

The TMDL process: A primer

By Angela B- Fowler. URS Cororation, September 2001, Mining Engineering, SME, p.61

Many mining companies will be affected by the new Total Maximum Daily Load (TMDL) regulations promulgated by the US Environmental Protection Agency (EPA) on July 13, 2000. Typical sources of pollution at mines may include tailings, mine rock piles, adits, leach stockpiles and pit-dewatering operations. Typical pollutants associated with these sources include sediments (total suspended solids, total dissolved solids), metals, acid rock drainage, and nutrients.

Last October, Congress suspended EPA's implementation of these rules until more information could be gathered. The National Research Council has been examining the TMDL program's scientific basis for evaluating the status of impaired waters and for developing TMDLs. The report concludes that only six states have enough data to assess fully the condition of their waters (General Accounting Office).

Many states are in the process of implementing the federal TMDL program. The TMDL program is a water-quality-based approach designed to maintain designated uses for waterbodies throughout each state. Elements of the program include:

- Identification of impaired waters (i.e. not meeting water quality standards),
- Establishment of priorities for conducting studies,
- Development of TMDLs,
- Implementation of control actions, and
- Assessment of the effectiveness of control actions on water-quality standards.

The current national momentum behind the TMDL program is court ordered. The EPA and 40 states have been sued by the Sierra Club and others. The courts, in

The American Petroleum Institute estimates that the new TMDL regulation could cost its members \$20 billion. Will these regulations have the same impact on the mining industry? Or will the impact be greater?

large measure, have sided with the Sierra Club. Even if the new TMDL regulation is rescinded, these court orders to clean up the nation's streams would still stand. See the following Web site for information regarding the status of these lawsuits, www.epa.gov/owow/tmdl/lawsuit.html.

The TMDL rule is not new. The TMDL program was initiated in section §303(d) of the 1972 Clean Water Act. The 1972 Clean Water Act §303(d) requires states to:

1. identify waters not meeting water-quality standards,
2. set priorities for TMDL development, and
3. develop a TMDL for each pollutant for each listed water- A single waterbody might require multiple TMDLs to be developed. The EPA approves or disapproves the state's submissions- And if disapproved, will act in lieu of the state.

The 1998 National Water Quality Inventory Report to Congress stated that approximately 218 million Americans live within 16 km (10 miles) of an impaired waterbody and more than 21,845 waterbodies do not meet designated uses. In addition, there are more than 300,000 impaired river miles and five million impaired lake acres. The leading reasons for impairment include excess sediments, nutrients and pathogens. According to EPA testimony to congress, the leading sources of these impairments are 47% from

nonpoint sources only, 43% from combined point and nonpoint sources, and 10% from point sources only. Nonpoint sources, such as mining, agriculture, forestry and storm-water drainage, are key contributors to impairment.

To determine how the TMDLs will affect the mining industry, a few basic questions need to be answered. What is a TMDL? What is the TMDL study process for impaired waterbodies? What are the benefits of getting involved early?

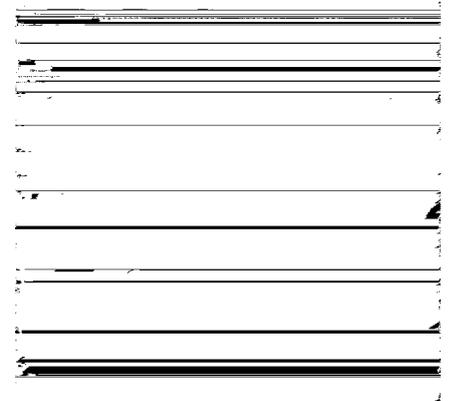
What is a TMDL?

A TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still achieve water-quality standards. It is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources and includes a margin of safety and consideration for seasonal variations. In addition, the TMDL identifies the reductions needed to meet water-quality standards. It then allocates these reductions among the sources in the watershed (URS 2001 National Client Alert).

What is the TMDL study process for impaired waterbodies?

After the impaired waterbody and pollutants have been identi-

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tied, a TMDL study is conducted to establish the allowable pollutant load so that surface water use designations are met. The TMDL study is generally broken down into three parts: source identification and assessment, linking water quality targets to sources, and allocating pollutant loads.

A source assessment characterizes individual pollutant sources and categories of sources. It quantifies the degree to which each source contributes to the problem. Consideration includes point source discharges from industry, mining and municipalities; nonpoint source discharges of storm water from urban areas, agriculture, forestry and mining activities; and background or upstream contributions.

Once identified, the pollutant load is allocated among the sources and generalized by the following equation:

$$\text{Pollutant Load} = \text{Waste Load Allocation} + \text{Load Allocation} + \text{Margin of Safety.}$$

Where,

Pollutant Load = the amount of the specified pollutant the waterbody can receive and meet surface water criteria;

Waste Load Allocation (WLA) = the amount of the specified pollutant allocated to point sources;

Load Allocation (LA) = the amount of the specified pollutant allocated to nonpoint sources and

Margin of Safety (MOS) = a factor to account for uncertainty and lack of knowledge and may also include future growth potential.

What are the benefits of getting involved early?

The illustration depicts the critical need to get involved in the TMDL process early. The earlier you get involved, the more money you can save your mine. The EPA and other stakeholders are making decisions now that will potentially cost your mine millions of dollars. Ultimately, the EPA will decide what allocation is assigned to your mine.

Since mines may contribute to nonpoint source and point sources of pollution, the likelihood of being affected by the TMDL process is

greater. This point emphasizes the importance of getting involved in the process early.

Getting involved early will allow you to receive your fair share when it comes time to allocate the load among the industrial and mining point sources and other nonpoint sources. It will provide you the insights to effectively challenge the process. And it can make the difference in determining if costly upgrades are required to your wastewater treatment system or other process.

Stay involved throughout the entire TMDL process

Following are eight important areas in the TMDL process where participation could help control your mine's TMDL-related costs.

1. Make sure your discharge waterbody has been properly listed.
2. Determine the quality of the data used to list your waterbody, was it adequate?
3. Verify that your waterbody has been properly classified for its intended use — drinking water, swimming, or other use.
4. Evaluate whether site-specific water quality criteria would be more appropriate for your discharge to the waterbody.
5. Make sure your mine receives a fair and just pollutant allocation.
6. Evaluate whether your waterbody can be delisted.
7. Thoroughly understand the data and assumptions used in the water-quality modeling process.
8. Explore innovative compliance concepts, such as pollutant trading programs, with other facilities discharging into the impaired waterbody.

A copy of the final TMDL rule published in the Federal Register on July 13, 2000 (65 FR 43586), can be obtained from Web site www.epa.gov/owow/tmdl/finalrule.

Reducing the Cost of a TMDL on a Facility

- Before Waterbody is on 303(d) list
- TMDL Strategy & Planning Process
- TMDL Implementation & Development

