ENVIRONMENTAL LAW INSTITUTE®

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

2012 NATIONAL TRAINING WORKSHOP ON CWA 303(d) LISTING & TMDLS

MEETING THE CHALLENGES OF NUTRIENTS AND NONPOINT SOURCES OF WATER POLLUTION

FINAL PROJECT REPORT
&
WORKSHOP PROCEEDINGS

OCTOBER 23, 2012

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 this workshop possible: Helen Bresler, Allen Bonini, Kathy Stecker, and Tom Stiles. 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: Astor Boozer, Jimmy Bramblett, Lisa Duriancik, Katie Flahive, Sarah Furtak, Lynda Hall, Eric Monschein, Jeff Risberg, and Larry Sanders.

ELI staff contributing to this project included Adam Schempp, Bruce Myers, Marion Boulicault, and Philip Womble.

Except where expressly noted, the views expressed in the materials prepared and assembled by ELI should not be attributed to U.S. EPA, or to other federal or state agencies, nor should any official endorsement be inferred. The information contained in these materials was gathered from many and varied sources, and ELI alone is responsible for errors or inaccuracies.

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

CONTENTS

I. INTRODUCTION

In April 2012, the Environmental Law Institute (ELI) convened the *2012 National Training Workshop on CWA 303(d) Listing & TMDLs: Meeting the Challenges of Nutrients and Nonpoint Sources of Water Pollution.* 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/TMDL and Nonpoint Source Program officials from 19 states. The assembled participants learned about and discussed present and potential challenges to addressing nutrients and nonpoint sources of pollution (NPS); strategies for meeting these challenges; and the best means of measuring and sustaining success through and with a "ten-year vision" for the CWA 303(d) program. Participants had an opportunity to share their unvarnished views with colleagues from other jurisdictions, representatives of EPA Headquarters and several EPA Regions, and a representative of the Association of Clean Water Administrators (ACWA).

As with similar events of national scope convened in June 2008, May 2009, and April 2011, ELI and EPA intended for this training workshop to provide an avenue for program officials 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, ELI assembled a Planning Advisory Group (PAG) consisting primarily of state officials. For approximately three months, this group worked through a highly participatory process to develop, shape, and refine: the substantive topics for discussion, the list of personnel to be invited, the course materials, and the event agenda and substantive presentations.

State 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. Given the focus of the workshop, they also came from states with unique approaches or substantial challenges to addressing nutrients and nonpoint sources of pollution. Regional and programmatic diversity was also an objective in participant selection.

The three-day workshop, held at the U.S. Fish & Wildlife Service National Conservation Training Center, was successful by the metrics of sharing useful information, generating new ideas, and building relationships. The takeaway messages from the presentations and discussions are identified in Part II of this report. The bulk of the report, Part III, consists of a detailed, session-by-session summary of event proceedings. Appendices to the report include the event agenda, the participant list, a full summary of evaluations and comments provided anonymously by participants, 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 its website and through an ELI-administered listserv for state, tribal, and territorial professionals.

II. TAKEAWAY MESSAGES

From the perspective of ELI staff in attendance, the following are the most significant messages and themes that emerged over the course of the workshop (although they do not necessarily reflect complete agreement among the group):

The time is right to develop a ten-year vision:

- As consent decrees and settlement agreements in response to TMDL pace litigation taper off, the CWA 303(d) program has the opportunity to recalibrate its objectives, and a ten-year vision is meant to lay out that path.

- Broad engagement will be necessary for the vision to serve its purpose and the goals to be reached.

There are many opportunities for synergies between CWA 303(d), CWA 319, and other programs:

- As the CWA 319 Program is refined to respond to the recent EPA and U.S. Government Accountability Office (GAO) evaluations of the program, there are many opportunities for synergies with the CWA 303(d) program. Opportunities may be found in joint planning and priority-setting, TMDLs in nonpoint source priority watersheds, nonpoint source-"friendly" TMDLs, and tools for TMDL and nonpoint source practitioners.

- Particularly in the nonpoint source context, for the CWA 303(d) program to be supportive of the CWA's ultimate objective of protecting and restoring the nation's waters, it must support the work of programs focused on implementation—from the CWA 319 Program and U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) to community groups and resource organizations. At the same time, the work of these programs can and does support the aims of the 303(d) program.

Challenges for listing nutrient impairments remain:

- There is significant variation across states in the standards and approaches used to capture the impacts of nutrients in CWA 303(d) lists. The CWA 303(d) program needs to tell the nutrient assessment story better.

- Many state participants believe that their state captures in its listings the impairments caused by phosphorus, as well as impairments to drinking water caused by excess nitrogen. As a result, addressing nitrogen loadings in marine waters can raise discrepancies with respect to state and federal priorities as well as upstream and downstream priorities. States could use federal leadership on Mississippi River basin surface water nitrogen targets for the Gulf of Mexico.

- Some states would prefer to base nutrient listing decisions on whether response criteria are met (with or without consideration of numeric nutrient criteria), not solely on whether numeric nutrient criteria are met.

There are various ways to address nutrient impairments:

- States are at different stages in developing nutrient reduction strategies. In some cases, nutrient management strategies can give a broader context to individual TMDLs and support TMDL implementation through better interagency coordination. In other cases, TMDLs provide an organizing framework for setting nutrient reduction goals and divide them among point and nonpoint sources.

- A TMDL is not always the most effective tool for addressing a nonpoint source problem. Circumstances can vary significantly from state to state and from one water body to the next. State personnel should carefully consider whether the most effective route to achieving environmental results is a TMDL, a CWA 319 plan, another alternative, or even a combination of approaches.

- Individual states have done and are doing significant research on BMP efficiencies, promote and use a wide variety of BMPs, and have unique manuals and tools for facilitating BMP implementation. These resources could be made more useful to other states, particularly if they were to be presented in an organized compilation, together with contact information.

- Targeting BMPs to critical flow pathways and sources improves the effectiveness of BMPs in reducing loads. Suites of practices work better than single practices.

- The concept of "agricultural certainty" has the potential to build accountability and make the voluntary approach to nonpoint source pollution reductions more functional. Suites of BMPs with "presumed compliance" used in some states could be useful in others.

There are many ways to measure program success with transparency and accountability:

- The CWA 303(d) program has the opportunity to reconsider how success should be measured. Pace alone is inadequate as a measure of success; it should at most be one component of a multi-component metric for evaluating success.

- The CWA 303(d) program should develop new measures of success in line with the ultimate objective of the CWA, protection and restoration of beneficial uses. At the same time, these measures of success should be within the scope of what the CWA 303(d) program can independently achieve. To find a better alternative, significant thought must be put toward what is being prioritized and why.

- Incremental milestones of success are critical to reflecting progress and evaluating actions undertaken in the path toward achieving environmental results.

- Measures of success should reflect the CWA 303(d) program vision and goals, once developed, and be useful to states in meeting their water quality goals.

- To meet the demands of and be used by the public, measures of success should: be framed in terms of use values (outcomes, not numbers); be observable; have measurable points to demonstrate progress; and have meaningful targets.

- To the extent feasible, measures of success should accommodate a broad range of influences on water quality, such as commodity prices, farm bill programs and other USDA policies, climate change, and natural disasters—both to inform the public and to ensure that the measures are realistic and ultimately functional.

- Program measures also could be linked to the information-providing service of TMDLs. TMDLs can identify the problem, who caused it, how to fix it, and potentially whether there is stakeholder support in the watershed, whether implementation has begun, and whether implementation is being tracked. The CWA 303(d) program also may be able to prioritize waters to be addressed.

- Education is an important part of program success: not just with respect to what information is provided, but also how it is provided—particularly for nonpoint source load reduction when relying on voluntary participation.

- The listing process may be able to identify whether water quality is maintaining or improving as a result of protection or restoration efforts. Good monitoring and feedback loops are critical for identifying the effectiveness of corrective actions, allowing mid-course changes, and ultimately achieving long-term success.

- There are challenges to success posed by the variation in success measurements across programs. All programs should be collectively accountable for water quality restoration and protection success measurements.

- In addition to restoration, protection is critical. Achieving it can be difficult, but also cost-effective.

III. WORKSHOP PROCEEDINGS: SESSION-BY-SESSION DISCUSSION

The 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 participants, which consisted of listing, TMDL, and CWA 319 staff representing 19 states, along with staff from EPA Headquarters, staff representing three EPA Regions, and a representative of ACWA. A complete list of the workshop participants and their affiliations is provided in Appendix 2 of this workshop report. ELI staff also explained how this workshop differs from larger workshops of the past, focusing on a narrower set of issues, intending to analyze the issues in greater detail, and relying more on facilitated discussion than formal presentations to advance collective understanding and solution development.

John Goodin, Chief of EPA's Watershed Branch in OWOW, provided an overview of the agenda arc, from Tuesday's sessions laying the introductory context; to Wednesday's sessions that address the meat of specific nutrient and nonpoint source issues including listing, priority setting, TMDL development, and implementation; to Thursday's sessions that come back to how success is measured with regard to efforts concerning nutrients and nonpoint sources of pollution. Mr. Goodin explained that the nonpoint source issue was the topic of a smaller ELI workshop in 2009, from which useful information and discussion arose. Because of the continued interest in addressing nutrient pollution, the CWA 303(d) program has remained focused on nonpoint source pollution. In addition, he noted that the timing for this workshop is appropriate given the analysis and review that the CWA 319 Program has been doing of their efforts.

Mr. Goodin then discussed the relevance of this workshop to the development of a ten-year vision for the CWA 303(d) program, offering context for evaluating what has been created thus far in the process. He encouraged everyone to familiarize themselves with the outputs sought from the workshop, specifically the compilation of recommendations on how to move forward, what would be beneficial to convey to other states, tribes, and territories and to other programs relevant to addressing nonpoint source pollution in the CWA 303(d) context.

Session 1: A Ten-Year Vision for the CWA 303(d) Program

This session featured one presentation. Intended outcomes of the first session included:

- Participants will learn about the status of the development of a ten-year vision and associated goals for the CWA 303(d) program.
- Participants will learn about the role of a ten-year vision in this workshop and the role of this workshop in shaping the vision with regard to NPS and nutrient pollution.

Eric Monschein, Associate Branch Chief, Watershed Branch: Evolution of Clean Water Act Section 303(d) Listing and TMDL Program Vision

Mr. Monschein began by asking how many of the participants had been involved in the discussions regarding the development of a ten-year vision for the CWA 303(d) program. Roughly half of the state participants raised their hands. With that information, he proceeded to give a brief history of the CWA 303(d) program and how it has come to the point of vision development. Mr. Monschein explained that the history of the program can be divided into several periods: (1) the early years – 1972 to the mid-late 1990s – typified by limited state and EPA activity, 40 lawsuits, and a focus on point sources; (2) the litigation response and attempted rule making era – late 1990s to early 2000s – a ten-fold increase in TMDL development, the Perciasepe guidance (pace of 8-13 years and reasonable assurance), and the 1998 National Advisory Council for Environmental Policy and Technology Federal Advisory Committee report on the national TMDL Program; and (3) the implementation era – early 2000s to present - role of TMDL pace litigation diminishes and is replaced by litigation focused on TMDL content, and pace serves as the primary measure of program performance.

Mr. Monschein noted that while the program has done a great job of exceeding performance measures, many people are recognizing that pace alone is not the best measure of the program. He explained that there have been developments in the process as well: guidance on addressing mercury in the context of listing, use of Category 4b, and ocean acidification; a push for 100% timely submission of lists; development of technical tools and memos addressing stormwater (PCBs); the nearly complete Watershed TMDLs Handbook as well as the TMDLs to Permits Handbook for Stormwater; among many others. Mr. Monschein also described research on the effects of TMDLs, including a Region 5 statistical sample indicating a large majority of TMDLs being "partially" implemented, a review of CWA 319 Success Stories showing that TMDLs are associated with 54% of them, and a Kent State University study of TMDLs in Ohio and West Virginia that revealed 19% of waterbodies with TMDLs have been partially recovered and 3% have been fully recovered.

Mr. Monschein proceeded to list several key emerging program realities, such as challenges to achieving 100% on-time review and submission of state lists, achieving comprehensive assessment of waters, and developing TMDLs for the over-40,000 waters that still need one or more TMDLs. He also noted that as TMDLs age, more will require revision; lawsuits on individual TMDL components will still require program attention; states continue to use varying scales (segment vs. watershed); and pace, while important, does not fully reflect program success. More broadly, he explained that partial and full recovery lags despite greater TMDL implementation: nonpoint source load reductions are lacking, CWA authority does not extend to implementation, and state and federal funding is static or declining.

Mr. Monschein then turned to the CWA 303(d) program vision. On account of these noted changes and challenges, he said that EPA feels that the program is generally pointed in the right direction but needs to make adjustments: directed evolution, not revolution. He stated that developing the vision requires input from the states and stakeholders. Mr. Monschein explained the framework of the vision as a long-term view of what the program is to become; to stretch the program's capabilities; and establish specific, measurable, achievable, realistic, and time-based

goal statements of intended future results. He then laid out the schedule for development and review as well as the current version of the working draft vision. He explained that part of what he takes from the vision is what is there (e.g., more states prioritizing waters and watersheds where it is important to do work and the idea of integration) as well as what is not (e.g., historic emphasis on pace). Mr. Monschein then noted the vision issue threads and the working draft goal statements, which cover prioritization, protection, alternatives, integration and coordination, public engagement, and assessments. He concluded his presentation by describing the role of this workshop in the visioning process: identifying how the working ten-year vision could address nonpoint source- or nutrient-related impairment issues and how addressing nonpoint source- or nutrient-related impairment issues could support achievement of a ten-year vision.

Session 1 Discussion

The presentation was immediately followed by a discussion of the timing of the vision's review and completion. Mr. Monschein noted that EPA would like to have the draft vision and goals finalized by the end of June, but he acknowledged that it may take longer than anticipated.

The conversation then turned to what will be done with the vision once completed. Mr. Monschein said that the EPA Watershed Branch will factor it into annual work planning, use it to identify products that the Branch needs to start or continue working on, and use it to guide revision of the existing program measures, likely aiming for FY14. Another EPA representative explained that the vision would set the target for ten years from now, with the next step being the setting of milestones for EPA, states, and stakeholders. He followed by noting that EPA may find that national policies need to change to, for example, allow focusing on protection as much as restoration; it is an opportunity to sort out what this program wants to do and how to get there.

A discussion opened regarding one of the slides in the presentation concerning the delivery of state lists. Some state participants commented that the pace of EPA list approvals also is not enviable. One participant noted that his state's list was submitted in April but not approved for a year. EPA participants noted that it is an issue being discussed and actually has been highlighted recently as a result of a court decision in California, where the judge opined on the level of review necessary by EPA. They went on to say that EPA will be looking at opportunities to improve its side of the equation, including revisiting the appropriate level and rigor of EPA review. One EPA participant explained that the draft 2014 integrated reporting guidance may be an opportunity to address this topic in part.

Questions arose concerning measures, specifically whether EPA is allotting sufficient time to gather information to perform against new measures and how much deference would be given to states to set their local priorities, as opposed to regional or national ones. Mr. Monschein responded by saying that the CWA 303(d) program does not have authority over everything that happens after the list and TMDLs, so the challenge is to develop measures grounded in program authorities. He went on to say that priority-setting may be an important part of that alternative and prioritization would happen at the state level, with the integrated report being one place where states can articulate those overall priorities. Mr. Monschein cautioned that if the program moves away from a pace measure, it will have to have a good replacement.

Other comments included a call for credit for things that the state programs already are doing, a suggestion to consider in the visioning process components of the 2000 rule that never got off ground, a statement that the vision actually transcends the CWA 303(d) program and should have buy-in from a wide range of relevant parties, and a declaration that the vision is important for moving out of the consent decree era. Mr. Monschein concluded by noting that there has not been a formal vision of this nature for the CWA 303(d) program in the past given that much of the program history and direction had been shaped by litigation on the pace of TMDL development.

Key Points Raised:

- With much of the TMDL pace-driven litigation addressed, the CWA 303(d) program has the opportunity to recalibrate program objectives, and the ten-year visioning process is the means of laying out that path.
- Broad engagement will be necessary for the vision to serve its purpose and meet the goals to be reached.

Session 2: Implications of the CWA 319 Program

This session featured one presentation. Intended outcomes of the second session included:

- Participants will learn about the results of the CWA 319 Program Evaluation Study and the direction of the CWA 319 Program.
- Participants will identify and learn about ways that the CWA Section 319 Program could support nutrient- or NPS-related objectives of the CWA 303(d) program.
- Participants will identify and learn how the CWA 303(d) program could better support NPS control implementation in the CWA 319 Program.

Lynda Hall, Chief, Nonpoint Source Control Branch: Update on CWA 319 Program Improvements

Ms. Hall began by noting that nonpoint sources are the leading cause of water pollution in the U.S. and that 76% of all TMDLs address waters that are impaired by nonpoint source pollution. Still, she said, there has been a downward trend in funding for the CWA 319 Program, from about $200 million annually in this last decade, to a reduction in FY11, to the President's FY 12 proposed budget of $165.8 million. She explained that since 1999, CWA 319 funds have been divided into two halves: base (used for a wide range of purposes eligible under the Act) and incremental ($100 million focused on implementing TMDLs and watershed-based plans to restore impaired waters). Ms. Hall said that states may use at least 20% of both base and incremental funds to develop watershed-based plans and nonpoint source TMDLs. She then noted the Office of Management and Budget interest in increasing the fiscal accountability of the program and that there has been a suggestion to have 75% of CWA 319 funds to be used exclusively to implement TMDLs, which would have a devastating impact on state nonpoint source programs. Ms. Hall explained, in response, EPA requested an opportunity to first conduct a study to determine how CWA 319 funds are being used and to then make recommendations on how to strengthen the program in the future. She noted that the expected completion date of the

EPA study is the end of September, with intent to begin to implement program reforms in FY12 and finish in FY13.

Ms. Hall then proceeded to share the key findings of that CWA 319 study. First, the study demonstrates that base funds are critical for effective state nonpoint source programs, including the support of core staff, enforcement of state regulations, implementation of statewide initiatives, and oversight of watershed projects. Second, base and incremental funds yield on-the-ground results, notably implementation of watershed-based plans and TMDLs. Third, many state nonpoint source programs are out of date and updating the state programs will reinvigorate the CWA 319 Program. Fourth, about 20 states provide significant state funding beyond the required state match. Fifth, the Clean Water State Revolving Fund is under-used for nonpoint sources, and a few states serve as models. Sixth, CWA 319 money leverages significant USDA funding. Seventh, she noted that satisfactory progress reviews hold promise for improving consistency of program management.

Ms. Hall then discussed the recommendations for program enhancement stemming from the study, including using the satisfactory progress and the program plan updates to strengthen program accountability, establishing regional competition for the reallocation of unliquidated balances, improving program management and achieving environmental results, increasing leverage of Clean Water State Revolving Funds and other sources of state funding, measuring success and improving program accountability; and improving the partnership and collaboration with USDA and other federal agencies. She noted that a series of workgroups already are underway to follow up on these recommendations.

Ms. Hall gave general comments about the preliminary findings of the GAO report on the CWA 319 Program. She noted that overall GAO's survey findings reflect positively on the program, with 72% of project managers reporting that their project accomplished all objectives originally identified in the project proposal. She also said that GAO did not conduct a full review of the CWA 303(d) program, focusing only on watershed-based projects implemented with CWA 319 funding. Ms. Hall explained the report's recommendations for EPA—provide guidance to EPA Regions on oversight and review and revise program measures to reflect the overall health of targeted water bodies and focus on protecting high quality water bodies. She also explained the report's recommendations for USDA—NRCS should obtain information on NRCS-funded conservation practices that may negatively affect water quality and ensure water quality protection.

Ms. Hall concluded by noting that both the TMDL and CWA 319 Programs are going in new directions, and there are many opportunities for synergies, such as joint planning and priority-setting, TMDLs in nonpoint source priority watersheds, nonpoint source-"friendly" TMDLs, and tools for TMDL and nonpoint source practitioners.

Session 2 Discussion

The discussion began with the issue of collaboration with NRCS. Ms. Hall noted that the understanding with NRCS is that they would coordinate practices with watershed plans and TMDLs, but there are still many things on which to work. One participant explained that due to

new constraints on the CWA 319 Program, that state is currently planning to have monitoring staff only focus on places with plans. Another participant expressed concern that the link between EPA and USDA may not lead to change, that despite these efforts USDA may not provide anything more than the voluntary planning process where a landowner can decline participation.

The conversation then turned to how to improve the status quo by boosting voluntary participation. Several participants stressed the importance of education and outreach. One participant noted experience with the Mississippi Basin Initiative, where two million of three million dollars had to be returned because farmers did not understand why they had to do certain things. In addition, she noted that one cannot report on success with education and outreach. Ms. Hall concurred and added that it is hard to describe success for that kind of activity; explaining the narrative better will help people connect the dots and increase buy in. One participant noted that the farm bill provides a great deal of money but the trouble with implementation is the need to have "boots on the ground" – staff that could help farmers make use of the farm bill financial assistance.

Discussion then moved to the merits of the voluntary approach. Several participants noted the value of working within that system, the successes that have been realized, and the adverse impact that efforts to regulate can have on collaboration with farmers. One participant noted that her program has had support from USDA and farmers as long as a voluntary approach is taken, and those collaborations have actually led to farmers asking EPA for advice, including on monitoring. She also said that farmers viewed the Concentrated Animal Feeding Operations (CAFO) permit as EPA pushing more regulation, which shut down discussions.

Participants also touched on how CWA 319 funds will be able to be used in the future and what pollutants the Program is considering when defining success. Ms. Hall explained that flexibility in the use of CWA 319 funds has been very important to its success, as it can fill gaps. She said that she expects to end up with a base state program support fund and then program implementation at roughly a 50/50 split. One participant noted that the CWA 319 Working Group has discussed a laundry list of scenarios, including how and if CWA 319 funds can continue to support TMDLs. In response to an inquiry, Ms. Hall also detailed the pollutant focus of the CWA 319 Program, stating that success considers all pollutants, but there is a particular focus on nutrients and sediments in USDA initiatives. An EPA Regional participant noted that all relevant pollutants to gauge TMDL implementation are being tracked, including metal reductions.

The conversation ended where it began, with the issue of collaboration, but this time focused on the relationship between the CWA 319 Program and TMDLs. One participant noted that a common obstacle facing some CWA 319 Program staff is that TMDLs are not specific enough for implementation: shortcomings in prioritization and specificity regarding where things should be done. Another participant explained that for TMDLs, it is the math and the path, that the TMDL Program has not done a good job with the path as it focuses on pace of TMDL development. He said that it leaves TMDLs not that useful and suggested that CWA 319 funds be used to revisit the path. Another participant identified three critical pieces to CWA 319–TMDL collaboration: a common vision and measures, improved reasonable assurance, and

integrated priorities for prioritizing watersheds? The session concluded with two anecdotes of success. One participant explained that his state had established a targeted basin approach to funding connected to the monitoring cycle, which kicked off collaboration with NRCS. Another participant noted that her state is requiring an implementation plan in TMDLs for those TMDLs that use CWA 319 funds. She said that stakeholders are involved from the start, which has been vital to gaining and sustaining momentum. She explained that the integration has elevated the quality of CWA 319 project proposals and reduced opposition to TMDLs.

Key Points Raised:

- The TMDL and CWA 319 Programs are going in new directions, and there are many opportunities for synergies. These include joint planning and priority setting, the use of TMDLs in nonpoint source priority watersheds, the use of nonpoint source-"friendly" TMDLs, and the development of tools for TMDL and nonpoint source practitioners.
- Education and outreach are important in achieving and measuring success in nonpoint source load reduction, particularly given the absence of regulatory authority and the need to rely on voluntary participation.
- TMDLs could better support the efforts of the CWA 319 Program by better prioritizing waters to be addressed and specifying what needs to be done to address nonpoint source pollution.
- CWA 319 funds can be critical to TMDL development and to successful implementation; however, potential changes to the CWA 319 Program with respect to how these funds can be spent are under consideration.

Session 3: How the NPS Landscape May Influence Listing/TMDLs

This session featured three presentations. Intended outcomes of the third session included:

- Participants will identify and learn about factors that may facilitate addressing NPS- or nutrient-related impairment.
- Participants will identify and learn about factors that may hinder addressing NPS- or nutrient-related impairment.
- Participants will identify and learn about how to account for these factors in CWA 303(d) program activities.

Dr. Larry Sanders, Professor and Extension Economist, Oklahoma State University: Setting the Stage for Consideration of Long Term Issues for Nutrient Management & Water Quality

Dr. Sanders began by identifying the wide variety of issues that he intended to cover in his presentation: farm bill and commodity prices, weather projections, evolving dietary needs, urban-rural fringe pressures, ecosystem services as opportunities, macroeconomic issues (including trade), and identifying the objectives being sought. He explained the farm bill as the social contract with agriculture, and he noted that the contract is changing. Dr. Sanders said that the Farm Bill is supposed to be renewed this year, but it probably will be pushed off into 2013. He noted that the Obama budget wants to cut $40 billion in the next 10 years, primarily from

commodity programs and less from conservation and food stamps/SNAP; with less money on the table by 2013, the landscape could change. He suggested that reduced commodity program funding could mean that more producers will abandon Conservation Compliance, and reduced conservation program funding could mean that more producers will return marginal land to production.

Dr. Sanders explained that commodity prices are also an important factor in agricultural decision-making. He said that ethanol has fuelled increases in corn prices, and overall prices and yields are relatively good right now, except in drought problem areas. He noted that some people see the data on commodity prices and net farm income and think that government support is no longer necessary for agriculture. But Dr. Sanders explained that the cure for high prices is high prices: high prices will bring more resources into production, raising output, driving prices down, and resulting in less stability. He noted it is only a matter of time.

Dr. Sanders went on to discuss the potential implications of climate change. He noted that it could have implications on certain parts of the country, for example, in the short to intermediate term, climatologists are predicting 3 to 15 years of the ongoing drought pattern in the Oklahoma/Texas region. Dr. Sanders explained that temperature increases are likely to reduce yield potential by speeding maturation of annual crop plants and extreme high temperatures may cause more severe crop losses. He said that higher temperatures increase precipitation variability, which increases floods and droughts as well as instability resulting in risk to crops/livestock, ultimately making management planning more difficult. He also noted that higher temperature and precipitation variability are likely to increase the spread of pests/diseases and weeds/invasive species, which can lead to increased chemical use, possibly increasing health, environmental, and economic risks. In addition, he said these variables could shift ranges of optimal production centers for specific crops. Dr. Sanders explained that climate changes are projected to reduce global agricultural productivity 3% to 16% by the 2080s, with total U.S. agricultural income down 10.9% (25% to 35% decline in the southeast and southwest somewhat offset by increases in northern states). He went on to say that risk and uncertainty require adaptation and mitigation options as well as consideration of public and private investment.

Dr. Sanders then explained that American diets are out of balance with food recommendations, consuming an excessive percentage of meats and grains and not enough dairy, fruit, and vegetables. He posed the question to the group of what a correction of this dietary tendency would mean for nutrient management and water quality.

Dr. Sanders concluded with commentary on the macroeconomy and linkages to agriculture. He explained that in this down economy some farmers are trying to squeeze more out of their agricultural endeavors (having fewer opportunities for a second job), which could lead to more intensive agriculture. He also noted that the U.S. is importing and exporting more than ever, and the surplus is bigger than it has ever been, driving up prices and driving desire to take land out of conservation and put it into production.

Jimmy Bramblett, Chief of Staff, Regional Conservationist, NRCS: NRCS National Water Quality Initiative (NWQI)

Mr. Bramblett began by defining the goal of the NRCS National Water Quality Initiative as removing streams and other water-bodies from the 303(d) list, stopping contributions to impairments, and adequately addressing TMDL plans. He said that every state must select between one and three watersheds to participate in the Initiative. He explained that the selected watersheds must be at the 12-digit HUC scale and have waters on the 303(d) list, identified as threatened, with a TMDL Plan, and/or otherwise deemed critical, and such impairments result from agricultural sources and NRCS can effectively address them through voluntary action. He described the selection process as beginning with state water quality agency input and then involving state technical committee input before a final decision is made by the state conservationist. Mr. Bramblett said that eleven pollutants are eligible for the initiative. In selecting watersheds, he noted that states should emphasize nutrients, including low dissolved oxygen, ammonia, and algal growth as well as sediment, including turbidity. He said that other eligible pollutants are pesticides, temperature, salinity, habitat alteration, and cause unknown – impaired biota.

Mr. Bramblett then explained the ranking criteria for applications. He said that each application is screened high, medium, or low, and beginning with high priority applications they are prioritized through a list of questions. He noted that national program questions account for 25% of the total score and are meant to provide consistency, state questions account for 50% of the total score and are meant to convey specific NWQI objectives, and local questions from state technical committee input account for 25% of the total score.

Mr. Bramblett said that $33 million (5% of EQIP funding) is being dedicated to this effort. He explained that states must establish ProTracts sub-accounts and are allowed to contribute more than the original 5% of EQIP funding toward this purpose, but any unused portion of the original 5% is returned to NHQ for re-allocation to other states for this purpose. He noted that EQIP does not costshare anymore since it is too complicated; instead they offer payment schedules. Mr. Bramblett said that there is some flexibility to cost estimates, because it is a new initiative, but not much, and on a very limited basis do they add practices/scenarios.

Mr. Bramblett concluded by saying that they have high interest in figuring out how to communicate information. He noted that they have developed a water quality index for agriculture to determine what impacts they are having on the edges of fields.

Lisa Duriancik, Coordinator, Conservation Effects Assessment Project, NRCS: The Conservation Effects Assessment Project (CEAP): Overview and Watershed Scale Assessments

Ms. Duriancik began by explaining the origin of CEAP. She said that throughout the federal government the Office of Management and Budget requires outcome-based reporting through the PART process, and in the early 2000s, NRCS had data on practices applied, but did not have enough data on the water quality outcomes of conservation practices. In addition, she noted that while the conservation title of the 2002 farm bill significantly increased funding, Congress and the public wanted more information on the benefits of the programs (as they also did of the

CWA 319 Program at the time). But, she added, the true value of conducting the assessments for NRCS has been to better understand how to effectively and efficiently implement conservation programs to protect environmental quality.

Ms. Duriancik identified the goals of CEAP as (1) estimating conservation effects and benefits at regional and national scales, (2) quantifying and establishing the scientific understanding of conservation practice effects at watershed scales, and (3) improving efficacy of conservation practices and programs. She said that collaboration is critical to CEAP achieving these goals; the CEAP Interagency Steering Committee includes USDA (NRCS, ARS&NAL, NIFA, FSA, NASS, ERS, USFS), USEPA, DOI (USGS, BLM, USFWS), NOAA, and NASA. She noted that over 60 agencies, universities, NGOs, societies, and others are involved in aspects of CEAP grassroots efforts.

Ms. Duriancik then proceeded to provide the key findings from CEAP: conservation practices work, comprehensive planning is needed because suites of practices work better than single practices, targeting critical acres significantly improves effectiveness, and critical conservation concerns still exist. She also explained the key questions regarding watersheds that CEAP is seeking to answer: effects of location, suites, and timing of practices, interactions among practices; socio-economic factors that facilitate or impede implementation and maintenance; and the optimal suite and placement of conservation practices. She noted that the Watershed Assessment Studies component of CEAP is focused on smaller scales (8- to 12-digit HUCs) with long-term databases (10 to 30+ years).

Ms. Duriancik concluded by discussing specific studies and projects. She explained that 42 CEAP watershed studies around the country were funded and that most are now completed. She said that almost every CEAP watershed has at least one CWA 319 study and that they took advantage of it and greatly appreciated the investment that EPA had made in collecting water quality data resulting from BMP implementation. She noted that targeted information was very important, the key being to know the hydrologic pathways. She also introduced a project on which CEAP is working with Colorado State University: eRAMS, an interface to help digitize a field and to present producers with additional information about the outcomes a producer could have on choosing alternative management practices. She said that it helps determine which decisions would have the greatest effect on producing desired water quality outcomes.

Session 3 Discussion

The discussion again included the topic of the voluntary approach. One participant asked the panel if there are alternatives to incentivizing participation via funding. Mr. Bramblett responded agreeing that it is imperative to find means of incentivizing participation in addition to financial resources; regulatory certainty has a lot of promise. Ms. Duriancik said that a CEAP study did a key informant interview across 13 watersheds and found that ¼ of producers adopt conservation primarily because of stewardship values alone, sometimes because of religious values, but she noted that the financial assistance provided by NRCS is by far the biggest factor in achieving adoption. Dr. Sanders added that part of the evolution of the concept of BMPs is due to the fact that it makes economic sense and makes farmers feel like better stewards. He stressed that more of the research on BMPs is being done on farms in recent years, and while

some say that it weakens scientific foundations, it has the benefit of increasing interest and awareness among farmers.

Relatedly, one participant commented that sometimes it is not those who manage the critical areas who want to be involved in these programs. Mr. Bramblett responded by saying that the adoption of conservation practices is a sociological phenomenon and not to be surprised if there are strange decisions made in NWQI, as there are probably underlying reasons for this. He said that at the end of the day they go where they can be successful.

A participant asked whether CEAP has tried to determine value of benefits (bang for the buck), to which Ms. Duriancik replied that the only place where they have done valuation is with USGS in lower Mississippi Alluvial Valley, where a CEAP partner, Duke University, did the valuation of ecosystem services from wetlands.

Another participant asked whether NWQI would be flexible as to the watershed scale used, to which Mr. Bramblett answered yes, because they do not want to let process cause them to miss out on low-hanging fruit. But he said that there would need to be a rationale and justification since the 12-digit scale is small enough to demonstrate water quality improvements and it creates consistency for the program.

Another participant asked how NRCS will mitigate displacement of other EQIP dollars in a watershed and what the time for measuring success is. Mr. Bramblett said that the time associated with measuring impact on water quality ideally will be annually. As far as displacement of EQIP funds, he said that they are locally led in their approach, so resources can get moved from one community to another. He noted that they acknowledge it as an issue but they can manage it with the authority state conservationists have over their budgets.

The panelists each provided key remarks near the end. Mr. Bramblett said that more money will be associated with the NWQI effort in the future, and more pollutants may be added to the list. Ms. Duriancik cautioned that WRP is one program that is thought of as less popular, as is any program that takes land out of production. Dr. Sanders suggested that the sooner that people move toward voluntary efforts, including environmental markets, the sooner there will be an increase in practice adoption. He noted that he thinks there will be a growing local interest to seek out farmers to help local people solve some of their water problems.

Key Points Raised:

- The farm bill, commodity prices, and the broader economy all significantly influence the amount of land put into production and how it is used, and thus all have impacts on water quality.
- Climate change may reduce yield potential and cause more severe crop losses. It may create greater risk to crops and livestock as well as shift where crops can and should be grown. It is projected to decrease overall national agricultural income. These effects could drastically change impacts to water quality from agriculture throughout the country, and the uncertainty makes water quality planning difficult.

- State water quality agencies influence and support NRCS funding decisions, whether through the identification of critical watersheds for NWQI or through the collection of data on BMPs relevant to CEAP watershed studies.

Session 4: Nutrient- & NPS-Related Vision Elements

Intended outcomes of the fourth session included:

- Participants will identify and learn about how a CWA 303(d) program ten-year vision could address NPS- or nutrient-related impairment issues.
- Participants will identify and learn about how addressing NPS- or nutrient-related impairment issues could support achievement of a CWA 303(d) program ten-year vision.
- Participants will establish the beginnings of guiding principles for addressing nonpoint sources of pollution through the CWA 303(d) program.

The discussion in this session centered on several aspects of a ten-year vision in the context of nonpoint source pollution. The conversation thread focused primarily on collaboration and from there branched into the value of TMDLs relative to alternative approaches, the role of TMDLs in prioritizing restoration and protection objectives, the value of planning in light of adaptive management, and the prospects for thoroughly incorporating CWA 319 into the vision or creating its own vision.

The discussion was prefaced by a list of challenges presented by nutrient and nonpoint source pollution. One participant noted that if cooperation is purely voluntary then there will be free riders. Another participant added that those free riders may be a big source of the pollution and the key to meeting water quality standards. One participant said that not knowing the thresholds for when nutrient concentrations are harmful to the aquatic environment adds complexity to management. Another noted that not understanding BMP effectiveness hinders solution planning. Yet another added that the farmer is not always the landowner, reducing practitioner interest in long-term sustainability.

For much of the session, the conversation centered on collaboration, in large part the collaboration between the CWA 319 Program and the CWA 303(d) program. A fundamental question posed by one of the participants was how the TMDL Program can help the CWA 319 Program. One participant said that in her state TMDLs prioritize where CWA 319 projects take place and how they are structured and that the quality of project proposals rose significantly when they began requiring implementation plans in CWA 319-funded TMDLs. Several participants explained the value of TMDLs in performing analyses, setting goals, and providing structure for marshaling resources.

Discussion turned slightly to whether the information and direction provided by TMDLs could be realized through alternative approaches, particularly watershed management plans. One participant noted that TMDLs are the first two elements in a watershed plan but the ideal approach would include the benefits of the TMDL Program and flexibility of management plans. Another participant said that her state requires TMDLs to be adopted by the legislature, so watershed management plans provide an easier pathway as they can be implemented

immediately. One participant suggested that the challenge in this inquiry is the variation in circumstances between states. She noted that in her state TMDLs are a low priority due to the expense; when the pollution problem is not a complex one they go straight to implementation, receive TMDL credit, and produce a watershed plan of an average of 8 pages. Another participant questioned the value of extensive planning when adaptive management is such a recognized and accepted aspect of appropriate management now, particularly in light of the influences of market, crop, and land use changes. He suggested that money might be better spent on implementation.

A number of state participants noted that TMDLs are a vital part of the process and can't fully be replaced by alternative mechanisms. One participant said that TMDLs provide technical rigor that watershed plans do not. Another expressed concern about the technical capacity of local watershed groups and others for the analysis necessary. Yet another added that even when those groups do have the capacity, TMDLs validate their efforts. A fourth participant noted that the process is important and his state tries to get the best of both worlds by writing TMDLs that can be dropped into watershed management plans. A fifth explained that in his state the local watershed plans incorporate state planning and state planning is timed around local watershed planning, but the structure for all of it is provided by TMDLs. A seventh participant capped the conversation by noting that, in his experience, without TMDLs there is no organization or process, only good intentions, leading to little success, but likewise TMDLs cannot be viewed as the end product.

The conversation also covered the challenge of handling sentiments of inequity in mixed-source nutrient problems. Part of the challenge is created by the design of TMDLs. One participant noted that there is a question of equity between load and waste load allocations. Another participant added that TMDLs are targeted but not sufficiently spatially explicit, particularly to fairly address dynamic nutrient problems. Several participants referenced education as a means of correcting those perceptions of inequity of burden that are unmerited. One participant noted that people need to understand that everyone contributes to the problems and everyone should be responsible for bearing the cost of the solution. An approach tried by several states involved setting base line conditions on all TMDLs, and they found it to increase the perception of equity. Yet, a few participants highlighted the challenge in equity presented by the lack of regulatory authority over nonpoint source pollution. One participant noted the inequity in carrots for nonpoint sources and sticks for point sources. Another participant explained his experience with the divide within agriculture, some are good stewards and do their part voluntarily while others are being paid, and then there are those who will not participate even with full cost share. One participant explained that in some cases the key is understanding incentives, and for farmers that can be community ties, such as the impact that a particular practice may be having on a neighbor.

One participant summarized the conversation with his experiences and the current efforts of his state. He explained that they are doing much research, precision and targeting work, and civic engagement. He expressed hope that the newly launched agricultural certainty program will provide some of the data that is needed. He noted that there is a big toolbox, but ultimately success relies on accountability. He highlighted the need for compliance from those who are not interested.

Conversation also directly addressed the relevance of the CWA 303(d) program vision to the CWA 319 Program. Several participants requested either a companion vision for the CWA 319 Program or that the Program be more clearly incorporated into the CWA 303(d) program vision.

Key Points Raised:

- Collaboration between the CWA 319 and CWA 303(d) programs is critical in order to better address nonpoint source pollution.
- Since circumstances can vary significantly from state to state and from one water body to the next, a TMDL is not always the most effective tool for addressing a nonpoint source problem. Yet, the analysis provided by TMDLs is important in most scenarios regardless of its source and package.
- Identifying new means of securing participation from farmers who are not interested, even by full cost share, may be critical to meeting water quality standards in mixed source and nonpoint source dominated waters.
- The perception and realities of inequity in water quality management in mixed source and nonpoint source dominated waters are a challenge for the TMDL Program.

Session 5: Approaches to Listing Waters Impaired by Nutrients

Intended outcomes of the fifth session included:

- Participants will learn about current policies for identifying and assessing waters impaired by nutrients.
- Participants will learn about key 'rules of thumb' to improve listings of or more accurately list waters impaired by nutrients.
- Participants will learn about tools that help identify nutrients as the stressors for listings.
- Participants will identify and learn about the current role of response indicators in the listing of waters impaired by nutrients.

Discussion in this session ultimately was defined by a series of related dichotomies: the value of response indicators versus numeric nutrient criteria, addressing phosphorus versus nitrogen, and the focus on state versus national concerns.

The initial question posed to the group was how accurate and comprehensive are the various ways that states are identifying waters impaired by nutrients. Several state participants proceeded to express concerns with the EPA-generated maps indicating progress by states in developing numeric nutrient criteria (included in the workshop background materials), particularly that they do not give states enough credit for what they have been doing with regard to capturing nutrients within the CWA 303(d) structure. One participant noted that his state has multiple TMDLs regarding nutrients that have numeric targets despite not having numeric nutrient criteria. Another participant said that the map titles "Progress Towards…" are inappropriate as they do not demonstrate progress, rather whether or not the criteria have been adopted.

Multiple state participants expressed reservations regarding a general expectation of numeric nutrient criteria. One participant explained that his state has not adopted numeric nutrient

criteria for scientific reasons: while the state has strong science for listing for chlorophyll levels in tidal areas, in non-tidal streams he sees the science falling apart. He added that they address dissolved oxygen in estuarine areas by reducing nitrogen and phosphorus and address dissolved oxygen and chlorophyll in reservoirs by managing phosphorus. Another participant expressed difficulty in listing for nitrogen and phosphorus on account of uncertainty in the science.

State participants emphasized the value of response indicators, some suggesting that response variables are also as useful as numeric nutrient criteria in identifying impairments by nutrients. One participant said that her state lists based on dissolved oxygen because there are threatened and endangered fish runs, and people know about fish not being able to breathe. Another participant noted that his state has nitrogen and phosphorus criteria, but applied only to a few watersheds in the 1980s and '90s to protect reservoirs from eutrophication, and while the numbers are being met, the reservoirs are eutrophic because the numbers are somewhat useless without response indicators.

Discussion then moved to listing based on the pollutant and response indicator. One participant noted that her state prohibits listing purely based on response indicators, that the cause of the pollutant must be identified as well. She said that her state lists for nutrients based on chlorophyll-a and algal growth. Several participants similarly noted that their states require listing for both the response variable and the pollutant. These participants also said that the connection between response indicators and nutrients is not always easy to make, or accurate once made, with corrections being made as to the true pollutant leading up to and during TMDL development.

The discussion then turned to the issue of independent applicability and relationship between the numeric and response variables. One participant noted the interest of states in looking at response indicators in addition to nitrogen or phosphorus concentrations when listing for nutrient impairments. A participant from EPA Headquarters explained that CWA Section 303(d) requires the listing of a water body based on any applicable water quality standard; thus, exceeding one independent criterion, such as total phosphorus, requires a listing regardless of other criteria. EPA and some states are discussing how to design criteria that toggle between or take into account both causal N/P and response variables.

In further response to whether the current listing processes are identifying waters impaired by nutrients, the state participants indicated that they are capturing impairments caused by phosphorous in local surface waters and impairments by nitrogen in drinking water. Debate arose over linking excess nitrogen with impairments in local fresh water systems. One participant noted that phosphorus is the limiting pollutant in freshwater environments; nitrogen is primarily an issue in marine waters. Another participant expressed his comfort with the science linking nitrogen to problems in the Chesapeake Bay and coastal reservoirs but also his discomfort with connecting nitrogen levels to local effects in nontidal waters. Several participants from landlocked states added that in their states nitrogen is not the issue, phosphorus is what impairs designated uses, and their states are prioritizing phosphorus. One participant from a landlocked state said that his state cares about nitrogen, but they do not yet know how much they care since they do not understand it well enough. He noted that they plan to do

nitrogen standards, but in the meantime they are doing a two-year nitrogen study, mandated by the state legislature.

One participant said that the federal interest in nitrogen in freshwater demonstrates the divide between state and federal priorities: the Gulf of Mexico is a priority of the federal government and not a priority of upstream states. He noted that this explains in part the map in the materials distinguishing the large number of Mississippi River basin miles exceeding NARS thresholds for nutrients and the relatively small number of miles deemed impaired by nitrogen on CWA 303(d) lists (several participants also expressed concern with the use of reference data to determine NARS thresholds). Other participants from Mississippi River basin states suggested that it is only logical for states to want to solve their own problems before solving those of others and asked whether a state should be asked to invest its limited resources on a national issue over addressing its own problems. An upper basin state participant said that his state does care about hypoxia in the Gulf of Mexico, and they have set 25% reduction goals for nutrients from all sources as a result. A participant from outside the Mississippi River basin noted that the same controversy over downstream priorities occurs in the Chesapeake Bay and Long Island Sound watersheds, among others. He said that grand TMDLs, like that for the Chesapeake Bay, give states targets that they otherwise would not have on their own.

A few concluding remarks were made regarding the question of how completely the current listing processes employed by states are identifying water quality problems caused by nutrients. One state participant explained that her state has phosphorus criteria for some streams, but its CWA 303(d) list does not include streams with excess phosphorus and meets acceptable dissolved oxygen levels. An EPA Regional participant noted that a state in her region is working on numeric nutrient criteria because the CWA 303(d) list based on response variables now only reflects the worst of the worst.

Key Points Raised:

- There is significant variation across states in the standards and approaches used to capture the impacts of nutrients in CWA 303(d) lists and whether nutrients are noted as the pollutant associated with those listings.
- Many state participants believe that their CWA 303(d) listings fully capture the problems caused by phosphorus, as well as the impairments to drinking water caused by excess nitrogen.
- States rely heavily on response indicators to identify water quality impairments by nutrients. To many, if a response indicator is not triggered (or a water quality standard otherwise exceeded), high levels of nitrogen or phosphorus are not themselves a water quality problem that triggers a listing.
- Excess nitrogen in surface water is seen as a difficult problem to address and one that commonly has a greater impact in marine waters than freshwater. As a result, addressing nitrogen loadings in marine waters can highlight discrepancies between state and federal priorities, and between upstream and downstream priorities. It can even call into question what qualifies as impairment. Some states commented that the ultimate resolution may lie in a "grand TMDL."

Session 6: Setting Program Priorities with Accountability

Intended outcomes of the sixth session included:

- Participants will identify and learn about the obstacles to and opportunities for creating a system of prioritizing TMDL development and implementation that replaces pace requirements.
- Participants will learn about and recommend principles for integrating CWA 303(d) priorities with other priorities, for balancing TMDL development and implementation, and for balancing state priorities with multi-state priorities.

During this session, discussion focused on the challenges with current pace requirements and various options for replacing pace. Questions arose about what exactly states should be prioritizing and a list of factors for measuring success was developed. There were many who commented that a successful means of prioritization and success measurement must allow for tailoring to the unique circumstances of each individual state.

The limitations of the current pace approach were widely discussed. One participant suggested that pace requirements discourage evaluation of past TMDLs, that the focus on future targets means that less time is spent working on ensuring the continued success of past TMDLs. Another participant said that there is no point doing many TMDLs if there are not sufficient resources available to implement the plans. She noted that her state is very successful in garnering local input on TMDL development through public meetings; however, the public expects something to happen following TMDL development, and failing to implement TMDLs can endanger public trust in the program. A participant from EPA Headquarters agreed that bean counting cannot be the sole measure, that simply tallying completed TMDLs was useful as a driver in the past but now an alternative to pace is needed to meet the country's water quality goals.

Discussion of the challenges of pace brought up issues of prioritization. Many states reported a backlog of TMDLs, particularly those states still working under consent decrees. One participant claimed that current pace requirements meant that his state prioritizes those TMDLs that are relatively easy to do. For example, his state is currently working on a Mercury TMDL that he might not have chosen if it weren't for bean counting. Another participant explained that her state undertook a phosphorus TMDL that took ten years but only earned 3 "beans." A third participant explained that when he turns in his CWA 303(d) list, he identifies low, medium, and high priorities, but prioritization could go beyond the list and consider protection. A participant from EPA Headquarters added that his understanding, based on conference calls regarding the new vision for the program, is that prioritization is not being thought about solely in terms of the CWA Section 303(d); rather it is in terms of effective CWA program integration.

The discussion then turned to how to improve the current situation. One participant said that her state currently requires a list of the TMDLs that will be done over the next three years. She noted that she would prefer a prioritized list of activities that does not include hard deadlines, as some activities may be extremely important but may take longer than anticipated. She added that her state has created a basin-wide planning system that is implemented every five years and that she would like some kind of bean for that accomplishment. Another participant suggested that

states create strategic plans to meet goals, some of which may focus more heavily on TMDLs and others less so. A third participant said that EPA should not establish the state priorities themselves, but instead only check that those priorities are being met.

Many participants also discussed their respective state's current attempts at developing more effective criteria for prioritization and also for determining success. One participant mentioned that she has staff that work with local groups on CWA 319 implementation. Other participants agreed that general work beyond TMDLs (e.g., revising criteria) should count toward success. One participant stated that pace is just one piece of the larger picture, thus it should be included in any metric but not be the driving component. One participant noted that his state realizes that getting TMDLs done is just one part of the puzzle so they are creating a statistic that encapsulates all the TMDLs on which work currently is being done. He said that he believes that this approach gives the public a more accurate sense of the work being done. Another participant's state has created a strong scoring criterion that looks at the TMDLs completed annually in terms of the number of watershed groups, public participation, historic cost share database, water quality, how close waters are to delisting, recreational use, bacteria, and more. Another participant suggested that the CWA 319 prioritization method be adopted – priorities for a given year are set and success is measured by the extent to which these priorities are met.

Together, the group developed a list of core factors that should be taken into consideration when assigning priorities and measuring success. Many participants emphasized that the list encapsulates only the core factors and that each state should be able to adapt the list to their own unique situation, particularly when assigning weight to different priorities. The list consists of:

- Human health
- Local leadership and capacity
- Data availability
- Percent of the watershed impaired
- Current load
- Proximity to population
- Watershed schedule
- Ability to meet water quality standards
- Economic impact
- Percent of state covered by similar impairment
- Downstream and interstate concerns
- Number of CWA 303(d) listed causes
- Staff availability
- Number of stressors and impacts
- Political pressure
- Litigation likelihood
- High value resources
- Ability to measure progress
- Regulated vs. unregulated sources
- Credit for all work underway
- Revisiting old TMDLs

- Critical areas
- Infrastructure on the ground
- Projected land use change
- Complexity of TMDLs
- Economic benefit of action
- Public support
- Type of impairment (difficulty)
- New or increased discharges
- Recovery potential – the aforementioned list of factors is crosswalked with the indicators used for the recovery potential screening analysis in Appendix 4

Key Points Raised:

- The use of pace as the guiding principle for both setting priorities and measuring success is inadequate.
- To find a better alternative, significant thought must be put toward what is being prioritized and why.
- Pace should be one component of a multi-component metric for evaluating priorities and success. System implementation and flexible strategic planning should play key roles.

Session 7: TMDL/Other Programs & Nutrient Reduction Strategies

Intended outcomes of the seventh session included:

- Participants will recommend principles for how TMDLs can support the development and implementation of state nutrient reduction strategies, particularly in setting load reduction targets.
- Participants will learn how to develop nutrient reduction targets in TMDLs or other implementation mechanisms.
- Participants will identify and learn how nutrient reduction could be accomplished with or without TMDLs.

The session began with discussion of the nutrient reduction strategies in place or under development in different states. The answers varied significantly. One participant noted that her state is implementing its nutrient strategy, which involves developing suites of BMPs that go with land uses that deliver nutrients. She added that compliance is mandatory, or else a fine is levied, and compliance is presumed if BMPs are implemented. She also said that the performance standards are visual, such as untrampled areas between water and animals, no channelization, and presence of native plants.

Another participant explained that TMDL, nonpoint source, watershed program, and monitoring staff regularly convened but could only agree to plan to plan. She noted that a few of them felt that education and voluntary activities were the most realistic means of reducing nutrients, but the scientists demanded more data. She added that the planning path has not been approved and TMDLs do not have an explicit role thus far.

A third participant noted that his state is preparing a nutrient reduction strategy, but the development of the point and nonpoint strategies is being done completely separate from one another. His department is preparing the point source part of the strategy, with the agriculture department having been selected to do the nonpoint source part. He noted that the nonpoint source part is being developed without involvement of his department or environmental groups.

Several states noted their numeric nutrient criteria. One participant said that her state's numeric criteria for total nitrogen and total phosphorus for lakes and freshwater streams is not yet implementable. She added that they are working on numeric nutrient criteria for estuarine areas. Another participant noted that her state has had numeric chlorophyll criteria since 1979, which they use for restoration and protection from phosphorus and nitrogen.

Discussion turned to the Nutrient Framework Memo[1] and whether and how it has been incorporated into processes and decisions regarding nutrient reduction. One participant explained that before the memo his state knew that it had too many nutrients in its water and was espousing that nutrient reduction is more important than finding the number. He said that after the memo they repackaged their work into the context provided by the memo so that EPA knew what they were doing. He noted that they set up TMDLs to gather information and set the stage for adaptive management: setting endpoints, taking a first cut at allocations, setting up a sequence of implementation actions, and toggling between point and nonpoint sources. He added that his state is in the process of setting reduction targets, likely to be based on what they think technology will do on point sources. He explained that the biggest item in the repackaging was getting agriculture to buy-in to the process. Several participants noted that their states are accomplishing most if not all of the elements in the memo, but not necessarily exactly as written in the memo. One participant said that now that his state has demonstrated what it is doing element by element, it is setting milestones with dates and phases.

The session concluded with a lengthy discussion of the interrelationships between TMDLs and nutrient strategies. One participant noted that his state's plan and tracking mechanism are being built off of major watershed HUC-8 TMDLs related to nutrients. Another participant said that in her state TMDLs play the role of coordinating strategies due to their links to water quality standards and implementation. A third participant explained that the Chesapeake Bay TMDL defined her state's nutrient reduction strategies. A fourth participant noted that one of the values of TMDLs is as an authority for state order, a means to organizing the actions of different agencies toward a common end. He said that in his state, the Department of Forestry and Department of Agriculture are asking for TMDLs specific enough to show how to address loads. Several participants reiterated that the detail and scientific rigor behind a TMDL make a significant difference in what can be accomplished, and in many cases older TMDLs created under a consent decree are less useful for that reason. Another participant suggested that the same modeling used for TMDL development would be helpful in creating a nutrient management strategy.

[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).

Participants also noted the value that nutrient management strategies have for TMDLs. One participant explained that the nutrient management strategies in her state are broader than TMDLs and help facilitate general collaboration with the Department of Agriculture, NRCS, and others with influence over TMDL implementation. Another participant said that strategies open up a bigger toolbox and show when TMDLs fit in or when other approaches are okay.

Key Points Raised:

- The status of nutrient reduction strategy development varies significantly from state to state, both in progress and form.
- States are satisfying most if not all of the elements in the Nutrient Framework Memo, but not necessarily exactly as written in the memo.
- TMDLs provide information for strategy development, although TMDLs with greater detail and scientific rigor are of greater utility for addressing loading than some older TMDLs.
- Nutrient management strategies can give a broader context to individual TMDLs and support TMDL implementation through agency connections.

Session 8: Tools & Approaches to Foster NPS Load Reductions

Intended outcomes of the eighth session included:

- Participants will identify specific next steps to close the 'information gap' between the existence of BMP information and effective BMP application.
- Participants will identify whether and how development of a suite of tailored BMPs would be useful for states in developing and implementing TMDLs.

The session began with several participants describing the suites of BMPs established in their states, how they came to be, and how they have functioned in practice. One participant said that her program has developed and continues to develop suites of BMPs to accompany different land uses, including a BMP manual for agriculture. She noted that farmers and others are given the option of using the recommended BMPs or their own, but since the program has the authority to enforce nonpoint source pollution reductions, they must do something and must be successful. She explained that the program offers presumed water quality compliance for those implementing the recommended BMPs. She also noted a few of the challenges that she has faced in the development of these suites of BMPs: the program was accused of regulating land uses, conservation districts felt threatened and sought to prevent them, and peer review of the agricultural BMP manual was difficult due to backlash.

Another participant noted that her state does not have enforcement authority over nonpoint sources and explained that local stakeholder groups evaluate local resources in the watershed and then select BMPs to offer through a cost-share program. She said that every program includes a suite of BMPs that are highest priority, those that have been demonstrated to be effective through water quality modeling data and even examples of water quality restoration. She added that the BMPs may need to be tweaked (amending cost-share rates or changing specifications) in different circumstances, and they continue to look for new BMPs to address certain situations. She said that they provide greater incentives for those BMPs with greater pollution reduction

efficiency and prioritize participation by producers in areas with the most significant contributions. She commented that the involvement of local stakeholders helps them evaluate the likelihood of implementation

Another participant described the value of incorporating BMP information into a nonpoint source management plan designed like a reference manual. She said that the plan is divided into chapters on urban uses, agriculture, wet weather, outstanding resource waters, etc., and each chapter covers the status in the state, what the state is doing, what the most intimate friends are doing, and information on BMPs, as well as much more. She explained that the plan puts all the relevant information in a single place.

Yet another participant said that in his state there is a series of workgroups—urban, point source, agriculture, etc.—and one of their tasks was to find the efficiency of BMPs used in the Chesapeake Bay area. He said that from this information a list of over 100 BMPs was developed and incorporated into the Bay model. He noted that this volume of information made it very difficult to convey the options to individuals on the ground, and as a result they created an online scenario assessment tool that contains all HSPF and BMP information. He explained that the tool allows stakeholders to test the use of different BMPs on different parts of their land and generate data regarding the resulting water quality benefits, which has helped with buy-in. But, he added, the Bay TMDL is the accountability system.

Conversation throughout the session identified a number of challenges facing strategic BMP implementation. One participant affirmed the experience of others, noting that a large collection of BMP options, particularly when accompanied by assessments of their relative efficiencies, can be overwhelming to stakeholders. Another participant noted that the potential cost can make stakeholders anxious about getting involved. Several others provided examples of challenges they have had with cost estimations of BMP installation and maintenance. One participant stated that changes in acceptable BMPs and experiences with ineffective BMPs can make buy-in harder to get. Several participants expressed difficulty with tracking BMP implementation and water quality results as well as with calculating and quickly providing the credit desired by stakeholders. Regarding the use of tools for selecting BMPs, one participant explained that she has seen reservations amongst stakeholders to using such tools for fear that whatever is submitted would be regulated.

Several participants commented on the opportunities for packaging to, as some of the previously noted participants had described, distill a large amount of information about BMPs into a more manageable and ultimately useful form. One participant explained that her state's agricultural extension office has been packaging BMP solutions based on the specific type of agricultural activity—dairy, beef, goats, small animals, etc. Another participant said that his state has been doing something similar but based on the pollutant so that when people came in through CWA 319 or on their own they had a ready source of information.

While the bulk of the conversation centered on BMPs for agricultural lands, participants also raised challenges specific to addressing pollution from urban areas. Several participants expressed frustration with the lack of information pertaining to urban BMPs, particularly in how to reduce loadings of urban pollutants such as heavy metals. One participant said that one of her

state's biggest challenges concerning BMPs is in areas that are so built out that there is no land to do a BMP such as a stormwater pond. Another participant responded that her state's Nutrient Scientific Advisory Board, composed largely of stormwater staff from local governments, is trying to figure out how to get the reductions needed from areas that are already built out. Another participant noted success that her state has had with TMDLs for impervious cover and a manual on implementing stormwater BMPs.

The conversation turned to the value of an organized compilation of state materials and practices regarding BMPs. One participant explained that she would benefit from an accessible reference of the types of BMPs actually being used and by whom so that she could contact individuals with experience in using a given BMP. Another participant said that staff in his state would benefit from a list of other state BMP resources, their respective purposes, and how to link to them. Yet another participant suggested cataloging the BMP information by state so that surrounding states have additional input as to what may be feasible for them. There also was discussion of the value of a table of BMP options. One participant noted that the Virgin River TMDL has an implementation appendix with a BMP matrix by pollutant type and practice and describing load reduction potential, maintenance, and when reductions are likely to be seen. Another participant suggested including BMP efficiency specific to land use and slope. Yet another participant expressed the importance of information on cost estimation.

The session concluded with a brief discussion on agricultural certainty. One participant explained the program recently announced in his state. He said that the Technology Advisory Committee is developing a water quality certification program to accelerate on-farm adoption of recommended management practices. He noted that each farmer who signs up will be required to put in prescribed BMPs. He added that participating farmers will receive more assistance money; certainty that their actions meet water quality goals, standards, and objectives; and protection from additional regulations and requirements. He added that there will be check-ins to see if interim milestones are being met and whether the farmer can re-up. He said that his program believes this approach to be good because it gives accountability and clear expectations that farmers have not had through TMDLs, which are not clear as to what must be done on the individual farm level to meet reduction goals. He is hopeful that over time it will build trust, generate good will, and get more farmers interested.

Key Points Raised:

- There are many challenges to effective BMP implementation, one of which is conveying the diversity of options, their benefits, their efficiencies, and other information to those who would adopt them. States have had success with this by logically packaging the information and using technology.
- States have done and are doing significant research on BMP efficiencies, promote and use a wide variety of BMPs, and have unique manuals and tools for facilitating BMP implementation. This information could be made more useful to other states if it were compiled, organized, and presented with contacts.
- There is a particular lack of information available on urban BMPs and solutions for areas that are already built out and lack the land area to support traditional BMPs.
- The concept of "agricultural certainty" has the potential to build accountability and encourage more voluntary approaches to nonpoint source pollution reductions.

Informal Evening Session: (Re)defining Success

Intended outcome of the evening session was:

- Participants will share the stories that they would like to be able to tell in ten years about the results of their efforts and how they got there.

Below are the stories provided by the participants:

- In ten years, I envision a world where we do not need to do TMDLs anymore. Instead, people step up and do what they need to do, local food is advertised as water-quality safe, and I can retire from my job and no one needs to do it after me!
- I imagine Baltimore Harbor with a Roman swimming pool.
- Whenever I get calls from the public, they ask what the state thinks of X water body. If I say it is doing pretty well, they are disappointed, and they are excited if I say the water body is a problem because they think things will get fixed. My hope is that, whenever someone calls, I will be able to tell them that we have a program for them, to take advantage of people who want to be stewards of their water. I would like to involve people through citizen monitoring.
- I want people to turn around in ten years and say "wow, what we did made a difference!" We did the smart thing and created value, and it paid off financially too.
- As a kid, I could not swim in Boston Harbor. By the time I left for college, people were swimming a little. Now the water is clear and clean! It took a big vision and it paid off. It happened in ten years in Boston, it could happen anywhere.
- I would like to see the rural communities welcome us, but most of all I would like for rural groups to have taken on the water quality problems themselves and see success from their efforts (even if they still don't like us).
- That is sort of my vision too – provide enough assistance to allow for local stakeholders to take ownership. I have seen some of that occur – for example with dairy farmers who want their kids to be able to fish like they did.
- I would like TMDLs to be a force for good – integrate communities and programs so everyone is on the same page in terms of protecting water quality.
- I have two different goals: first I would hope that in ten years, half of TMDLs post-consent decree are being used by people to solve problems. And second I would like water quality issues to be like recycling, ingrained into the public consciousness. I would like to see all our decisions made in terms of water quality.
- I would like to see us contributing to a system where conservation practices are seen as a win-win.
- By 2022, I have got an approved list by April 30th, I have fewer than ten lakes experiencing pollutants, and I am ready to retire!
- I would like to see my state really implement so that success can be measured properly, rather than measuring on a large scale and implementing on a small scale.
- I am sitting in an office with a window. I pull up some data that everyone has entered into a state wide tracking system. One of the staff members is complaining about doing three TMDLs and that the CWA 303(d) list needs to be updated in four years!
- I would like to see success stories defined by the local community.

- I would like for us to be working as a unified front.
- I would like to have worked myself out of a job. I would like our program to be a smooth-running machine with no need for new TMDLs, and we are making progress on all old TMDLs. The local community has pride in and a sense of ownership of its waters.
- I hope we will not be having this same conversation in ten years.
- I would like to feel confident that we have strategically figured out how to spend the limited resources we have.
- I want to fish in all the streams that have been restored – a different stream every day for a year.
- This weekend I walked in my neighborhood and saw an urbanized stream. We spent CWA 319 money doing this stream restoration, and there is a consent decree that required restoration of a sewer line along the stream. The community fought to make sure that a pumping station was not in this neighborhood. I looked down and saw big fish in the stream!
- The bipartisan CWA amendments, after a 9-0 Supreme Court ruling to uphold them, are considered to be the best environmental laws ever!
- We look at watersheds on state lands that had been dead for so long, and local people are almost to the point of tears when the stream is restored.
- In my state the average age of a farmer is 57. It is also true that younger farmers seem more interested in conservation. My vision is that the state has a young, vibrant farming community that does not need government cost share to implement conservation strategies. I also envision a food system that pays for itself.
- I would like productive and engaging public meetings. I do not want to spend one quarter to half of my time responding to FOIAs and law suits.
- The president has asked for a report on the CWA 303(d) program. Results are in – 90% of the population has access to protected, healthy, or improving water quality uses that the state have defined for them. The only thing left to do is to open the case of champagne from the states!

Key Points Raised:

- Many participants tie their objectives to use of the resource, whether by themselves or others.
- Many participants would like to see an increase in local participation and local ownership of waters.
- Many participants would like to see water quality become part of the public consciousness.
- Many participants would like to see a decrease in bureaucracy, increase in cooperation, and increase in effectiveness.

Session 9: Measuring & Sustaining NPS Load Reduction Success

Intended outcomes of the ninth session included:

- Participants will identify and learn about different options for measuring success in addressing NPS impairments in the CWA 303(d) program.

- Participants will identify and learn about measuring incremental success in addressing NPS impairments in the CWA 303(d) program.
- Participants will identify and learn about solutions to the obstacles to sustaining success in addressing NPS impairments.

The session began with a few comments from John Goodin, providing context and introductory points for the discussion. He described the results of recent studies on TMDL effectiveness, one of which involved Ohio and West Virginia and found that 3% of waters with TMDLs in those states have attained water quality standards and 19% are demonstrating incremental water quality improvement. Mr. Goodin then recommended that participants approach the session unencumbered by historical measures of success as they contemplate new measures. He said that the measures should reflect the ultimate goal of the CWA but be bounded by the limitations of the CWA 303(d) program's authorities; thus thinking big, but couching solutions in ways that the program can be in control of its success. He also suggested that measures be linked to use value, be visual, have measurable points to demonstrate progress, have a meaningful target, reflect the vision and goals, and be more than the output of TMDLs.

Subsequent conversation centered on potential measures. Several participants noted that the ultimate objective of the program already exists, protection and restoration of beneficial uses. One participant said that this is already what the public expects of the program. Several participants also pointed out that the CWA 303(d) program is but one piece of the pipeline in getting to that end goal, and the program does not even have grant funding for implementation like the CWA 319 program does. One participant suggested that the TMDL process is a tool to inform how to get to the end of the pipe and that the end of the pipe can't be reached if there is a blockage at the TMDL stage. He recommended that TMDLs be measured at a fundamental level by whether they are informing smart decisions that will lead to an endpoint that will achieve water quality standards. Another participant added that identifying who caused the problem, and the resulting source sector accountability, is a role played by TMDLs that is valuable to other, implementing agencies. He noted that the CWA 303(d) program may also support achieving use attainment by identifying how to fix the problem, whether there is stakeholder support in the watershed, whether implementation has begun, whether implementation is being tracked, and potentially (through monitoring) whether the water quality response is improving.

One participant said that there are many useful measures. Another participant suggested that measurement should consider all of the tools in the toolbox and protection as well as restoration. A third participant added that appropriate measures may include maintenance, no net loss. She also explained the value of qualitative data, particularly with nutrients. She noted that when she has been in the field, she has heard stories about, for example, how locals used to catch fish in an area but now they do not. She suggested that these might produce easier milestones than quantitative data if the results can be tracked. She also suggested that prioritization be a measure, particularly in light of the previous day's discussion. Another participant recommended partitioning lists even further for different categories of items, such as creating a Category 5n for nutrients, and set certain expectations for addressing those issues.

Conversation focused on incremental measures as well. Many participants noted the importance of measuring progress toward the ultimate goal, one in particular noting from personal

experience that incremental measures prevent the necessary work from falling to the end of the total time frame. One participant explained that when working with communities, a good means of identifying measurements and defining milestones is by asking them, giving them ownership. Several participants noted the value of education and suggested that success in that arena by the CWA 303(d) program would be useful as incremental measures. One participant said that his state has put together fact sheets on top ten water quality problems in the state, which was received well by the public, but people want to know what is being done about them. Another participant explained that her state had created a volunteer monitoring process; it gave petri dishes to those implementing restoration measures so that they could measure before and after implementation and see the difference within a month. A third participant said that statewide PCB and mercury TMDLs may actually be useful in terms of education and public awareness. A fourth participant noted that part of that education may need to involve an understanding of the timeline for success itself, whether 3 years or 30. He added that the workshop participants look at the 3% number that John quoted as being great, but a state legislator would consider it awful.

One participant noted that this discussion was déjà vu given his prior three years spent working on reporting progress from state funding. He said that they began with over 100 different measures and narrowed them to a top 18, based on relevance to the public and legislature. He noted that measurement was based on improvements on and restoration of impaired waters, from the 15 impaired waters now meeting designated uses to the hundreds of waters in which there have been qualitative improvements. He added that they focused on outcomes rather than numbers so as to provide the public information about what they most care about. The participant also stated that this reporting will be conducted every two years, in alignment with appropriation of funds from the legislature.

A few participants noted specific challenges to consider in creating and implementing success measures. One participant said that her state had been measuring success in part on cost-share dollars expended, and money was going out slowly to Mennonite farmers but with demonstrable water quality improvements; they discovered that the money spent did not match the success because farmers were fencing streams due to pressure from the church, not cost share dollars. Another participant noted that pollutants like DDT are very hard to address through the conventional channels and could take a long time, and those characteristics must be captured in success measurements.

One participant suggested that to truly reach the ultimate and interim objectives discussed, the base would need to be reset. He said that with pace as the objective, listings drive the program; more listings mean more pressure. Therefore, he explained, as the objectives are retooled, so too can or must listing be, potentially shifting listing resources from the front end to the back. He noted that the only way to get a sense of success is to monitor results. Several other participants supported the notion of resetting the base, but with a particular emphasis on resetting water quality standards. One participant expressed frustration with his inability to get the bacteria standard for free-flowing streams amended. Another participant said that aligning appropriate water quality restoration goals with reality is critical to success in his state. He added that they frequently find themselves in a situation where a water body noted as a coldwater fishery had been managed and enjoyed as a warmwater fishery for many years. He said that the initial designations were set in 1975 and never revised, but the TMDL process can be useful in

establishing what appropriate beneficial uses are, and ultimately getting buy-in on water quality goals.

The discussion moved to sustaining success once achieved. One participant likened the CWA 303(d) program to the education system, insofar as it must provide the tools to the local community to sustain the work accomplished when it departs the water body. He added that his program gets the ball rolling, and if it is lucky it has the resources to see some measurable outcomes. One participant likened the short window of involvement for many of these programs to the signs denoting that one is leaving the Chesapeake Bay Watershed – so now what? Several participants noted the importance of local and resource partnerships, such as with Trout Unlimited and The Nature Conservancy, to create more sustained success. One participant suggested that farmers also can be a source of partnership even without long-term funding when the benefits, such as connection between soil loss and productivity, are included in the explanation of the effort. Another participant noted commodity prices, the farm bill, USDA policies, climate change, natural disasters, and many other factors make sustaining success very difficult.

Looking beyond the CWA 303(d) program to keys to success, several participants noted the challenges posed by the variation in "beans" across programs and agencies. One participant said that in his state the CWA 319 staff asks for modeling to inform the watershed plan but the TMDL Program can't deliver it because it is focused on meeting pace. Another participant noted that each program needs to be accountable, and while the "beans" for each program may be different, they must be collectively accountable for water quality restoration and protection "beans."

Key Points Raised:

- The ultimate objective of the CWA 303(d) program is the same as that of the CWA itself, protection and restoration of beneficial uses. But the CWA 303(d) program is just one piece of the puzzle, and measures of success developed for this program must be both consistent with 303(d) program authority and capable of being independently achieved.
- TMDLs advance the process toward protection and restoration of beneficial uses through education. This includes education of decision-makers at subsequent stages of the process and education of the public. TMDLs can identify the problem, who caused it, how to fix it, and potentially whether there is stakeholder support in the watershed, whether implementation has begun, and whether implementation is being tracked. Program measures may logically be linked to this service.
- Qualitative data, such as stories about the changing frequency of fishing in a stream, and systems for prioritizing TMDL development and implementation also may provide measures for CWA 303(d) program success.
- Incremental measures of success are critical.
- The listing process may be able to identify whether water quality is being maintained or is improving as a result of protection or restoration efforts.
- Measures should be focused on outcomes rather than numbers. This can better help to meet public expectations and improve buy-in. The short window of involvement

of the CWA 303(d) program and the many potential challenges to sustaining success necessitate partnerships with local and resource organizations.
- There are challenges to success posed by the variation in "beans" across programs. All programs should be collectively accountable for water quality restoration and protection.

Final Discussion and Training Workshop Wrap-Up

Intended outcomes of the final discussion included:
- Participants will review the major conclusions from each of the previous sessions.
- Participants will recommend changes to a CWA 303(d) program ten-year vision in light of analysis through the lens of NPS and nutrient pollution.

John Goodin, Chief of EPA's Watershed Branch in OWOW, began the session by providing an overview of his take on the major conclusions of the workshop to that point. He started with the first session, noting that participants appear generally supportive of developing a ten-year vision now. He added that the vision process may be well served by extending the deadline for completion beyond June so as to incorporate the information from this workshop. A participant from EPA Headquarters suggested that the vision be developed in the larger context of water quality. Another participant suggested that countermeasures be included in the vision, so as to accommodate, for example, unforeseen declines in financial resources.

Mr. Goodin proceeded to Session 2. He noted that the Chesapeake Bay TMDL could be thought of as a pilot for modeling BMP efficiencies and reasonable assurance. He also suggested several future actions: exploring '319-friendly' TMDLs, pursuing integrated measures between the CWA 319 and TMDL Programs, and coordinating priorities with NPS and NRCS via, for example, rotating basins.

Mr. Goodin then moved on to Session 3, saying that the main conclusion that he drew was that suites of BMPs work best. As for potential actions, he suggested exploring the utility of compiling NRCS 'success stories' and applying CEAP conclusions and resources for TMDL and CWA 319 purposes. A participant from EPA Headquarters noted her excitement regarding the discussion in Sessions 2 and 3 and their implications for the CWA 319 program. She said that there is much science available that could help improve the two programs and agrees that they should use CEAP data more effectively. Several participants supported the notion that scientific data and success stories should be more effectively utilized in the two programs. One participant highlighted the example of "ecological lift" in terms of wetlands and explained that mitigation work is of a much higher quality when this data is used. She noted that biological data is more expensive but suggested that it tells a better story than chemical data. One EPA Regional participant stated that the nonpoint source monitoring program has many good success stories that could be utilized.

Mr. Goodin then discussed Session 4. One conclusion he drew from that session was the importance of tying nonpoint source effects to the impacts on neighbors in a community. He also noted the importance of addressing pollution contributions from the small number of

holdouts who may actually be contributing a significant portion of the load. As for next steps, he suggested distilling the characteristics of TMDLs that effectively integrated CWA 319 Program needs. He also suggested exploring the circumstances where implementation actions are best folded into a TMDL, CWA 319 plan, or some other method. One participant reiterated the importance of education, particularly for sustainability purposes.

Proceeding to Session 5, Mr. Goodin said that he took from the conversation that many states believe they have a handle in identifying waters impaired by phosphorus, but linking nitrogen to local impairments is more difficult and nitrogen is viewed as less of a problem in their states. As for next steps, he suggested finding a better way to tell the nutrients assessment story in order to ensure that CWA 303(d) lists reflect the extent of nutrient impairments. Another follow-up action could be to determine which listing tools are still needed and analyzing trade approaches among states.

Mr. Goodin noted that from Session 6 he found that there are many key factors for prioritization of nitrogen and phosphorus impairments. He also noted that continuing planning processes, performance partnership agreements, and performance partnership grants may host priorities in addition to Integrated Report/list submittals. In addition, there were calls for feedback loops for mid-course corrections. Mr. Goodin suggested compiling and circulating the key factors for setting priorities coming out of this session and that prioritization be connected to the work being done on recovery potential. One participant emphasized the importance of moving away from pace. Another participant maintained that this is especially important given that the CWA 303(d) program has tackled some of the basic problems, and the water quality problems it is now facing are more complex. A third participant stated that any prioritization metric will require a strong understanding of what a healthy river really is. Several participants emphasized the importance of accountability in any prioritization and success metric.

The discussion on prioritization developed into one on the issue of protection versus restoration. One participant explained that his state has spent significant time on protection, including enhanced reviews of Tier 2 waters. He said that they have moved away from pace to a more comprehensive approach that integrates multiple programs, and protection is a key element in that approach. A second participant noted that it is more cost-effective to protect rather than restore. But another participant added that protection has a negative connotation in his state, that there is resistance against the notion of government intervention to protect resources on private land and that protection raises questions in the minds of the public as to who the waters are being protected from. He suggested that states respond to local protection initiatives rather than implementing their own. One participant raised the issue of anti-degradation but said that in her state it is often not protective enough.

Mr. Goodin extracted from Session 7 several main points: TMDLs are important in key circumstances, for example in situations involving permittees and establishing site-specific water quality criteria; suites of BMPs with "presumed compliance" could help in other states; and states could use federal leadership on Mississippi River basin surface water nitrogen targets for the Gulf of Mexico. Moving forward, he suggested exploring where TMDLs and other tools are good or best fits to achieve water quality. One participant suggested that "and other alternatives"

be added to the term "site-specific" in the aforementioned conclusion because alternative expressions are important when applying criteria from steady conditions to a dynamic situation.

Mr. Goodin noted as the main conclusion from Session 8 that an aggregate metric is more feasible than tracking thousands of BMPs. He also suggested creating a BMP information tool, such as a compilation of BMP resources organized by characteristics like state and land use.

Turning to Session 9, Mr. Goodin highlighted the need for measures to be linked to water quality values such as swimming and drinking water, the importance of measures being visible and incremental, and the importance of measures reflecting the vision and goals as well as what the CWA 303(d) program can control. He also noted the difference between outcomes and outputs and the need for measures to reflect counter pressures. He suggested that the results of this discussion could provide "principles" to the state vision workgroup. One of the participants stressed the importance of flexibility, suggesting that each state tailor its particular approach to its particular circumstances.

The workshop concluded with a round of thank yous for all involved.

APPENDIX 1: WORKSHOP AGENDA

ENVIRONMENTAL LAW INSTITUTE®

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

2012 NATIONAL TRAINING WORKSHOP ON CWA 303(d) LISTING & TMDLS

MEETING THE CHALLENGES OF NUTRIENTS AND NONPOINT SOURCES OF WATER POLLUTION

National Conservation Training Center
Shepherdstown, West Virginia
April 10-12, 2012

TRAINING WORKSHOP AGENDA

(WITH VISION, GOALS, AND 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 participants from Clean Water Act Section 303(d) Listing/TMDL and Nonpoint Source Programs to learn about—and to discuss with one another and federal counterparts—present and potential challenges to addressing nutrients and nonpoint sources of pollution (NPS); strategies for meeting these challenges; and the best means of measuring and sustaining success through and with the ten-year vision of the CWA 303(d) program.

GOALS

- In support of achieving the ten-year vision, advance **mutual understanding** among the states and EPA about the challenges and opportunities before the CWA 303(d) program resulting from nutrients and nonpoint sources of pollution.
- Improve the **effectiveness** of state and federal efforts to address nutrients and nonpoint sources of pollution through TMDLs and other tools.
- Identify, share, and learn about **current strategies and tools** in listing, TMDL development, and TMDL implementation for addressing nutrients and nonpoint source pollution.
- Develop **incremental measures of success** for achieving the ultimate goal of meeting state water quality standards.
- Learn about and foster **opportunities to improve coordination** among state, tribal, territorial, and federal agencies with authority over issues pertaining to nutrients and nonpoint source pollution.
- Enhance the **network of listing and TMDL professionals** by expanding and improving communication among the states, identifying experts on specific topics, and promoting the sharing of resources and better understanding of experiences.

OUTPUTS

No. 1: A compilation of recommended strategies to assist states, tribes, and territories in addressing various aspects of nutrient and nonpoint source pollution through their CWA 303(d) and other programs, and to clarify how EPA can help states achieve success, tied to the ten-year vision.

No. 2: A summary of recommendations regarding how success in addressing nutrients and nonpoint source pollution through the CWA 303(d) program should be measured and credit given.

No. 3: A final report summarizing presentations and discussions 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 9 ***Arrival, Check-In, & Registration***

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

Tuesday, April 10 ***2012 Training Workshop on Listing & TMDLs***
Day 1: The Setting

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

8:30 am – 9:00 am **Welcome, Introductions, Updates, and Training Workshop Overview**
Room 151, Instructional West Building

Greeting and Introductions
Bruce Myers, ELI

Opening Remarks
John Goodin, EPA HQ

Training Workshop Overview
Adam Schempp, ELI

9:00 am – 10:00 am **Session #1**
A Ten-Year Vision for the CWA 303(d) Program
Room 151, Instructional West Building
Facilitators
Bruce Myers & Adam Schempp, ELI

Update on the Ten-Year Vision
Eric Monschein, EPA HQ

Facilitated Discussion

Session #1 Outcomes:

- *Participants will learn about the status of the development of a ten-year vision and associated goals for the CWA 303(d) program.*
- *Participants will learn about the role of the ten-year vision in this workshop and the role of this workshop in shaping the vision with regard to NPS and nutrient pollution.*

10:00 am – 10:30 am Morning Break

10:30 am – 12:00 pm **Session #2**
Implications of the CWA 319 Program
Room 151, Instructional West Building
Facilitators
Bruce Myers & Adam Schempp, ELI

Session Coordinator
Allen Bonini, IA

Update on CWA 319 Program Improvements
Lynda Hall, Chief, Nonpoint Source Control Branch, EPA HQ

Facilitated Discussion

Session #2 Outcomes:

- *Participants will learn about the results of the CWA 319 Program Evaluation Study and the direction of the CWA 319 Program.*
- *Participants will identify and learn about ways that the CWA Section 319 Program could support nutrient- or NPS-related objectives of the CWA 303(d) program.*
- *Participants will identify and learn how the CWA 303(d) program could better support NPS control implementation in the CWA 319 Program.*

Discussion Questions: Where is CWA 319 headed given its voluntary, non-regulatory program features coupled with potentially tightening financial controls? How will CWA 319 funding be able to be used? How will that affect states' abilities to integrate CWA 303(d) and CWA 319 programming? What can be done to increase collaboration between the two programs to continue to achieve environmental improvements? How can the CWA 303(d) program be encouraged to do the critical NPS TMDLs first and in a way that is most useful to the 319 Program? How are CWA 319 Programs using those TMDLs to inform their decision-making and develop and implement effective watershed based plans?

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

1:00 pm – 3:00 pm **Session #3**
How the NPS Landscape May Influence Listing/TMDLs
Room 151, Instructional West Building

Facilitators
Bruce Myers & Adam Schempp, ELI

(1) Setting the Stage for Consideration of Long Term Issues for Nutrient Management & Water Quality
Larry Sanders, Professor & Extension Economist, Oklahoma State University

(2) NRCS National Water Quality Initiative (NWQI)
Astor Boozer, Regional Conservationist for the West, USDA NRCS

(3) The Conservation Effects Assessment Project (CEAP): Overview and Watershed Scale Assessments
Lisa Duriancik, Coordinator, CEAP, USDA NRCS

Facilitated Discussion

Session #3 Outcomes:

- *Participants will identify and learn about factors that may facilitate addressing NPS- or nutrient-related impairment.*
- *Participants will identify and learn about factors that may hinder addressing NPS- or nutrient-related impairment.*
- *Participants will identify and learn about how to account for these factors in CWA 303(d) program activities.*

Discussion Questions: What is the economic forecast for agriculture? What are the likely effects of the Farm Bill and other federal policies? How is NRCS considering water quality in decision-making and program execution, e.g., under the FY12 National Water Quality Initiative? What influences on CWA 303(d) program success regarding nonpoint sources are beyond the direct control of the program? What factors may facilitate addressing NPS- or nutrient-related impairment? What factors may hinder it? What obstacles could the CWA 303(d) program overcome to achieve nutrient- or NPS-objectives, and how?

3:00 pm – 3:30 pm Afternoon Break

3:30 pm – 5:30 pm **Session #4**
Nutrient- & NPS-Related Vision Elements
Room 151, Instructional West Building

Facilitators
Bruce Myers & Adam Schempp, ELI

Session Coordinator
Tom Stiles, KS

Facilitated Discussion

Session #4 Outcomes:

- *Participants will identify and learn about how the ten-year vision could address NPS- or nutrient-related impairment issues.*
- *Participants will identify and learn about how addressing NPS- or nutrient-related impairment issues could support achievement of the ten-year vision.*
- *Participants will establish the beginnings of guiding principles for addressing nonpoint sources of pollution through the CWA 303(d) program.*

Discussion Questions: What are the obstacles to attaining the ten-year vision posed by NPS- and nutrient-related impairments? How has your State overcome some of these obstacles and are those approaches transferrable to other states? To support the ten-year vision, what guiding principles should be established and applied to addressing NPS- and nutrient-related impairments?

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 11 ***2012 Training Workshop on Listing & TMDLs***
Day 2: Next Steps

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

8:00 am – 9:30 am **Session #5**
Approaches to Listing Waters Impaired by Nutrients
Room 151, Instructional West Building

Facilitators
Bruce Myers & Adam Schempp, ELI

Facilitated Discussion

Session #5 Outcomes:

- *Participants will learn about current policies for identifying and assessing waters impaired by nutrients.*
- *Participants will learn about key 'rules of thumb' to improve listings of or more accurately list waters impaired by nutrients.*
- *Participants will learn about tools that help identify nutrients as the stressors for listings.*
- *Participants will identify and learn about the current role of response indicators in the listing of waters impaired by nutrients.*

Discussion Questions: What approaches are being used in the listing of waters impaired by nutrients to make them as accurate and comprehensive as possible for the purpose of subsequent decisions? In the absence of numeric nutrient criteria, what are the best approaches to use? Without numeric criteria, what is the role of information, including biological information, in the listing of waters impaired by nutrients? What tools are available to identify nutrients as stressors for those listings?

9:30 am – 10:00 am Morning Break

10:00 am – 12:00 pm **Session #6**
Setting Program Priorities with Accountability
Room 151, Instructional West Building

Facilitators
Bruce Myers & Adam Schempp, ELI

Session Coordinator
Jeff Risberg, MN

Facilitated Discussion

Session #6 Outcomes:

- *Participants will identify and learn about the obstacles to and opportunities for creating a system of prioritizing TMDL development and implementation that replaces pace requirements.*
- *Participants will learn about and recommend principles for integrating CWA 303(d) priorities with other priorities, for balancing TMDL development and implementation, and for balancing of state priorities with multi-state priorities.*

Discussion Questions: How can a system of prioritizing TMDL development and implementation be sufficiently transparent and accountable to replace pace requirements? Are states, tribes, and territories willing to do it? How should interstate/multi-state priorities be balanced against state priorities? How should the priorities of other programs be incorporated into TMDL development and implementation priorities? What are the means and methods that must be devised to set priorities, regardless of who is devising them? What existing tools could support these means and methods? What might a prioritization system that meets all these qualifications look like?

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

1:00 pm – 2:30 pm **Session #7**
TMDL/Other Programs & Nutrient Reduction Strategies
Room 151, Instructional West Building

Facilitators
Bruce Myers & Adam Schempp, ELI

Facilitated Discussion

Session #7 Outcomes:

- *Participants will recommend principles for how TMDLs can support the development and implementation of state nutrient reduction strategies, particularly in setting load reduction targets.*
- *Participants will learn how to develop nutrient reduction targets in TMDLs or other implementation mechanisms.*
- *Participants will identify and learn how nutrient reduction could be accomplished with or without TMDLs.*

Discussion Questions: What are the intentions of states and where are they in the process of developing state nutrient reduction strategies? What should be the role of TMDLs to support the development and implementation of state nutrient reduction strategies? In what ways could the development and implementation of TMDLs be modified to assist strategy success? Should strategies be designed to specifically include TMDLs or other programs? If so, how? How should nutrient reduction strategies inform the prioritization, development, and implementation of TMDLs?

2:30 pm – 3:00 pm Afternoon Break

*NOTE: the next three sessions **focus on success** in addressing nutrients and NPS pollution by the CWA 303(d) program: the tools available and what is needed to determine and achieve success (Session 8), what should constitute success (Evening Session), and knowing when success is being achieved and how to sustain it (Session 9).*

3:00 pm – 4:30 pm **Session #8**
Tools & Approaches to Foster NPS Load Reductions
Room 151, Instructional West Building

Facilitators
Bruce Myers & Adam Schempp, ELI

Session Coordinator
Kathy Stecker, NC

Facilitated Discussion

Session #8 Outcomes:

- *Participants will identify specific next steps to close the 'information gap' between the existence of BMP information and effective BMP application.*
- *Participants will identify whether and how development of a suite of tailored BMPs would be useful for states in developing and implementing TMDLs.*

Discussion Questions: How are programs getting BMPs implemented? For those states that rely on voluntary approaches for BMP implementation, has there been a gap between existence of BMP information and BMP implementation? Could agriculture certainty programs or tracking programs help facilitate BMP implementation? Could a suite of tailored BMPs help in practice with TMDL and other implementation mechanisms? If so, how should it be created? How can these tools and approaches bolster Reasonable Assurance? What BMP optimization tools are available to cost-effectively address nonpoint sources of pollution?

4:30 pm – 5:30 pm Open

5:30 pm – 7:00 pm Dinner
Commons Dining Room

7:00 pm – 8:00 pm **Informal Evening Session**
(Re)defining Success
Ding Darling Lounge Area

Facilitators
Bruce Myers & Adam Schempp, ELI

Evening Session Outcomes:

- *Participants will share the stories that they would like to be able to tell in ten years about the results of their efforts and how they got there.*

Thursday, April 12 ***2012 Training Workshop on Listing & TMDLs***
Day 3: Success

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

8:00 am – 10:00 am **Session #9**
Measuring & Sustaining NPS Load Reduction Success
Room 151, Instructional West Building

Facilitators
Bruce Myers & Adam Schempp, ELI

Session Coordinator
Helen Bresler, WA

Facilitated Discussion

Session #9 Outcomes:

- Participants will identify and learn about different options for measuring success in addressing NPS impairments in the CWA 303(d) program.
- Participants will identify and learn about measuring incremental success in addressing NPS impairments in the CWA 303(d) program.
- Participants will identify and learn about solutions to the obstacles to sustaining success in addressing NPS impairments.

Discussion Questions: How should success in addressing NPS impairments be measured, via water quality, or by some other metric? Should progress or incremental success be measured and given credit? If so, how? What can be done to bridge the gap between BMP implementation and accounting for load reduction? What are the obstacles to sustaining success in addressing NPS impairments? Are there good examples of sustaining success? If so, what did it take?

10:00 am – 10:30 am Morning Break

10:30 am – 12:00 pm **Final Discussion and Training Workshop Wrap-Up**
Room 151, Instructional West Building

Facilitators
Bruce Myers & Adam Schempp, ELI

Plenary Discussion

EPA Remarks

John Goodin, *EPA HQ*

Final Discussion Outcomes:

- *Participants will review the major conclusions from each of the previous sessions.*
- *Participants will recommend changes to the ten-year vision in light of analysis through the lens of NPS and nutrient pollution.*

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
2012 NATIONAL TRAINING WORKSHOP ON CWA 303(d) LISTING & TMDLS
MEETING THE CHALLENGES OF NUTRIENTS AND NONPOINT SOURCES OF WATER POLLUTION

April 10 - 12, 2012
National Conservation Training Center
Shepherdstown, West Virginia

State Participants

Jason Sutter
Supervisor, TMDL and Assessment Unit
Arizona Department of
Environmental Quality
1110 W. Washington Street
Phoenix, AZ 85007
602-771-4468
sutter.jason@azdeq.gov

Traci Iott
Supervising Environmental Analyst
Connecticut Department of
Environmental Protection
79 Elm Street
Hartford, CT 06106
860-424-3082
traci.iott@ct.gov

Julie Espy
Environmental Administrator
Florida Department of
Environmental Protection
2600 Blair Stone Road
Mail Station 3555
Tallahassee, FL 32399
850-245-8416
Julie.espy@dep.state.fl.us

Martha Clark Mettler
Deputy Assistant Commissioner, Office of Water Quality
Indiana Department of Environmental Management
102 N. Senate Ave
Indianapolis, IN 46204
317-691-6271
mclark@idem.in.gov

Allen Bonini
Supervisor, Watershed Improvement Section
Iowa Department of Natural Resources
Wallace Building
502 E. 9th Street
Des Moines, IA 50319-0034
515-281-5107
allen.bonini@dnr.iowa.gov

Tom Stiles
Chief, Watershed Planning Section, Bureau of Water
Kansas Department of
Health and Environment
1000 S. Jackson Street, Suite 420
Topeka, KS 66612
785-296-6170
tstiles@kdheks.gov

Paulette Akers
Manager, Watershed Management Branch
Kentucky Division of Water
200 Fair Oaks Lane, 4th floor
Frankfort, KY 40601
502-564-3410
Paulette.Akers@ky.gov

Chuck Berger
Engineer 6, Water Permits Division
Louisiana Department of Environmental Quality
P.O. Box 4313
Baton Rouge, LA 70821-4313
255-219-6633
Chuck.berger@la.gov

Lee Currey
Manager, TMDL Technical Development Program
Maryland Department of the Environment
1800 Washington Blvd
Baltimore, MD 21230
410-537-3913
lcurrey@mde.state.md.us

Jim George
Manager, Water Quality Restoration and Protection Program
Maryland Department of the Environment
1800 Washington, Blvd.
Baltimore, MD 21230
410-537-3572
jgeorge@mde.State.md.us

Jeff Risberg
Coordinator, Impaired Waters
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194
651-757-2670
jeff.risberg@state.mn.us

Jeff Myers
Director, Water Monitoring and Assessment
New York State Department of Environmental Conservation
625 Broadway
Albany, NY 12233-3502
518-402-8251
jamyers@gw.dec.state.ny.us

Kathy Stecker
Supervisor, Modeling and TMDL Unit
North Carolina Division of Water Quality
1617 Mail Service Center
Raleigh, NC 27699
919-807-6422
kathy.stecker@ncdenr.gov

Shanon Phillips
Director, Water Quality Division
Oklahoma Conservation Commission
4545 North Lincoln Blvd, Suite 11A
Oklahoma City, OK 73105
405-522-4728
Shanon.Phillips@conservation.ok.gov

Kevin Brannan
Natural Resource Specialist
Oregon Department of Environmental Quality
811 SW 6th Ave
Portland, OR 97204
503-229-6629
brannan.kevin@deq.state.or.us

Carl Adams
Program Manager, Watershed Protection
Utah Dept. of Environmental Quality
Division of Water Quality
PO Box 144870
Salt Lake City, UT 84114
801-536-4330
carladams@utah.gov

Nesha McRae
Field Coordinator, TMDL/Watershed Program
VA Department of Conservation and Recreation
44 Sangers Lane, Suite 102
Staunton, VA 24401
540-332-9238
nesha.mcrae@dcr.virginia.gov

Helen Bresler
Supervisor, Watershed Planning Unit
Washington Department of Ecology
P.O. Box 47600
Olympia, WA 98504-7600
360-407-6180
hbre461@ecy.wa.gov

Kevin Kirsch
Water Resource Engineer
Wisconsin Department of Natural Resources
101 S. Webster St. PO Box 7921
Madison, WI 53707
608-266-7019
Kevin.Kirsch@gmail.com

Jennifer Zygmunt
Coordinator, Nonpoint Source Program
Wyoming Department of Environmental Quality
122 W. 25th Street, Herschler Building 4W, Cheyenne, WY 82002
307-777-6080
jennifer.zygmunt@wyo.gov

Federal Participants

EPA Headquarters

Luke Cole
ORISE Fellow
Office of Water/OST/SHPD
USEPA
EPA West Building
1301 Constitution Ave., N.W.
Washington, DC 20004
202-566-9988
cole.luke@epa.gov

Tatyana DiMascio
Watershed Branch
USEPA
EPA West Building
1301 Constitution Ave., N.W.
Washington, DC 20004
202-566-1530
dimascio.tatyana@epa.gov

Katharine Dowell
Assessment and Watershed Protection Division
USEPA
EPA West Building
1301 Constitution Ave., N.W.
Washington, DC 20004
202-564-1515
dowell.katharine@epa.gov

Katie Flahive
Nonpoint Source Control Branch
USEPA
EPA West Building
1301 Constitution Ave., N.W.
Washington, DC 20004
202-566-1206
flahive.katie@epamail.epa.gov

John Goodin
Chief, Watershed Branch
USEPA
EPA West Building
1301 Constitution Ave., N.W.
Washington, DC 20004
202-566-1373
goodin.john@epa.gov

Yu-Ting Guilaran
Associate Director, Assessment & Watershed Protection Division
Office of Wetlands, Oceans, and Watersheds
USEPA
EPA West Building
1301 Constitution Ave., N.W.
Washington, DC 20004
202-566-1312
guilaran.yu-ting@epa.gov

Lynda Hall
Chief, Nonpoint Source Control Branch
USEPA
EPA West Building
1301 Constitution Ave., N.W.
Washington, DC 20004
202-566-1210
hall.lynda@epa.gov

Meghan Klasic
National Coordinator of 319 Grants
National Coordinator or 604(b) ARRA Program
Nonpoint Source Control Branch
USEPA
EPA West Building
1301 Constitution Ave., N.W.
Washington, DC 20004
202-564-8221
klasic.meghan@epa.gov

Chris Lewicki
Watershed Branch
USEPA
EPA West Building
1301 Constitution Ave., N.W.
Washington, DC 20004
202-566-1293
lewicki.chris@epa.gov

Menchu Martinez
Watershed Branch
USEPA
EPA West Building
1301 Constitution Ave., N.W.
Washington, DC 20004
202-566-1218
martinez.menchu-c@epa.gov

Eric Monschein
Associate Branch Chief, Watershed Branch
USEPA
EPA West Building
1301 Constitution Ave., N.W.
Washington, DC 20004
202-566-1547
monschein.eric@epa.gov

Doug Norton
Watershed Branch
USEPA
EPA West Building
1301 Constitution Ave., N.W.
Washington, DC 20004
202-566-1221
norton.douglas@epa.gov

Shera Reems
Watershed Branch
USEPA
EPA West Building
1301 Constitution Ave., N.W.
Washington, DC 20004
202-566-1264
reems.shera@epa.gov

Tom Wall
Acting Director, Assessment & Watershed Protection Division
Office of Wetlands, Oceans, and Watersheds
USEPA
EPA West Building
1301 Constitution Ave., N.W.
Washington, DC 20004
202-564-4179
wall.tom@epa.gov

Anne Weinberg
Assessment and Watershed Protection Division
Office of Wetlands, Oceans & Watersheds
USEPA
EPA West Building
1301 Constitution Ave., N.W.
Washington, DC 20004
202-566-1217
weinberg.anne@epa.gov

EPA Regions

Elizabeth Gaige
USEPA- Region 3
Water Protection Division 3WP30
1650 Arch Street
Philadelphia, PA 19103
215-814-5676
gaige.elizabeth@epa.gov

Fred Suffian
Program Manager
USEPA Region 3, Nonpoint Source Pollution Program
1650 Arch Street
Philadelphia, PA 19103
215-814-5753
suffian.fred@epa.gov

Peter Monahan
Regional NPS Coordinator
Watershed Team Lead
USEPA Region 8, Ecosystems Protection Program
1595 Wynkoop Street,
Denver, CO 80202-1129
303-312-6946
monahan.peter@epa.gov

Valentina Cabrera-Stagno
Watersheds Office
US EPA Region 9
75 Hawthorne Street,
San Francisco, CA 94105
415-972-3434
cabrera-stagno.valentina@epa.gov

Natural Resources Conservation Service

Astor Boozer
Regional Conservationist for the West
USDA NRCS
14th and Independence Ave., SW, Room 6101-A
Washington, DC 20250
202-690-2196
astor.boozer@wdc.usda.gov

Lisa Duriancik
Coordinator, Conservation Effects Assessment Project (CEAP)
USDA NRCS
George Washington Carver Center
5601 Sunnyside Ave.
Beltsville, MD 20705
301-504-2304
lisa.duriancik@wdc.usda.gov

Other Participants

Marion Boulicault
Environmental Law Institute
2000 L Street NW
Suite 620
Washington, DC 20036
202-939-3862
boulicault@eli.org

Bruce Myers
Environmental Law Institute
2000 L Street, N.W.
Suite 620
Washington, DC 20036
202-939-3809
myers@eli.org

Larry Sanders
Professor & Extension Economist
Department of Agricultural Economics
Oklahoma State University
Stillwater, OK 74078
405-744-9834
larry.sanders@okstate.edu

Adam Schempp
Environmental Law Institute
2000 L Street, N.W.
Suite 620
Washington, DC 20036
202-939-3864
schempp@eli.org

Philip Womble
Environmental Law Institute
2000 L Street, N.W.
Suite 620
Washington, DC 20036
202-939-3859
womble@eli.org

Sara Vinson
Environmental Program Manager
Association of Clean Water Administrators
1221 Connecticut Ave., NW, 2d Floor
202-756-0600
svinson@acwa-us.org

APPENDIX 3:
SUMMARY OF WORKSHOP PARTICIPANT EVALUATIONS

Sixteen 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.

Participant Evaluation Form: Compilation

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

A. The Workshop—Overall

Information Presented	**5** (12)	**4** (4)	**3**	**2**	**1**	**AVG: 4.75**
Workshop Materials	**5** (10)	**4** (4)	**3** (2)	**2**	**1**	**AVG: 4.50**
Workshop Organization	**5** (13)	**4** (2)	**3**	**2** (1)	**1**	**AVG: 4.69**
Group Interaction	**5** (14)	**4** (2)	**3**	**2**	**1**	**AVG: 4.88**
Session Facilitation	**5** (14)	**4** (1)	**3** (1)	**2**	**1**	**AVG: 4.81**
Conference Facility (NCTC)	**5** (14)	**4** (2)	**3**	**2**	**1**	**AVG: 4.88**

Comments:

- Thanks for keeping the formal presentations to a minimum. The best parts of the workshop were the open discussion sessions!
- Overall, and once again, ELI did an excellent job facilitating the sessions. Suggest adding a "team building" activity in the evening (on site). The purpose to bring the group even closer.
- ELI did an excellent job facilitating, were knowledgeable and organized. Could have used more blank note paper in binder.
- I'm pretty hard to please, but this was great!

- Another excellent workshop. There were many topics/practices brought up in the discussion that I will bring home and explore/implement into our programs.
- Color copies for binder would be preferable.
- Only issue was cutting off discussion at a session's end, might be good to see if group wants to extend time. I could have benefited from Larry's full presentation on Tuesday.
- I am very thankful for the chance to have participated/listened this week. Not just did I learn, but I feel empowered by the experience, ideas, energy of other participants. John, Eric and Menchu did a wonderful job (as did ELI). I hope that my state will participate in the future. Also, I liked the mix of more and less experienced participants – it allowed for fresh ideas and valuable, informed life experience. It is small potatoes, but the ice breaker was easy and fun rather than cheesy and awkward and the 10 year goal/vision sharing was inspiring and forward-looking. Size of the meeting is perfect though.
- This worked very well. The facilitators made sure everyone was heard, the facility is comfortable and facilitated discussion. ELI does a great job.
- Great conference, liked the discussion-based format (no "death by powerpoint"), lots of energy and enthusiasm, clearly lots of effort invested in upfront planning, ELI staff did an excellent job with planning and facilitation.
- Very impressive overall. Well-orchestrated by ELI.
- The classroom style set-up is not ideal for interaction.
- Good balance of presentations and open dialogue. Good mix of attendees. It would have been nice if the agenda was presented by day with materials following instead of all the agenda at the front. Only facility problem is lack of cell signal.

B. Goals and Outcomes; Topical Coverage

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

5 (10) **4** (5) **3** **2** **1** **AVG: 4.67**

How successfully did the workshop meet your own expectations?

5 (12) **4** (2) **3** (1) **2** **1** **AVG: 4.73**

What I learned will be useful to me:

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

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

- I think we could use more discussion of moving from determining load reductions needed to estimating what reductions have been achieved as BMPs are implemented. Important to measure incremental success short of meeting standards!
- Multi-jurisdictional TMDLs – Mississippi River/Gulf of Mexico Hypoxia
- Crosswalk between designated beneficial uses and TMDLs. Role of TMDLs in informing appropriate uses – UAA/TALU
- I'm not sure that the challenges of TMDLs and TMDL implementation were clearly discussed. It seemed to be a question of interest based on the pre-survey, but it wasn't asked.
- More detailed discussion on reasonable assurance

C. Specific Sessions

If you would like to comment on individual sessions, please use the space below:

Session #1: A Ten-Year Vision for the CWA 303(d) Program

- A smart way to kick the workshop off. Open atmosphere let everyone talk.
- This concept is very much appreciated, especially because the states were asked to participate in formulating the vision. The vision should help to provide a collaborative focus.
- Glad to see that this is being done, presentation provided a good overview of 303(d) program. Would be great if something similar could be done for 319.
- Wonderful – I like it! We had some conversation at lunch about getting buy-in from states/EPA folks who did not participate in developing the vision, but since it was organic and "not developed in a box" (not to mention really good (strong) I think it will be accepted).
- I am encouraged by the 10 year vision.
- I appreciate EPA's continued willingness to listen to states and seek our input on the future of the program.
- Good.

Session #2: Implications for the CWA 319 Program

- Good.
- I live in TMDL world, so more info on 319 was helpful.
- Very informative, helped set the stage for discussion.
- Interesting discussion by Lynda regarding program reviews/reports and how to move forward. The current NRCS EQIP allocations were informative as I had not heard anything from our state folks. Hopefully our 319 program has had some input.

Session #3: How the NPS Landscape May Influence Listing/TMDLs

- Very thought provoking, especially the info presented by Larry Sanders – more time for this would have been good.
- Really enjoyed CEAP presentation along with others, information presented didn't seem to weave its way back into discussion throughout the meeting, though.
- It was an interesting perspective from the ag-related agencies/activities. Reminded me that our participation in the State Technical Committee has decreased and that we may need to reengage NRCS. We are exploring a joint Santa Cruz TMDL with EPA R9, knowing the NIFA study exists for the area may prove helpful.
- Because issues with NPDES permits "get more attention," I've been aware of issues/disconnects between permits in TMDLs, but it is useful/more holistic to think about disconnects between TMDLs/TMDL modeling and NPS – maybe we'll get there, get along better. Also, I liked the idea of bringing economics into the conversation.
- This will be problematic as long as we don't have jurisdiction over nonpoint source load.

Session #4: Nutrient- & NPS-Related Vision Elements

- Good.
- Present examples of success in addressing nutrients, particularly related to projects involving partnerships between regulators and the agricultural industry.
- Although nutrients have not been a large concern in my state, it was an eye-opening discussion of challenges other states face. The approaches and tools developed can be tweaked and applied to other pollutants more applicable to us.
- Good.

Session #5: Approaches to Listing Waters Impaired by Nutrients

- Good.
- This is a real issue for the state I work with. The state has no written assessment methodology, and only the very worst impairments are on a list (cat 5). Borderline waters go from 5, 4a, 4b, etc. depending on the biologist on the job.
- Didn't take away as much from this session as in others – discussion got sidetracked with the maps (seemed like some felt defensive based on the way that their efforts were presented)
- The discussion did not seem to coincide with the prompts in the agenda – I don't think the outcomes were achieved.
- Great to hear perspective from other agencies within the EPA.

Session #6: Setting Program Priorities with Accountability

- Good.
- This is such an interesting/challenging/important issue. And so many perspectives in the room have great ideas. I still struggle with the accountability issue, especially if this

conversation is exclusively between EPA HQ and the states (since the regions approve IR's). Facilitators did a great job of herding cats in the room.
- Great discussion, highly productive. Would have liked more time to narrow down the list we came up with for 303(d) program along with 319 and then look for how to bridge/match up priorities.
- Very good discussion.

Session #7: TMDL/Other Programs & Nutrient Reduction Strategies

- Low energy. Maybe should have included a brief thought-provoking presentation (with controversial maps!) Or maybe should have given as homework & done a roll call.
- Presumed compliance is an interesting concept that could be used to promote NPS "enforcement" options in states when they do not exist.
- This is so interesting and refreshing. My one concern (that I have to express) is how to deal with the least common denominator. If a state wants to prioritize in a very lazy way that simply avoids doing work and truly having required requirements, how do you deal with it? It is demoralizing and counter-productive to allow the least common denominator to steer the cruise ship, but it needs to be addressed (because my state is currently on that track and I don't know how to deal with it – comparing the state to "better states" does not work!)
- This was the only session that I felt dragged a little, discussion didn't seem to really gain traction.
- Good discussion – most points were included.

Session #8: Tools & Approaches to Foster NPS Load Reductions

- I think maybe a brief presentation from Helen or Shannon would have been helpful. Maybe not…discussion went well after slow start.
- The concept of greater cost share to stronger/more effective 319 projects may help reduce weaker project proposals. If a group was looking for grant funds for a project that would not really address the pollutant issue of concern they would require a greater match.
- Information gaps are real challenges when we are standing in front of angry people who are threatening lawsuits. This (suite of BMPs – TMDL appendices) is helpful for helping our programs help each other (or at least prevent us from making each other's lives/jobs harder), which has a positive feedback loop!!
- Good information provided by participants regarding BMP tools, BMP problems and limitations.

Informal Evening Session: (Re)defining Success

- This was fun and informative.
- Very nice. Have something similar next year.
- Great idea – informal setting was a nice change of pace.
- Hilarious!
- This worked out better than I thought – props to ELI for setting it up.

- Being "newer" (less than 5 years) in the program and just emerging from a very intense CD, it is hard to know where I'll be in 10 years. It was refreshing and inspiring to hear from my more experienced colleagues. Some of the (semi-off-the-wall?) topics that are cool include 1) winning the hearts and minds of the people who pay our salaries and love to remind us of it, 2) looking at win-win economics – people pay more for organics and (sometimes) walk a few extra steps to recycle because of "social pressure" etc. (labeling could be akin to 1% for the planet on Patagonia/Cliff Bar)
- Loved this – it reminded me of why I do this work.
- Very inspiring, morale building! Clear themes emerged, good participation

Session #9: Measuring & Sustaining NPS Load Reduction Success

- Very good. Could have been more structured and longer if we wanted to actually come up with measures ready to use.
- Although we were not bound by consent decree pace requirements, it is good to hear that other measures of success/progress are being explored. The ties between 319 and TMDLs at the state level are being pushed in R9, but is that push taking place at the federal level?
- Between this and setting priorities, everything else flows to respond to these two endpoints at the beginning and end of the restoration process.
- I'm so glad that "do not let silos of 'beans' (assessment, TMDLs, NPS, NPDES, WQS) be enemies" resonated with states. It is the most unpleasant part of my job.
- Really enjoyed this discussion, quite valuable. Hope that recommendations on more effective measurements can be considered. Saw real value in discussion about competing interests of TMDL and NPS programs and associated "beans."
- Lots of good ideas discussed.
- This is the only conference I've ever attended where there was a concerted effort to restructure programmatic methods – in line – based on the attendants' input. Very progressive.
- Nice cluster of last 3 sessions – good build up to final discussions.

Final Discussion and Training Workshop Wrap-Up:

- John did great as usual.
- John does a wonderful job coalescing so many thoughts into a cohesive set of findings and actions.
- I appreciate the chance to re-visit.
- Good wrap-up, nice summary of key findings, clear commitment to follow up on ideas, allowed for review of an additional input on key findings and ideas that came out of each session.

Other Comments or Suggestions:

- Thank you! ELI did a fantastic job!!!

- Based on the ten year vision and its final form, future calls/workshops on how to integrate with other programs and alternatives to TMDLs would be useful. Work on how to meet the goals and objectives of the vision earlier rather than later would help us all meet those goals and objectives.
- Workshop was great overall. It promotes camaraderie and sharing of information and ideas. I hope to be back next year.
- Great job once again in organizing a wide array of issues into a cohesive workshop. Bruce, Adam, Philip and Marion's energy and positive attitude were instrumental in making this workshop a success.
- As always, ELI put together a great workshop, I'm hopeful the developed networks among participants provides a resource to apply the findings here to our daily mission.
- Odd-ball ideas that came to me during downtime/informal conversations:
    - It was great to see someone from a university here. Professors/students (supervised grad and undergrad) do cutting edge work on nutrients and so many other subjects yet are often not engaged or engaged in illogical ways. Can we get help from Land Grant (and other) universities to develop numeric criteria and do other good work on nutrients? (caution – don't do it the "easiest" way to get money out the door, but by MOST QUALIFIED folks! – N & P biochemists)
    - Use economics to our benefit – we are not job killers (usually – we should not be!)
    - Are there opportunities for us to improve our imaging to the public and elected officials?
    - Using "quick and dirty" statewide mercury TMDLs, PCB TMDLs (that some people think are a waste of time) to leverage or bring awareness to an issue that is dealt with in another silo (air, waste, etc.) It even applies to nutrients as far as a secondary NAAQ for NOx/SOx!?
- Great facility for conference, just long enough (quite a bit packed in but everyone stayed very engaged throughout), well-planned, thanks to EPA for sponsoring this.
- Another great workshop! The setting/organization really lead to good opportunities for learning from one another.
- Host a similar conference for water quality standards!

APPENDIX 4: LINKING CORE FACTORS IN PRIORITIZATION AND SUCCESS WITH THE RECOVERY POTENTIAL TOOL

During Session 6 of the 2012 National Training Workshop, participants together developed a list of core factors that they believed should be taken into consideration when assigning priorities and measuring success. There is a strong correlation between most of these core factors and the indicators used in the recovery potential tool developed by EPA. Detail regarding these indicators is available online and may provide added information for assigning priorities and measuring success. The chart below lists the core factors in the left column and the URL for the relevant recovery potential indicator in the right column.

Core factors to be considered when assigning priorities and measuring success (developed at 2012 workshop)	**URL of Recovery Potential Screening subcategory or specific indicator relevant to this factor**
Human health	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorssocial.cfm#humanhealth
Local leadership and capacity	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorssocial.cfm#leaderorgengage
Data availability	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorssocial.cfm#infocertplan
Percent of the watershed impaired	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorsstressor.cfm#svritypollloading
Current load	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorsstressor.cfm#svritypollloading
Proximity to population	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorssocial.cfm#humanhealth
Watershed schedule	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorssocial.cfm#humanhealth
Ability to meet water quality standards	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorsstressor.cfm#svritypollloading
Economic impact	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorssocial.cfm#socioecoconsid
Percent of state covered by similar impairment	Indicator not currently developed
Downstream and interstate concerns	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorssocial.cfm#RP3lgwshedmgt (see also jurisdictional complexity for interstate part)
Number of CWA 303(d) listed causes	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorsstressor.cfm#svritypollloading

Staff availability	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorssocial.cfm#leaderorgengage
Number of stressors and impacts	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorsstressor.cfm#svritypollloading
Political pressure	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorsdownload.cfm
Litigation likelihood	indicator not currently developed
High value resources	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorssocial.cfm#humanhealth
Ability to measure progress	indicator not currently developed
Regulated vs. unregulated sources	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorssocial.cfm#protectownerreg
Credit for work it would accomplish	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorsdownload.cfm (see '303d schedule priority' or 'other priority recognition')
Revisiting old TMDLs	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorssocial.cfm#infocertplan
Critical areas	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorssocial.cfm#humanhealth
Infrastructure on the ground	Indicator not currently developed
Projected land use change	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorsstressor.cfm#landusepastfuture
Complexity of TMDLs	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorssocial.cfm#restorcost
Economic benefit of action	Indicator not currently developed
Public support	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorssocial.cfm#humanhealth
Type of impairment (difficulty)	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorsstressor.cfm#svritypollloading
New or increased discharges	http://owpubauthor.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/indicatorsstressor.cfm#svritypollloading

For more information on the recovery potential tool, please contact Doug Norton of EPA Headquarters at norton.douglas@epa.gov.

APPENDIX 5: WORKSHOP WEB PORTAL—ELI'S STATE TMDL PROGRAM RESOURCE CENTER

Following the 2012 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