments for TMDLs that have been developed for the Camp Creek watershed by the West Virginia Department of Environmental Protection (WVDEP). The five waterbodies in Table 1 were identified on West Virginia's 2008 Section 303(d) List; development of TMDLs for mine drainage impairments of Camp Creek and Left Fork of Camp Creek TMDLs is required by the 1997 Consent Decree. The

1997 Consent Decree will be discussed in more detail in the following section. TMDLs were developed for total iron, dissolved aluminum, pH, fecal coliform bacteria and/or biological impairments.

Table 1. Waterbodies and Impairments for TMDLs have been Developed for Camp Creek Watershed

Stream Name	NHD Code	pH	Fe	Al	FC	BIO
Camp Creek	WV-OT-45-Q	x	x	x		x
UNT/Camp Creek RM 0.50	WV-OT-45-Q-1	x		x		
Left Fork/Camp Creek	WV-OT-45-Q-2	x	x	x	x	x
Tiger Fork	WV-OT-45-Q-2-A				x	
Right Fork/Camp Creek	WV-OT-45-Q-3	x	x	x		x

UNT = Unnamed Tributary, RM = river mile
 FC indicates fecal coliform bacteria impairment
 BIO indicates a biological impairment

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, uses the best available data, and accounts for uncertainty with the inclusion of a MOS value explicitly or implicitly. Conditions, available data, and the understanding of the natural processes can change more than anticipated by the MOS. The option is always available to refine the TMDLs for resubmittal to EPA for approval.

A TMDL formula presents applicable TMDLs (sum of individual wasteload allocations plus sum of load allocations plus margin of safety) for iron, aluminum, and fecal coliform. Allocation spreadsheets also provide applicable TMDLs, wasteload allocations to individual point sources, and load allocations to categories of nonpoint sources. A Technical Report provides descriptions of the detailed technical approaches used throughout the TMDL development process. West Virginia developed an interactive ArcExplorer Geographic Information System (GIS) project that shows the spatial relationships between source assessment data for streams in the Camp Creek watershed.

III. Background

The Camp Creek watershed is located in Western West Virginia, and lies entirely within Wayne County, West Virginia (Figure 3-1). The watershed drainage area encompasses nearly 8.7 square miles. The Camp Creek watershed is comprised of the Left and Right Forks of Camp Creek and other waterbodies listed in Table 1. The total population living in the watershed is estimated to be less than 400 people. The Camp Creek watershed is dominated by forest land use (68.3 %), with some grassland (8.4 %), pasture (1.4 %), urban/residential (7.9 %), mining (6.2 %), and AML (4.3 %) land uses. Individually, other identified land uses compose less than five percent of the total watershed area.

West Virginia conducted extensive water quality monitoring from July 2005 through June 2006 in the Camp Creek watershed. The results of this effort were used to confirm the listing of waterbodies not meeting applicable water quality criteria and to identify impaired waterbodies that were not previously listed. Table 1 presents the five waters for which TMDLs

are developed. The TMDLs were developed for iron, aluminum, pH, fecal coliform bacteria and/or biological impairments, including 13 TMDLs (waterbody/pollutant combinations).

TMDLs in the Left Fork Camp Creek and Camp Creek watersheds were developed by West Virginia and approved by EPA to fulfill requirements of a 1997 TMDL lawsuit settlement agreement. The 1997 Consent Decree as modified by consent of the parties requires either West Virginia or EPA to develop TMDLs for acid mine drainage (AMD) impaired waters by September 30, 2009. The establishment of the Camp Creek watershed mine drainage TMDLs helps to meet the September 30, 2009, deadline for completion of all mine drainage TMDLs. These TMDLs also included several non-consent decree waters listed on the 2008 Section 303(d) List of impaired waters that help West Virginia to meet TMDL development pace milestones.

WVDEP utilizes the Watershed Management Framework cycle approach for TMDL development. The framework divides the state into 32 major watersheds and operates on a five-year, five-step process. The watersheds are divided into five hydrologic groups (A-E). Each group is assessed once every five years and waters are placed on the Section 303(d) List of impaired waters, as necessary. The TMDL process begins in the first year of the cycle with pre-TMDL sampling and public meetings in the affected watersheds. The data is compiled and TMDL development begins in year two of the cycle. In the third year, TMDL development continues and the TMDL is drafted. The TMDL is finalized in the fourth year. In the fifth year of the cycle, TMDL implementation is initiated through the National Pollutant Discharge Elimination System (NPDES) permitting process and efforts toward limiting nonpoint source loading. Throughout the TMDL development process, there are numerous opportunities for public participation and input. The Camp Creek watershed is in hydrologic group E. Further information on West Virginia's TMDL development process is provided in Section 2.1 of the TMDL report.

Computational Procedures

Sections 5, 6, 7 and 8 of the TMDL Report discuss metals, pH, fecal coliform bacteria and sediment source assessment while Section 4 describes biological impairments and stressor identification (SI) methods. Sources for metals and sediment in the Camp Creek watershed include mining, non-mining, forestry, oil and gas, roads, agriculture, streambank erosion, and other land disturbance activities. The pH impairments in the Camp Creek watershed have been attributed to historic mining activities. There are one mining and no non-mining metals-regulated NPDES permitted facilities within the TMDL watersheds addressed in this report. There are also no active construction sites operating under West Virginia's Construction Stormwater General Permit. Fecal coliform bacteria sources include a home aeration unit (HAU), on-site sewage treatment systems, runoff from agriculture and natural background (wildlife). Stressor identification (Section 4.0 of the TMDL) indicated that biological impairments were caused by metals and pH toxicity, organic enrichment, and sedimentation. The Technical Report has expanded details of the pollutant source assessment discussed in Sections 5 and 6.

Biological integrity/impairment is based on a rating of the stream's benthic macroinvertebrate community using the multimetric West Virginia Stream Condition Index

(WVSCI). Biological impairments were addressed by developing TMDLs for specific stressors. West Virginia utilized a stressor identification process to determine that metals and pH toxicity, and sedimentation were the causative stressors for biologically impaired streams addressed in this TMDL study.

To address the sedimentation biological stressor, WVDEP initially pursued the development of sediment TMDLs for these streams using a reference watershed approach. However, all of the sediment impaired streams are also impaired pursuant to total iron water quality criteria and TMDL assessment of iron included representation and allocation of iron loadings associated with sediment. In each stream, the sediment loading reduction necessary for attainment of the water quality criteria for iron exceeds that which was determined necessary using the reference watershed approach for sediment. The iron TMDLs are reasonable surrogates for biological impairments from sedimentation. EPA believes that the implementation of the iron TMDLs will address the biological impairment caused by sedimentation.

Section 9.0 describes the Mining Data Analysis System (MDAS) modeling processes employed during TMDL development with greater details provided in the Technical Report. The MDAS was used to represent the source-response linkage in the Camp Creek watershed TMDL study area for iron, aluminum, sediment and fecal coliform. MDAS is a comprehensive data management and modeling system that is capable of representing loads from nonpoint and point sources in the watershed and simulating in-stream processes. MDAS is used to simulate watershed hydrology and pollution transport, as well as stream hydraulics and instream water quality. It is capable of simulating different flow regimes and pollutant loading variations. A customized Microsoft Excel spreadsheet tool was used to determine the fecal loading from failing septic systems identified during source tracking efforts by WVDEP. West Virginia's numeric and water quality criteria and an explicit MOS were used to identify the TMDL endpoints.

EPA has determined that these TMDLs are consistent with statutory and regulatory requirements and EPA's policy and guidance. EPA's rationale for establishing these TMDLs is set forth according to the regulatory requirements listed below.

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

The applicable numeric water quality criteria are shown in Table 2-1 of the TMDL report. The applicable designated uses for all the waters subject to this report include: propagation and maintenance of aquatic life in warmwater fisheries, water contact recreation, and public water supply. All of the streams addressed by this TMDL Report are designated as warmwater fisheries.

All West Virginia waters are subject to the narrative criteria in Section 3 of the Standards. That section, titled *Conditions Not Allowed in State Waters*, contains various provisions relative to water quality. The narrative water quality criterion at 46 CSR Section 1-3.2.i prohibits the presence of wastes in State waters that cause or contribute to significant adverse impacts on the chemical, physical, hydrologic, and biological components of aquatic ecosystems. This provision is the basis for the "biological impairment" determinations. Biological impairment

signifies a stressed aquatic community. WVDEP determines the biological integrity of each stream based on a rating of the stream's benthic macroinvertebrate community using the multimetric WVSCI.

The TMDLs are designed to implement these water quality standards.

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

A TMDL is the total amount of a pollutant that can be assimilated by the receiving water while still achieving water quality standards. TMDLs can be expressed in terms of mass per time or by other appropriate measures. TMDLs are comprised of the sum of individual WLAs for point sources, LAs for nonpoint sources, and natural background levels. In addition, the TMDL must include an MOS, either implicitly or explicitly, that accounts for the uncertainty in the relationship between pollutant loads and the quality of the receiving stream. Conceptually, this definition is denoted by the following equation:

$$\text{TMDL} = \text{Summation of WLAs} + \text{Summation of LAs} + \text{MOS}$$

For purposes of these TMDLs only, wasteload allocations are given to NPDES permitted discharge points and load allocations are given to discharges from activities that do not have an associated NPDES permit, such as Abandoned Mine Lands (AMLs), failing septic systems and straight pipes. The decision to assign load allocations to these sources does not reflect any determination by WVDEP or EPA as to whether there are, in fact, unpermitted point source discharges. In addition, by assigning load allocations to these sources, WVDEP and EPA are not determining that these discharges are exempt from NPDES permitting requirements.

Section 10 of the TMDL Report presents applicable TMDLs and source allocations for total iron, dissolved aluminum, pH, and fecal coliform bacteria. Allocation spreadsheets also provide applicable TMDLs, wasteload allocations to individual point sources and load allocations to categories of unpermitted sources. The Metals Allocation Spreadsheet presents detailed iron and aluminum TMDLs, LAs, and WLAs. The Fecal Coliform Bacteria Allocation Spreadsheet presents detailed fecal coliform TMDLs, LAs, and WLAs. The TMDLs are also presented as equivalent average daily loads in pounds per day or counts per day.

There is one mining related NPDES permit with ten associated outlets within the TMDL study area. The TMDLs required mining discharges at some outlets to be reduced for iron. There are no non-mining NPDES permitted facilities with associated outlets in the watershed that have effluent limits for metals and pH. There are also no current active construction stormwater permits under the Construction Stormwater General Permit. The TMDL does not prescribe pollutant reduction from the existing non-mining point sources or construction stormwater sources. A complete list of the permits and outlets is provided in the appendices of the Technical Report. The discharges from construction activities that disturb more than one acre of land are legally defined as point sources. Though the sediment introduced from such discharges can contribute metals, they are generally considered to be negligible because of their minimal discharge flows. For these TMDLs, these minor discharges are assumed to operate

under their current permit limits and were given WLAs based on their current permit limits. LAs for metals were assigned to AMLs, and sediment sources including forestry, oil and gas, roads, agriculture, and other land disturbance areas. The assignment of LAs to AML or bond forfeiture sites does not reflect any determination by EPA or WVDEP as to whether there are, in fact, unpermitted point source discharges within these landuses. Likewise, by establishing these TMDLs with AML discharges treated as LAs, EPA and WVDEP are not determining that these discharges are exempt from NPDES permitting requirements. No bond forfeiture sites were identified in the Camp Creek watershed.

Fecal coliform bacteria sources are point sources, including individual sources covered under the NPDES program such as wastewater treatment plants and general sewage permits; and unpermitted sources, including onsite treatment systems, stormwater runoff, agriculture, and natural background (wildlife). Fecal coliform bacteria TMDLs were developed in two streams and will affect no active Home Aeration Units (HUAs) registered under the HUA General Permit. The TMDLs allowed fecal coliform NPDES permits to remain at 200 counts/100 ml (monthly geo mean) and 400 counts/100 ml (daily maximum). Load allocations were assigned to pasture, onsite sewer systems including failing septic systems and straight pipes, residential land uses including urban/residential runoff, and background and other nonpoint sources including wildlife sources from forested land and grasslands. The loadings from wildlife sources were not reduced beyond the background loadings.

The TMDL development methodologies prescribe allocations that achieve water quality criteria throughout the watershed. Various provisions attempt equity between categories of sources and the targeting of pollutant reductions from the most problematic sources. Nonpoint source reductions did not result in loading contributions less than the natural conditions, and point source allocations were no more stringent than numeric water quality criteria.

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

The TMDL considers the impact of background pollutant contributions by considering loadings from background sources like wildlife. MDAS also considers background pollutant contributions by modeling all land uses.

4. The TMDLs consider critical environmental conditions.

According to EPA's regulation 40 CFR §130.7 (c)(1), TMDLs are required to take into account critical conditions for stream flow, loading, and water quality parameters. The intent of this requirement is to ensure that the water quality of the impaired waterbody is protected during times when it is 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. Critical conditions for waters impacted by land based sources generally occur during periods of wet weather and high surface runoff. In contrast, critical conditions for non-land-based point source dominated systems generally occur during low flow and low dilution conditions.

High and low flow stream conditions and all point and nonpoint source loads were included in the development of these TMDLs, by using a long period of weather data that represented wet, dry, and average flow periods. Accordingly, the TMDL considers critical conditions.

5. The TMDLs consider seasonal environmental variations.

Seasonal variations were considered while considering critical conditions, by running the daily simulation model for six years, from 1998 to 2003 for MDAS. Continuous simulation (modeling over a period of several years that captures precipitation extremes) inherently considers seasonal hydrologic and source loading variability.

6. The TMDLs include a Margin of Safety.

The CWA and Federal regulations require TMDLs to include an MOS to take into account any lack of knowledge concerning the relationship between effluent limitations and water quality. EPA guidance suggests two approaches to satisfy the MOS requirement. First, it can be met implicitly by using conservative model assumptions to develop the allocations. Alternately, it can be met explicitly by allocating a portion of the allowable load to the MOS.

An explicit MOS of five percent was included to counter uncertainty in the modeling process (Section 9.6.1). West Virginia did not include a discussion regarding an implicit MOS, but did use conservative model assumptions (such as assuming all point sources continually discharge at permit limits) to develop the allocations.

7. The TMDL has been subject to public participation.

Section 12.0 describes the public participation process which included two informational meetings prior to allocation of pollutant loads and another public meeting to present the draft TMDLs. The draft TMDLs were advertised in various local newspapers and subject to a 30-day public comment period. The 30-day public comment period was from February 2, 2009 to March 3, 2009, and the public meeting to present the draft TMDLs was held February 10, 2009, in Wayne, West Virginia. West Virginia did not receive any comments from the public.

IV. Discussion of Reasonable Assurance

EPA requires that there be a reasonable assurance that a TMDL can be implemented. Section 11.1 of the TMDL report addresses “Future Growth” to ensure the reasonable assurance of implementations of Iron and Aluminum. Section 11.2 of the report discusses the implementation of Fecal Coliform TMDLs for future growth.

There are a few primary programs in effect which provide reasonable assurance that the TMDLs will be implemented. Section 13.1 discusses NPDES permit reissuance by WVDEP’s Division of Water and Waste Management and Division of Mining and Reclamation. NPDES permitting has been synchronized with TMDL development through West Virginia’s Watershed

Management Framework.

Section 13.2 discusses the Watershed Management Framework process and the West Virginia Watershed Network. The Watershed Management Framework includes a management schedule for integration and implementation of TMDLs and identifies a six-step process for developing integrated management strategies and action plans for achieving West Virginia's water quality goals. Step 3 includes development of TMDLs or other source management strategies. Steps 5 and 6 provide for the preparation, finalization and implementation of a watershed-based plan to improve water quality. In addition, the West Virginia Watershed Network is an informal association of state and federal agencies and nonprofit organizations and coordinates watershed-based plans. The Network evaluates restoration potential of watersheds within specific hydrologic groups, including a review of TMDLs and development of watershed-based plans. While there are no active watershed associations in Camp Creek, there is a Twelvepole Creek Watershed Association active in the larger Twelvepole Creek basin that encompasses the Camp Creek watershed.

Sections 13.3 and 13.4 discuss ongoing public sewer and AML projects. As mentioned in the TMDL report, the Office of Abandoned Mine Lands and Reclamation manages the reclamation of lands and waters affected by mining prior to the passage of the Surface Mining Control and Reclamation Act (SMCRA) in 1977. Funding for reclamation activities is derived from fees placed on coal mined which are placed in a fund and annually distributed to state and tribal agencies. Various abandoned mine land reclamation activities are addressed by the program as necessary. In December 2006, Congress passed legislation amending SMCRA and the Title IV program and in November 2008, the Office of Surface Mining finalized rules to implement the amendments. After an initial ramp-up period, AML&R will realize significant increases in its annual reclamation funding and the flexibility to direct a larger portion of those funds to address water resource impacts from abandoned mine drainage (AMD). Title IV now contains a "30 percent AMD set-aside" provision that allows a state to use up to 30 percent of its annual grant to address AMD problems. In regard to water resource impacts, project prioritization will consider treatment practicability and sustainability and will be accomplished under a methodology that provides for the efficient application of funds to maximize restoration of fisheries across AML impacted areas of the State.

Section 14.0 discusses monitoring activities including NPDES compliance, nonpoint source project monitoring, and TMDL effectiveness monitoring.