



TMDL Science Issues Conference 2001 Closing Session Summary

The Advisory Committee on Water Information (ACWI) operates under OMB Memorandum 92-01 and the Federal Advisory Committee Act to facilitate coordination of water resources information among government agencies and the private sector. At the May 1999 ACWI meeting, an action was approved to hold a conference about the science issues that arise in applying TMDL regulations. The Water Environment Federation and the Association of State and Interstate Water Pollution Control Administrators agreed to undertake the conference, and drew on the public and private sector ACWI members to cooperate in the planning and implementation of the conference.

Approximately 590 individuals representing a broad array of stakeholders attended the TMDL Science Issues Conference on March 5-7, 2001. After two days of technical sessions, attendees were asked to identify information gaps hindering the progress of TMDL development and action items needed for improvements in the process. The closing session was devoted to discussing and recording their feedback. This document categorizes and summarizes their responses, listing information gaps first and then action items. **The following statements represent the views of conference participants and should not be attributed to any organization that sponsored the conference.**

INFORMATION GAPS AND NEEDS

GENERAL

- The lack of an adaptive management framework makes it difficult to modify TMDLs. There is a struggle between the desire to be precise and the reality that only an approximation is possible.
- The TMDL process is not integrated with other environmental programs, resulting in TMDLs being planned piece by piece instead of through an integrated watershed approach. There is not a link between TMDL implementation and regulatory programs outside of the CWA that affect water quality (for example Clean Air Act, contaminants in groundwater covered under RCRA and CERCLA).
- There needs to be a better resolution of authority over TMDLs between USEPA, States and the courts.

WATER QUALITY STANDARDS

- The current water quality standards program is scientifically weak. Standards are not accurate, sufficient, nor scientifically valid/defensible.
- The establishment of designated uses was flawed and uses need to be refined. There is not enough guidance or encouragement from the federal level for refinement or sub-classification of uses. The use attainability analysis process is not adequate to address the need.
- Water quality criteria need to include realistic, defensible margins of safety. Water effects ratios for criteria are inadequate.
- Translators for narrative standards are inadequate, and there are too many imprecise narrative criteria.
- Anti backsliding squelches tiered approaches and adaptive management or results in too small a load reduction.

LISTING

- There is not a legitimate and working process for delisting waters.
- There are no consistent criteria/methods for listing waterbodies (especially fish tissue).

MONITORING/DATA GAPS

- Overall, there is a lack of adequate monitoring data, lack of targeted monitoring to support modeling, inadequate ambient monitoring.
- There is inadequate guidance on event based water quality sampling and how to bring hydrology and geomorphology into the TMDL analysis process.
- Tools to measure progress (such as bio-assessment) are not well developed.
- States and other agencies need guidelines for data collection and data management system design. Most States do not have enough information on how to collect adequate data to properly run models and do not know what data collection questions to ask.
- States are using old and inappropriate data, creating the need to better identify the quality of data that is currently being used.
- There are not enough effective data sharing mechanisms.
- There are significant data gaps regarding nonpoint sources, for example, it is difficult to quantify the delivery of pollutants from nonpoint sources to the receiving water body.
- There is not enough information on the use and effectiveness of agricultural best management practices (BMPs) (see BMP section below).
- Knowledge on natural and background conditions is not adequate, and there is a need for information on how to define and use baseline/reference conditions.
- There is not enough data on wet and dry conditions, seasonal variations; flow and water quality.

MODELING

- States and others developing TMDLs need guidance on how modeling and data collection go hand in hand, for example how models can be used to identify data collection needs.
- There is a need for models on the economic aspects of TMDL development. States, communities, and stakeholders do not have the information they need to make decisions about water use in the context of economics.
- There is a need for adequate models on nonpoint source discharges, air deposition, contaminated sediment, groundwater, and storm water.
- There is not enough training on how to properly use models and how to choose the appropriate model. Guidance on selection, use of models and good modeling practices/options is lacking. It is difficult to find the optimal degree of complexity for the job or the optimal sequencing of models.
- Modelers are not communicating enough about data needs for effective modeling. There are data issues (such as data standards for modeling analysis) regarding TMDL development and model selection that need to be communicated up-front.
- In-stream fate processes are not adequately coded in existing models. Current statistical approaches are inadequate and call for better model algorithms.
- There is an inadequate understanding of the impact of sanitary sewer overflows, septic tanks, and illicit connections in modeling wet weather events and their relationships to dry weather standards.
- Better methods for correcting models with biological indicators and biological processes are needed.
- Better land use dynamics assessment (e.g. urbanization) is needed.
- There is not enough guidance on margin of safety (MOS) to quantify the implicit uncertainty analysis.

BEST MANAGEMENT PRACTICES

- BMPs are not adequately maintained, installed and monitored.
- BMP effectiveness is not well understood (at the micro (per site) and watershed scale), neither is the linkage to implementation and load reduction goals. There are inadequate techniques for estimating water body response to BMP implementation, and there are data gaps, particularly for agriculture, on a wide number of pollutants.
- BMP effectiveness cannot be quantified to relate to TMDLs, models do not predict the long-term impacts to water quality from BMPs, and there is little knowledge on how to use and evaluate BMPs in variable weather conditions.
- The temporal, spatial, and economic efficacy of BMPs must be better developed.
- There is an inadequate understanding of the costs associated with BMPs and the distribution of those costs across interested parties (point source/NPS, trading, collaboration in watershed management).

RESOURCES

- The biggest gap/need in the process is funding - States do not have enough resources and neither does USEPA.
- The lack of funding is particularly hard for the monitoring programs, which are the first to be cut and last to be funded. Due to cuts in monitoring program funds, adequate databases for good modeling do not exist. States need more money for monitoring.
- TMDL requirements present States with a problem of scale. There are an impossible number of TMDLs to do in a limited time.
- There is not enough funding to help NPS landowners/uses and farmers adopt BMPs.

PUBLIC OUTREACH/STAKEHOLDER INVOLVEMENT

- Scientists and regulators need to learn to communicate with stakeholders effectively. Risk communication needs to be improved and uncertainties need to be quantified in ways that stakeholders understand so that they are able to make better decisions.
- Interstate water commissions are not factored into the stakeholder balance.
- There is not adequate communication between stakeholders, policy makers, and the technical community.
- There are not enough resources and information for stakeholders. There is not a clear, understandable explanation of the TMDL process.
- It is difficult to convince stakeholders that models work (model credibility). Modelers need to learn how to convey results in the proper context and communicate uncertainty effectively.
- Models are difficult to apply to the decision making process.

ACTION ITEMS

(The following list does not always specify WHO should undertake the recommended action).

GENERAL

- There should be a bottom to top review of TMDL program taking into account uncertainty, adequacy of knowledge, data, and the need for adaptive management in watershed planning and implementation. EPA should investigate the adoption of a strategy that moves the process from precise statutory requirements to an adaptive management program that will allow more regulatory flexibility and encourage stakeholder buy-in and incremental progress.
- TMDLs need to be more flexible, for example, to accommodate changing allocations as appropriate when progress is made and to better recognize site-specific conditions/issues.

- EPA needs to initiate a national dialogue on how to link sources outside of the Clean Water Act to TMDL implementation and seek conjunction between surface water and drinking water programs.

WATER QUALITY STANDARDS

- EPA and States need to re-examine and improve the framework of their criteria programs. EPA and States need to work together on biocriteria (and other criteria) development at the State level and establish adequate databases for water quality managers.
- EPA needs to better define background/ reference conditions in the standard setting process.
- Stakeholders need to devote resources toward educating the public on standards, especially at local level, in the beginning of the TMDL process.
- EPA should address WQS/designated use challenges and the need to refine uses in a regulation or guidance.
- States and EPA should incorporate use attainability analysis (UAAs) into the TMDL process, create a legitimate and working process for doing UAAs, and promote the use of UAAs when necessary.
- EPA should develop technical guidance on how to use long-term biological data to link narrative and numeric standards.
- EPA should promote the development of consistent translators for narrative standards that can achieve compatibility or buy-in from one State to another.

LISTING

- EPA should develop a legitimate and working process for listing/delisting waters and provide for a prioritized planning (non-regulatory) list. States should use valid, defensible scientific principles to develop meaningful lists that reflect true priorities and provide direction for their TMDL programs.
- EPA should develop and publish listing method guidance before the next listing cycle.

MONITORING/DATA GAPS

- EPA should develop standardized sampling and data collection protocols and create an accountability mechanism for acquiring quality data.
- States and federal agencies should increase monitoring surrounding BMPs and those watersheds where they are widely used.
- EPA (or others) should hold workshops for assessment and modeling experts to develop targeted monitoring guidance to support modeling.

MODELING

- EPA should provide clear, understandable guidance on the use of models, undertake a major training effort at the State level for model users, and develop guidance on model selection.
- There should be a professional certification for modelers to ensure that appropriate data is used and to avoid model misuse.
- EPA needs to re-energize its research on modeling capability.
- EPA should develop guidance on data and models that go hand, develop targeting tools between data and models with common links, and develop a compendium on data needs of commonly used models.
- Models should be upgraded to enhance fate processes.
- EPA should develop a comprehensive guidance on quality control for TMDL modeling and implementation.
- EPA should collect and distribute information on modeling wet/dry weather conditions and seasonable variations.

BEST MANAGEMENT PRACTICES

- EPA should develop better information on the long-term effectiveness of BMPs using post-implementation monitoring studies to show improvement. EPA should develop guidelines and design criteria for BMPs based on actual field results.
- Integrate site-specific information into development, implementation and modeling of BMPs.
- Evaluate and improve previously accepted practices in agriculture and other production (tile drains, irrigation, tillage, etc.).
- Develop/explore options for establishing incentive based programs for BMP implementation (non-regulated NPS) such as market incentives, tax credits, tax incentives for buffers, etc. that do not rely on Section 319 programs.

RESOURCES

- More information should be sent to Congress regarding how much it costs to develop and implement a TMDL. Congress needs to appropriate more funding for the TMDL process and provide flexibility in the use of funds.
- EPA needs to make it easy for groups other than State and Federal agencies to develop TMDLs. EPA could promote third party TMDL development by making regulatory and policy changes that enable others to collect data and develop a TMDL. This would require the development of a guidance or framework to ensure the development of quality TMDL plans.
- States, communities, and stakeholders need guidance on how to determine the cost of TMDL analyses and how to compare various TMDL strategies based on cost.
- Establish a funding mechanism for TMDLs; the 208 program may be an appropriate model.
- Congress should increase funding for research, monitoring and all aspects of data collection, including assessments, source identification, gauging stations, and the development of technical tools.

- EPA should provide guidance on using monitoring resources that are not Federal or State related and help third parties collect data that meets quality assurance requirements.

PUBLIC OUTREACH/STAKEHOLDER INVOLVEMENT

- Develop more guidance on communication and the collaborative process, such as how to use non-technical language to explain TMDLs to the public.
- EPA should increase communication between its Regions. USEPA needs to be consistent between Regions on what is approvable to create equity nationwide pertaining to TMDL development.
- Develop programs for local education on the value of clean water. Education is the key to funding, the TMDL process, and consensus building.
- Develop better guidance on how to explain uncertainty and adaptive management to policy makers and the public.
- Provide training on stakeholder involvement for TMDL development.
- Provide training for primary resource producers (agriculture, silviculture, etc) on implementation and management of BMPs to insure long-term management.
- In the TMDL development process, alternative dispute resolution services should be provided by the State where necessary to achieve consensus at the federal, state, and local level.
- EPA should be more aggressive in information sharing. There should be a technology transfer program dedicated to TMDLs.
- EPA should develop an inventory and review of existing TMDLs, so that TMDL success stories should be publicized.