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2011 NATIONAL TRAINING WORKSHOP ON CWA 303(d) LISTING & TMDLS

**MEETING CHALLENGES TO WATER QUALITY MANAGEMENT
WITH NEW TOOLS & IMPROVED COORDINATION**

FINAL PROJECT REPORT & WORKSHOP PROCEEDINGS

JULY 29, 2011

**This project is made possible through a cooperative agreement with the
United States Environmental Protection Agency**



ACKNOWLEDGMENTS

The Environmental Law Institute (ELI) gratefully acknowledges the Watershed Branch of the U.S. Environmental Protection Agency, Office of Wetlands, Oceans & Watersheds, for its support of this important project, undertaken pursuant to Cooperative Agreement No. X7-83460001-0. Special thanks go to Branch Chief John Goodin and our excellent Program Officer, Menchu Martinez.

ELI is particularly indebted to the members of our dedicated planning advisory group, whose time, insights, and enthusiasm made the April 2011 workshop possible: Helen Bresler, Rick Dunn, Kathy Stecker, Tom Stiles, and Steven Winnett. Thank you!

The organizers also wish to thank everyone else who presented material at the workshop, or who otherwise contributed knowledge and time to developing the event: Carl Adams, Dwight Atkinson, Chuck Berger, Marti Bridges, Ruth Chemerys, Tim Clear, Rosaura Conde, Lee Currey, Susan Davies, Tatyana DiMascio, Angus Eaton, Julie Espy, Jamie Fowler, Sarah Furtak, Kimberly Groff, Michael Haire, Phil Hegeman, Heidi Henderson, Thomas Johnson, Eric Monschein, Trinka Mount, Nesmarie Negron, Doug Norton, Rik Rasmussen, Julie Reichert, Christine Ruf, Nancy Schuldt, Jennifer Sincock, and Jason Sutter. Finally, a word of appreciation to Denise Keehner, Director of U.S. EPA's Office of Wetlands, Oceans and Watersheds, for being a part of the workshop.

ELI staff contributing to this project are Adam Schempp, Sandra Nichols, Bruce Myers, Philip Womble, and Lucas Ackerknecht.

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ELI maintains a companion website for this project: our State TMDL Program Resource Center (http://www.eli.org/Program_Areas/state_tmdl_center.cfm).

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EXECUTIVE SUMMARY

In late April 2011, the Environmental Law Institute (ELI) convened the *2011 National Training Workshop on CWA 303(d) Listing & TMDLs: Meeting New Challenges to Water Quality Management with New Tools & Improved Coordination*. This event, supported through a cooperative agreement with the U.S. Environmental Protection Agency (EPA), brought together Clean Water Act (CWA) Section 303(d) listing and TMDL officials from 41 states, three tribes, Puerto Rico, and the District of Columbia. The assembled participants focused on a range of specific issues facing the CWA 303(d) Program as a whole, from nutrient loadings to legacy pollution, the impacts of climate change to inter- and intra-agency coordination. Participants had an opportunity to share their unvarnished views with colleagues from other jurisdictions, representatives of EPA Headquarters and the ten EPA Regions, and a representative of the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA).

As with similar events of national scope convened in June 2008 and May 2009, ELI and EPA intended for this training workshop to provide a fresh avenue for program officials both to interact with one another; learn about current best practices in listing, TMDL development, and TMDL implementation; and convey their programmatic ideas (and concerns) directly to EPA. To ensure a planning process that would culminate in a workshop attuned to the needs of program implementers at the state, tribal, and territorial level, ELI assembled a Planning Advisory Group (PAG) consisting primarily of state officials. For approximately six months, this group worked through a highly participatory process to develop, shape, and refine: the substantive topics for discussion, the list of officials to be invited, the course materials, and the event agenda and substantive panel presentations.

State, tribal, and territorial participants (including members of the PAG) were typically individuals with substantial responsibility in their respective programs, but who were not far removed from day-to-day program operations. Key to this event, and to the 2008 and 2009 events, was having the right people in the room.

The three-day workshop, held in a retreat-type setting, was successful by the metrics of sharing useful information, generating new ideas and building new relationships. Distinct overall themes emerged from the gathering; these themes are identified in Part I of the report. Part II sets forth a list of takeaway messages from the workshop. The bulk of the report, Part III, contains a detailed, session-by-session summary of event proceedings. Appendices to the report include the event program, a list of participants, a full summary of participant evaluations and comments, and information on ELI's companion website.

ELI continues to build on the momentum and enthusiasm generated by this and the prior years' events through an ELI-administered website for CWA 303(d) programs and through a listserv dedicated to state, tribal, and territorial professionals and designed to increase and enhance interactions among programs.

I. WORKSHOP THEMES

From the perspective of ELI staff in attendance, the following important themes emerged from state, tribal, and territorial participants over the course of the three-day workshop:

Success in Restoring Impaired Waters Will Require Cooperation and Coordination

The CWA Section 303(d) Program does not have all the necessary legal authorities to fulfill the goals of the CWA, including restoring and protecting the Nation's waters. Thus, whether necessary for accomplishing objectives or just effective use of resources, cooperation and coordination with other levels of government, other agencies, other programs within the same agency, non-governmental entities, and even the legislature is important for the future success of the CWA 303(d) Program at the national, state, tribal, and territorial levels.

State, Tribal & Territorial Law and Politics Affect Implementation Options

One size does not always fit all in the CWA 303(d) Program because jurisdictions face different circumstances. State water programs are structured differently, avenues for coordination within and across agencies can be different, oversight and authorities vary (particularly for nonpoint source management), popular and political support ranges, and funding differs. Thus, the obstacles to and opportunities for implementation are diverse. The overall success of CWA 303(d) Program policies will benefit from the participation of states, tribes, and territories in regulation and guidance development and flexibility in implementation across jurisdictions.

Prioritizing is Critical

With numerous demands on CWA 303(d) programs, and particularly in light of greater budget uncertainty, being as efficient as possible is important. This requires prioritization, from monitoring to TMDL implementation, but it is not always clear how priorities should be set. Evaluations of cost-effectiveness and the recovery potential tool may help with these decisions.

Science and Tools Are Needed from EPA

Good decisions require good information, and while states, tribes, and territories can provide local information, EPA can provide national-scale information, such as the latest climate change data. EPA also is well-positioned to analyze the various strategies employed by different jurisdictions and the environmental results of those approaches, identifying best practices from experience. Participants asked for suites of BMP combinations for particular sources or land use types that can be inserted into TMDLs to make sources more accountable. EPA also can be the most efficient and economical source of nationally applicable tools for processing information and performing other program functions, as demonstrated by the recovery potential tool.

States, Tribes & Territories Seek to Meet Legal Obligations and Environmental Outcomes

The statutory, regulatory, and judicial requirements governing CWA 303(d) programs may not always be the most efficient or effective means of achieving desired environmental outcomes, but they must be followed. State, tribal, and territorial programs must find ways to meet legal obligations in the best way possible for accomplishing certain environmental goals. Balancing TMDL development and TMDL implementation was an issue of particular concern for participants. EPA should help in this broad effort through implementation flexibility, and in some cases guidance.

EPA's Role Can Be Strategic and Varied

Not all jurisdictions agree as to what roles EPA should play in all instances, specifically where and how EPA serves as leverage for relations with stakeholders, the legislature, and other jurisdictions. Serving as a backstop is enough in some instances: the threat of EPA involvement or revocation of program authorities can be a powerful tool. In others, active involvement is desirable, such as in the development of certain multi-jurisdictional TMDLs. Understanding the needs of the state, tribal, and territorial programs can make EPA's involvement most effective and efficient, even if not uniform across jurisdictions and events.

Risk Aversion Regarding Lawsuits Is Not Always Uniform across Jurisdictions

Legal obligations, particularly those defined by a court decision, influence what, when, and how actions are undertaken by federal and non-federal programs. But federal reactions to a lawsuit are not always the same as those of non-federal programs, especially for jurisdictions not involved in the suit. This discrepancy can cause disagreements about appropriate courses of action between federal and non-federal jurisdictions, such as with development of numeric nutrient criteria and demonstration of reasonable assurance in TMDLs.

The Future of the CWA 303(d) Program May Require a Change in Public Perception

The public perception of the CWA 303(d) Program, and particularly TMDLs, is not always informed or even positive. Changing how the CWA 303(d) Program is portrayed and the means by which outreach is conducted may be important for improving stakeholder participation and political and financial security. Using social media may build grassroots support, and a complete "re-branding" may be vital to conveying the value of the CWA 303(d) Program. As one workshop participant noted, the term "TMDL" does not embody the usefulness of the TMDL Program.

Communication and Education by CWA 303(d) Program Professionals Aid Success

Workshop participants expressed how useful the information provided was to them and the value of interacting directly with EPA and other jurisdictions to build a network and learn from each other's experiences.

II. TAKEAWAY MESSAGES

The following are the most significant lessons that emerged from the workshop, as well as suggestions and recommendations from state, tribal, and territorial participants (although not necessarily consensus language) following session presentations:

NUTRIENTS

- Different jurisdictions presently use widely varying types of nutrient-related criteria, with different effects on assessments, and TMDL and permit programs.
- Coordination with other agencies (especially USDA) and other CWA programs (especially the nonpoint source control program) are critical to address nutrient impairments.
- Some non-federal participants requested that EPA (1) develop technology-based effluent limitations for point sources of nutrients and (2) identify suites of BMP combinations for particular nonpoint sources or land use types.
- Some non-federal participants suggested that (1) the nutrients framework¹ be viewed as a toolbox of approaches instead of as eight mandatory steps, (2) steps one through seven be used in lieu of developing numeric nutrient criteria, and (3) EPA clarify the role of the 303(d) Program in fulfilling steps one through seven.
- Some non-federal participants stated that numeric nutrient criteria should not always be the exclusive means by which water quality is assessed since other methods, such as aquatic life uses, can reveal impairments that numeric nutrient criteria do not and since a certain amount of nitrogen or phosphorus in a waterbody does not necessarily indicate a present or future impairment.

DOWNSTREAM IMPACTS / MULTI-JURISDICTIONAL TMDLS

- All jurisdictions sharing the watershed should be included early in the TMDL process.
- Having a water quality standards program can help a tribe better protect its interests in multi-jurisdictional TMDL decision-making, and EPA Headquarters should clarify how tribes can adopt a delegated CWA 303(d) program since EPA regions presently have different requirements for delegating these programs.
- EPA has a role in multi-jurisdictional TMDLs, whether simply as a backstop to enhance communication and cooperation between jurisdictions or as an active convener of the parties and facilitator of negotiations.
- EPA should explore its legal authority to participate in multi-jurisdictional TMDLs so that states, tribes, and territories know what EPA can do in certain situations.
- EPA regions should work more closely with EPA Headquarters on significant multi-jurisdictional projects.

¹ *Working in Partnership with States to Address Phosphorus and Nitrogen Pollution through Use of a Framework for State Nutrient Reductions*, Memorandum from Nancy K. Stoner, Acting Assistant Administrator for Water, USEPA, to Regional Administrators (Mar. 16, 2011).

- Differences between jurisdictions in water quality standards and scientific methodologies for water quality assessment or TMDL development can pose challenges to the development and implementation of multi-jurisdictional TMDLs, but this may be minimized by using EPA as an impartial intervener.
- Involvement of one jurisdiction in the public comment period of another can be a valuable means of promoting and ensuring cooperation between them.
- Tracking load reductions across jurisdictions and collecting that information in a central clearinghouse could help equalize burdens and improve overall implementation.
- Some non-federal participants requested EPA guidance on multi-jurisdictional TMDLs.

STORMWATER

- The 2010 Stormwater memo² is intended to address four elements: (1) EPA recommends numeric water quality-based effluent limits (WQBELS) in National Pollutant Discharge Elimination System (NPDES) permits for stormwater discharges where feasible, (2) wasteload allocations for regulated stormwater sources should be disaggregated to the extent feasible, (3) it may be appropriate to use a surrogate parameter such as stormwater flow or impervious cover, and (4) EPA encourages more active use of residual designation authority.
- Some non-federal participants requested that EPA provide examples of permits with limits based on TMDLs with impervious cover surrogate targets.
- Residual designation authority is potentially a powerful means for addressing stormwater pollution from additional sources other than currently regulated point sources; a best practices document regarding this authority would be useful.
- EPA should provide examples of TMDLs developed for *E. coli* where waterbodies were listed for fecal coliform impairments.
- Microbial source tracking can be a useful tool in source identification and ultimately TMDL development, but experiences with it are mixed and opinions vary regarding its cost relative to its benefit.

REASONABLE ASSURANCE

- Some non-federal participants requested that EPA issue guidance on reasonable assurance that connects the 1991 EPA TMDL Guidance, 1997 Perciasepe Memo, 2002 EPA TMDL Guidance, Lake Champlain TMDL revocation, *Pinto Creek* decision, and Chesapeake Bay TMDL EPA Report to Congress.
- EPA does not foresee a “one-size-fits-all” approach to reasonable assurance, and the Chesapeake Bay TMDL represents the more detailed end of the spectrum.

² *Revisions to the November 22, 2002 Memorandum “Establishing Total Maximum Daily Load (TMDL) Wasteload Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs”*, Memorandum from James A. Hanlon, Director of Wastewater Management, USEPA and Denise Keehner, Director of Office of Wetlands, Oceans and Watersheds, USEPA, to Water Management Division Directors, Regions 1-10 (Nov. 12, 2010).

- EPA should develop a TMDL template that demonstrates reasonable assurance, built from the best examples of reasonable assurance in TMDLs that are strategically developed to push implementation and that are on track in achieving their implementation goals.
- State-level authority over nonpoint source polluters can be critical to true reasonable assurance. For states without such authority, there may be inequity in the allocation of load reductions between point and nonpoint sources if the nonpoint source programs are not effective in delivering load reductions.
- EPA should identify suites of BMP combinations for particular sources or land use types that are based on existing CWA 319 and Natural Resources Conservation Service (NRCS) materials and can be inserted into TMDLs to make sources more accountable in order to facilitate demonstration of reasonable assurance.
- EPA should issue guidance on the terminology “maximum extent practicable” in the BMP context and whether it should be defined at the industry or individual farm level.
- Some non-federal participants suggested that reasonable assurance demonstrations allow for implementation using adaptive management, supported by progress monitoring and adequate backup plans in the event that load reductions do not match the expected reduction goals in the TMDL.
- Some non-federal participants stated that reasonable assurance would stall TMDL development or put more focus on development rather than implementation, but others noted that it could be a lever to bring all sources to the table for setting realistic loading reduction goals.
- Some non-federal participants encouraged EPA to develop program measures to better reflect incremental water quality improvement and restoration.

ANTIDEGRADATION

- There is a large difference between regulatory due diligence and actually protecting a water’s condition, so federal and non-federal officials should set an antidegradation methodology that focuses on achieving tangible environmental benefits while being consistent with statutes.
- The data analysis capability necessary to discern between natural fluctuations in water quality and downward trends in water quality can be a significant hurdle to effective antidegradation policies.
- EPA should consider potential issues such as how to treat secondary or cumulative impacts or nonpoint source pollution in an antidegradation evaluation, how to treat Tier 1 or Tier 2 designations not based on water quality, and how degraded waters that still meet water quality standards are evaluated in a potential TMDL.
- Well-designed biocriteria can help assessment programs identify declining water quality conditions, and actionable biocriteria can make biological trends prevent permits in waters that are close to declining below their biological listing threshold.
- EPA should provide more support for using tiered aquatic life classes.
- Some non-federal participants noted that if listings based on antidegradation lead to the development of “protection” TMDLs, those TMDLs should count toward TMDL

development goals like any others. In addition, EPA should identify what a “protection” TMDL would look like.

- Roughly a half dozen workshop participants expressed interest in helping to shape EPA’s guidance on antidegradation for the 2014 integrated reporting cycle.

RECOVERY POTENTIAL

- The basic working concept of the recovery potential tool is a transparent, repeatable process for comparing impaired waters based on their restorability. Applications include prioritizing among listed waters in 303(d) schedules, prioritizing TMDLs for implementation, and comparing restorability for many other purposes.
- Supporting the social portion of the tool is particularly important so as to systematically quantify social indicators.
- States were intrigued by the many possibilities of the recovery potential tool and requested that EPA make the tool more accessible and pilot it in several Western states.

LEGACY POLLUTANTS

- Early conversation between hazardous waste and water programs can be important when a water is impaired by a legacy pollutant.
- EPA’s CWA 303(d) Program should strongly encourage EPA’s Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Programs to recognize that water quality standards are ARARs (Applicable or Relevant and Appropriate Requirements).
- EPA should develop a compendium of current state practices regarding legacy pollutants, with an emphasis on how TMDLs can help address legacy pollutants.
- EPA should continue to explore the options for using Category 4(b) to address water quality impairments caused by legacy pollutants.

CLIMATE CHANGE

- Climate change could affect various EPA water quality programs: water quality criteria, monitoring, attribution of impairments, wasteload allocations, and 319 and other nonpoint source programs.
- EPA should continue to keep states, tribes, and territories abreast of scientific developments and technical tools for assessing the effects of climate change on water quality.

COORDINATION

- EPA and program implementers should have regular, honest conversations with each other in order to make the federal approach to water quality protection and restoration work.
- Federal mandates should be communicated to those in the regulated sector.

- EPA and the delegated programs need to re-emphasize how they are “branding,” or publicizing, their programs to more effectively generate grassroots support for clean water initiatives.
- Great field partners can be vital to overcoming the lack of information and fears held by stakeholders, farmers, and local homeowners when addressing nonpoint sources of pollution.
- A program’s relationship with EPA, other agencies, and other parties may have to adapt to changes in political realities.
- There are successful state examples of effectively targeting EQIP and 319 funding with TMDL implementation efforts.

III. WORKSHOP PROCEEDINGS: SESSION-BY-SESSION DISCUSSION

Following is an overview and detailed discussion of the workshop, presented session-by-session. The full workshop agenda appears in Appendix 1 to this report.

Welcome, Introductions, Updates, and Training Workshop Overview

ELI staff opened the workshop by welcoming the diverse set of participants, which consisted of TMDL or listing staff representing 41 states, three tribes, one territory, and the District of Columbia, along with staff from EPA Headquarters, staff representing the ten EPA Regions, and a representative of ASIWPCA. A complete list of the workshop participants and their affiliations is provided in Appendix 2 of this workshop report.

Denise Keehner, Director of EPA's Office of Wetlands, Oceans, and Watersheds (OWOW), gave opening remarks. She observed that the workshop was the most diverse convening to date for these water quality programs. She provided an overview of current strategic priorities of OWOW. OWOW's top priorities included: clarifying CWA jurisdiction; more effectively addressing mountaintop mining operations in Central Appalachia; and improving management of nutrient pollution at a national level through measures to reduce nitrogen and phosphorus loadings, EPA's nutrient framework, and numeric nutrient criteria. Ms. Keehner also noted the tremendous challenges posed by eutrophication on a national level. Over 15,000 waters are impaired by excessive nutrient pollution, and there exist over 168 hypoxic zones in U.S. waters. OWOW is also interested in increasing use of green infrastructure, particularly in the areas of CWA permitting and Combined Sewer Overflows (CSOs), and improving identification of high quality waters and preventing their degradation and impairment, with specific endorsement of the Healthy Watersheds Initiative. OWOW is also seeking to improve identification of impaired waters, track water quality improvements in known impaired waters, and complete the first set of National Aquatic Resource Surveys to help demonstrate U.S. water quality improvements. Ms. Keehner also noted other EPA initiatives, including EPA regulations governing numeric nutrient criteria in Florida, the introduction of new ammonia criteria, the development of new recreational water quality criteria, the Chesapeake Bay TMDL, scientific research on fate and transport of nutrients in the Mississippi River Basin, and collaborative work on the Mississippi River/Gulf of Mexico Hypoxia Task Force.

Ms. Keehner surveyed FY11 and FY12 budget challenges for OWOW's programs. The FY11 appropriations reduce EPA funding from FY10 levels by over \$1.5 billion with almost \$1 billion in cuts coming from the Clean Water and Drinking Water State Revolving Funds. Ms. Keehner concluded by reinforcing the need for federal, state, tribal, and territorial agencies to pursue cost-effective, entrepreneurial methods to improve water quality management under the CWA 303(d) programs and noted that, in general, the American public supports clean water initiatives.

John Goodin, Chief of EPA's Watershed Branch in OWOW, provided an overview of the status of CWA 303(d) programs. He said that the most important facet of the workshop is the

valuable exchange of ideas between program managers, and he emphasized that EPA takes the state, tribal, and territorial input that it receives at these events very seriously in its decision-making regarding program development. Mr. Goodin then outlined the main takeaway messages for EPA from previous ELI-EPA workshops: supporting innovative state programs; enhancing federal, state, regional, and non-governmental stakeholder involvement in CWA 303(d) programs; increasing coordination of efforts across different CWA programs; supporting programmatic measures of incremental water quality improvements; supporting use of TMDL alternatives for achieving water quality objectives; and increasing focus on TMDL development and implementation. He also provided specific examples of how state input received at previous ELI-EPA workshops had informed EPA policy decisions.

Mr. Goodin followed these comments with a discussion of the results of a recent EPA geospatial study indicating the extent to which TMDL allocations are reflected in NPDES permits and CWA Section 319 grant investments. He noted that 95 percent of NPDES permits were meeting specified wasteload allocations and that 72 percent of Section 319 projects supported pertinent TMDLs. Mr. Goodin also cited a Kent State University study in Ohio and West Virginia that presented methods for demonstrating incremental stages of watershed recovery. He then noted key areas where the OWOW CWA 303(d) Program believes it can improve, including the improving balance of pace and rigor in TMDL development, coordination with other CWA programs and with the US Department of Agriculture (USDA), and outreach on and communication of CWA 303(d) successes.

Mr. Goodin provided an overview of fundamental measures of the CWA 303(d) Program's progress, noting that almost 3,000 formerly listed waters were now attaining water quality standards and that over 9,000 causes of impairment had been removed, figures that are close to attaining EPA's 2014 goals for the program. However, Mr. Goodin also noted that overall timeliness of CWA 303(d) list submissions and approval had fallen off in the most recent submission cycle. In addition, due to budget cuts and, in some instances, development of more difficult TMDLs or an increased emphasis on TMDL implementation, FY11 will be the first year that EPA and the States are likely to fall short of their goals for TMDL submission and approval.

Finally, Mr. Goodin outlined difficult, upcoming pressures on the CWA 303(d) Program. He noted that program managers should expect reduced CWA 303(d) funding, but that past litigation still demands that many states meet certain requirements for TMDL development. He concluded by inviting input over the course of the workshop on how EPA Headquarters could best support state programs in light of these challenges with new resources such as compendia of best practices, technical tools, or program guidance.

Sessions 1-2: Nutrients

Session 1: Nutrients (Part I)

This session featured four presentations. Intended outcomes of the first session included:

- Participants will better understand several different state approaches used to address nutrients under the CWA 303(d) Program.

- Participants will better understand key recent EPA actions regarding nutrients.

(1) Eric Monschein, EPA HQ: Status of Addressing Nutrients under the CWA 303(d) Program as Well as Key Recent EPA Actions

This presentation covered three main topics: national statistics on nutrient-related listings and TMDLs, actions within the EPA watershed branch and CWA 303(d) Program that are influencing the program's direction, and a summary of recent key EPA actions on nutrients.

Nationally, about 21 percent of impairments are nutrient-related and 18 percent of developed TMDLs address nutrient impairments. Notably, 64 percent of nutrient-related listings and 59 percent of nutrient-related TMDLs involve streams, creeks, or rivers. In addition, among EPA Regions, there is tremendous variability among the percentages of listings and TMDLs that are nutrient-related. About 50 percent of states fall in the range of 0-100 nutrient-related impairment listings, and roughly 40 percent of states have 0-100 nutrient-related TMDLs. The majority of nutrient-related TMDLs are more than seven years old, and over 80 percent of nutrient-related TMDLs have been developed by states. Nearly 90 percent of nutrient-related TMDLs address either a combination of nonpoint source and point source pollution or address solely nonpoint source pollution. In addition, nearly half of nutrient-related TMDLs utilize numeric nutrient criteria while the other half use other numeric water quality targets, including those based on EPA-recommended criteria for nitrogen or phosphorus, state guidance on nutrient-related causal or response variables, or site-specific waterbody values.

To aid nutrient-related TMDL development, EPA is working with states to develop a compendium of best practices used in identifying nutrient impaired waters and developing TMDLs. EPA is also piloting its Recovery Potential tool to target TMDL implementation in high-priority waters and watersheds. Some of EPA's key nutrient-related activities include the Mississippi River Hypoxia Task Force and National Academy of Sciences panel, promulgation of numeric nutrient criteria in Florida, finalization of the Chesapeake Bay TMDL, the eight-step framework for nutrient management, and letters to the state of Maine and the New England Interstate Water Pollution Control Commission communicating EPA's preference for state adoption of numeric nutrient criteria and requirement for scientifically defensible criteria for waters' designated uses.

(2) Susan Davies, Maine: Nutrients in Maine: Criteria Development, Listing and TMDLs

Maine has a long-standing practice of receiving direct biological feedback from monitoring data to develop a robust program that effectively optimizes water quality, including managing nutrients. This information feeds into development of the state's water quality standards and criteria. Maine has a set of existing laws and policies that have influenced the development of narrative nutrient criteria for lakes, which must have a declining trophic state. Maine's rivers and streams must meet tiered, biologically-based criteria.

Maine's nutrient management strategy is to use numeric environmental response indicator criteria (*e.g.*, DO, algae, macroinvertebrates, chlorophyll-*a*, Secchi disk readings, etc) to trigger impaired waters listings, enforcement actions, and TMDL restoration targets. The

position of the Northeast states is that, excursions of nutrient concentration thresholds alone do not necessarily imply an impairment of aquatic life or recreational use, since, unlike toxics, nutrients exhibit a non-linear, subsidy-stress relationship in aquatic ecosystems. To support its nutrient management strategy, Maine has developed a proposed decision framework that uses numeric nutrient concentrations in combination with numeric environmental response indicator criteria to determine impairment. Under Maine's proposed framework any waterbody not meeting one or more environmental response criteria would be deemed impaired, whether or not nutrient concentration criteria (*e.g.*, total phosphorus) were exceeded. Further, waters with an exceedance of nutrient concentration criteria would not be deemed impaired if criteria for environmental response indicators were met. EPA has taken issue with the state's proposal not to list a stream as "impaired" if nutrient concentrations are above numeric limits but environmental response indicators are good. EPA has requested that the state consider that the attainment status for these waterbodies be "indeterminate," requiring additional monitoring to determine if they are impaired or require site-specific nutrient concentration criteria.

(3) Heidi Henderson, New Mexico: New Mexico's Approach to Nutrient Impairments and TMDLs

This presentation covered New Mexico's ecoregional approach for developing water quality standards, the state's approach for assessing and listing impaired waters, and the support that these processes provide for TMDL development.

New Mexico's water quality standards for nutrient enrichment are established for specific waterbody types based on a combination of EPA's nationwide, ecoregional study of nutrient data and a USGS regional dataset that uses STORET, USGS, and SWQB data to establish certain criteria threshold values. These datasets resulted in nutrient threshold values for streams, and the state is currently developing threshold values for lakes.

New Mexico uses a two-tiered assessment protocol to monitor attainment of water quality standards throughout the state: qualitative, Level I field visits followed by a Level II Nutrient Survey if the field visit suggests impairment. New Mexico uses a combined weight-of-evidence approach, involving biological indicators and nutrient concentrations, to determine if a particular water is impaired. In the case of streams, New Mexico uses a suite of seven different nutrient criteria to determine impairment.

New Mexico then develops TMDLs with total phosphorus or nitrogen targets set based on the water quality threshold for a particular ecoregion and aquatic life use or value that is proven effective at maintaining a waterbody's integrity. Three empirical examples of nutrient TMDLs that use this approach were presented: the Rio Ruidoso, Mora River, and Cieneguilla Creek. The phased approach used in the Cieneguilla Creek TMDL represents New Mexico's goal for TMDL development.

(4) Julie Espy, Florida: Overview of Complications with EPA's Promulgated Numeric Nutrient Criteria in Florida

Numeric nutrient criteria became a leading issue in Florida in August of 2008 when Earthjustice sued EPA to obtain numeric nutrient criteria in the state. In January of 2009, EPA agreed that numeric nutrient criteria were necessary. This issue continues to generate debate in Florida and beyond.

EPA's promulgated rule included numeric nutrient criteria for lakes, streams, and springs, additional numeric nutrient criteria for streams to protect downstream lakes, and a provision allowing federal site-specific alternative criteria (SSAC) for these waters. EPA's numeric nutrient criteria for streams provide different standards for each of five nutrient watersheds. In addition, numeric nutrient criteria for lakes are divided into three categories: colored lakes, clear/high alkalinity lakes, and clear/low alkalinity lakes. All of the numeric nutrient criteria are expressed as annual geometric means that cannot be exceeded more than once in a three-year period.

The Florida Department of Environmental Protection (DEP) disagreed with some tenets of EPA's promulgated numeric nutrient criteria, including the exclusion of sites impaired for DO, the lack of biological validation of impairment, and the lack of implementation guidance. The three-year monitoring period for EPA's promulgated criteria will increase the state's monitoring burden, and EPA's requirements for numeric nutrient criteria could reduce the number of Florida waters assessed for nutrients from 25 percent to 15 percent. In addition, at this time DEP does not have authority to undertake a rulemaking to coordinate its own criteria with EPA's numeric nutrient criteria. If DEP cannot promulgate numeric nutrient criteria by March of 2012, EPA may have to assess the numeric criteria it promulgated and DEP may still have to concurrently assess using its existing criteria, which would create additional confusion among the regulated community.

Session 2: Nutrients (Part II)

This session consisted of plenary discussion. Intended outcomes of the second session included:

- Participants will learn how other states, tribes, and EPA view overcoming the challenges of nutrient-related listings with and without numeric nutrient criteria.
- Participants will learn how other states, tribes, and EPA view overcoming the challenges of nutrient-related TMDL development with and without numeric nutrient criteria.
- Participants will be familiar with how well certain policies and approaches have worked in practice, what led to success, what hasn't, and why.
- Participants will set the stage for continued discussion among state and tribal water quality agencies and with EPA about addressing nutrients in CWA 303(d) lists and TMDLs.

A number of states shared their use of unique nutrient criteria and its effects on their standards, assessment, and TMDL programs. States use numeric nutrient criteria in different capacities. California has utilized numeric nutrient criteria in a broader risk-beneficial uses framework that addresses nutrient impairments in the context of different categories of beneficiaries. Rhode

Island uses numeric nutrient criteria for lakes and ponds and is in the process of evaluating numeric nutrient criteria for rivers. Rhode Island has developed a TMDL for an impaired lake that requires an upstream tributary to meet certain numeric nutrient criteria so that the lake does not exceed its own numeric nutrient criteria. Alabama is under a consent decree and has been required to use numeric nutrient criteria for lakes since 2000.

States that use narrative nutrient criteria discussed their approaches to water quality monitoring and assessment. Connecticut uses periphyton-based biocriteria, assessing the communities' quick reaction to nutrient enrichment and their ability to integrate pollution over time. Connecticut focuses on the quantification of phosphorus loadings over time from different land use types, comparing these values to modeled natural loadings to determine the amount of phosphorus added from anthropogenic sources; these enrichment factors are then linked to the state's biological condition gradient. Florida uses narrative nutrient criteria such as DO or biocriteria to determine impairment and also uses macroinvertebrate strength indices due to their ability to integrate changes in water quality over time. North Carolina has used numeric biocriteria for chlorophyll-*a* since 1979. Oregon uses biocriteria to support development of watershed-based phosphorus TMDLs. Louisiana uses narrative nutrient criteria based on nitrogen-phosphorus ratios.

Significant discussion centered on EPA's assertion of the need for numeric nutrient criteria. EPA staff noted that biocriteria datasets may not be strong enough to fully assess waters for impairment and that numeric nutrient criteria can identify nutrient impairments before response variables reflect an impairment. States expressed a number of concerns with this approach. One state explained that its robust biocriteria dataset has allowed the state to identify a number of impaired waters that would not have been identified by solely using numeric nutrient criteria. Another state asserted that since it models the relationship between nitrogen and phosphorus loadings and its numeric biocriteria (chlorophyll-*a*), use of numeric nutrient criteria would not provide a more preventive approach to listing impaired waters. States also noted that fixed-interval monitoring methods for numeric nutrient criteria may miss spikes in nutrient concentrations; that numeric nutrient criteria may emphasize baseload nutrient input from point sources over runoff from nonpoint sources; and that using measurements of nutrient concentrations in tributaries is not as determinative of downstream impacts in lakes or ponds as measurements of nutrient loadings. Finally, some states claimed that they generally need more flexibility in setting water quality criteria, that numeric nutrient criteria represent an unfunded mandate for states, and that total nitrogen and total phosphorus should not be managed in the same way as toxins, always assuming a linear, negative response, due to their subsidy-stress relationship in aquatic ecosystems. One participant noted that a significant amount of money was spent on the Chesapeake Bay, but numeric criteria for total nitrogen and phosphorus in the Bay could not be determined; if the best minds in the country could not do it, and instead chose to use response variables, states should not be expected to do it.

In addition, a number of states mentioned that they would like for EPA to set technology-based effluent limitations for point sources of nutrient enrichment to provide immediate reductions in nutrient loads.

Key Points Raised:

- EPA urges states to adopt numeric nutrient criteria, believing this to be the most effective (and predictive) means of identifying water quality impairment.
- Many non-federal participants noted objections to the use or exclusive use of numeric nutrient criteria in water quality assessments, including contending that other methods can reveal impairments that numeric nutrient criteria do not and that a certain amount of nitrogen or phosphorus in a waterbody does not necessarily indicate impairment.
- Different jurisdictions presently use widely varying types of nutrient-related criteria, with different effects on assessments and TMDL and permit programs.
- New Mexico develops TMDLs (more recently employing a phased approach) that set total phosphorus or nitrogen targets based on the water quality threshold for a particular ecoregion and aquatic life use.
- Maine uses environmental response indicators, including macroinvertebrate and periphyton biocriteria, to trigger impaired waters listings, enforcement actions, and TMDL restoration targets and has developed a proposed decision framework that uses these indicators in combination with numeric nutrient concentrations to determine impairment.
- Numeric nutrient criteria in Florida face structural challenges (DEP does not have rulemaking authority, so cannot coordinate its criteria with the EPA-promulgated rule) and some substantive concern (an increase in the monitoring burden and decrease in the number waters assessed).
- Many non-federal participants requested that EPA develop technology-based effluent limitations for point sources of nutrients.
- Some non-federal participants suggested that (1) the nutrients framework be viewed as a toolbox of approaches instead of as eight mandatory steps, (2) steps one through seven be used in lieu of developing numeric nutrient criteria, and (3) EPA clarify the role of the 303(d) Program in fulfilling steps one through seven.

Session 3: Downstream Impacts / Multi-jurisdictional TMDLs

This session featured five presentations, followed by plenary discussion. Intended outcomes of the third session included:

- Participants will better understand the obstacles to and opportunities for developing and implementing multi-jurisdictional TMDLs in practice from examples of ongoing efforts.
- Participants will be more familiar with principles for downstream protection in CWA programs.
- Participants will better understand the implications of these principles for TMDL development, permits, and standards.

(1) Nancy Schuldt, Fond du Lac Reservation: St. Louis River Cooperative TMDL

The Fond du Lac Reservation, which has delegated authority only for water quality standards and assessment and not for TMDL development, is working collaboratively with EPA Region 5, the Minnesota Department of Natural Resources (Minnesota DNR), and the Wisconsin Department of Natural Resources (Wisconsin DNR) to develop a TMDL for the

St. Louis River. EPA Region 5 is leading development of the TMDL on behalf of the Fond du Lac Reservation. The Fond du Lac Reservation, along with two other tribes, has rights to hunt and fish in the River, making mercury accumulation in fish tissue their leading water quality concern; their standards for mercury pollution are more stringent than those used by the other jurisdictions. The River is impaired for mercury in the Fond du Lac's segment and has multiple use impairments downstream from PCBs, PAHs, metals, dioxin, toxaphene, DDT, and dieldrin.

The multiple parties to the TMDL have mapped cumulative pollution stressor scores in the River's contributing watersheds based on NPDES permits, land use patterns, and nonpoint source pollution. The headwater areas of these watersheds contain legacy contamination from a long history of mining, leachate, and small municipal wastewater treatment plants (WWTPs). These waters flow into a Great Lakes Area of Concern, which is affected by legacy contamination from industry. Remedial processes are in place to address legacy pollutants in Wisconsin and Minnesota. The Fond du Lac Reservation worked with the Minnesota DNR on a large biological monitoring and assessment effort upstream of the Reservation and with the Wisconsin and Minnesota DNRs on restocking sturgeon populations. Mercury reduction in addition to what is required by the Minnesota statewide mercury TMDL is needed to achieve the Reservation's stringent water quality standards.

(2) Phil Hegeman, Colorado, and Tom Stiles, Kansas: Salinity TMDLs on the Arkansas River between Colorado and Kansas

Mr. Stiles presented Kansas' perspective on the development and implementation of a salinity TMDL for the Arkansas River. After the last major impoundment of the Arkansas River in Colorado, the River is subject to heavy irrigation use and reuse, making the River one of the most saline in the nation when it enters Kansas. Due to the interstate water compact, which guarantees Kansas certain quantities of water, the River's flow usually peaks in the summer and drops substantially in the winter, at which point irrigation water returns compose much of the flow and so salinity increases. In 2006, Kansas completed a TMDL to address decreasing yields and salinity. The TMDL coincided with updates to Colorado's water quality standards, so the states melded these two processes.

Mr. Hegeman presented Colorado's perspective. He explained that the Arkansas River below the City of Pueblo is divided into three segments, with the farthest downstream segment representing the portion of the River between the reservoir and the Kansas border. All segments are listed as impaired for selenium, the upstream segment is listed for sulfate, and the farthest downstream segment was listed for uranium in 2008. To address these problems, Colorado is focusing on use of BMPs and working with Colorado State University to evaluate irrigation practices that could reduce these water quality concerns. Significantly, Kansas registered as a party and submitted comments during Colorado's water quality standards review process.

Mr. Stiles mentioned that although water quantity litigation between the states hurt their ability to work collaboratively, the states moved beyond this and used the Colorado water

quality standards process as an opportunity to convince Colorado to invest in remediation—which has been critically important for Kansas.

(3) Jennifer Sincock, EPA Region 3: The Chesapeake Bay TMDL: A Pollution Diet to Restore Clean Water

The Chesapeake Bay TMDL covers approximately 64,000 square miles and seven jurisdictions and was prompted by a number of factors, including consent decrees in Virginia and the District of Columbia, an MOU in Maryland, and an executive order declaring the Bay to be a national treasure.

The Bay TMDL is intended to achieve all pollution reductions by 2025 and 60 percent of reductions by 2017. It uses water quality standards for DO, chlorophyll-*a*, water clarity, and underwater Bay grasses. Three main tenets drove allocation of pollutant reductions among the different jurisdictions involved in the Bay TMDL: (1) load allocations should protect the Bay's living resources and achieve water quality standards in all segments; (2) drainage basins contributing most to the Bay's pollution should perform the most restoration; and (3) all tracked load reductions are considered in final load reductions.

In developing the TMDL, EPA first released its target load allocations for each jurisdiction and held public meetings to promote early involvement and work on Phase I Watershed Implementation Plans (WIPs). Each jurisdiction then drafted its own Phase I Plan, which divided target load allocations among specific point and nonpoint sources and was to provide reasonable assurance that load reductions would be met. EPA then evaluated these draft WIPs and used them to create a draft TMDL that was released for public comment. In December of 2010, the Bay TMDL was finalized, with each jurisdiction's final Phase I WIP serving as reasonable assurance. The jurisdictions are now working on their Phase II WIPs to refine load reduction strategies with local partners and ensure that reduction targets are met. Modeling and monitoring of actual reductions are checked every two years; if the jurisdictions do not meet their two-year milestones, EPA has the option to use federal action to insert stricter permits or water quality standards. In 2017, the states and D.C. will start on their Phase III WIPs, which will include mid-course adjustments in TMDL implementation in these jurisdictions. The path forward for the Bay TMDL is more of a marathon than a sprint.

(4) Lee Currey, Maryland: Process and Strategy Development for Maryland's Bay TMDL Phase I and Phase II Watershed Implementation Plan

The Chesapeake Bay has tremendous value for Maryland's residents and industries. Fifty-three of the 92 water quality segments addressed in the Bay TMDL are in Maryland. Since Maryland contains just 14 percent of the Bay's drainage basin but over half of the Bay's surface area, the state needs EPA's help in developing a multi-jurisdictional TMDL to achieve a clean Bay.

EPA set load reduction strategies to include principles of equity, credit for existing actions and relative impact to the Bay waters, where relative impact is a measure of the per pound

nutrient load reduction benefit on DO. More specifically, allocation rules stated that watersheds that have a higher impact will require a higher load reduction than watersheds with a lower relative impact. Due to Maryland's proximity to the Bay, the relative impact is high, meaning that land-based loads have little loss before being delivered to the Bay waters and that reductions in these loads are very effective at improving water quality. The result is challenging load reduction targets in Maryland.

EPA's evaluation of Maryland's Phase I WIP found that it would meet assigned nutrient and sediment reductions. The plan contains an accelerated goal of meeting all load reductions by 2020, with 70 percent of load reductions proposed by 2017. In determining the strategies to meet 2017 targets, Maryland applied a strong public outreach component which included source sector specific Governor's listening sessions, discussion of strategies by the Governor's Bay Cabinet members, and also public comment on the WIP document. Maryland has a very strong MS4 stormwater permits program, provides a priority on wastewater treatment plant load upgrades to ENR, and has strong agricultural strategies.

Determining the strategies for load reductions and establishing an equitable distribution of load reductions across the state's basins and counties were particularly difficult obstacles in the design process for the WIP. After the target loads for each jurisdiction were released, the jurisdictions had only two months to identify their respective strategies to meet those targets in 2017. Due to time constraints and EPA modeling capacity, Maryland simply did not have time to fully evaluate the relative impact of strategies determined in the Phase I WIP. The Bay Cabinet hopes to more thoroughly address these issues in Phase II. Better modeling tools to support the allocation of loads among counties would be helpful as the state moves forward with Phases II and III of the Bay TMDL.

(5) Angus Eaton, New York: Chesapeake Bay TMDL in New York

The Bay TMDL continues to be an exhaustive process for New York's TMDL staff and, unlike Maryland, the part of New York that drains to the Bay represents a small area of the state. The area is rural, contains only four percent of the Bay watershed's population, contains ten percent of the Bay watershed's surface area, and is primarily forested and not developed.

Nutrient loadings in that part of New York are primarily from agriculture and forests. EPA rated New York's initial Phase I WIP as being "seriously deficient," and EPA committed to prepare backstop or alternative allocations, such as requiring WWTPs to meet limits of technology for nutrients and requiring heavy retrofits of stormwater infrastructure. These measures were frustrating from New York's perspective, particularly since New York's baseline pollution quantities to the Bay have actually decreased since the mid-1980s, while other states' have grown. Nor does rural New York receive many direct benefits from the Bay's health. After extensive negotiations, EPA increased New York's target load and finalized the TMDL. A significant gap remains. EPA rated the state's rewritten Phase I WIP as "significantly improved" but still included a "backstop" in the final TMDL. New York continues to work with EPA to close the gap and plans to submit a more detailed Phase II WIP demonstrating the voluntary efforts underway in New York to help with Bay restoration

efforts. New York is the downstream state in other multi-jurisdictional TMDLs, and so it is cognizant of downstream states' perspectives in the Chesapeake Bay TMDL process.

Session 3 Plenary Discussion

Participants shared their experiences and suggestions on EPA involvement in the development and implementation of multi-jurisdictional TMDLs. They identified different levels of EPA involvement that they have encountered, from very involved and supportive to serving the role of a distant, neutral mediator that could settle potential conflicts. Participants noted that simply the ability to use EPA as a backstop when multi-jurisdictional TMDL processes encountered conflicts was particularly useful. Moreover, in the context of the Chesapeake Bay TMDL, one participant noted that EPA's essential mandate for agricultural load reductions was extremely helpful. Another identified role for EPA was convening the multiple parties involved, and ideally actively seeking the resolution in that meeting of the most significant conflicts. Some participants noted that EPA could help solve problems caused by differing water quality standards, beneficial uses, or scientific methodologies for water quality assessment or TMDL development in different jurisdictions. One participant suggested that EPA write permits for wasteload allocations in upstream jurisdictions in some instances. Another participant mentioned CWA Section 319(g), under which a state can petition EPA to convene a management conference to address nonpoint source contributions to that state from an upstream state. Such a conference was convened in 2010 to address mercury deposition from upwind states to the Northeast states. Finally, some participants suggested that, in TMDLs that involve multiple EPA regions, the involved regions should strive for consistency in their regulatory treatment of these TMDLs.

Participants identified strategies for developing and implementing multi-jurisdictional TMDLs without significant EPA involvement. Some participants suggested that when multiple jurisdictions have different water quality standards for the same pollutant on the same impaired water, it can be helpful to move forward with water quality restoration and simply recognize that specific discrepancies in water quality standards can be managed at a later point when water quality has improved and the difference in standards is relevant. One participant noted that multi-jurisdictional TMDLs were particularly successful when all involved jurisdictions developed their own TMDLs concurrently or when the involved jurisdictions jointly developed one TMDL. Some participants recommended giving upstream jurisdictions a global allocation for pollutant load reductions rather than identifying reductions for specific sources in other jurisdictions. Participants also recommended that a downstream jurisdiction involve upstream jurisdictions early in the TMDL development process instead of notifying them after allocations have already been set.

Participants from tribes noted that state and EPA officials should pursue early tribal involvement in multi-jurisdictional TMDLs that potentially affect tribal lands and waters. One tribal representative explained that due to tribal sovereignty and the lack of primacy for writing TMDLs, EPA regional officials served as a tribal representative in the development of a multi-jurisdictional TMDL. This tribal representative also noted that adoption of a water quality standards program was particularly helpful in advancing the tribe's water quality interests.

Several participants discussed methods for water quality programs to comprehensively track particular load reductions and credit them to particular parties to help in equitably allocating future reductions in TMDLs. One participant recommended a centralized, state-level clearinghouse where municipalities and other parties could store their investments in load reductions. The Chesapeake Bay TMDL is managing pollution reduction tracking within and across jurisdictions through BaySTAT; the Great Lakes Areas of Concern have developed central databases for tracking pollution reduction efforts; and Virginia has developed a statewide tracking system for pollution reduction.

Participants also discussed technical details of the Chesapeake Bay TMDL. This discussion covered modeling methods to account for annual variation in flow and its effects on pollution levels, though it was noted that this model did not account for flow changes due to climate change or green infrastructure retrofits that recharge more groundwater. In addition, participants discussed methods for allotting or capping WWTP growth in the Bay TMDL and the effect of increased WWTP fees and modified fee structures on households and industry.

Key Points Raised:

- The fundamental challenge is that downstream states have the incentive but lack all the necessary authority, while upstream states have some of the missing authority but often lack the incentive to solve multi-jurisdictional pollution problems.
- All jurisdictions sharing the watershed should be included early in the TMDL process.
- EPA has a role in multi-jurisdictional TMDLs, whether simply as a backstop to enhance communication and cooperation between jurisdictions or as an active convener of the parties and facilitator of negotiations.
- Differences between jurisdictions in water quality standards and scientific methodologies for water quality assessment or TMDL development can pose challenges to the development and implementation of multi-jurisdictional TMDLs, but this may be minimized by using EPA as an impartial intervener.
- Involvement of one jurisdiction in the public comment period of another can be a valuable means of promoting and ensuring cooperation between them, as seen in the example of Colorado and Kansas.
- Having a water quality standards program can help a tribe better protect its interests in multi-jurisdictional TMDL decision-making.
- Tracking load reductions across jurisdictions and collecting that information in a central clearinghouse could help equalize burdens and improve overall implementation.

Session 4: Stormwater

This session featured three presentations, followed by plenary discussion. Intended outcomes of the fourth session included:

- Participants will learn new strategies and receive updates on how some states are addressing stormwater through TMDL development and implementation.

- Participants will better understand the perspectives of EPA regarding the stormwater guidance.

(1) Angus Eaton, New York: New York State DEC Stormwater Permits: TMDL Conditions

New York has a fairly active stormwater management program, supported by a statewide stormwater management design manual, required green infrastructure in new development, and enhanced phosphorus removal requirements to manage for one-year storms. New York has a policy of no net increase of pollutants of concern in areas that drain to impaired waters without a TMDL. For impaired waters with a TMDL, the state includes numeric targets for pollutant reductions in relevant MS4 permits. New York designates additional MS4 areas where EPA-approved TMDLs require stormwater pollution reductions beyond what is presently achievable. New York's older TMDLs did not distinguish between nonpoint source pollution and MS4-regulated pollution, and so the state had to work around this lack of specificity in TMDL implementation.

In New York, based on an MS4 area's watershed characteristics, the available BMPs for that watershed, and the level of impairment in nearby water(s), the state has tiered requirements for use of BMPs in enhanced MS4 permits. New York's required stormwater BMPs include BMPs for smaller construction areas, phosphorus removal levels that manage for one-year storms, mapping of entire sewer systems in some areas, stormwater retrofit plans, and septic system inspections and rehabilitation. The state encourages use of non-structural load reduction practices as well as structural stormwater retrofits. New York implements an MS4 bubble policy, whereby individual MS4 dischargers have the option to form a regional entity and trade pollution allocations within this entity as long as the gross quantity of pollution within the bubble meets combined pollution reductions.

New York does not require or perform effluent monitoring and is being sued for this absence of monitoring. New York tracks MS4 pollution reductions based on modeling of a project's load reductions, and every five years the state reevaluates these permits by comparing its modeled reductions with ambient water quality monitoring data.

(2) Kathy Stecker, North Carolina: MS4s and TMDLs: North Carolina's Approach

North Carolina has a number of other stormwater requirements outside of the overlap of NPDES-based MS4 permitting and TMDL programs. North Carolina uses only individual MS4 permits, not general permits, based on the preference of local jurisdictions to be able to negotiate with the state in the permitting process. MS4 permitting in North Carolina is conducted on a five-year cycle, and the criteria for new designations for MS4 areas are set by river basin based on population growth and impaired waters in the basin.

The North Carolina Water Quality Recovery Program requires, among other things, a schedule for implementation of load reductions, annual review of progress, and updating plans when necessary. For MS4 permits, compliance with the Water Quality Recovery Program is considered compliance with the relevant TMDL. In North Carolina, the most commonly approved TMDLs that involve MS4 components are TMDLs for fecal coliform

and for impervious cover. The state's stormwater TMDLs do not yet include numeric limits for pollutant loads, but instead use percent reduction as their metric of pollution changes. North Carolina has no BMP requirements in its TMDLs, and MS4 areas generally outline BMPs in their Water Quality Recovery Program. Also, though North Carolina does not require TMDL implementation plans, the state and local jurisdictions have found it useful to include them in TMDLs with stormwater components to outline next steps for reducing stormwater pollutant loads.

Among other challenges North Carolina has faced with integrating MS4 permits into TMDLs, MS4 permits for impervious cover TMDLs require permittees to "monitor pollutant(s)" but the state uses an impervious cover surrogate metric instead of pollutant monitoring to be consistent with the TMDL. The North Carolina Division of Water Quality sometimes hears complaints from local jurisdictions that the pollutant loads they are reducing through MS4 permits are coming from unregulated, upstream sources, such as agricultural operations. However, to date, North Carolina has not had any litigation over either of these issues.

North Carolina has a stormwater manual and interactive map, which allows residents to view the stormwater programs in their area.

(3) Jamie Fowler, EPA HQ: The 2010 Stormwater Memo

EPA's November 2010 Stormwater Memorandum provided guidance on setting wasteload allocations for stormwater sources in TMDLs and writing NPDES permits for stormwater sources based on those wasteload allocations. Under the 2010 Stormwater Memo, EPA broadened the definition of numeric WQBELs and recommends their use in NPDES permits for stormwater. EPA still recognizes that decisions about allocations of pollutant loads within a TMDL are still largely driven by the quantity and quality of existing and readily available water quality data, but that when better data is available, stormwater sources should be disaggregated from specific sources to the extent possible within a wasteload allocation. Surrogate metrics for pollutant loads have been used to develop wasteload allocations in TMDLs in many instances in EPA Region 1, along with isolated instances in Regions 4 and 7. Finally, the Memo discusses residual designation authority to transition load allocations to wasteload allocations for new stormwater sources in a TMDL.

EPA issued the 2010 memo as an update to the 2002 memo because considerable experience had been gained in the realm of TMDLs and stormwater since the release of the earlier memo, which had been released on the heels of EPA's phase II stormwater regulations and was designed to show how TMDLs and the stormwater regulations fit together. The 2010 Memo demonstrates that numeric effluent limitations can be broader than end-of-pipe pollutant measurements and introduces more accountability and enforceability into translating wasteload allocations from TMDLs into permits. Also, in 2002, numeric limits were used rarely and EPA thought that stormwater wasteload allocation data were fairly aggregated, but as of 2010 EPA knew of 32 states using numeric limits, and some permittees were using the 2002 memo to resist using numeric limits.

Stakeholder comments have included: concerns with the use of surrogate measures in TMDLs; concerns about the cost of implementing the memo's preferences; and suggestions that EPA increase its role as a clearinghouse for developing tools to quantify and evaluate characteristics of stormwater wasteloads.

Session 4 Plenary Discussion

Discussion focused primarily on three topics: monitoring requirements for TMDLs using surrogate metrics (*e.g.*, impervious cover and stormwater flow), residual designation authority for stormwater permitting beyond MS4 requirements, and bacteria TMDLs and use of microbial source tracking. One participant asked if the 2010 Stormwater Memo's broader definition of numeric effluent limits also extended to monitoring requirements. An EPA Headquarters participant responded that while surrogate measures were helpful for tracking progress with TMDL implementation, the ultimate goal of a TMDL is to restore waters to their aquatic life designated uses, and a biological indicator would ultimately determine compliance. One participant noted that his state requires MS4 permittees to perform ambient monitoring of the pollutant of concern to ensure pollution reductions are occurring when impervious cover TMDLs are at issue. An EPA regional participant mentioned a recent court case requiring effluent monitoring for all MS4 permits in a particular part of the region. Another participant mentioned that, generally, MS4 areas see their permits as a burden and so they are challenging a number of TMDLs and impaired water listings.

Several participants identified residual designation authority as a means for EPA to reach beyond states and municipalities to issue stormwater permits for facilities that are discharging pollutants into an impaired water. EPA can grant its residual designation authority directly to a state agency. Participants touted the approach, noting that permits administered under residual designation authority are applicable to a wide range of stormwater sources, including those that are not covered under MS4 permits or construction requirements. An EPA regional official noted that the option of using residual designation authority can be especially useful for agencies to motivate private investment in stormwater BMPs. Another participant emphasized the utility of residual designation authority in one of her state's stormwater management efforts, attracting involvement of an entire consortium of the watershed's stakeholders, including 93 percent of entities with Grade A impervious cover. A participant noted that residual designation authority was effective in the Charles River watershed in Massachusetts and that the Conservation Law Foundation had petitioned for use of residual designation authority in Vermont.

The topics of bacteria TMDLs and microbial source tracking also arose in the stormwater discussion. One participant mentioned that her state has completed a number of bacteria TMDLs and that they generally use fairly simplistic metrics for bacteria loading reductions, such as percentage reductions. The state conducted shoreline surveys for the National Shellfish Program and used the surveys for TMDL development and prioritization of MS4 efforts. Another participant mentioned that his state uses land use models to target load reductions in particular land use categories, focusing on anthropogenic pollution sources before addressing natural pollution sources. Several participants then shared their experience using microbial source tracking to identify particular sources of bacteria, with some asserting that it was expensive and ineffective and others having found it to reveal an unexpected source of bacteria as the source of

impairment. A participant noted that her state does not develop TMDLs when no anthropogenic inputs are contributing to the water quality impairment; thus, if microbial source tracking can link bacterial impairments to anthropogenic sources it can be useful. Finally, a participant expressed support for EPA regions that facilitate the transition from fecal coliform to *E. coli* water quality standards.

Key Points Raised:

- For impaired waters with a TMDL, New York includes numeric targets for pollutant reductions in relevant MS4 permits; where TMDLs require stormwater pollution reductions beyond what is presently achievable, New York designates additional MS4 areas.
- North Carolina does not require TMDL implementation plans, but the state and local jurisdictions have been including them in TMDLs with stormwater components to outline next steps for reducing stormwater pollutant loads.
- The 2010 Stormwater memo is intended to address four elements: (1) EPA recommends numeric WQBELS in NPDES permits for stormwater discharges where feasible, (2) wasteload allocations for regulated stormwater sources should be disaggregated to the extent feasible, (3) it may be appropriate to use a surrogate parameter such as stormwater flow or impervious cover, and (4) EPA encourages more active use of residual designation authority.
- Water quality monitoring by MS4 permittees is required in some jurisdictions by law or by judicial decision.
- Residual designation authority is potentially a powerful means for addressing stormwater pollution from additional sources other than currently regulated point sources; a best practices document regarding this authority would be useful.
- Microbial source tracking can be a useful tool in source identification and ultimately TMDL development, but experiences with it are mixed and opinions vary regarding its cost relative to its benefit.
- EPA should provide examples of TMDLs developed for *E. coli* where waterbodies were listed for fecal coliform impairments.

Session 5: Reasonable Assurance

This session featured three presentations, followed by plenary discussion. Intended outcomes of the fifth session included:

- Participants will learn how some states have overcome the challenges of demonstrating reasonable assurance.
- Participants will begin discussion on how to address reasonable assurance in the CWA 303(d) Program.

(1) Menchu Martinez, EPA HQ: Introduction to Reasonable Assurance Concepts

Reasonable assurance in the TMDL context means that when a TMDL is developed for waters impaired by both point and nonpoint sources, and the wasteload allocation is based on an assumption that nonpoint source load reductions will occur, the TMDL should provide

reasonable assurances that nonpoint source control measures will achieve expected load reductions. Reasonable assurance provides a “roadmap” of how nonpoint source reductions occur over time in a TMDL to help achieve water quality standards. EPA’s 1991 *Guidance for Water Quality-Based Decisions: The TMDL Process* stated that assurance of meeting nonpoint source load reductions in mixed-source (point and nonpoint source) TMDLs is necessary and that all necessary load reductions must be assigned to point sources when reasonable assurance is not present. These concepts were reaffirmed in what is known as the 1997 Perciasepe Memo³ and in the 2002 *Guidelines for Reviewing TMDLs under Existing Regulations*.

Reasonable assurance is an implicit requirement of CWA 303(d) and 301(b), which address TMDLs and permitting. CWA Section 303(d) sets a fundamental requirement that TMDLs be “established at a level necessary to implement the applicable water quality standards.” Reasonable assurance is the only way to ensure that the sum of load allocations and wasteload allocations in a TMDL can add up to meet water quality standards. Reasonable assurance is required in water quality permitting regulations, because permit effluent limits must be “derived from and compl[y] with” water quality standards and be “consistent with” the assumptions and requirements of wasteload allocations in a TMDL. The only way an effluent limit can meet both requirements is for the wasteload allocation to set a level that (in combination with other wasteload allocations and load allocations in the TMDL) implements water quality standards.

Today, TMDLs feature a wide range of expressions of reasonable assurance: from no mention of reasonable assurance, to statements that reasonable assurance is unnecessary because the existing permitted limit was not increased or is set at criteria-end-of-pipe, to general discussions of CWA 319 grants or Farm Bill programs, to detailed descriptions of how load allocations for nonpoint source pollution will be met over time. The Chesapeake Bay TMDL represents the more detailed end of the spectrum for reasonable assurance.

EPA noted that while 47,000 TMDLs have been developed and approved and progress has been made especially in controlling PS under the NPDES program, more work needs to be done. On average only 130 waters are moved from Category 5 (impaired waters) to Category 1 (meeting all water quality standards) each year. There have been significant point source pollution reductions, but more work needs to be done to assure reductions of nonpoint source pollution. Reasonable assurance can provide a higher likelihood of achieving point and nonpoint source pollution reductions by prompting more detailed pollution source assessments, more analysis of BMPs, and better quantification of BMP reductions.

In litigation involving the Lake Champlain (Vermont) TMDL, brought by the Conservation Law Foundation, there was a claim that the TMDL’s wasteload allocations were too generous since nonpoint source reductions did not happen over time and were not assured to happen over time. EPA voluntarily remanded this TMDL, based partially on a complaint pertaining to the insufficiency of the reasonable assurance. In its remand, EPA noted that the nonpoint

³ *New Policies for Establishing and Implementing Total Maximum Daily Loads (TMDLs)*, Memorandum from Robert Perciasepe, Assistant Administrator for Water, USEPA, to Regional Administrators and Regional Water Division Administrators (Aug. 8, 1997).

programs described in the TMDL did not provide adequate assurance that the programs would be implemented, nor did the anticipated load reductions adequately meet the nonpoint source load allocations in the TMDL. There also was reference to the *Friends of Pinto Creek v. EPA* ruling by the 9th Circuit Court of Appeals, which indicated that reliance on the TMDL allocation by NPDES permittees is not enough without a showing that the allocations to other sources “represent the amount of pollutants currently discharged” or that there is a “plan to effectuate these load allocations.” Otherwise, if the point source will not attain water quality standards, “then the permit cannot be issued unless the state or [the new discharger] agrees to a schedule to limit pollution from a nonpoint source or sources sufficient to achieve water quality standards.”

Although an EPA emphasis on reasonable assurance may require increased investment in activities such as modeling and data collection and could slow the pace of TMDL development, reasonable assurance presents an opportunity for the CWA 303(d) Program to get “bang for the buck” by ensuring: implementable TMDLs, more trackable water quality results, less vulnerable TMDL approvals, and associated NPDES permits. EPA does not foresee a “one-size-fits-all” approach to reasonable assurance and needs input from states, tribes, and territories on the main challenges to demonstrating reasonable assurance and how to overcome them.

(2) Trinka Mount, Ohio: “Reasonably Sure” that Good Things Will Happen: Ohio’s Olentangy TMDL

Ohio is at the low end of rigor for reasonable assurance, although the state does provide implementation plans with fairly detailed load allocations, to the extent that it can, given its relative lack of authority to regulate nonpoint source pollution. However, by coordinating closely with its 319 and NPDES programs, Ohio has implemented many TMDL recommendations, resulting in measurable water quality improvements and some delistings. The Olentangy River TMDL involves a reasonably large watershed that contains a mix of agricultural and urban land uses. Ohio lists waters and develops TMDLs by watershed, at the 10-digit Hydrologic Unit Code (HUC) scale. In addition, Ohio includes biological criteria in its water quality standards.

The process for developing the Olentangy River TMDL began with a new watershed assessment that consisted of measuring the aquatic life and recreation uses of 74 sites. At several sites, the river failed standards for macroinvertebrates and fish, resulting in the development of TMDLs for phosphorus, sediment, habitat, and pathogens. If the phosphorus TMDL was to rely solely on point source pollution reductions to achieve water quality standards, loadings from wastewater treatment plants would need to be reduced to 0.5 or 0.4 mg/L of phosphorus. However, point sources are not the sole pollution reduction sources and so other pollution sources must also be addressed. The state did not require point source reductions under 1 mg/L of phosphorus at this time. There were recommendations for voluntary load reductions in the watershed; with some active watershed groups providing environmental education programs. Ohio EPA has pursued lowhead dam removals, channelization fixes using two-stage ditches, and suites of agricultural BMPs.

Ohio TMDLs don't detail reasonable assurance, but they generally mention ways to be "reasonably sure" that some load reductions will happen. This issue only occupies a few paragraphs in the Olentangy TMDL. Ohio EPA lists the load reductions that it can effectuate and then provides specific steps that organizations and regional or local government agencies can take to reduce pollutant loads and achieve water quality improvements. As a result, five dams have been removed along the Olentangy with the support of CWA Section 319 grants and aquatic resource mitigation funding from the Ohio DOT, numerous channels have been fixed, and the watershed is included in the Conservation Reserve Enhancement Program. Water quality has been improving, based on several indicators.

(3) Marti Bridges, Idaho: Demonstrating Reasonable Assurance in Idaho TMDLs: Fact, Fiction & Warm Fuzzies

Idaho DEQ treats reasonable assurance seriously, but many of the load reduction steps discussed in the state's TMDLs have not actually been implemented. Two TMDLs in Idaho help demonstrate the transition from "warm fuzzies" to the use of more reliable reasonable assurance provisions in TMDLs. Idaho writes its TMDLs at the 4-digit HUC level.

The first TMDL case study presented was for Lake Walcott, listed for total phosphorus, sediment, and temperature. This TMDL contains a 14-page explanation of what might be termed "warm fuzzies" used to demonstrate reasonable assurance, going into great detail about a number of potential load reductions that were never in fact implemented. The detailed explanation for reasonable assurance was ineffective because there is only one point source in the Lake Walcott watershed, which received a total suspended solids wasteload allocation of 0.01 tons/day, and reasonable assurance for the point source requires a discharge monitoring report, which is fulfilled with technology-based monitoring. Sediment loads in the Lake Walcott watershed are expressed in tons per day and are allocated among three separate subwatersheds in the lake's drainage areas, which include a substantial quantity of Bureau of Land Management land, which does not have much management money.

Following this TMDL, Idaho developed a standardized two-to-three page reasonable assurance plan that addressed each component of reasonable assurance and was inserted into the state's TMDL template. Another relevant TMDL, the Mid Snake / Upper Snake Rock TMDL, was involved in an Environmental Appeals Board (EAB) appeal because the City of Twin Falls was discharging more than its total suspended solids wasteload allocation and sought to engage in pollutant trading. To settle the appeal with EPA at the EAB, the city agreed to offset its wasteload allocation, because its total suspended solids concentrations had already reached the limits of technology. The TMDL was subsequently revised to grant the City an increased wasteload allocation for total suspended solids, while continuing to meet the technology-based effluent limit. For purposes of reasonable assurance, the City was required to meet a 3:1 ratio of nonpoint source reductions for point source offsets, which were provided through constructed wetlands and sediment basins. The load allocations for nonpoint source pollution in the TMDL were subsequently transferred to the City.

A challenge for Idaho DEQ regarding reasonable assurance is that DEQ does not have primacy for NPDES. Other state agencies, such as the Soil and Water Conservation Commission, help DEQ write implementation plans. Impaired waters that flow through tribal lands are more difficult to control, and can hinder attaining reasonable assurance. Sources of funding such as CWA Section 319 grants, the State Agricultural Water Quality Program, the NRCS Environmental Quality Incentives Program, and NRCS Conservation Reserve Program may be problematic from the perspective of reasonable assurance, because once farmers stop receiving funding for BMPs, they may revert to their previous practices.

Most TMDLs with point sources are written first, and Idaho DEQ writes load allocations second since point sources are typically the most politically challenging portions of a TMDL. Until BMPs are mandatory, reasonable assurance resembles fiction. 319 grants should perhaps be spent in targeted watersheds, and an EPA-enforced, technology-based limit for total phosphorus should be considered. Instead of issuing additional guidance on reasonable assurance, EPA might consider promulgating a rule on reasonable assurance that was drafted with input from non-federal jurisdictions and ASIWPCA.

Session 5 Plenary Discussion

Participants discussed particular methods for improving the probability that water quality improvements identified in TMDLs are achieved; why reasonable assurance appears problematic to some states; and the potential for new guidance, rulemaking, or clarifications on the treatment of reasonable assurance in TMDLs. EPA stated that the objective of reasonable assurance was primarily to illustrate that the TMDL program was restoring water quality. One participant suggested that targeting 319 funding to entities with a more established infrastructure to handle grants, as opposed to smaller, agricultural operations, as well as utilizing CWA Section 404 compensatory mitigation funding for projects such as dam removals can improve TMDL implementation and reasonable assurance. Another participant asserted that certain suites of BMPs can solve land use problems and that 319 grants could be conditioned on implementation of these suites of BMPs. Two participants noted that their state-level authority over nonpoint source polluters was critical to achieving water quality improvements. In both states, nonpoint source entities are deemed compliant with state laws if certain suites of BMPs are implemented. Another participant noted that point source polluters can be a strong political force to push implementation of nonpoint source pollution reductions. Several participants suggested that TMDLs should be prioritized for inserting reasonable assurance provisions. A workshop participant suggested that the federal government could align U.S. Department of the Interior, U.S. Geological Survey, and USDA programs to better support TMDL programs.

A participant emphasized the fundamental differences in point source and nonpoint source loadings, noting that point sources influence baseflow water quality and that nonpoint source pollution is most influential following runoff; thus the additive concept of wasteload and load allocations in TMDLs is flawed. He asserted that instead of this additive compilation, TMDLs should be expressed as a series of conditional probabilities that water quality improvements occur, and that reasonable assurance should be framed to demonstrate TMDLs' higher probability of achieving water quality standards. He also noted that a new emphasis on reasonable assurance could divert funding from TMDL implementation.

Several participants expressed concern over increasing requirements or stringency for reasonable assurance in TMDLs. Several others noted that, instead of examining pollution reductions from individual sources within a TMDL, reasonable assurance should determine if TMDLs have adequate backup plans in the event that load allocations or wasteload allocations do not match established levels in the TMDL. One participant viewed reasonable assurance as an unfunded mandate from EPA. Another participant described reasonable assurance as a way to force implementation planning without federal control over nonpoint sources. A third participant described pushing reasonable assurance as “not helpful” for jurisdictions without authority to regulate nonpoint sources. A fourth participant suggested that EPA use of more achievable, consistent, and generally better performance standards would be helpful.

One participant asked if EPA was still planning to release new guidance on reasonable assurance, to which EPA replied that the Agency wanted to take next steps on reasonable assurance in concert with identified needs of states, tribes, and territories. One participant noted that reasonable assurance should not be a one-size-fits-all solution, citing experience with atypical TMDLs such as one that involved diverting nonpoint source pollution to point sources and increasing point source wasteloads as a method of decreasing overall pollutant loads entering an impaired water. He added that, in the absence of rules on reasonable assurance from EPA, guidance documents and memoranda of agreement/understanding are being treated as the rule of law, and states need increased flexibility with concepts such as reasonable assurance. Another participant expressed concern about how federal requirements for reasonable assurance melded with existing state laws, since the laws of his state require implementation plans for TMDLs but the plans are typically done outside of the TMDL document.

Key Points Raised:

- EPA does not foresee a “one-size-fits-all” approach to reasonable assurance, and the Chesapeake Bay TMDL represents the more detailed end of the spectrum.
- Ohio EPA approaches reasonable assurance by listing the load reductions that it can effectuate and then providing specific steps that organizations and regional or local government agencies can take to reduce pollutant loads and achieve water quality improvements.
- Coordination with sources of funding such as CWA Section 319 grants, the NRCS Environmental Quality Incentives Program, and the NRCS Conservation Reserve Program can accomplish nonpoint source reductions more efficiently, but with shrinking budgets, this approach could be problematic for reasonable assurance because once farmers stop receiving funding for BMPs, they may revert to their previous practices.
- State-level authority over nonpoint source polluters can be critical to true reasonable assurance. For states without such authority, there may be inequity in the allocation of load reductions between point and nonpoint sources if the nonpoint source programs are not effective in delivering load reductions.
- Some non-federal participants suggested that reasonable assurance demonstrations allow for implementation using adaptive management, supported by progress monitoring and adequate backup plans in the event that load reductions do not match the expected reduction goals in the TMDL.

- Some non-federal participants stated that reasonable assurance would stall TMDL development or put more focus on development rather than implementation, but others noted that it could be a lever to bring all sources to the table for setting realistic loading reduction goals.

Session 6: Antidegradation

This session featured two presentations, followed by plenary discussion. Intended outcomes of the sixth session included:

- Participants will learn the extent to which some states have incorporated antidegradation principles into their CWA programs.
- Participants will better understand how antidegradation policies and implementation procedures may influence listing decisions and how to address antidegradation requirements in listing.
- Participants will learn about potential next steps for addressing antidegradation in CWA 303(d) listing.

(1) John Goodin, EPA HQ: Introduction to Antidegradation and Impaired Waters

This session opened with regulatory background on antidegradation, antidegradation tiers, and antidegradation evaluation criteria to spur discussion on evaluating the utility of different possible approaches to assessing antidegradation in a CWA 303(d) listing context. A footnote in EPA's 2006 Integrated Report Guidance recognizes consideration of antidegradation listings. In addition, CWA 303(d) and its underlying regulations contain specific requirements for listing impaired waters that do not meet any relevant water quality standards, including those for antidegradation. An antidegradation lawsuit in Florida further highlights the issue. States and certain tribes are required to develop antidegradation policies to protect different uses of water, which are often referred to as tiers. Tier 1 requires protection of all existing uses in a particular waterbody; Tier 2 requires protection of high quality waters; and Tier 3 requires protection of waterbodies deemed Outstanding National Resource Waters. It may be helpful to think of these tiers as different levels of protection, though many jurisdictions have designated alternative criteria for these tiers that do not necessarily line up with ecological value. EPA maintains an online clearinghouse to document different states' approaches to managing antidegradation.

There are potential examples of how states and tribes could manage antidegradation. For example, with respect to Tier 3 waters, states and tribes could assess data and trends indicative of water quality to determine if degradation had occurred since the water was designated an Outstanding National Resource Water. If degradation was confirmed and this degradation violated a state or tribe's water quality standards, the water would require listing. Many states have not designated Tier 3 waters. Tier 2 waters implicate a tremendous number of questions and potential details for management. For example, Tier 2 waters could be evaluated to determine whether they have been degraded in a manner that was not in compliance with the state or tribe's antidegradation policy or implementation methods. If noncompliant degradation had occurred, the water would need to be included on the CWA

303(d) listing until the required antidegradation review is completed or the water's high quality is restored. A number of these waters do not have adequate historical water quality data to determine if degradation has occurred. Tier 1 antidegradation evaluations would require determination of whether a water's existing uses were supported based on existing and readily available data and information. For example, Tier 1 antidegradation analyses could be conducted for shellfish harvesting areas; also, in non-coastal states, Tier 1 could be used to evaluate fisheries. Tier 1 evaluations could result in more comprehensive analyses of existing uses.

EPA is considering practical ways to implement antidegradation in the CWA 303(d) Program that offer environmental benefits. For instance, antidegradation would be environmentally beneficial if it offers a method of identifying overlooked water quality problems. EPA also is considering the programmatic and technical needs associated with antidegradation and how to avoid major additions to state and tribal workloads. Providing scientific support for antidegradation can be extremely challenging. Finally, the legal defensibility of antidegradation is receiving considerable attention, and antidegradation efforts need to take into account federal regulations and state and tribal policies.

(2) Julie Espy, Florida: Antidegradation Policy and Procedures in Florida

A 2008 lawsuit claimed that Florida's antidegradation policy and implementation methods were inadequate. Florida has designated no Tier 3 waters but has Outstanding Florida Waters, which constitute Tier 2.5, along with Tier 2 and 1 waters. The waterbody implicated in the 2008 lawsuit was an Outstanding Florida Water. Florida DEP's permitting regulations for NPDES and MS4 permits stipulate requirements for antidegradation assessment in Tier 2 and 1 waters when permits are issued, and five years later the state further assesses water quality and biological indicators in relevant waterbodies. If degradation is found five years after a permit's issuance, the state can reevaluate the permit.

The criteria for designating an aquatic resource as an Outstanding Florida Water are subjective, and the Florida Legislature can designate any water it deems important as an Outstanding Florida Water. The waterbody implicated in the 2008 antidegradation lawsuit had little baseline data before being designated. When the lawsuit was filed, Florida's efforts on antidegradation were focused on assessments that would improve the state water quality program's environmental benefits by covering areas that were not duplicated under CWA 303(d) assessment.

Session 6 Plenary Discussion

Participants discussed requirements for addressing antidegradation, environmentally beneficial methods to implement antidegradation policy, implementation of tiered aquatic life uses in antidegradation policy, and past experience and concerns with antidegradation implementation. An EPA participant mentioned that federal and non-federal officials should set an antidegradation methodology that is consistent with statutes and that focuses on achieving tangible environmental benefits. He also explained that antidegradation policy for Tier 2 waters is fairly straightforward when public review establishes that water quality in a particular

waterbody should be maintained at a certain level, as these instances obviate the need for a trends analysis. However, antidegradation is more complicated when public review processes for permits do not occur and water quality in a particular aquatic resource drops just below baseline expectations, since it is not immediately evident that the public had a chance to evaluate relevant permits.

Another workshop participant noted that tiered aquatic life uses have been very successful in driving laws and regulations to protect higher quality waters, and that her state has been able to keep 90 to 98 percent of its waters well above the least stringent, fishable/swimmable standards for water quality. She explained that tiered uses have allowed the state to avoid heavy-handed use of antidegradation and that well-designed biocriteria can help state assessment programs identify declining water quality conditions. She continued by saying that, in states with actionable biological criteria, these biological trends may prevent issuance of permits in waters that are close to declining below their biological listing threshold.

A participant mentioned that her state has reviewed its antidegradation policy and has found components of its permitting procedures that could be clarified to more clearly explain antidegradation provisions of permits to the public. Another participant noted that his state was in the process of revising its antidegradation regulations, which had involved permitting, exemptions for the economic impact of antidegradation, and applying the regulation of stormwater. He also mentioned that a lawsuit in his state had led to good analyses of cities' contributions to degradation of particular waterbodies. Another participant mentioned that his state is addressing requests from the National Park Service to list Tier 3 waters affected by atmospheric deposition of nitrogen under antidegradation provisions. Another participant noted that although his state has had an antidegradation policy since 1968, it has not used this policy since referencing it in a 1990 guidance document. He said that, until recently, the state did not have the data analysis capability to evaluate trends in water quality, that they are presently receiving pressure to list waters for antidegradation, and that it will be interesting to observe how antidegradation listings based on trend data are completed and received.

One participant noted that an environmental nonprofit was asserting how antidegradation policy should be interpreted and applied to nonpoint pollution sources. Another participant mentioned using particular BMPs for stormwater permits affecting Tier 2 waters, such as 300-foot buffers. A third participant noted that his state's antidegradation policy triggers an enhanced permit review process for construction permits, and the state already implements stormwater regulations and good forestry and buffer practices. Another participant indicated that antidegradation raises issues about how to consider secondary impacts, cumulative impacts, and BMPs.

Finally, participants shared their concerns with antidegradation policy. One participant suggested that there is a large difference between actually protecting a water's condition and conducting regulatory due diligence, and that antidegradation policy should be implemented in a way that achieves actual environmental improvements. Another participant expressed concern over how to categorize waters that are listed for antidegradation in their integrated waters reports. An additional participant questioned Tier 3 or 2.5 designations that are based on heritage and not on actual water quality. Several participants expressed fear over using TMDLs as the vehicle for addressing waters listed for antidegradation since it might trigger development of

protection TMDLs. One participant explained that, in the specific context of permitted aquatic resource impacts that involve listed or endangered species, more support from federal agencies such as the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, and EPA for water quality standards for Tier 2.5 waters would be helpful. One participant mentioned that assessing historical uses of waterbodies for the purposes of a Tier 1 antidegradation analysis might uncover former uses of a water, such as coldwater fisheries lost because of changes in temperature regimes. A participant noted that, unless there was an existing use that was not a designated use, Tier 1 waters were largely redundant with impaired waters. Building on this concept with an example, another participant explained that wild rice had declined in her jurisdiction by about 90 percent from its historic range, and the existing sulfate criteria of the neighboring state had not been enforced to protect the wild rice use from degradation.

Key Points Raised:

- There is a large difference between regulatory due diligence and actually protecting a water's condition, so federal and non-federal officials should set an antidegradation methodology that focuses on achieving tangible environmental benefits while being consistent with statutes.
- Documentation of declining trends in biological condition, when combined with well-designed, actionable biocriteria can empower assessment programs to restrict or modify permits in waters that are close to declining below their biological listing threshold, which is the point of "antidegradation" provisions.
- The data analysis capability necessary to discern between natural fluctuations in water quality and downward trends in water quality can be a significant hurdle to effective antidegradation policies.
- External pressures, whether litigation or otherwise, can be instrumental to implementation of antidegradation policies.
- Assessing historical uses of waterbodies for the purposes of a Tier 1 antidegradation analysis might uncover former uses of a water, such as coldwater fisheries.
- Some non-federal participants requested that EPA provide more support for using tiered aquatic life classes.

Session 7: Recovery Potential

This session featured two presentations, followed by plenary discussion. Intended outcomes of the seventh session included:

- Participants will learn about various experiences in using recovery potential, how it has worked, and how its implementation can be improved.
- Participants will better understand opportunities for using recovery potential.
- Participants will better understand EPA's framework for recovery potential – a method for setting restoration priorities.

(1) Doug Norton, EPA HQ: Introduction to Recovery Potential

The basic working concept of the recovery potential tool was to create a transparent, repeatable process for systematically identifying top priorities for TMDLs based on their

restorability. Recently, the recovery potential tool has received broader interest from 319 grant programs and the Healthy Watersheds Initiative, since these programs can utilize many of the same factors to assess differences in water quality condition. The recovery potential tool has several strengths: it can be used at various spatial scales and at differing levels of detail, can systematically inform TMDL development and implementation priorities that may involve hundreds or thousands of factors, and is flexible with respect to state-specific circumstances or data.

Three fundamental components are used to evaluate recovery potential: (1) the ecological capacity of an impaired water to regain functionality, (2) exposure of an impaired water to stressors, and (3) the social context affecting restorability. The recovery potential tool produces a subscore for each of these components. The formula for assigning an impaired water or watershed's final recovery potential score is: $(\text{Ecological} + \text{Social}) / \text{Stressor}$. The ecological subscore is designed to capture ecological attributes of waterbodies related to their functionality, such as biotic community indices, landscape connectivity, channel integrity, natural flow regime, corridor condition, and watershed inputs. The stressor subscore compiles external influences on the waterbodies' condition but focuses on pollution sources with the ultimate goal of addressing factors such as flow alteration, biological stressors, fragmentation, channel degradation, corridors, watershed pollution sources, and the severity and complexity of impairments. The social subscore includes a broad assortment of factors and may provide opportunities to examine protection mechanisms, economic variables, complexity of restoration efforts, and human behavioral factors such as engagement, incentives, and leadership.

The tool allows users to evaluate waterbodies or watersheds in rank-ordered arrangements based on a single subscore or all three subscores. Another potential output is bubble plotting, which allows users to create two-dimensional graphs with all three of the recovery potential subscores and compare these subscore ratings for healthy waters with those from impaired waters. In these graphs, the ecological and stressor subscores are presented on the graph's two axes, and the water's social context is indicated by the size of the plotted point. Maps of watersheds' recovery potential ratings can be used to assign restoration priorities, allowing users to examine geographic connectivity among watersheds. Maps also can allow state water quality practitioners to target restoration initiatives in watersheds near other healthy watersheds or to connect healthy watershed corridors.

There have been several state efforts to implement the recovery potential tool. Illinois used its 2002 CWA 303(d) list in mapping 104 different ecological, stressor, and social indicators to categorize waters into high, medium, and low priorities for restoration. Maryland screened watersheds at two different spatial scales to identify priority watersheds for restoration and then subsequently identify priority subwatersheds for improving the condition of the larger watershed unit. Vermont's work on recovery screening was particularly exceptional due to the state's high-quality channel form and morphology data. Recovery potential also has been applied in Massachusetts, where one of this pilot's highlights was the presence of exceptional flow regime data and a real interest in sustainability. EPA performed a one-day training course on recovery potential in Region 1, a brief session in Region 3, and a half-day training course in Region 6. EPA extended technical assistance to states on the use of recovery

potential, which involved adding state- or region-specific indicators of recovery potential or otherwise setting up a state's ability to do statewide screenings. The recovery potential tool is currently posted in draft format on the Tetrattech website; a final version of the tool should be available on the EPA site soon. One of the most useful parts of the existing recovery potential website is the step-by-step directions it provides for recovery potential screening.

(2) Tim Clear, Vermont: Vermont's Experience with the Recovery Potential Methodology

Vermont Department of Environmental Conservation (DEC) became interested in using the recovery potential screening because of the state's extensive geomorphology data and the desire to synthesize other data, such as the state's extensive biomonitoring data, with this geomorphology data. Also, Vermont was reevaluating its statewide water quality planning process, part of which involved consolidating the state's water databases.

In the first attempt at establishing indicators for the three recovery potential subscores, Vermont chose elevation, valley slope, channel slope, watershed area, dominant geologic material, the percent of the watershed that is forested, and a stream's confinement ratio as indicators for the ecological subscore. For stressor indicators, the state examined the percent of a watershed that is urban and percent that is cropland, the percent of a stream corridor that is urban and percent that is cropped, where total stream buffers extended less than 25 feet, the number of bridges and culverts, and the percent of a stream reach affected by bridges or culverts, berms or roads, or stream straightening. Vermont recently added social indicators, which evaluate the percent of protected lands, the presence of an existing TMDL or 319 plan, causal certainty for pollution, jurisdictional complexity, and a water's proximity to a university.

Vermont recently completed its first real recovery potential analysis, which established a number of other questions to investigate. DEC was re-examining the indicators to explore how powerful specific indicators were in determining a particular recovery potential rating. Maps were displayed that aggregated site-specific recovery potential scores and subscores by 12-digit HUC to inform the state planning process, along with their related bubble plots. The ecological subscore was notably lower in the dairy-producing northwestern portion of the state, although the stressor subscore was not low in this region.

Vermont just finished its prototype GIS analysis tool that allows indicator selection. The state would like to further incorporate its biological data into the tool, and the tool could be used to evaluate subsets of impaired waters in certain circumstances—with the state eventually using the tool to prioritize TMDL implementation.

Session 7 Plenary Discussion

Workshop participants asked Mr. Norton and Mr. Clear for specific details on the structure and operation of the recovery potential tool. After seeing that Vermont's program primarily used physical indicators to compile its ecological and stressor subscores, one participant noted that it does not appear that the recovery potential tool evaluates recoverability in a biological, stressor-response manner. An EPA participant noted that the Agency would like to see more use of

biological data in the recovery potential tool and that the tool was designed to balance different categories of ecological factors with other factors that were statistically independent. He also commented that the ecological and stressor indicators did not fit a classic dose-response relationship since they are designed to capture condition gradients and assess a water's capability to regain better condition.

One participant asked how the recovery potential tool quantifies social indicators, receiving the response that, though social variables can be hard to value, the recovery potential project does the best it can to quantify these indicators and that some of the social indicators simply denote the presence or absence of a particular characteristic, such as a watershed group. The EPA participant then noted that funding for sociological research to support the social portion of the tool was particularly important, as the tool could truly profit from systematically quantifying social indicators. Another participant followed by adding that his state was working on defining social indicators, and that he believed this topic to be particularly ripe for discussion in future ELI-EPA workshops.

Several participants noted that overlaying stressor-response plots with recoverability scores and subscores could help to insert the relative significance of different impairments, making the tool stronger.

One participant asked if, in choosing stressor indicators, recovery potential looks only for anthropogenic stressors or if natural stressors are also evaluated, receiving the response that a number of the stressor indicators are anthropogenic but some are modified natural processes. The EPA participant noted that the recovery potential workgroup had identified 500 to 600 indicators that relate restorability to climate change and that the workgroup was expanding their indicators database, with the website providing public information and factsheets on indicators.

Key Points Raised:

- The basic working concept of the recovery potential tool is a transparent, repeatable process for comparing impaired waters based on their restorability. Applications include prioritizing among listed waters in 303(d) schedules, prioritizing TMDLs for implementation, and comparing restorability for many other purposes.
- The three fundamental components used to evaluate recovery potential are the ecological capacity of an impaired water to regain functionality, exposure of an impaired water to stressors, and the social context affecting restorability, with each component having a subscore and the recovery potential score being (Ecological + Social) / Stressor.
- The recovery potential tool can be a valuable means of synthesizing several robust data sets.
- Supporting the social portion of the tool is particularly important so as to systematically quantify social indicators.
- Overlaying stressor-response plots with recoverability scores and subscores could make the tool stronger by inserting the relative significance of different impairments.

Session 8: Legacy Pollutants

This session featured two presentations, followed by plenary discussion. Intended outcomes of the eighth session included:

- Participants will better understand what approaches have been taken to address legacy pollutants in the TMDL arena.
- Participants will better understand how well certain approaches have worked in practice, what led to success, what has not, and why.

(1) Sarah Furtak, EPA HQ: “Developing TMDLs for Waters Impaired by PCBs” Draft Document

The scope of and process for compiling a draft EPA memorandum, *Developing TMDLs for Waters Impaired by PCBs*, were discussed. The memorandum is designed to provide stakeholders with a compendium of best practices for Polychlorinated Biphenyl (PCB) TMDLs that are consistent with EPA regulations and that help the TMDLs benefit from other regulatory programs. EPA is currently seeking review and comment from non-federal actors on this draft memorandum.

PCBs are sixth among national causes of impairment, but fewer than one percent of TMDLs developed to date address PCBs. The EPA PCBs memorandum is intended to provide web references from a variety of PCB TMDLs, including databases, analytical sources, and Superfund documents on issues such as sediment, capping, and dredging. Section 8 of the document, which addresses wasteload allocations, merits attention. It details relevant regulations, a U.S. Court of Appeals decision on the “daily” component of a TMDL, the handling of stormwater discharges in a TMDL’s wasteload allocation, and the interplay between a reserve capacity regulation and TMDLs.

Between fall 2008 and spring 2009, EPA Headquarters noted the fundamental charge from states and EPA regions to address PCBs and worked on a first iteration of this PCB memorandum. EPA then performed internal review of this first iteration in spring 2009 and states reviewed the draft document in the summer and fall of 2009. Based on this review, the Agency has clarified the scope and purpose of the memorandum. Comments fell into categories: expanding on various sections of the draft memorandum, adding new sections to the document, and providing updates on local experiences with PCB cleanup throughout the country. Ms. Furtak concluded by noting that she was excited about the opportunity for states to re-examine the draft PCB memorandum by May 2011, with the final memorandum likely to issue by summer 2011.

(2) Rik Rasmussen, California: Legacy Pollutants in California

California has 704 impaired waters listed for legacy pollutants, which constitutes about 20 percent of the state’s impaired listings. Mercury is the most common cause of legacy impairment due to the 1849 gold rush. California uses a unique set of tools for addressing pollutants, since the state’s regulations require adoption of enforceable implementation plans as part of TMDLs. Also, the state has a nonpoint source policy to address these pollution

sources through TMDL implementation and enforcement, allowing the state to write enforceable permit requirements for nonpoint sources.

California is attempting to focus on TMDL implementation rather than merely developing TMDLs. To streamline this process, the state is attempting to quicken the TMDL development process. The targets for legacy pollutants often vary, including addressing PCBs and mercury in fish tissue, NOAA's sediment guidelines, and water column numbers, where available. Legacy pollutant implementation actions in California include: sediment control, hot spot remediation, pollution prevention measures, natural attenuation, reservoir management, and dredging. Hot spot remediation has been used in the San Francisco Bay TMDL for PCBs, in which PCBs are currently lost into the air at a faster rate than they are being added to the Bay. Accordingly, the state is on track to achieve water quality standards without substantial involvement and is focusing primarily on addressing environmental justice implications of PCB hot spots on fisheries. Pollution prevention is used to address mercury impairments stemming from legacy mining effects. The state is evaluating long-term management of dredging in the San Francisco Bay. Plumbing has been changed in some areas to reduce drainage in selenium-enriched soils as a remediation measure. California is working on a statewide mercury TMDL, which has involved coordination between regional and state water boards to address mercury-rich soils, Superfund sites located under water reservoirs, and aerial deposition. The state is currently looking for BMPs that will advance implementation of this mercury TMDL.

Session 8 Plenary Discussion

At the outset of the discussion, several participants expressed interest in using Category 4(b) for PCB impairments rather than developing PCB TMDLs, especially when impairments are concurrently being addressed under CERCLA or RCRA. A participant from EPA Headquarters explained that a national survey of 4(b) waters was conducted and that the resulting paper determined that RCRA or CERCLA remediation efforts can sometimes satisfy requirements for 4(b). He noted that RCRA and Superfund address pollution, but that this pollution remediation may not always be adequate for achieving water quality standards. In an ideal situation for utilizing 4(b), a Superfund site would be the sole source of impairment and would have completed the Remedial Investigations process and Applicable or Relevant and Appropriate Requirements (ARARs) cleanup plan to conduct monitoring. In addition, even where water quality standards are not explicitly mentioned in the relevant Record of Decision (ROD), EPA regional officials could still potentially determine that the cleanup effort was adequate for attaining water quality standards.

An EPA regional official explained that a state had wanted to list a particular impairment under Category 4(b), but the regional office disagreed with the 4(b) listing since Superfund did not adequately address the impairment. An EPA Headquarters participant emphasized that, in these instances, early conversation between hazardous waste and water programs was important. An EPA regional participant gave an example of a situation where the ARARs for PCB cleanup in a particular impaired water were much more relaxed than water quality standards, asserting that this water merited development of a TMDL. One participant explained that his program has the perspective that, as long as PCBs are in the environment, they may be resuspended, and even

after Superfund actions are taken, residual contamination typically still exists. He also noted that the Natural Resource Damage Assessment (NRDA) process could be a useful tool for obtaining funding for PCB cleanups; his state obtained \$18 million for PCB remediation through NRDA. Another participant shared his experience working with a \$20 million Superfund cleanup, noting that it did not proceed until a particular city remediated a source of PCBs in its urban runoff.

Participants discussed various legacy pollutant TMDL implementation measures. One participant explained that the emphasis in his state is preventing PCBs from entering waters through measures such as stabilizing stream banks. In response to a question, it was noted that in the San Francisco Bay, hot spot remediation was identified before the TMDL process through shipyard remediation, and other shipyards that might contain PCB hot spots were assessed during and after the TMDL process. Also, San Francisco Bay has a large dredging program, and addressing these hot spots can be very cost effective. An EPA regional participant questioned whether entombment of legacy pollutants could qualify as a TMDL implementation measure. Another participant responded by saying that his state has considered entombment in some of its TMDL implementation plans.

A participant questioned how reasonable assurance could be demonstrated for PCB TMDLs, noted that PCB remediation was expensive and difficult, and that it was problematic when there was no potentially responsible party under CERCLA.

Key Points Raised:

- The draft EPA memorandum, *Developing TMDLs for Waters Impaired by PCBs*, is designed to provide stakeholders with a compendium of best practices for PCB TMDLs that are consistent with EPA regulations and that help the TMDLs benefit from other regulatory programs.
- The legacy pollutant implementation actions in California include sediment control, hot spot remediation, pollution prevention measures, natural attenuation, reservoir management, and dredging.
- Early conversation between hazardous waste and water programs can be important when water is impaired by a legacy pollutant.
- RCRA and Superfund address pollution, but this pollution remediation may not always be adequate for achieving water quality standards.
- The Natural Resource Damage Assessment (NRDA) process could be a useful tool for obtaining funding for PCB cleanups.

Informal Evening Session: Climate Change and Water Quality

This session featured two presentations, followed by plenary discussion. Intended outcomes of the evening session included:

- Participants will learn about national-scale watershed modeling that EPA ORD is conducting to assess the potential impacts of climate change on hydrology and water quality in 20 large watersheds.
- Participants will better understand how the TMDL program is starting to evaluate methods to factor climate change impacts into future TMDL development.

(1) Thomas Johnson, EPA Office of Research and Development Global Change Research Program: Watershed Modeling to Evaluate Potential Climate Impacts

The EPA ORD's research on modeling potential impacts of climate change on watershed hydrology and water quality was outlined. Watershed management has long focused on shorter-term, seasonal-to-interannual variability, but climate science currently indicates that this is not a reasonable prediction of the future. Reviewing observed changes in global and contiguous U.S. air temperature anomalies in the past century, one can see that clearly increasing trends have emerged in global air temperature anomalies and an increasing trend, albeit a less clear one, is evident in U.S. air temperature anomalies. The global air temperature anomalies indicate a rise of about 1.7 degrees Fahrenheit over the last century, and there are geographic scale effects to climate change, so regional trends are sometimes more subtle, as in the contiguous U.S. These scale effects are important to take into consideration when integrating climate science into watershed management.

Global and contiguous U.S. plots of annual precipitation anomalies suggest that, within the contiguous U.S., these aggregate precipitation anomalies increased by about six percent. But when these trends are analyzed at regional scales within the U.S., some areas have experienced increased trends, some have experienced decreased trends, and some have seen no evident trends in annual precipitation anomalies. Although annual precipitation anomaly trends are not nationally consistent, this does not mean that nothing noteworthy is occurring. Results from additional research demonstrate that, within the contiguous U.S., precipitation during the last century was generally concentrated into larger magnitude events, with some regional variation in the change in precipitation magnitude.

Certain components of watershed hydrology are highly sensitive to climate. Climate-induced changes in runoff quantity essentially would come down to any changes in precipitation and evaporative loss, though changing patterns in the quantities of water stored in snowpack and glaciers could modify runoff timing. More simply, if areas are wetter, runoff will increase, and if areas are drier, runoff will decrease. Background concentrations of nutrients, sediment, and biogeochemical processes are all influenced by temperature. Further, increased precipitation intensity could increase nonpoint source pollutant loads. Streams' assimilative capacity could change since changes in streamflow could affect a stream's dilution capacity and climate could also induce changed pollutant loads. Climate change could modify particular elements of the built environment that influence water quality, such as urban drainage systems and sewer systems. Climate change also could affect the performance of specific BMPs, such as rain gardens or riparian buffers, and in general, ecosystems are very sensitive to changes in flow. In the context of climate-induced changes in watershed hydrology, climate change could affect various EPA water quality programs: water quality criteria, monitoring, attribution of impairments, wasteload allocations, and 319 and other nonpoint source programs.

Current efforts to model climate change's impacts on watershed hydrology face limitations. Planning for climate change is confounded by uncertainty, and accurate, multi-decadal climate forecasts are not currently feasible, but scientists still have a detailed understanding of how the climate system functions and how various emissions scenarios will affect climate

change. This understanding of how climate systems function and the projected effects of various future climate change scenarios can be used to formulate policy and management strategies that address vulnerabilities across a wide range of potential climate scenarios.

With respect to the hydroclimate simulation models used in ORD's research, EPA's Clean Watersheds Project is a large, national-scale watershed modeling effort to project the sensitivity of streamflow and nutrients to future climates. A key portion of the Clean Watersheds Project focuses on modeling the interaction between climate change and urban development in watersheds that are becoming increasingly urbanized. One key objective of this modeling project is to improve methodologies for studying the effects of climate change on various hydrologic factors affecting water quality so that they can be useful for non-federal water quality practitioners.

The watershed model is being applied in 20 watersheds throughout the contiguous U.S. and Alaska, and five of these projects are denoted as pilot projects that have returned modeling data. In these watersheds, ORD is utilizing standard watershed models (HSPF and SWAT) to model streamflow, nitrogen, phosphorus, and sediment. These two watershed models are run based on a "delta" (change) factor that incorporates projected changes in meteorology under different IPCC emissions scenarios. ORD also is using HSPF and SWAT to incorporate projected land use scenarios, and the models create three overall products: models using only projected climate data, models using solely land-use projections, and models run with both climate and land-use data. The finest spatial resolution of the model runs with meteorological data at the 8-digit HUC scale, the base period for model data is 1970-2000, and future projections are completed for the period 2040-2070.

Modeling outcomes from the five pilot watersheds that have already returned watershed modeling results demonstrate that total streamflow is projected to increase or decrease by as much as 50 percent in various watersheds' scenarios, and total suspended solids are projected to increase in nearly all watersheds' model runs. The model simulations provide a conceptual model for how hydrologic systems would respond to climate change. With respect to monthly projected air temperature and precipitation values in the Minnesota pilot watershed based on the 14 IPCC climate change scenarios, while air temperatures almost uniformly were projected to increase, projected precipitation changes were less consistent.

The projected hydrologic impacts of climate change are greater than projected hydrologic impacts of land-use change, but climate change needs to be considered concurrently with other environmental factors, such as land-use change. Climate change projections should be connected to land-use change, as projected impacts of climate change on flow, sediment, and nutrients are very similar to those impacts of urbanization on hydrology. While these two factors may have additive hydrologic effects, the climate change effects could be addressed through better land-use management. Another modeling effort, this one to determine the sensitivity of nitrogen loads in Pennsylvania's Monocacy River to climate change scenarios for precipitation and temperature, shows that nitrogen loads are a function of climate. ORD's BASINS Climate Assessment Tool is available via EPA's website.

(2) Christine Ruf, EPA HQ: Climate Change and CWA 303(d) Program

The goal at EPA is to understand climate change at a national level and to bring insights to a local level, but this is difficult due to the global nature of many climate models and analytical methods. This presentation did not cover EPA's 2012 listing guidance on ocean acidification. With respect to the projected regional effects of climate change on precipitation intensity, the Northeastern U.S. expects to see a 58 percent increase in days with very heavy precipitation. Some Southeastern and Western States are projected to see increases in drought, which could be problematic in the TMDL program since decreased flows could exaggerate pollution problems. Incorporating climate change into TMDLs is a very complicated issue and depends upon further ORD research and findings.

The Watershed Branch's first step toward addressing climate change will be to review ORD's 20 watershed study outputs when they become available and to analyze historical trends in climate variables affecting impairment listings and TMDLs. Transferring information from general circulation models to watershed models in a manner that is useful for the listing and TMDL programs is very complex. A pilot TMDL for addressing climate change is emerging for Lake Champlain, and EPA is considering how to integrate climate change considerations into HSPF or SWAT. Uncertainty remains with respect to inclusion of climate change in the CWA 303(d) Program.

Informal Evening Session Plenary Discussion

The plenary discussion centered on EPA's guidance for impairment listings for ocean acidification, integrating changing hydrologic patterns into the regulatory context, the structure of ORD's hydrological and climate models, and ORD's interagency involvement in climate change research.

One participant asked about the pH scale EPA Headquarters was examining for its 2012 ocean acidification guidance and if there were particular cases where ocean acidification was particularly accentuated. An EPA Headquarters participant responded by noting that some coastal states have small ranges of acceptable pH in their water quality criteria (*e.g.*, 6.8-7.2) and that the changes in ocean acidity that are predicted (*e.g.*, 6-8.2) are larger than some of these criteria ranges. She then emphasized that ocean acidification is a real threat, that Puerto Rico has listed three waters for ocean acidification, and that litigation in Washington prompted consideration of ocean acidification. She also noted that carbon acidification modeling was fairly nascent but that coastal impacts from upwelling were identified in some areas and that scientists were attempting to develop relevant biological indicators for ocean acidification in addition to water quality indicators. One participant noted that her state had been receiving inquiries from the Center for Biological Diversity about incorporating ocean acidification into their 2012 listings.

A participant mentioned that her state's CWA 303(d) program was struggling to integrate climate change into the listing process, noting that climate change could be viewed as the "new natural" for listing purposes. An EPA regional participant responded by saying that incorporating climate change into listing decisions is difficult, since climate change analyses generally

examine larger hydrologic patterns. She also emphasized that EPA would like to involve climate change considerations in the CWA 303(d) Program in a practical, not impossible, manner.

A participant noted that his state's stormwater staff had received questions from a number of stormwater permittees about the implications of climate change on the cost of upgrading and maintaining BMPs. He asked if EPA had any projections for these costs. An EPA Headquarters participant noted that the EPA National Water Program had developed a Climate Action Plan and that a member of the Office of Water was investigating future stormwater BMPs in different areas of the nation. A participant noted that by increasing use of low-impact development, green infrastructure, riparian buffers, land conservation, and by improving nutrient management, communities can become more resilient to the impacts of climate change.

A participant asked if ORD was making any inherent assumptions when it integrated climate models with hydrologic models. It was explained that HSPF is a more physically-based model than SWAT and that the assumptions depend on how the various models are designed and calibrated. Also, in most cases ORD cannot pull individual variables, such as runoff, out of the model and make assumptions for the variable, but the models could be used to make broader inferences about the effect of climate change on processes such as evapotranspiration and soil moisture. One participant noted that ORD's models were examining environmental quality changes and asked if the program was also investigating changes in habitat or sea level rise. It was noted that Dr. Johnson's project primarily focused on modeling watershed loadings, not examining sea level rise, but projects in EPA's Office of Air and Radiation (OAR), such as the Clean Bays Project, focused on sea level rise.

Participants discussed an interagency workgroup involving the U.S. Fish and Wildlife Service and a workgroup between EPA, the U.S. Army Corps of Engineers, the Bureau of Reclamation, and USGS. It was also noted that USGS is starting regional climate centers and that NOAA's regional integrated assessment teams are great resources for linking climate change to water and terrestrial ecology.

Key Points Raised:

- Planning for climate change is confounded by uncertainty, and accurate, multi-decadal climate forecasts are not currently feasible, but scientists still have a detailed understanding of how the climate system functions and how various emissions scenarios will affect climate change.
- The magnitude of the projected hydrologic impacts of climate change is greater than projected hydrologic impacts of land-use change, but climate change needs to be considered concurrently with other environmental factors such as land-use change.
- Climate change could affect various EPA water quality programs: water quality criteria, monitoring, attribution of impairments, wasteload allocations, and 319 and other nonpoint source programs.

Session 9: Coordination: Among State Agencies, with EPA, and Others

This session featured three presentations followed by plenary discussion. Intended outcomes of the ninth session included:

- Participants will learn how other states and tribes have addressed coordination issues between agencies.
- Participants will better understand the complexities of coordinating with key federal agencies relevant to water quality.
- Participants will set the stage for continued discussion among state and tribal water quality agencies and federal agencies about how to strengthen coordination and relationships.

(1) Helen Bresler, Washington: The Challenge of Co-managing Programs with EPA

The relationship between states and EPA can be seen as a marriage in which neither party can get cranky or file for a divorce. A case study illustrates how the relationship can hit a bump in the road—as well as lessons learned. In 1999, Washington’s TMDL Program aimed to involve EPA early in the TMDL development process.

EPA and Washington co-manage the TMDL process. Washington’s Department of Ecology (Ecology) manages all of the responsibilities of the TMDL Program and decides which TMDLs are done first, while EPA provides technical help and focuses on TMDL approval. EPA and Ecology have a high level of trust, and they discuss adversaries or non-adversaries in various watersheds and decide whether EPA or Ecology should work with these parties. This co-management approach has been so effective that EPA redirected a TMDL staff person to CWA 303(d) listing, which had not been coordinating as smoothly with EPA.

Ecology has nonpoint source enforcement authority, which it has readily used to address surface and drinking water pollution caused by agricultural operations near Seattle. For example, in Whatcom County, groundwater rises to the surface in the winter, and so Ecology was enforcing requirements that manure could not be placed on the ground in the county. EPA distributes National Estuary Program (NEP) grants in Washington, and one of the conservation districts applied to EPA for \$1 million to apply a risk assessment tool to examine the effect of manure application on water quality in the county. Ecology contacted EPA and objected to this grant application based on the assertion that the scale of the project was too large, that the project did not involve adequate monitoring, and that manure application represented harm to the region’s water quality. However, EPA still gave the grant to this conservation district. EPA and Ecology had returned to their former relationship status where the programs make separate decisions.

To co-manage effectively, state and federal agencies have to talk and listen to each other constantly, and the agencies need to be completely honest with each other. EPA and Ecology had to mend their relationship after the aforementioned NEP grant.

(2) Carl Adams, Utah: Balancing on a Tight Rope: Coordination between Opposing Forces

This presentation focused on balancing state sovereignty with federal mandates for delegated water quality programs. One of the key points was that federal mandates should be communicated to those in the regulated sector. When regulated entities and the public have the perception that the balance between state and federal power has shifted too far to one

side, the TMDL program suffers. The state program can be pulled in many directions at once, as it needs to be flexible to local realities and also deliver on its delegated federal responsibilities. The perception in Utah is that the TMDL program is “biased” towards protecting water quality.

Utah had completed a long-term, contentious water quality study of the Cutler Reservoir that implicated the city of Logan’s publicly owned treatment works (POTW). Logan contains one of the largest treatment systems in the U.S., occupying about 500 acres. The TMDL Program initiated dispute resolution efforts with the POTW manager, but the manager maintained the threat of forwarding complaints on the proposed point source reductions to the State Water Quality Board.

Although the program and the city ultimately worked out a midway approach to this water quality problem, the TMDL program had angered a number of stakeholders in the state. Utah is one of the few states that requires a formal process to incorporate TMDLs into regulation or law. The Cutler Reservoir TMDL was incorporated into rule in February of 2011, at which point the city of Logan complained to the State Water Quality Board that the dispute resolution process for the TMDL was inadequate. Prior to the complaint, the State Water Quality Board approved and incorporated TMDLs after they received EPA approval; after this complaint, the board requested a switch in order. This can make the TMDL approval process particularly difficult, because EPA could theoretically disapprove a TMDL that was already approved by the board. The TMDL Program and EPA attempted to avoid this problem by sharing early drafts of TMDLs with EPA before they were submitted to the State Water Quality Board. A key step in the new process for TMDL approval was an opportunity for disgruntled stakeholders to petition the Water Quality Board for third-party review of the TMDL.

At one point, a particularly influential member of the Logan community went to his representative in the state legislature, who inserted wording into a bill to require that all TMDLs costing over \$10 million be approved by the legislature. The measure passed. The community was trying to use the law to promote increased state funding for implementation of expensive TMDLs, but the state has a number of challenging and potentially expensive TMDLs to complete in the future.

(3) Chuck Berger, Louisiana: Nonpoint Source (319) Projects—Successful Collaboration Stories

This presentation described Louisiana DEQ’s experience with using 319 grants to successfully address nonpoint source pollution and delist waters impaired for fecal coliform. This process involved successful collaboration with state and local government agencies and watershed groups.

The Tchefuncte River received runoff from expanding urban sprawl in the New Orleans area and was impaired by high fecal coliform counts. The Lake Pontchartrain Basin Foundation was very helpful with cleanup efforts, and in 2004 the Foundation set up intensive water sampling and monitoring under a cooperative agreement with Louisiana DEQ through a 319

grant. The Foundation hired two environmental inspectors to check facilities and houses to ensure that sewage treatment systems were installed before the facilities were allowed to connect to electricity. It also used 319 funding to develop educational materials and set up education programs for Louisiana residents. Subsequently, the bacteria counts in the River declined, the River now meets water quality standards for contact recreation, and it was removed from the CWA 303(d) list.

The drainage area of the Tangipahoa River contains a number of residential treatment units and dairy farms. To address fecal coliform pollution, the Louisiana Department of Health and Hospitals began requiring inspection of home sewage systems for all new homes. The agricultural community and regulatory agencies developed minimum standards and specifications for zero-discharge waste systems on dairy farms, NRCS installed approximately 158 of these systems, and the Lake Pontchartrain Basin Foundation implemented a water quality sampling program and an environmental education program. The Tangipahoa River now meets water quality standards.

Bayou Plaquemine Brule is located in an area with high rice production and catfish and codfish farming. As with the aforementioned rivers, the bayou was impaired for coliform and required an 83 percent reduction to meet primary contact recreation standards. To resolve the water quality problem in the Bayou, local stakeholders gathered to develop a watershed plan and to help landowners implement BMPs. USDA implemented BMPs on more than 70,000 acres of farmland, and Louisiana DEQ directed 319 funds to soil and water conservation districts to implement BMPs such as irrigation water management, drill planting of rice, and grazing and fencing for farmland. Louisiana DEQ and NRCS worked to convince farmers that by implementing these BMPs they could have higher rice yields and reduce soil losses. Additionally, the LDHH inspected nearby homes and assisted homeowners in installing new individual aerobic treatment units. After these steps to address nonpoint source pollution, bacteria counts declined and the bayou now meets water quality standards for primary contact recreation.

The key in all three of these projects was overcoming the lack of information and fears harbored by stakeholders, farmers, and local homeowners. The nonpoint source pollution reductions can be attributed to great field partners and DEQ's outstanding relationship with these partners. DEQ's field partners can appear more amenable than DEQ to stakeholders, farmers, and landowners as a partner to implement BMPs.

Session 9 Plenary Discussion

A participant began the plenary session by asking whether the EPA regional legal counsel reacted to Washington's TMDL redesign process, the response to which was that Ecology's legal counsel has a good relationship with the EPA Region 10 attorney and the agencies' lawyers were able to reach agreement. A participant asked if the fecal coliform restoration efforts were particularly successful because the state and its partner agencies had directed most of their resources there, or if other, similar pollution reduction efforts existed throughout Louisiana. It was noted that there are "plenty" of similar activities across Louisiana. Louisiana DEQ and its partners were able to implement zero-discharge dairies, because environmental education,

particularly through the Lake Pontchartrain Basin Foundation, helped to convince dairy farms to join the program. The Foundation secured homeowner involvement by explaining how implementation of a TMDL would be restrictive. A participant commented that the Louisiana DEQ's efforts in the waters presented by Mr. Berger also consisted of good watershed plans. A participant asked if Utah's legislature now has veto authority over TMDLs, receiving a response in the affirmative. It was noted that this new process will slow TMDL development and approval, but since the new approval process does allow input from a number of interested parties, once a TMDL is approved, it should experience less resistance to implementation.

A number of states shared their successes with the use of collaborative water quality management approaches. One participant noted that his state was successful in prioritizing NRCS-funded EQIP projects in areas with 319 projects or TMDLs in place by incorporating water quality as a crowning point for EQIP funding. Another participant mentioned that his state has used the EPA region as a "bad cop," most recently to convince a number of stakeholders that amending state legislation to require the state to perform 4(b) listings instead of TMDLs in fact presented a difficult approach. Another participant noted that in a sediment TMDL where all point sources were under technology-based effluent limits, 319 funding and cooperation with irrigation districts was used in the relevant watershed to install sediment basins or other sediment controls, and now the impaired river reaches water quality targets 97 percent of the time. Another participant shared that they recently have focused 319 funding in impaired watersheds and moved away from the use of a statewide competitive grant process. He noted that his agency still relies heavily on conservation districts or other local community leaders to move projects forward. His state also established a cooperative extension with university researchers to perform microbial source tracking and create watershed-based plans for the entire state based on a nonpoint source education tool.

A participant shared that her agency has had extensive experience with federal and state interagency coordination and coordination with watershed groups, largely because her state's water quality programs often have only one or two staff members. She noted that her agency has used collaboration to organize street fairs, raise awareness on urban ponds in low income neighborhoods, implement pollution prevention programs for heavy metals, provide direct technical assistance to industrial properties not subject to multi-sector general permits, target reduction in impervious cover, and address bi-state bacteria TMDLs. However, she explained that the lack of adequate funding for local stormwater improvements and inadequate social marketing were hampering the state's collaborative approaches to water quality management.

Participants also suggested methods by which EPA could potentially support their CWA 303(d) programs. One participant noted that her state legislature was passing legislation preventing the reclassification of waters, and that in general, her state legislature seemed to be targeting environmental regulations for review or restrictions. In this context, she commented that her program's relationship with EPA might have to adapt to the state's current political realities. Along similar lines, a participant noted that cities and counties with MS4 permits were eager to challenge the CWA 303(d) list and accordingly asked EPA to approve their state's CWA 303(d) list as soon as possible to minimize or avoid these challenges.

One participant expressed that, in his experience, stakeholders were not commenting on TMDLs during the public notice period and that they were waiting until they received permits to address TMDL wasteload allocations. He asked how other states were handling these situations. Another participant explained that his state does not allow point sources to comment on a TMDL through the permitting process and that point sources learn the “hard way” if they don’t address complaints with a TMDL during the TMDL development process. Another participant shared that his state develops and issues TMDLs as orders, which carry enforcement authority. He noted that during the TMDL development process, they try to obtain comments from permittees by exchanging the TMDL with permit writers, but once the TMDL is issued and approved by EPA, the permittees cannot change it. Another participant commented that his state adjudicated a TMDL that was challenged by a permittee, and the state won; however, he noted that TMDLs are subject to engagement for 6 to 6.5 years after being approved and that permittees can challenge the TMDL within that time period. Another participant explained that in one of her state’s major rivers, an impairment was solved by bypassing the TMDL process altogether through use of a collaborative stakeholder process to reduce phosphorus pollution.

An EPA Headquarters participant questioned whether reopening a previously completed public review process for a TMDL in the context of a later public review process for permitting would be legally defensible. A participant responded that, even though his state argued this, the permittee was still able to challenge a TMDL via the permit process. Another participant shared that her state’s TMDL development process was very clear on what wasteload allocations would be and that permittees were involved in the development of the TMDLs, and so once TMDLs are approved, they leave permit challenges to the state’s permitting division. An EPA regional participant identified what he perceived to be a useful role for federal agencies in this context, noting that EPA can explain to stakeholders fighting a particular TMDL that changing a permit also requires modifying a TMDL and that often stakeholders do not want to pursue this elevated challenge. Another participant noted that he viewed changing wasteload allocations in permits as a zero-sum game: if one permittee is able to increase his or her permitted wasteload, other permittees will have to make up for this increased pollution. He has used this to ensure that permittees are engaged in the TMDL development process, so that permit writers are not in a position to make potentially unfair reallocations of wasteloads among permittees. Another participant noted that most stakeholders in his state were aware of the public notice process associated with TMDLs, and that it is important to engage all stakeholders and ensure that TMDLs are based on the best science possible to help avoid subsequent permit challenges.

Finally, a participant noted that the Utah legislature’s interceding into executive affairs was not unique, explaining that his state requires any agency regulations to be submitted to a legislative rules committee for approval. He also mentioned that he would be interested in a national review of state legislatures’ impacts on executive procedures and questioned whether these types of incursions could be constitutionally challenged. An ELI attorney responded that these types of legislative reviews of agency processes are fairly common and that he is unaware of any state or federal constitutional barrier to them.

Key Points Raised:

- EPA and program implementers should have regular, honest conversations with each other in order to make the federal approach to water quality protection and restoration work.
- Federal mandates should be communicated to those in the regulated sector.
- Overcoming any lack of information or fears held by stakeholders, farmers, and local homeowners can be critical to addressing nonpoint sources of pollution, and great field partners can be vital to that end as they can appear more amenable to those groups than does the water quality agency.
- There are successful state examples of effectively targeting EQIP and 319 money with TMDL implementation efforts.
- Small staff numbers can require collaboration to achieve program goals.
- A program's relationship with EPA, other agencies, and other parties may have to adapt to the changes in political realities.
- There are several ways to encourage or even require permittee involvement in the TMDL development process, rather than risking opposition to the TMDL in the permitting process.

Session 10: Final Discussion and Workshop Wrap-Up

This final session consisted of opening remarks by EPA, followed by plenary discussion. Intended outcomes of the third session included:

- Progress toward a list of state and EPA issues and actions that, if addressed, could advance efforts to meet water quality standards.
- Progress in evaluating current mechanisms for communication and coordination and identifying new means with promise for success.

(1) John Goodin, EPA HQ: Opening Remarks for Session

Mr. Goodin opened the final session by expressing his excitement with the fantastic interactions that occurred during the workshop and the passion of the workshop participants, both during and outside of formal workshop sessions. But he noted that the most telling metric of the meeting's success would be the progress that transpired after the workshop. He said that EPA, state, tribal, and territorial programs could gain substantial insight from studying successful approaches to TMDLs and listing. He emphasized that EPA should publicize successful examples. Finally, he highlighted the importance of collaboration within and across federal and non-federal agencies.

He presented a working draft of a chart that sorted opportunities identified by workshop participants for EPA to provide best practices, technical tools, and program guidance in each of the content areas discussed during the workshop sessions. For nutrients, as a result of an EPA meeting in February 2011, the Agency is developing a compendium of nutrient-related listing and TMDL development practices that attempts to capture the current practices in the CWA 303(d) Program. He noted that there may be an interest in a technical tool that would help to facilitate conversion of existing nutrient TMDLs into site-specific criteria. Finally, he

said he received a clear message from workshop participants that EPA should re-examine using technology-based tools as a first step to manage nutrients.

Regarding multi-jurisdictional TMDLs, workshop participants seemed to believe that EPA could be more involved in TMDLs that affect multiple states, and that EPA assistance was helpful for tribal representation. EPA is in the process of drafting potential guidance on multi-jurisdictional TMDLs.

Regarding stormwater, suggestions of how to use residual designation authority could be helpful in some instances as a best practices document. Technical tools that facilitate use of *E. coli* TMDLs with fecal coliform listings could be beneficial, and permitting programs could use help in transitioning to use of impervious cover targets in TMDLs.

A primary takeaway from the reasonable assurance session was support for the use of suites of BMPs that are better linked to particular sources or land use types. EPA could potentially compile technical documents based on existing 319 or NRCS materials or additional research to support use of BMP suites. Another possibility would be to create a TMDL template for demonstrating reasonable assurance and for tools that better incorporate adaptive management and monitoring for purposes of accountability in this arena.

With respect to antidegradation, EPA perceives a need for technical tools to evaluate secondary or cumulative impacts, how nonpoint source pollution is included in an antidegradation evaluation, and how degraded waters that still meet water quality standards are evaluated in a potential TMDL. Roughly a half dozen workshop participants expressed interest in helping to phrase EPA's guidance on antidegradation for the 2014 integrated reporting cycle.

Two main recommendations regarding recovery potential appeared to emerge: first, that the recovery potential tool be made more accessible; and, second, that the recovery potential tool be piloted in some Western states.

In reference to legacy pollutants, it may be useful to create a compendium of current state practices, with emphasis on how TMDLs could be helpful in addressing legacy pollutants. Options to utilize category 4(b) listings should continue to be explored, and EPA's CWA 303(d) Program may need to emphasize to federal RCRA and CERCLA programs that water quality standards could be ARARs.

A principal takeaway from the climate change session was that EPA should continue to keep states, tribes, and territories abreast of scientific developments and technical tools for assessing the effects of climate change on water quality.

Finally, EPA and the delegated programs may need to re-emphasize how they are "branding," or publicizing, their programs to realize more grassroots support for clean water initiatives and the state and federal programs.

Session 10 Plenary Discussion

Nutrients

Workshop participants first discussed the potential for converting nutrient TMDLs to site-specific criteria. Several participants noted that, with respect to nutrients, increased use of site-specific criteria would be resource-intensive and slow the development of TMDLs. One suggested that use of a technology-based effluent limit for nutrients would reduce expenses. An EPA Headquarters participant responded by saying that even if secondary treatment limits were immediately revised to include technology-based effluent limits, it would take around five years for those more stringent limits to go into place. Another participant noted that even though his state uses ecoregion-based standards, site-specific standards were still necessary in some instances, and the more they develop site-specific standards, the easier and faster the process becomes. Another participant suggested that allowing some use of response criteria for nutrient TMDLs should be a component of nutrient management.

Discussion turned to the 2011 Nutrients Memo, *Working in Partnership with States to Address Phosphorus and Nitrogen Pollution through Use of a Framework for State Nutrient Reductions*, and its emphasis on the use of numeric nutrient criteria. One participant suggested that the eight-step framework in the memo be viewed as a toolbox of approaches for states, tribes, and territories instead of eight mandatory steps. She also emphasized that her state would prefer increased exploration of how the nutrients framework could be used to evaluate a program's nutrient management practices. Another participant commented that a technical tool demonstrating how TMDLs can fulfill steps one through seven of the framework and ultimately facilitate a long-term goal of achieving step eight—numeric nutrient criteria—would be useful. An EPA Headquarters participant suggested that, in terms of technical tools for nutrients, the CWA 303(d) Program should develop one that would facilitate using steps one through seven of the Stoner Memo to promote use of numeric nutrient criteria.

A participant declared the eight-step framework in the 2011 Nutrients Memo to be “happy talk,” with the only step that he saw as helpful being step four, which encourages adoption of innovative, collaborative approaches to addressing nutrient pollution from agricultural entities. He further asserted that the memorandum was more of a “defensive strategy” to protect programs from lawsuits and that it would not change implementation of nutrient management. He also noted that for every step they were taking forward, agricultural entities were setting the CWA 303(d) Program back ten steps. He asserted that EPA's endorsement of E15 ethanol was unhelpful from a nutrient management perspective. Finally, he stressed that water quality management programs need to regulate agriculture at some level.

Another participant noted that his state is developing numeric nutrient criteria and striving to link nutrient criteria to biological communities' responses. He explained that natural background nutrients and political pressures were complicating factors for use of numeric nutrient criteria, and that latitude and trust from EPA in implementing numeric nutrient criteria would be helpful.

Stormwater

Regarding stormwater issues, discussion focused primarily on EPA's draft stormwater program guidance. A participant noted that EPA already was reviewing comments on its stormwater program guidance and that the workshop provided good input for this memorandum, particularly with respect to how it addresses stormwater components of TMDLs. An EPA regional participant noted that EPA is performing heavy outreach for their stormwater guidance and that the guidance is primarily focused on MS4s, MS4 expansion, and development of performance standards, though the guidance does apply to additional stormwater permittees outside of MS4 boundaries.

Reasonable Assurance

The discussion of reasonable assurance covered development of a reasonable assurance template, potential regulations, adaptive management, the Chesapeake Bay TMDL, and the public perception of discussions of reasonable assurance. A participant encouraged EPA Headquarters to have the EPA regions solicit the best examples of reasonable assurance in TMDLs that are strategically developed to push implementation and that are on track in achieving their implementation goals. He noted that these examples could include a suite of BMPs or the TMDL document itself. This input should then be used in the design of a minimum reasonable assurance template.

Another participant noted that guidance or a rule from EPA on reasonable assurance that connects the 1991 EPA TMDL Guidance, 1997 Perciasepe Memo, 2002 EPA TMDL Guidance, Lake Champlain TMDL revocation, *Pinto Creek* decision, and Chesapeake Bay TMDL EPA Report to Congress would be useful. One participant stated that she would prefer guidance on reasonable assurance to a regulation. The participant who had in an earlier session suggested that EPA promulgate a reasonable assurance rule noted that her suggestion was based on the premise that if EPA was enthusiastic about its reasonable assurance guidance, it should be willing to make it a regulation. She also commented that the current reasonable assurance guidance is outdated and needs revision, and, in her reading of the 1997 Perciasepe Memo, reasonable assurance is required only when a wasteload allocation is transferred to a nonpoint source in a mixed TMDL. Another participant noted that if reasonable assurance was promulgated into regulation and required in TMDLs, her program's workload would increase dramatically; since her state already has rigorous requirements to develop basin management action plans, the pace of TMDL development would slow if these planning processes were moved to the TMDL development process.

One participant emphasized that a "paradigm shift" was needed for reasonable assurance and that this concept should ensure that load and wasteload allocations in a TMDL will reach water quality standards instead of heavily regulating point sources as a backup plan. She noted that if the lack of nonpoint source implementation stalls achievement of water quality standards, the programs should highlight this problem as a way to change the current regulatory culture.

Another participant noted that he did not understand why reasonable assurance was being emphasized by EPA since lawsuits come with the territory, and most states do not have

regulatory authority over nonpoint source polluters. He saw no reason for EPA to create model language or a template for highlighting reasonable assurance in TMDLs, and he encouraged EPA to still approve TMDLs with inadequate reasonable assurance. An EPA Headquarters participant noted that EPA has not only had lawsuits but court decisions related to some TMDLs, such as the Lake Champlain TMDL, where point source wasteload allocations were successfully challenged on the grounds that reasonable assurance was not demonstrated. He explained that EPA felt that the TMDL programs needed to seriously integrate reasonable assurance into TMDLs.

A participant noted that his state has nonpoint source regulatory authority, that state regulations require adoption of TMDL implementation plans, and that his state believes it does adequately demonstrate reasonable assurance. As a result, the pace of TMDL development in his state is much slower, but the program receives less resistance from stakeholders due to the lengthy process. He also emphasized that the state is willing to reopen TMDLs and that adaptive management needs to be an important component of any efforts to address reasonable assurance. Another participant recommended promoting the use of adaptive management and monitoring and suggested that the threat of regulating nonpoint sources via TMDLs, the Endangered Species Act, or the Federal Insecticide, Fungicide, and Rodenticide Act can prompt voluntary action to reduce pollution. He gave the example of water quality pesticide monitoring data being used to inform growers about the effects of their agricultural practices on water quality and ultimately reducing the in-stream concentration of pesticides. The information was distributed with the help of university extension, resource conservation districts, soil and water conservation districts, and revised pesticide BMPs—without a TMDL.

A participant commented that reasonable assurance is entirely concerned with nonpoint source pollution, that agricultural operations were the largest pollution problem, and that reasonable assurance was “dancing around” the problem of agricultural pollution. She mentioned that NRCS already has certain specifications for farms to receive Farm Bill funding for BMP implementation and that, if states cannot obtain regulatory authority over nonpoint sources, closer relationships with NRCS on the EQIP program can be a useful investment. She also asserted that EPA should play a role in prompting Congress or OMB to insert water quality measures into Farm Bill programs.

An EPA regional participant mentioned that the Chesapeake Bay Accountability Framework was a leading example of inserting reasonable assurance into TMDLs, noting that the Bay States compile watershed implementation plans, establish and evaluate achievement of two-year milestones, use the BayTAS database to track water quality improvements, and use the threat of federal action if adequate progress is not made. She also noted that this example of reasonable assurance might be more thorough than is necessary in TMDLs but that environmental groups were looking at the reasonable assurance provisions in the Chesapeake Bay as being potentially inadequate. Another participant explained that the Bay TMDL was used as a model for demonstrating reasonable assurance in the early drafts of the Lake Pepin TMDL and that his state found the Bay TMDL to be very helpful tool in establishing interim milestones.

Finally, a participant commented that efforts to demonstrate reasonable assurance need to be cognizant of their public perception, since discussions of reasonable assurance could portray the TMDL program as not achieving water quality improvements. She asserted that instead the

TMDL program should use reasonable assurance as a method of demonstrating actual water quality improvements and then use it to make a compelling point about the programs' inability to implement particular pollution reduction strategies.

Cost-Effective BMPs

Participants emphasized the importance of prioritizing cost-effective BMPs, publicly demonstrating their effectiveness, and integrating requirements for BMP effectiveness into NRCS cost-share requirements. One participant emphasized that compendia of specific combinations of BMPs that can achieve nutrient loading reductions would be helpful to “plug and play” in TMDLs as an expression of reasonable assurance. Another participant noted that developing tools or resources to demonstrate the cost-effectiveness of suites of BMPs or particular BMPs would be very useful. An EPA regional participant noted that Region 1 was working on a BMP decision-making tool to optimize placement of BMPs within particular watersheds and demonstrate the cost-savings of better planned BMPs. Another EPA regional participant noted that ORD has developed a model named SUSTAIN that was used in an EPA cost-share agreement with Los Angeles to evaluate the cost-effectiveness of suites of BMPs and their attainment of load reductions. She explained that the city and Region 9 were using the tool to identify specific subwatersheds for BMP implementation. One participant noted that the Chesapeake Bay Program designed BMP guides demonstrating the effectiveness of particular BMPs. Another participant expressed that the notion of BMP cost-effectiveness depends on the party bearing costs and expenses, asserting that unless agricultural producers see the BMPs as being internally cost-effective, they are unlikely to adopt BMPs.

One participant suggested that introducing a stronger link in the 2012 Farm Bill between NRCS' cost-share investments and reducing agricultural water quality pollution would be helpful. He also suggested using Grants Reporting and Tracking System-based load reduction models for BMPs for sediment, nutrients, or other water quality parameters such as temperature. He also noted that, in one of his state's watershed-based TMDLs, a particular point source was identified as a key polluter, and the point source then lobbied for involving agricultural polluters in the TMDL.

With regard to 319 grants, one participant asserted that states could use guidance on the terminology “maximum extent practicable” in the BMP context and whether this terminology should be defined at the industry level or at the level of an individual farm.

Antidegradation

Participants discussed potential model approaches to antidegradation policy, emphasizing use of tiered aquatic life classes and the possibility of holistic EPA guidance on antidegradation. One participant suggested that antidegradation efforts in the CWA 303(d) Program initially involve heavy work with water quality standards and permitting staff before exploring the effects of antidegradation on TMDL development. Another participant noted that Idaho recently completed an antidegradation rulemaking, prompted by litigation, and was writing implementation guidance for the regulation that could be useful to other CWA 303(d) programs when released. Another participant asserted that the goal of simply addressing legal defensibility for antidegradation was

very different from the holistic issue of protecting high quality waters. A third participant suggested that EPA provide more support to states on the use of tiered aquatic life classes. Yet another participant noted that Northeast States have implemented interesting and effective ways to use biological data calibrated to the biological condition gradients to protect high quality waters and noted that tiered aquatic life uses and sound biological data and assessments were central to these efforts. One participant requested program guidance for exploring various antidegradation options related to designated uses, water quality standards, and TMDLs. She asserted that until issues with designated uses and their relationship to water quality standards and TMDLs are addressed, substantial progress could not be made on antidegradation standards and TMDLs.

Multi-jurisdictional TMDLs and Downstream Impacts

Participants discussed particular roles that EPA could play with regard to multi-jurisdictional TMDL development and implementation. Several participants suggested exploring EPA's legal authority to participate in multi-jurisdictional TMDLs so that states, tribes, and territories could understand how to involve EPA in these efforts. Another participant recommended an EPA alignment of all federal agency programs that address or impact water quality. One participant suggested that EPA regions work more closely with EPA Headquarters on significant projects, citing an in-depth, collaborative process to address legacy PCB problems where multiple states, an EPA region, environmental groups, and industry officials reached an agreement but subsequently had the agreement prolonged and modified by EPA Headquarters. He also asserted that program implementers and regions should be responsible for asking higher officials in their agencies for objections early in collaborative processes. Another participant suggested that EPA be more proactive as a problem solver and mediator early in multi-jurisdictional TMDL processes, especially when different jurisdictions have different water quality standards.

A participant noted that there is a lack of clarity from EPA Headquarters on how tribes can adopt a delegated CWA 303(d) program to list and develop TMDLs and that EPA Regions have developed different requirements for delegating these programs.

General comments

One participant commented that better resources and tools for geographic- or sector-based pollutant source identification, which could include improved modeling or monitoring, would be useful. With federal budget cuts looming, a participant commented that it is important that 319 funds continue to be allowed for state staff and pass-through grants. Another participant asserted that the term "TMDL" does not embody the usefulness of the TMDL Program, noting that TMDLs never capture the "total" pollutant load, never capture the "maximum" load, and do not use "daily" load measurements. He suggested that another term, such as "water quality-based load reduction," would be more accurate.

John Goodin, EPA HQ: Closing Comments

Mr. Goodin closed the workshop by noting that the workshop had been "truly fantastic." He emphasized that the presence of tribal and territorial representatives was particularly valuable

and added a new dimension to this workshop. He thanked the workshop advisory group and the ELI workshop organizers for their efforts. He noted that the workshop participants should commit to follow-up and continue to utilize their new network of great resources.

APPENDIX 1: WORKSHOP AGENDA



ENVIRONMENTAL LAW INSTITUTE®

AN INDEPENDENT, NON-PARTISAN ENVIRONMENTAL EDUCATION AND POLICY RESEARCH CENTER.

2011 NATIONAL TRAINING WORKSHOP ON CWA 303(d) LISTING & TMDLS

**MEETING CHALLENGES TO WATER QUALITY MANAGEMENT
WITH NEW TOOLS & IMPROVED COORDINATION**

National Conservation Training Center
Shepherdstown, West Virginia
April 26-28, 2011

TRAINING WORKSHOP AGENDA

(WITH VISION, GOALS, & OUTPUTS)

**This project made possible through a cooperative agreement with the
United States Environmental Protection Agency**



VISION FOR THE TRAINING WORKSHOP

To provide an opportunity for state, tribal, and territorial participants from Clean Water Act Section 303(d) Listing and TMDL Programs to learn about—and to discuss with one another and federal counterparts—concrete strategies for addressing significant challenges currently facing water quality management, from specific pollutants and sources to programmatic obstacles.

GOALS

- Identify, share, and learn about **current best practices** in listing, TMDL development, and TMDL implementation that effectively address water quality impairments.
- Identify **opportunities to improve coordination** among state, tribal, territorial, and federal agencies with authority relating to water quality.
- Advance the **mutual understanding** among the states and EPA of the challenges facing the program, including policy and regulation, and potential solutions to them.
- Identify and better understand **immediate and long-term actions** that should be taken at the listing, TMDL development, and TMDL implementation stages and at state, regional, and EPA headquarters levels to achieve those solutions.
- Enhance the **network of listing and TMDL professionals**: expanding and improving inter-state communication, identifying experts on specific topics, and promoting the sharing of resources and better understanding of experiences.

OUTPUTS

No. 1: A list of discrete state and EPA issues and actions related to matters covered at the training workshop that, if addressed, could be expected to advance state and federal efforts to meet water quality standards.

No. 2: Evaluation of current mechanisms for exchanging information (*e.g.*, TMDL listserv, workshops) and identification of other means that may be helpful or necessary, including identifying states and tribes with a particular issue area interest.

No. 3: Findings, derived from remarks made by state, tribal, territorial, and federal personnel during the training workshop, that EPA may wish to consider in the context of future action (*e.g.*, developing guidance) on matters covered at the training workshop.

No. 4: A final report summarizing presentations and commentary from the training workshop. The report will include a summary document that identifies key findings from the event and highlights areas of agreement and disagreement regarding the subject matter covered.

AGENDA

Monday, April 25

Arrival, Check-In, & Registration

- | | |
|-------------------|---|
| 3:00 pm – 8:00 pm | NCTC Check-In and Training Workshop Registration
Main Lobby
Guest Lodge |
| 5:30 pm – 7:00 pm | Dinner (Open)
Commons Dining Room |
| 8:00 pm – 9:00 pm | Informal Welcome
Guest Lodge Lounge Area |

Tuesday, April 26

**2011 Training Workshop on Listing & TMDLs
Day 1: Challenging Pollutants and Pathways**

6:30 am – 8:00 am

Breakfast (Open)
Commons Dining Room

8:00 am – 9:00 am

**Welcome, Introductions, Updates, and Training Workshop
Overview**
Auditorium

Greeting and Introductions

Bruce Myers, ELI

Opening Remarks

Denise Keehner, EPA HQ

Progress on Listings and TMDLs

John Goodin, EPA HQ

Training Workshop Overview

Adam Schempp & Sandra Nichols, ELI

9:00 am – 10:00 am

**Session #1
Nutrients (Part I)**
Auditorium

Facilitator

Bruce Myers, ELI

Session Coordinator

Kathy Stecker, NC

Panel Presentations and Q&A

**(1) Status of Addressing Nutrients under the CWA 303(d)
Program as Well as Key Recent EPA Actions**

Eric Monschein, EPA HQ

(2) Nutrients in Maine: Criteria Development, Listing and TMDLs

Susan Davies, ME

(3) New Mexico's Approach to Nutrient Impairments and TMDLs

Heidi Henderson, NM

**(4) Overview of EPA's Promulgated Numeric Nutrient Criteria in
Florida**

Julie Espy, FL

Session #1 Outcomes:

- *Participants will better understand several different state approaches used to address nutrients under the CWA 303(d) program.*
- *Participants will better understand key recent EPA actions regarding nutrients.*

10:00 am – 10:30 am

Morning Break

10:30 am – 12:00 pm

Session #2
Nutrients (Part II)
Auditorium

Facilitator
Bruce Myers, ELI

Session Coordinator
Kathy Stecker, NC

Plenary Discussion

Session #2 Outcomes:

- *Participants will learn how other states, tribes, and EPA view overcoming the challenges of nutrient-related listings with and without numeric nutrient criteria.*
- *Participants will learn how other states, tribes, and EPA view overcoming the challenges of nutrient-related TMDL development with and without numeric nutrient criteria.*
- *Participants will be familiar with how well certain policies and approaches have worked in practice, what led to success, what hasn't, and why.*
- *Participants will set the stage for continued discussion among state and tribal water quality agencies and with EPA about addressing nutrients in 303(d) lists and TMDLs.*

Discussion Questions: How are narrative nutrient criteria used in TMDL development? Given that not all states have numeric nutrient criteria for N or P, what are the approaches used for assessment of waters or development of TMDLs when: a) there are only narrative nutrient criteria; b) when there are also response criteria (such as dissolved oxygen, chlorophyll a, water clarity, or biological condition)? What are their associated advantages and challenges? How are states achieving reductions in nutrients in the absence of numeric

nutrient criteria? How does one identify the pollutant of concern and TMDL loading target when waters are listed based on narrative criteria or response criteria? In particular, how does one determine if a nutrient pollutant is the cause of aquatic life use impairment? What roles do nutrient TMDLs have in implementing EPA's recent state nutrient reduction framework? In what situations would development of numeric nutrient criteria expedite nutrient control? What further assistance do states need from EPA to address nutrient impairments?

12:00 pm – 1:00 pm

Lunch
Commons Dining Room

1:00 pm – 3:00 pm

Session #3
Downstream Impacts / Multi-jurisdictional TMDLs
Auditorium

Facilitator
Sandra Nichols, ELI

Session Coordinator
Tom Stiles, KS

Panel Presentations and Q&A

(1) St. Louis River Cooperative TMDL

Nancy Schuldt, Fond du Lac Reservation

(2) Salinity TMDLs on the Arkansas River between Colorado and Kansas

Phil Hegeman, CO, and Tom Stiles, KS

(3) The Chesapeake Bay TMDL: A Pollution Diet to Restore Clean Water

Jennifer Sincock, EPA Region 3

(4) Process and Strategy Development for Maryland's Bay TMDL Phase I and Phase II Watershed Implementation Plan

Lee Currey, MD

(5) Chesapeake Bay TMDL in New York

Angus Eaton, NY

Session #3 Outcomes:

- *Participants will better understand the obstacles to and opportunities for developing and implementing multi-jurisdictional TMDLs in practice from examples of ongoing efforts.*
- *Participants will be more familiar with principles for downstream protection in Clean Water Act programs.*
- *Participants will better understand the implications of these principles for TMDL development, permits, and standards.*

Discussion Questions: How did the need for a multi-jurisdictional TMDL arise? How have pollutant loads at the jurisdictional boundary been determined? Have there been any issues to resolve regarding different water quality standards between jurisdictions? How have TMDLs assigned responsibility for WLAs and NPS to the upstream jurisdiction? How has Reasonable Assurance been incorporated into these TMDLs? How have jurisdictions coordinated with one another on TMDL development and implementation, and what role has EPA had with the TMDLs?

3:00 pm – 3:30 pm

Afternoon Break

3:30 pm – 5:30 pm

Session #4
Stormwater
Auditorium

Facilitator
Adam Schempp, ELI

Session Coordinator
Helen Bresler, WA

Panel Presentations and Q&A

(1) New York State DEC Stormwater Permits: TMDL Conditions
Angus Eaton, NY

(2) MS4s and TMDLs: North Carolina's Approach
Kathy Stecker, NC

(3) The 2010 Stormwater Memo
Jamie Fowler, EPA HQ

Session #4 Outcomes:

- *Participants will learn new strategies and receive updates on how some states are addressing stormwater through TMDL development and implementation.*
- *Participants will better understand the perspectives of EPA regarding the stormwater guidance.*

Discussion Questions: What approaches looked promising but have run into unforeseen obstacles? What else might work? How should allocations for stormwater be developed and implemented? Will those allocations establish permit limits? How do you develop categorical WLAs with limited resources? How do you put WLAs into TMDLs to determine if reductions are needed? Is there any flexibility in the new memo regarding MS4 wasteload allocations? What is EPA's expectation for stormwater load reduction in Highly Urban areas? Are any states changing their practices as result of the memo? Could trading between MS4s and nonpoint sources be functional and productive?

5:30 pm – 6:00 pm	Open
6:00 pm – 7:00 pm	Dinner Commons Dining Room
7:00 pm – 8:00 pm	Bonfire

Wednesday, April 27

***2011 Training Workshop on Listing & TMDLs
Day 2: Approaches to Effective Outcomes***

6:30 am – 8:00 am Breakfast (Open)
Commons Dining Room

8:00 am – 10:00 am **Session #5**
Reasonable Assurance
Auditorium

Facilitator
Bruce Myers, ELI

Session Coordinators
Menchu Martinez & Michael Haire, EPA HQ

Panel Presentations and Q&A

(1) Introduction to Reasonable Assurance Concepts

Menchu Martinez, EPA HQ

**(2) “Reasonably Sure” that Good Things Will Happen: Ohio's
Olentangy TMDL**

Trinka Mount, OH

**(3) Demonstrating Reasonable Assurance in Idaho TMDLs: Fact,
Fiction & Warm Fuzzies**

Marti Bridges, ID

Session #5 Outcomes:

- *Participants will learn how some states have overcome the challenges of demonstrating reasonable assurance.*
- *Participants will begin discussion on how to address reasonable assurance in the 303(d) program.*

Discussion Questions: What are some current approaches in developing mixed source TMDLs? What could be the key steps and essential components for demonstrating reasonable assurance? What are the main challenges and what are some ways of overcoming them? How would reasonable assurance affect cost and pace? How would reasonable assurance influence setting state priorities for implementation of TMDLs? Where should the CWA 303(d) program head with regard to reasonable assurance?

10:00 am – 10:30 am Morning Break

10:30 am – 12:00 pm **Session #6**
Antidegradation
Auditorium

Facilitator
Sandra Nichols, ELI

Session Coordinator
John Goodin, EPA HQ

Panel Presentations and Q&A

(1) Introduction to Antidegradation and Impaired Waters

John Goodin, EPA HQ

(2) Antidegradation Policy and Procedures in Florida

Julie Espy, FL

Session #6 Outcomes:

- *Participants will learn the extent to which some states have incorporated antidegradation principles into their CWA programs.*
- *Participants will better understand how antidegradation policies and implementation procedures may influence listing decisions and how to address antidegradation requirements in listing.*
- *Participants will learn about potential next steps for addressing antidegradation in 303(d) listing.*

Discussion Questions: How does one assess waters in these circumstances? What environmental benefits can be gained through listing for antidegradation? Is this a reasonable means of addressing threatened waters? What happens when degradation occurs through nonpoint source pathways? Is antidegradation review to occur for the waterbody or by pollutant? Will antidegradation apply to nonpoint sources or just for new point sources?

12:00 pm – 1:00 pm Lunch
Commons Dining Room

1:00 pm – 2:00 pm **Session #7**
Recovery Potential
Auditorium

Facilitator
Adam Schempp, ELI

Session Coordinator
Doug Norton, EPA HQ

Panel Presentations and Q&A

(1) Introduction to Recovery Potential

Doug Norton, EPA HQ

**(2) Vermont’s Experience with the Recovery Potential
Methodology**

Tim Clear, VT

Session #7 Outcomes:

- *Participants will learn about various experiences in using recovery potential, how it has worked, and how its implementation can be improved.*
- *Participants will better understand opportunities for using recovery potential.*
- *Participants will better understand EPA’s framework for recovery potential – a method for setting restoration priorities.*

Discussion Questions: Can recovery potential be used to set priorities?
Can we use this tool to help identify “priority management zones” to focus implementation activities within watersheds?

2:00 pm – 2:30 pm

Afternoon Break

2:30 pm – 3:30 pm

Session #8
Legacy Pollutants
Auditorium

Facilitator
Bruce Myers, ELI

Session Coordinator
Rik Rasmussen, CA

Panel Presentations and Q&A

(1) “Developing TMDLs for Waters Impaired by PCBs” Draft Document

Sarah Furtak, EPA HQ

(2) Legacy Pollutants in California

Rik Rasmussen, CA

Session #8 Outcomes:

- *Participants will better understand what approaches have been taken to address legacy pollutants in the TMDL arena.*
- *Participants will better understand how well certain approaches have worked in practice, what led to success, what hasn't, and why.*

Discussion Questions: In what ways can a TMDL assist in addressing legacy pollutants? What policy issues have arisen in this process and how have they been handled? Are a clean-up plan and ROD developed for a clean-up site sufficient for a clean-up plan under 4(b)?

3:30 pm – 6:00 pm

Participant Discussion and Networking Session
(Activity options to be selected on Day 1)

6:00 pm – 7:00 pm

Dinner
Commons Dining Room

7:00 pm – 8:00 pm

Informal Evening Session
Climate Change and Water Quality
Auditorium

Facilitator
Sandra Nichols, ELI

Watershed Modeling to Evaluate Potential Climate Impacts

Thomas Johnson, EPA ORD Global Change Research Program

Climate Change and CWA 303(d) Program

Christine Ruf, EPA HQ

Evening Session Outcomes:

- *Participants will learn about national-scale watershed modeling that EPA ORD is conducting to assess the potential impacts of climate change on hydrology and water quality in 20 large watersheds.*
- *Participants will better understand how the TMDL program is starting to evaluate methods to factor climate change impacts into future TMDL development.*

8:00 pm – 9:00 pm

Reception
Guest Lodge Lounge Area

Thursday, April 28

*2011 Training Workshop on Listing & TMDLs
Day 3: The Way Forward*

6:30 am – 8:00 am Breakfast (Open)
Commons Dining Room

8:00 am – 10:00 am **Session #9**
Coordination: Among State Agencies, with EPA, and Others
Auditorium

Facilitator
Adam Schempp, ELI

Session Coordinator
Jason Sutter, AZ

Panel Presentations and Q&A

(1) The Challenge of Co-managing Programs with EPA
Helen Bresler, WA

(2) Balancing on a Tight Rope: Coordination Between Opposing Forces
Carl Adams, UT

(3) Nonpoint Source (319) Projects – Successful Collaboration Stories
Chuck Berger, LA

Session #9 Outcomes:

- *Participants will learn how other states and tribes have addressed coordination issues between agencies.*
- *Participants will better understand the complexities of coordinating with key federal agencies relevant to water quality.*
- *Participants will set the stage for continued discussion among state and tribal water quality agencies and federal agencies about how to strengthen coordination and relationships.*

Discussion Questions:

What approaches have been shown to improve coordination between states and EPA? How can differences in regional and national goals be addressed to improve productivity? What challenges have recent changes in state regulations and rules created for continued coordination with stakeholders and completion of TMDLs? Other

federal programs do not always adhere to state regulations (e.g., permitting authority) or recognize state efforts (e.g., nonpoint source) when developing or implementing projects; how can EPA help coordinate federal and state programs where a common goal is shared? What has proven effective in overcoming the obstacles to intrastate agency cooperation posed by different mandates or goals across state agencies?

10:00 am – 10:30 am Morning Break

10:30 am – 12:00 pm **Final Discussion and Training Workshop Wrap-Up**
Auditorium

Facilitator
Sandra Nichols & Adam Schempp, ELI

Plenary Discussion

EPA Remarks

John Goodin, EPA HQ

Final Discussion Outcomes:

- *Progress toward a list of state and EPA issues and actions that, if addressed, could advance efforts to meet water quality standards.*
- *Progress in evaluating current mechanisms for communication and coordination and identifying new means with promise for success.*

12:00 pm – 1:00 pm Lunch
Commons Dining Room

NCTC Check-Out & Departure

1:00 pm Departure of Shuttle Bus for Dulles Airport (for participants with Thursday or Friday flights)

APPENDIX 2: PARTICIPANT LIST

2011 NATIONAL TRAINING WORKSHOP ON CWA 303(d) LISTING & TMDLS

Meeting Challenges to Water Quality Management with New Tools & Improved Coordination

April 26-28, 2011
National Conservation Training Center
Shepherdstown, West Virginia

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APPENDIX 3: SUMMARY OF WORKSHOP PARTICIPANT EVALUATIONS

Forty-seven workshop participants completed an anonymous Participant Evaluation Form (provided in the resource binder materials). The combined numerical results from the evaluations indicate an overall event rating of “Very Good-to-Excellent,” across all categories. In addition to the numerical responses, we received many written comments, which are reproduced here.

1. Participant Numerical Results (Combined)

Scale: 5 = Excellent, 4 = Very Good, 3 = Satisfactory, 2 = Fair, 1 = Poor

The Workshop—Overall

Information Presented	5 (23)	4 (22)	3 (2)	2	1	AVG: 4.45
Workshop Materials	5 (29)	4 (16)	3 (2)	2	1	AVG: 4.57
Workshop Organization	5 (33)	4 (11)	3 (2)	2	1	AVG: 4.67
Group Interaction	5 (28)	4 (16)	3 (2)	2	1	AVG: 4.57
Session Facilitation	5 (30)	4 (15)	3	2 (2)	1	AVG: 4.55
Conference Facility (NCTC)	5 (29)	4 (13)	3 (4)	2 (1)	1	AVG: 4.49

Goals and Outcomes; Topical Coverage

How effective was the workshop in satisfying the stated goals and intended session outcomes?

5 (14) **4 (24)** **3 (2)** **2** **1** **AVG: 4.3**

How successfully did the workshop meet your own expectations?

5 (19) **4 (22)** **3 (1)** **2** **1** **AVG: 4.43**

What I learned will be useful to me:

- 5 (21) = Immediately
- 4 (20) = In the Short-term
- 3 (1) = In the Future
- 2 (1) = Perhaps Sometime
- 1 = Never

2. Participant Written Evaluations

The Workshop – Overall Comments

Would have liked to have discussed bacteria TMDL issues. It was useful to have state/tribe/EPA interaction, but may want to consider state's only sessions (but we do have plenty opportunities to talk with other states during the open time periods). At minimum, keep the same open time slots for more informal conversations between states.

I like the format, time allotted for discussions, breaks, and keeping things on time. ELI folks did a wonderful job facilitating and managing logistics. Having everyone together and not having separate sessions was a great idea and other folks also enjoyed the setting.

Auditorium was too warm, otherwise great workshop

Way too hot, needed air conditioning

The conference was well organized with topics of interest and provided for good interactions with participants

Generally, more than 2 breaks are needed in order to keep most folks alert and engaged

Will use Ohio EPA handout, good model fact sheet. Would be good to have session on how to convince sister agencies to get involved.

The facilities are great. I have heard in the past there was no field trip and I very much appreciated the chance to see Antietam battlefield. Maybe next year Harpers Ferry!

Facility was too warm, but the food was excellent. It would be helpful to clarify for each presentation whether there are materials in the binder separate handouts or no materials. Also, including more blank pages for note taking

Lack of air conditioning was a distraction problem. Really enjoyed the Wednesday afternoon networking time and the town of Antietam. It was a welcome respite from the intensity of the workshop.

More of this type of interaction is strongly needed to repair the relationships between the states and EPA. An essential feature of this constructive interaction was to not have EPA leading it. The 3rd party facilitation was a huge plus and the EPA had more of an equal footing

Well done. Campus atmosphere lends itself well to maximum communication both in and out of sessions.

Great facility. I especially liked the time dedicated to discuss Q&A of topics

Large groups can be hard to manage. There are some new tools available which let you survey the crowd and show the results in real time, might consider how to integrate this polling into the next program.

Overall I thought the entire workshop was excellent. ELI staff was great. Logistics were very well thought out and preceded from my perspective, flawlessly.

Needs air conditioning

Too hot, but food was great

Great conference overall. Problems with heat resulted in loud fans, which made it more difficult to hear. Panels were well organized to frame topics and provide a basis for discussion

The overall discussion Q&A was more helpful than formal presentations. Standards and listing are the triggers for TMDL not enough emphasis on these areas. Key to success will be continued EPA support for monitoring and other issues. EPA has to focus on permit backlogs and not other CWA areas

Would have liked to have some breakout groups; hard to hear some participants because of microphones

Need more directed facilitation to get definite outcomes. With 100 people, need a mix of open discussion and other techniques in smaller groups. Need to draw out those who aren't talking.

Another excellent conference, this was the best one yet. Plenty of time to discuss content but good balance with moving forward into next topic.

Too hot!

The facility itself was very nice but the temperature was uncomfortable. The fans did help but I suggest holding the next workshop when AC has been turned on.

Facility low score is based on no AC

Needs a little more involved role of a facilitator in directing discussion to address session goals. Regarding facility, no AC! But wonderful otherwise.

Obviously make sure it's cooler. The importance of networking cannot be overstated

Excellent facility, needs A/C. Most useful meeting I've attended in years. All speakers were professional and brief!

What additional information, if any, that was not covered would have been useful to you and your colleagues?

Bacteria, metals, stress or ID process for biodiversity impairments

4b, longer discussion on storm water. What does EPA want as far as communication? What are states doing wrong/right?

Flow issues with TMDLs, coming expectations of cost/benefit analysis of TMDL allocations

There was a lot of interest in residual designation and bacterial source tracking

An overview of methods used for TMDL development

I would like to see a robust discussion of pathogens/pathogen TMDLs and subsequent implementation strategies of a future workshop. We have serious concerns over the WQS for *E. coli* (126/235); and serious concerns over the ability to achieve 98-99 percent reduction in bacteria in order to meet WQS.

There appears to be no flexibility on EPA's part in regards to their mandate that states develop, N and P criteria. It often works if a state is doing a good job protecting against nutrient impairments, this is not enough from EPA... N and P and still required.

Pull in more of the WQS that so strongly influences listings, TMDLs and restoration goals

More emphasis on solutions that have worked

Bacteria. Technical approaches to TMDL development innovative approaches and simple modeling techniques

It would be nice if EPA provided a list of guidance documents/memos and the current schedules

There seems to be a fair amount of flexibility with respect to EPA regional application of program guidance. It would be interesting to put a panel together of various regional 303d and TMDL coordinators to respond and discuss issues that state staff has encountered (although this could become uncomfortable unless managed to avoid any cheap shots).

Listing approach/assessment methods

What do we need to be thinking about for global warming? Also nutrients and Hg

Intersection of TMDLs and Permits

More detail on RA expectations/needs of EPA

A full session on implementation, how other states are able to implement the TMDL and not have it sit on a shelf

Session #1: Nutrients (Part I)

Numeric criteria may be good but more discussion and development and application may be different in every state.

Good that panel showed the differences in states approaches to address nutrients. Overview of current state of national program was good but I was left wondering what all of the data really means, like the age of initial listings beyond 8-13 years. Is there really program vulnerability? How hard is EPA going to push for TMDLs to be completed in this timeframe given the current economic and political circumstances? I really thought this was an opportunity to bring issues around PACE and Measures and the link to program funding to the forefront of the talks. Candid discussion with states about the #'s is needed but it doesn't happen often.

EPA needs to hear that national numeric standards are not appropriate. Without heavy input from biological indicators, they aren't meaningful.

A tepid session where interchange of ideas was dampened by _____'s sharp questioning of panel. Never really got into the intent of the framework not aspects of setting criteria (time frame, criteria on whole class of waters). An opportunity missed

EPA should have prepared a response to states resistance to and argument against the development of nutrient criteria

Too rushed, speakers needed more time (session started late), helpful information

Great, very informative

There was a lot of focus on PS pollution but I would have liked to hear more about NPS pollution. For states dominated by agricultural production, NPS pollution plays a much bigger role and is harder to manage. I would like to hear more about how other states manage NPS pollution.

Disappointment with EPA framework that items 1-7 are achieved by a state, item 8 is still required. Agree with comment that technology based standards for N and P for major WWTPs is needed, EPA should develop, EPA needs to allow biological response indicators in lieu of N and P criteria. CT approach should be permitted

Good constructive dialogue

Great discussion and well timed in the meeting. This is in one topic where states seem to be mostly opposed to EPA's approach (independent applicability) and good for them to hear that

Very interesting. My state is somewhat behind the rest of the states in terms of nutrient issues so this was a good overview. Colorado program staff should strongly support national effluent guidelines for nutrients, and I think our management would also support the same, probably with a certain size below which a POTW would not be affected.

States would like for EPA to promote technology limits for TP and TN. Panel was good

Excellent topic and good discussion. Speaker presentations too long and not particularly useful for stimulating discussion. More info on EPA's view of nutrient criteria TMDLs and the new nutrient plan.

Needed more time to discuss. Would have benefitted from some overall fact sheets. This is such a key issue, would like detailed, follow up action. EPA management should have been at the front table, not staff

Very good. FL example great. Devoted appropriate time and topic. Need more presentation on memo.

Such a good discussion until ____ shut it down

Good, needed more time though

Great!

Good, informative. Nice to see that other states are facing similar issues.

Good overview, impressive state presentations. EPA's position not supported by their presentation.

Compendium

Session #2: Nutrients (Part II)

This discussion really highlighted the difference between state and HQ thoughts on developing numeric N and P criteria. States are looking for a Matrix/Bio approach and HQ is look at numbers.

Seems like EPA is in a challenging place. States are looking to EPA to clarify expectations and roles. Mixed messages = mixed results. Not enough time spent on the overall goals and expectations when EPA talks with states. Good discussion on technical issues though. Like how states cut to the point, all valid comments.

This was a really well done session

It would have been good to canvass the states to hear what their approach or philosophy was. We could have seen who liked criteria, who did alternatives, who used dual P and Chlo indicators to cite problems

Good discussion and good ideas presented

Great again

EPA needs to reconsider the mandate that N and P criteria be developed for all state waters, this has put additional burden on states and does not allow flexibility to states that are doing a good job of managing nutrient impaired waters and protecting those that aren't nutrient impaired

Needed to discuss more on criteria. Need to work towards resolving all applicable criteria and biological response. Need biorelevant thresholds most important if we're to see progress. Downstream use = tech based limits 2nd treatment

Very good discussion

Based on discussion, especially flexibility displayed by EPA HQs, states would be crazy to pursue numeric nutrient criteria. EPA definitely needs to explore technology limits for nutrients at WWTPs, but taking costs into consideration. Otherwise we are just wasting time doing same projects over and over in different watersheds.

Good to hear from states

Great!

Good discussion; somewhat dampened by _____'s defensive attitude. Glad there was plenty of time and there was still more to be said.

Great job, break let people talk and then converse with the panel

Session #3: Downstream Impacts / Multi-jurisdictional TMDLs

Good examples of how states have worked together to resolve cross border issues.

Would be interesting to have EPA legal answer the following question: if EPA approves a state TMDL which assigns specific WLA to an upstream state's permittees, how can they approve NPDES permits from the upstream state which do not contain those same WLAs?

Idea: walk through a couple of upcoming situations, choose the hard ones, put us all on the spot to help us really think about how we'd approach the issue. Guidance alone will not be enough; most states express the need for EPA to lead these bigger efforts. Explore what EPA can do.

Concrete example about state-tribe-EPA maybe a success story

Wish legal difficulties of Chesapeake Bay TMDL were acknowledged openly or at all

Pretty good, I hope EPA got something out of the session to begin to indicate possible roles for EPA on MJ TMDL

Had a little harder time tying presentations to session outcomes and understanding the take home message

Why has EPA backed off on their plans to write a Mississippi R. Nutrient TMDL? This is a big disappointment. Unless and until this happens we will fail to make any serious progress in addressing nutrient loading from upstream sources and states will lack the leverage they need to motivate serious change in the way the land is managed. EPA be bold, stop being afraid.

Great

EPA should help facilitate the development of multijurisdictional TMDLs

Selection of speakers good but too focused on the sick kid "Chesapeake Bay". They have way more experience than most have.

Next workshop need to push EPA and states to be definite. Heard the same messages we always hear.

This session was less conclusive, less focused. Would like to explore the downstream impacts topic more in future conference.

Needed more focus in presentation on obstacles and opportunities with less emphasis on the impairments and TMDLs: how did you get multi states to the table? How did you determine which WQS would apply and who owned the TMDL?

Should have tailored each presentation to the specific challenges. Be more specific to issues. Don't need a synopsis of TMDL but issue and how it was resolved. Discuss what are issues, facing states when developing MJTMDLs? Could have been more helpful!

Would like to see more examples of MJTMDLs that also cross into different EPA regions (like the Ohio River bacteria TMDL)

With the onset of issues pertaining to Louisiana's coastal sub segments and the Mississippi River, MJTMDLs have become a very important issue in Louisiana

Good; Chesapeake Bay dominated and pointed back to nutrients. Good discussion after presentations.

Focused mostly on examples, no presence from EPA on guidance. Not much time to discuss downstream impacts and MJTMDL regulation. Discussion was split, needed more from EPA and more time to discuss.

Session #4: Stormwater

I would have liked to hear from one of the 3 areas that EPA selected pilot projects for watershed based MS4 permits. Are there TMDLs there? The Albuquerque area is struggling with this in the pilot project

We took a sharp detour over bacteria; need to have a session on this. Didn't get into EPA memo as deeply as I thought we might.

Why is it that we differentiate between urban stormwater runoff and agricultural stormwater runoff? They are both the result of rain events and ag drainage is really no different than an urban stormwater system. We need to stop treating ag runoff as some sort of sacred cow or we will never achieve the goals of the CWA.

Great

Need further clarification on the 2010 stormwater memo. Resources are not available to disaggregate stormwater WLA, and to do parcel by parcel analysis for TMDLs. See page 5 of memo, this is not feasible.

Another emerging issue with respect to TMDL development in Colorado. A lot of food for thought.

The stormwater memo should have been discussed more deeply

Where is the TMDL-SW handbook?

Need details from presenters. Require LID approaches? How? How do numerically?

Good set of discussion questions but I'm not sure the session overall hit the mark. Despite discussion at many conferences, I still am fuzzy about making best use of stormwater program to solve problems.

Good, not sure what 2010 memo accomplishes

Very helpful session and definitely current: would like to see more information on this subject in future workshops

Another important issue that has received increased awareness in Louisiana

Good. Highlighted interest in bacteria (See suggestions last page)

Seemed like it ran smoothly, plenty of time. Could use more discussion of legal issues that are evolving.

Session #5: Reasonable Assurance

There is no RA when you do not have regulatory authority.

Much better discussion, more open remarks and suggestions heard from the states.

Good overview of reasonable assurance

Lots of ideas, hope EPA follows up with engaging states to draft any guidance on RA. Lots of interest not to hog down process.

Good info

Good discussion, lots of comments and concerns raised

Still not sure what the goal is. Sounds like it's all about avoiding lawsuits, yet this is a real issue. We are fooling ourselves if we think any RA discussion has any real merit/value absent enforceable regulatory controls on Ag/NPS. Yet, there are so many cases where even if we assigned a zero WLA to the PS's we still would need major reductions in NPS loads to achieve the TMDL.

Has direct relevance to my work, very useful

It is not possible to provide a detailed roadmap of how, what NPS reductions will occur over time. Implementation of stormwater reductions necessary to achieve TMDLs will take millions of dollars per town in urban settings and will take many decades to implement. Getting more specific than this in a watershed TMDL that covers 70 miles of river and 35 communities in a reasonable assurance section of a TMDL is a waste of time and energy.

EPA policy/guidance needs to consider cases where WLA term is irrelevant in comparison to NPS. Forcing PS contributors to spend large sums on treatment that will not lead to meaningful, or even noticeable improvements in WQ undermines the program

Another informal conversation; it must be helpful in order to discuss the situation when a waterbody after performed nonpoint and point source reduction not comply with the TMDL

Discussion was good, however states will have difficulties trying to do reasonable assurance because there is no NPS enforceable mechanism

A key point was that in identifying effective BMPs, need to be able to demonstrate cost effectiveness to those that would implement them. If can't do that, need to be able to show progression of steps that could occur if not implemented. May be ways to get internalization of needs to implement even if not directly cost effective

We've got a good handle on PS. We need a better tool and RA isn't it. Lack of funding. PSs are a small part of load and no authority/funding. We'll continue to face challenges that even if PSs do meet limits, WQ will remain impaired. Speakers did a great job.

This session should have been more structured. EPA very equivocal about guidance. Would have liked management to be on stage not the staff, very wishy washy answers by EPA. Too much theory. Please ID next steps.

Needs more detail. Why and ultimate need by EPA. Need to make it real and what the EPA needs to accomplish. Too vague and ubiquitous. Lots of break talk, needed another session to follow this discussion once members digested info, like how nutrients were done.

Good session, USEPA appears poised to over-reach

Good discussion would encourage EPA to think about implications of trying to include so much implementation detail in TMDLs since implementation plans are not required—stakeholders will push back and TMDL development will be slowed

Obviously there is a need for more regulatory authority of NPS. EPA could elaborate on most guidance rulemaking in the future to help states

Excellent session, very helpful info presented. Philosophy behind the policy very helpful to understand.

This is a relatively new concept in Louisiana

EPA assertions at odds with state presentations. I wish EPA had presented this as a problem to be solved together rather than “here’s why you have to do this.” (supported by guidance, which is not regulation or law).

Really needed break after the presentation to allow for a talk/discussion before asking panel questions. Not enough time, first time really needed more time for questions and discussion. What’s next? Regulations?

Session #6: Antidegradation

It is encouraging to see EPA looking for state input prior to releasing guidance. There appears to be a wide range in how the states use anti-degradation so it will be important to know if listings based on anti-deg are even possible across the country.

Interesting discussion but not sure this is a big deal to 303d. It sure is for WQS and NPDES but antideg policy is their issue not TMDLs

More guidance is needed on how and when states should use antideg for listing. I’m still not clear on how we can write a TMDL for a water body that meets WQS

Needed more background on issue and lawsuit in presentation to really understand this topic better. I only felt like I was starting to understand the issues during the discussion phase, based on the questions and comments that were made.

Not sure if I get how this relates to listings and TMDL development

Still not sure of the connection between AD and TMDLs

Most helpful for me—greater context of the CWA framework for addressing impaired waters

Need for better tools to evaluate antidegradation for new stormwater discharges

Much more and deeper dialogue is needed on this topic. That conversation must include OST/WQS/criteria program/permits we are in a very primordial stage of action & understanding about how to truly prevent degradation. It’s not all about NPDES anymore

Good discussion, unanticipated consequences, if EPA cannot maintain a flexible stance on application of AD concepts to listing exercise may make this one of the biggest challenges for TMDL programs

I think this discussion got way beyond how to treat AD in listing and TMDLs and got into a discussion of how states should tier waters and even designate uses

Interesting how antideg became listing issue, need to better understand existing state programs and history. Florida - great job explaining. Would like to participate in developing listing options for antideg

Need examples of how TMDLs can be used

Not clear on how this impacts projects or lists

I think a little more info regarding EPA's intent needs to be provided to states, some folks seem unsure about expectations of current exercise

Rulemaking needed; like the idea of protective TMDLs but easily litigated b/c water bodies do not meet definition of category 5

Good session. Implementation challenges could have been a prominent topic.

Liked EPA's approach: asking questions and inviting state discussion and participation. Appreciate FL's honest presentation. Most interesting of the 3 EPA initiated sessions

Good timing and conversation went well.

Session #7: Recovery Potential

Interesting concept and similar in approval as the watershed based plans the University of Arizona developed for HDEQ. Basically, using weighted ranking to identify potential high risk areas to look for or target sources. U of A used AGWA modeling approach with a much smaller set of variables.

A good presentation, good to have states with strong biomonitoring programs. Have to hear how Maine and CT efforts are progressing.

Good info

Am interested in learning more about this topic, but clearly not enough time in this meeting. Discuss overlap between recovery potential of impaired watershed and TMDL reasonable assurance

I am very intrigued at the potential of this type of modeling too. We use a similar process but it's not this formal, it's more of an intuitive process for us, but it would be nice, formalizing it using this type of methodology.

Didn't know anything about it, good introduction

Very good

Sounds interesting but not sure how useful this could be in the real world

Interesting analysis, doesn't address budgetary constraints on TMDL programs. TMDL production in CO is driven in large part by the data gap between listing and TMDL modeling. If we need additional data, and we almost always do, TMDL prioritization must consider how to maximize our data collection efforts through internal and external partnering with other data collection efforts.

Consider providing a copy of all the presentations. Also, provide more details on the examples presented in the recovery potential screening.

Very interesting concept. Need to keep watch on developments and success. Would like to explore options to use the opposite for delisting and moving to impaired due to pollution. Need to acknowledge can't fix everything.

I don't understand why this is being used. Why use it? Link this to audience and program needs.

Interesting, not sure we have resources to explore now or in foreseeable future

Interesting topic! Would be interested to hear more from states that are attempting to use this tool

Very interesting and I will be looking into this for my program in the future.

Not the strongest of the sessions, perhaps could have been folded into a broader discussion of BMP effectiveness monitoring, TMDL implementation etc.

Not as useful as other presentations for me. Our state has already developed another tool for the same purpose.

Session #8: Legacy Pollutants

Not a good idea, too many things to do already. Other program areas are handling. Water folks have no knowledge or experience dealing with hazardous pollutants.

A 4b discussion would have been beneficial

Addressing PCB in first tissue listing; how to write TMDL

PCB talk was not a big deal to me. Rik's talk was very interesting.

More discussions: how states can develop state-wide Hg TMDLs and implementation issues would be helpful.

Not very relevant to us; not a big issue in our state

PCBs don't have any impairments (as for many states) so this was of no real use

EPA presentation—old, seen it before, and had no new info. Did not provide info on how states are addressing. Objects not achieved.

Good. Adequate time and content.

Good discussion. 4b really needs to be looked at relative to risk assessments completed by superfund sites to meet human health. Maybe work with superfund to include risk assessment of aquatic life.

Brief, informative. But I'm still not sure why we should do TMDLs for PCBs.

Informal Evening Session: Climate Change and Water Quality

As a state used for the pilot study, I would hope that there would be a chance for future collaborations with the climate change modeling group. What will the future of the project be; will they try to calibrate the model with additional data collected in the future?

Not what I expected. Thought it was going to be a practical discussion of the upcoming 2012 cycle

Too hard to hear

Some really interesting scenarios, doing it in the evening was a killer though. Sidebar: the message here runs headlong into EPA's quest for enhanced reasonable assurance.

EPA has to develop and help states and territories in order to study the ocean acidification problem

Good, it would be helpful if we had the handout of the presentation graphs of model assimilation was difficult to read on screen

Would have helped (?) more on ocean acidification and where we are going

Same message. Heard again. Needed discussion on our needs and questions in program. Have EPA give 10 min update at main meeting on OWOW activities as we need to implement the program

Interesting; good to present separate from rest of conference

Expected more discussion about OA based on recent guidance from EPA. OA may be 303d issue, but rainfall precipitation changes are not: they may affect TMDL development and success but I would have presented more in that way rather than as a climate change

Good informal sessions. Obviously lots of unknowns = uncertainty.

Knowledgeable and interesting speakers, but either too long or too late in the day

Session #9: Coordination: among State Agencies, with EPA, and with Others

Helen's presentation was excellent

Good discussion and good panel presentation.

Good ideas for how states and EPA can work together & what the different perspective are

We seem to coordinate well with our EPA region as long as we keep the lawyers out of the conversation

Very useful especially the presentation from Louisiana (and discussion) about working with NGOs and other state/federal agencies to implement TMDLs

It will be useful if EPA prepares a database with all the educational material concerning TMDLs, BMPs for NPS and so on

Very good session

Great presentation. TMDLs that are likely to result in widespread economic impact should go to UAA process so that we can allocate limited funds to get max environmental benefits rather than dealing with permits and cutting one or more discharges a break and ultimately defeating TMDL

Would like to have heard more about how EPA and states can improve interaction.

Same message again, need to focus this and get to actions

Good discussion, may have been better to split into state-fed, gov-NGO, or other split. A lot of content.

Good discussion and examples by the panel

Great presentations and discussion; would like to see more presentations.

Needed session and discussion. In the current economy and political climate, EPA and especially regional offices need to support state employees in the trenches that are trying to preserve long sought and hard-fought-for victories that are in jeopardy by the legislature

Good honest presentations. Good food for thought, especially liked learning about relationship problems and solutions from Helen and Carl. Helen's insights were extremely helpful and provide a good framework for dealing with EPA in all programs. Good discussion after presentations

Good to hear

Workshop Wrap-Up

Listing 303d and TMDLs is a good mix for such a workshop. Would recommend that HQ hosts another workshop.

John did a good job laying out the topics and issues, the table provided a basis for a good discussion and clarification.

Excellent summary of issues

EPA really did listen, nice matrix. Good feedback from states. Good energy to move forward

Great job, lots of good ideas

Good summary of issues and next steps

Too vague, too loose. John's summary a great starting point.

We should be using the listserv more! Maybe reach into the topics from the conference notes periodically and send out a "what are you thinking about this now" message. It would shake each of us out of our day to day issues and recapture the conversation we've had

I can't believe people still wanted to talk, especially about nutrients! Great participation! And good demonstrations of listening on the EPA's part. Loved the Haiku.

Other Comments or Suggestions

Ask each state and region to give us three top issues that you face and if it is worth it for HQ to work on it (instead of having HQ determine what issues are important for states). HQ needs to do an in depth evaluation on what they do and how it affects each state. All states are not Florida, California, and Washington. Every state is different. HQ does not need to come up with new things in this political climate and reduction in resources – both state and federal appropriations. EPA guidance creates more of an issue than clarification when we are faced with legal challenges and implementing programs. One or two lawsuits do not become an urgent issue nationally. Lawsuits happen and we have to deal with it. For HQ and HQ attorneys: expedite 303(d) list approval in states where there are no lawsuit threats and nothing has changed in how the list has been developed since 2006 and where 2006, 2008, and 2010 have been approved.

Having the regional EPA representatives at the meeting was fantastic! They offered a different perspective that I normally am not able to see. Great job ELI! I hope to attend the next workshop.

Look forward to next year. Consider having a poster session for participants to highlight critical topics that may not be on the agenda or may not be presented via panels. Consider a similar meeting for WQS.

Encourage EPA to be more timely with their listing guidance every 2 years

The afternoon break to Antietam/hike was a really good bonding exercise plus a good chance for recharging. Next year, load up on presentations from the newbies, they bring very fresh ideas and bring up issues we thought were passé like bacteria

Would be very helpful to have copies of presentations in color, since color is used to differentiate levels of things. A glossary of acronyms would be very helpful to all.

EPA seems to concede way too much ground or authority to USDA lately. While it's nice to praise agricultural for all the wonderful things they are doing, to be good stewards of the land they really have only scratched the surface in terms of doing what they need to do. In our state you wouldn't have to travel far to find examples of bad behavior by these supposed good stewards. Every time EPA pats agriculture on the back you give them to a reason to believe they are doing all they need to do. Also, corn based ethanol is killing us. Approval of E15 will only make it worse. For future workshop include a topic or session on social marketing and assessment; behavioral modifications, effective tools and estimates for changing human behavior

Very well done. Impressed with every aspect of the whole event.

EPA and states need to learn to work together better

Sometimes it's uncomfortable to speak about challenges you have as a state when dealing with EPA, when your EPA person is sitting in the same room, and there were a lot of EPA in the room.

It might be helpful to educate states and EPA on nutrient reduction success stories that rely on state authorities. While I understand this is a TMDL workshop, these alternatives can yield measurable reductions and may provide examples of other avenues for successfully meeting an environmental endpoint.

Colorado is attempting development of a technology based nutrient rule. Current rumor is that Region VIII and/or EPA HQ is not finding either the approach or the product (there is some confusion on my part) acceptable. Nonetheless there may be some interest as this process evolves. I would be happy to provide contacts, web info, and so on if ELI is interested—Phil Hegeman; Philip.hegeman@state.co.us ; 303.692.3518

We need a workshop that covers implementation issues by the states

Also more information is needed regarding source tracking

I would make sure people fill out evaluations throughout the workshop: you should mention this. Print out evals on a distinctive color of paper helps it stand out from the pile of handouts. A number of folks did not say a word. This may well have been by choice, but if there is any way to draw them out that would have been ideal. This is tough with such a large group, and some folks did grab too much time, but that is going to happen.

Need to improve standards, listing, and assessment program. This was first year heard about it and came from my regional coordinator. Need to think beyond TMDL as only means for WQ improvement

Excellent facilitation and keeping everyone on time and on target

Need advanced, trained experienced facilitators that knew and can effectively use various methods to get to workshop goals. Just guiding open discussion is not effective. Totally open, only open discussion does not get such a large group to agree to actions and definitely not create priorities. This method only results in limited yes or no to each. For example, to prioritize final actions, have all vote on flipcharts at break, then report out. That way gets most involved. Write down ideas on overhead as they are given, then ask group if this captures it adequately. Need to show ideas are incorporated. If someone who does not give a comment or very few, they need to be selected before those who have talked a lot.

Another excellent conference. ELI, you are the best at this!

TMDL is considered the enemy. We could use help from EPA and other agencies to promote the program and show that we are not enemies. Tools would be useful for

promotion. Overall, great workshop, great location, and enjoyed Antietam field trip. I look forward to returning in the future. Would also like to see coverage on conducting sediment in the future workshop.

Note to EPA, please continue supporting this workshop! It has been invaluable to me in networking with EPA counterparts and fellow states. This is my support group that helps me from going insane ☺

Ideas for next time: bacteria, timely submittal approval of 303(d) lists (with state successes and challenges). Measures (EPA's, related to 303(d) program). Mercury and other pollutants (NO, SO₂, CO₂) that impact WQ through atmospheric deposition. 4b. If we have an evening session, make it very visual and not directly related to 303(d), like underwater photography, something to enjoy and absorb but not discuss at length

APPENDIX 4: WORKSHOP WEB PORTAL— ELI'S STATE TMDL PROGRAM RESOURCE CENTER

Following the 2011 National Training Workshop, ELI updated its companion website for this and related past workshops—which ELI continues to maintain and make publicly available. All workshop materials, as well as many other resources that are relevant to the mission and work of State TMDL Programs, are available at the Institute's *State TMDL Program Resource Center*, at

http://www.eli.org/Program_Areas/state_tmdl_center.cfm