

FOREWORD

THE TMDL PROGRAM: LOOKING TO THE FUTURE

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The papers included in this volume were prepared and presented shortly before the United States (U.S.) Environmental Protection Agency (EPA) withdrew the TMDL Implementation Guidelines that had been issued by the Clinton administration in July 2000. The July 2000 Guidelines were issued in the midst of controversy and many of the concerns that led to the August 2001 retraction of the rule are anticipated and illustrated by the papers that follow. As of this writing, EPA is holding listening sessions around the nation, is accepting written comments on the TMDL program, and is reviewing and seeking to implement the recommendations of the National Research Council report, "Assessing the TMDL Approach to Water Quality Management." (The report is available for download or purchase at: <http://www.nap.edu/catalog/10146.html>).

The history of the TMDL program is now well known. After allowing Clean Water Act (CWA) Sections 303d and Section 305b to lie dormant after passage of the Act in 1972, about a decade ago the EPA began an effort to encourage each state to submit general assessments of the conditions of its waters (the 305b report) and submit a list of waters that it classified as "impaired." An impaired water is one where available monitoring or other data indicate that water quality standards are not being met. Therefore, the TMDL program requires appropriate and measurable water quality standards for each water body. The CWA expects the state water quality standards to designate the appropriate and desired uses for a water body and to include criteria for measuring whether the use is being attained. However, as three of the papers in this volume (Mostaghimi, Brannan, & Dillaha; Younos & Walker; Neilson & Stevens) suggest, water quality standards often are vague, incomplete, or not achievable.

However, water quality standard setting is a task that falls outside the implementation of Section 303d so the impaired waters lists are submitted using the standards that were in place prior to the initiation of the TMDL process. Several years ago, particular inadequacies with the standards or limitations of the monitoring data used to create the lists were of little concern. When impaired waters lists were submitted, states had no expectation that planning or regulatory requirements would be triggered for the waters on the list. In fact, because CWA Section 319 grant funds were allocated to states

(in part) according to the number of waters listed as impaired, some states used data of limited credibility to compile as large a list as possible.

Only a few years ago, and many years after 1972, a series of lawsuits were filed against EPA alleging a failure to fully execute the requirements of Section 303d. The plaintiffs asserted that Section 303d and EPA implementation guidelines required more than reporting on the condition of a waterbody. The court agreed with the plaintiffs that Section 303d required the states to estimate the maximum pollutant loads that could be discharged to the water from all sources – both regulated and unregulated. This was, in the language of the CWA, the "Total Maximum Daily Load." The court also agreed that a TMDL plan required an allocation of maximum allowable discharges of the pollutant among regulated and unregulated sources. Court orders directed the EPA, in partnership with the states, to aggressively implement the requirement to prepare a TMDL for all listed water bodies according to a schedule. It is worth noting here that the existing EPA Guidelines only required that a maximum pollutant load and allocation be calculated. There was no requirement that a plan be developed to achieve the reductions needed for the water to meet standards or that there be a strategy to implement such a plan. Even without such requirements, as the paper by Neilson and Stevens in this volume reports, there were a number of ambiguities in the Guidelines that became clear once the EPA began to pursue more complete implementation of Section 303d. In addition, as Neilson and Stevens make clear, significant limitations in data and model availability caused the states and regulated parties to question the ability to accurately make load estimates and allocations.

The heightened attention and significance of Section 303d motivated EPA to update the regulations governing all aspects of the TMDL process. These were the new rules issued by EPA in July 2000. The new rule, issued after an extensive public comment process, included a requirement that TMDL plans include an implementation plan, with "reasonable assurances" that the strategy would become a reality with a fixed number of years. The TMDL implementation plans would be submitted at the same time as TMDL load estimates.

The proposed rule generated much controversy among stakeholder groups. The final July 2000 rule only addressed some of the stakeholder concerns and even as it was issued the debate continued. There was no unanimity of view among environmental stakeholders on whether the rule would result in water quality improvements. This being said, there was a sense among environmental interests that some pressure needed to be placed on EPA or the 303d program would languish as it had in the past. Meanwhile, broad criticisms were offered by many of the states and by representatives of dischargers, both point and non-point. Non-point sources of pollutants (i.e., sources currently not required to get an NPDES permit) argued that a reasonable assurance requirement from EPA overstepped federal authority to require discharge reductions by sources not covered by CWA permitting requirements. States argued that the EPA requirement for clear and certain long-term implementation plans with regulatory requirements demanded more accuracy in water quality models than could be reasonably expected. States asserted that the data and models necessary to support a scientifically defensible TMDL approach to water quality management were lacking. Papers in this volume (Culver et al.; Stow, Borsuk, & Reckhow; Mostaghimi, Brannan, & Dillaha) describe some of the modeling approaches as well as their strengths and limitations.

Almost immediately after EPA announced its intention to implement the rule, it was sued in federal court. The lawsuit challenged the EPA's authority under the Clean Water Act to require state TMDL plans to include anything more than estimates of the maximum allowable loads and estimates of the reductions required by point and non-point sources to meet that load limit. Congress was following the debate and voted to impose a one-year moratorium on the rule in October 2000. In the same law it commissioned the National Research Council panel to make a study of the adequacy of the available data and models necessary to support the TMDL program.

The report of the NRC panel endorsed the watershed and ambient water quality focused approach to water quality management implied by Section 303d of the CWA. In addition, the panel felt that available data and models were adequate to move such a program forward. That being said, the panel had many concerns and made over 20 recommendations for improving the foundation for the TMDL program. Following the release of the NRC study in June of 2001, EPA announced that the July 2000 TMDL guidelines would be subject to further public meetings and review. A final release for the new rule is scheduled for March 2003.

This does not leave the TMDL program at a standstill. The old rules remain in place and therefore the court orders for selected states to file TMDL plans with EPA on a defined schedule stand. The momentum toward taking a watershed and ambient water quality focused approach to water quality planning and management cannot be reversed. In many states citizens expect not only plans, but also actions, to remove waters from the impaired waters lists.

What remains open to debate is not what TMDL activities will take place after March of 2003, but how these activities will be conducted. The NRC panel report raises issues and posed questions that will be the focus of debate in years to come. Here is my selection from and interpretation of these issues.

- How can – or should – the TMDL process include efforts to clarify and select appropriate water quality standards for particular water bodies? As noted, a number of papers in this volume make this point particularly well.
- Should the TMDL process focus on all the stresses (e.g., pollutants, hydrologic alterations, habitat modifications) that limit the attainment of standards? Is the program too narrowly conceived and focused, threatening to spend limited resources addressing the wrong source of an identified problem? The papers by Stow, Borsuk and Reckhow, and by Younos and Walker, make the case for a broader focus on all stressors.
- What monitoring data and how much data will be used when assessing whether a water body is meeting water quality standards? What statistical procedures will be used to interpret the data so that false positive and false negative errors are minimized? How does the choice of the procedure affect the amount and type of data that must be collected? How can limited monitoring resources best be allocated and used to support assessment?
- What models will be used for estimating the TMDL and allocating the allowable loads among sources? Are complex computer models needed in all places and in all waters or should we use “Best Professional Judgment” to make decisions on what to do and move directly to implementation of solutions? Every paper in this volume provides a perspective on the modeling challenges that must be faced.
- What will constitute reasonable assurance that actions will be taken so that desired water quality standards will be achieved? Does the phrase

“reasonable assurance” presume far more certainty in prediction of the cost and effectiveness of pollution control actions than the current data and models can deliver? If so, how can the concept of adaptive implementation as described by the NRC report and introduced by Stow, Borsuk and Reckhow in this volume be meshed with federal and state law and with the desires of stakeholders that water quality goals be aggressively pursued but that scarce funds not be wasted in that pursuit?

AUTHOR

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