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Wendy E. Wagner

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RESTORING POLLUTED WATERS WITH PUBLIC VALUES

WENDY E. WAGNER*

Watershed management is one of the oldest and most widely accepted tools for protecting water quality. For centuries, it has been understood that enhancing water quality is best accomplished by restricting polluting activities within a drainage area.¹ Even individuals not well-versed in technical issues, such as U.S. congresspersons, have appreciated the importance of watershed management to water quality protection. Since the 1950s, federal clean water statutes and their amendments have promoted watershed management as a method for protecting water quality.² Indeed, our legislative commitment to the tools of watershed management has only grown more emphatic over time.³

Yet despite the continued prominence of watershed management in the laws governing water quality control, until very recently there has been little effort by federal or state agencies to actually implement watershed

* Professor, University of Texas School of Law. I am most grateful to the editors of the WILLIAM AND MARY JOURNAL OF ENVIRONMENTAL LAW AND POLICY REVIEW for inviting me to participate in this symposium, and to the participants at the symposium for valuable comments and insights. Many thanks also to Melvyn Durchslag and Michael Walker for comments on an earlier draft and to Tanya Aure for excellent research assistance.

¹ See, e.g., Robert W. Adler, *Addressing Barriers to Watershed Protection*, 25 ENVTL. L. 973, 1004-13 (1995) (recounting how well established watershed management has been historically); see also *id.* at 976 (providing rough definition of watershed management that includes "[t]he entire surface drainage area that contributes water to a lake or river.") (quoting NATIONAL RESEARCH COUNCIL, RESTORATION OF AQUATIC ECOSYSTEMS: SCIENCE, TECHNOLOGY, AND PUBLIC POLICY 524 (1992)).

² For a comprehensive accounting of federal legislation that promotes watershed based restoration and protection, see Adler, *supra* note 1, at 1037-87; see also Scott D. Anderson, 26 B.C. ENVTL. AFF. L. REV. 339, 367-72 (1999) (detailing history of watershed management); William Goldfarb, *Watershed Management: Slogan or Solution?*, 21 B.C. ENVTL. AFF. L. REV. 483, 486-89 (1994) (recounting history of watershed management, and relating it to the concept of 'unified river basin management' of the early 1900s).

³ See, e.g., Oliver A. Houck, *TMDLs: The Resurrection of Water Quality Standards-Based Regulation Under the Clean Water Act*, 27 Env'tl. L. Rep. 10329, 10331-43 (1997) (detailing history of watershed-based water quality protections in the various incarnations of the Clean Water Act).

management into their regulatory programs.⁴ With a few notable exceptions, watershed management has played at best a minor role in the thirty year, billion-dollar effort to clean up our rivers and lakes.⁵ Instead, most of the expenditures and administrative resources have been dedicated to a watershed-blind approach to protecting water quality that requires industrial and other "point sources" to install the equivalent of the best available technology to control their discharge irrespective of the quality of the receiving waters.⁶

There are indications, however, that we may be reaching a watershed point in the use of watershed management as a tool for improving water quality. Technology-based standards have now been implemented for virtually all point sources of water pollution, yet the water quality of many rivers and lakes continues to be degraded.⁷ Moreover, because much of this degradation results from largely

⁴ This article addresses water quality protection, which is admittedly only a piece of the larger watershed restoration picture. See, e.g., Adler, *supra* note 1, at 1101 (advocating broader programs of watershed protection that include flow considerations and that account for "all aspects of the hydrological cycle, including links between land and water, water quality and quantity, and groundwater and surface water."); cf. Goldfarb, *supra* note 2, at 489 (arguing that "except for the broad outlines of nonpoint source pollution control strategies, watershed management—like its predecessor unified river basin management—has no consistently accepted descriptive meaning, either conceptual or operational."). Given the focus on citizen participation in this article, however, it seems appropriate to start with a discrete issue. The findings can then be extrapolated, if appropriate, to other features of watershed management or to environmental law more generally.

⁵ See, e.g., Houck, *supra* note 3, at 10343 (observing that as the Clean Water Act moved into the 1990s, "its federal technology standards work[ed] significant reductions in pollution discharges, its state water quality standards, with a few notable exceptions, [constituted] a distant and lightly attended second."); see also Michael P. Healy, *Still Dirty After Twenty-Five Years: Water Quality Standard Enforcement and the Availability of Citizen Suits*, 24 *ECOLOGY L.Q.* 393, 395, 414-29 (1997) (concluding that "evaluated from a variety of perspectives, the enforcement of the water quality-based system of pollution control [under the Clean Water Act] must be viewed as a failure.").

⁶ See Houck, *supra* note 3, at 10343.

⁷ See, e.g., U.S. EPA, REPORT OF THE FEDERAL ADVISORY COMMITTEE ON THE TOTAL MAXIMUM DAILY LOAD (TMDL) PROGRAM 8 (1998) [hereinafter FACA REPORT] (relating that "of the 19 percent of the nation's rivers and streams that have been assessed, 35 percent do not fully support water quality standards or uses and 8 percent are considered threatened . . . [and of] the 40 percent of lakes, ponds and reservoirs assessed (not including the Great Lakes), 39 percent are not fully supporting uses/standards and 10 percent are threatened.") (citing EPA's final National Water Quality Inventory Report to Congress for 1996).

unregulated nonpoint sources,⁸ calls for greater use of watershed management tools from both the policymaking and academic communities has become increasingly insistent.⁹

Yet, it is precisely because the concept of watershed management is so non-controversial that its conspicuous absence in regulatory programs needs to be understood. This essay endeavors to supplement other efforts to explain why water quality protection programs have struggled so unsuccessfully to incorporate watershed management into water quality regulation.¹⁰ The reason advanced in this article for the failure to integrate watershed management into water quality control

⁸ See, e.g., GENERAL ACCOUNTING OFFICE, GREATER EPA LEADERSHIP NEEDED TO REDUCE NONPOINT SOURCE POLLUTION 8 (1990) (reporting that nonpoint source pollution is predominant problem for 76 percent of the lakes, 65 percent of the streams, and 45 percent of the estuaries that fail to meet water quality standards); Adler, *supra* note 1, at 990 (citing numerous sources to support statement that "[p]olluted runoff is the largest source of water pollution in the United States and a major source of physical and hydrological impairment and habitat loss."); Farm, Urban Runoff, Municipal Sources Top Pollution Causes, EPA Tells Congress, 24 Env't Rep. 2228, 2228 (1994).

⁹ The culmination of efforts within the policy-making community is the FACA REPORT, *supra* note 7, which provides an assessment by a variety of experts on how best to improve the effectiveness, efficiency and pace of TMDL programs. This report was prompted not only (or even primarily) by the demand for cleaner water, however, but by a rash of citizen suits forcing the EPA and states into action. See, e.g., Oliver A. Houck, *TMDLs, Are We There Yet?: The Long Road Toward Water Quality-Based Regulation Under the Clean Water Act*, 27 Env'tl. L. Rep. 10391 (1997) [hereinafter Houck II].

On the academic side, Professors Adler and Houck have each provided superb accounts of the history and progress of water quality control programs and the TMDL programs in particular. See generally Adler, *supra* note 1 (providing a very thorough account of various regulatory programs designed to employ watershed management and describing and hypothesizing about their limited success); Robert W. Adler, *Integrated Approaches to Water Pollution: Lessons from the Clean Air Act*, 23 HARV. ENVTL. L. REV. 203 (1999) (considering whether the Clean Air Act offers insights for implementation of water quality backup programs under the Clean Water Act); Houck, *supra* note 3 (describing the origin of the TMDL program); Houck II, *supra* (documenting its historic failure and recent success as a result of citizen suits); Oliver A. Houck, *TMDLs III: A New Framework for the Clean Water Act's Ambient Standards Program*, 28 Env'tl. L. Rep. 10415 (1998) [hereinafter Houck III] (describing EPA's current activities to implement the program); Oliver A. Houck, *TMDLs IV: The Final Frontier*, 29 Env'tl. L. Rep. 10469 (1999) [hereinafter, Houck, IV] (considering the larger problems raised by the TMDL program and whether the program can achieve results). For a compilation of these articles by Professor Houck, as well as his additional, more recent research on TMDLs, see OLIVER A. HOUCK, *THE CLEAN WATER ACT TMDL PROGRAM: LAW, POLICY, AND IMPLEMENTATION* (1999).

¹⁰ See sources cited *supra* note 9. This essay takes these accounts as the starting point and endeavors to offer one additional, but significant, reason why the water quality control programs have not been successful.

regulation is somewhat counterintuitive, however. Rather than call for investments in still more scientific experts or technocratic tools to improve water quality, it is suggested that we may need less of these things. The problem, simply put, is that watershed management and the associated requirements for clean waters have been misframed as technical issues, when in fact public discourse is required for significant progress to be made in restoring degraded waters. While experience suggests that the threat of rigorous federal standards is essential to improve water quality,¹¹ experience also reveals that some of the greatest strides in environmental protection are made when these requirements form only the default rules for ensuring environmental quality, providing ample room for creative approaches that go above and beyond minimal federal guidelines.¹² In the area of watershed-based water quality protection, however, the default requirements—the Total Maximum Daily Load (TMDL) program—impose a mandatory process that seems to have the effect of preempting more creative or public-spirited approaches to protecting water quality.¹³ The unrealistic technical demands imposed by the TMDL requirements not only consume agency resources that could be used to involve the public in enhancing water quality, but they may also alienate all but the most dedicated citizens and local communities from participating in water quality decisions. Yet without the support or involvement of the public, particularly at the state level where much of the regulatory authority rests, water protection programs are bound to drift aimlessly and ultimately fail.¹⁴

This analysis of the ways in which involvement and support of the public is both critical to and largely missing from current efforts to integrate watershed management into water quality control is developed in four parts. In the first part, the current state of our water quality programs is detailed with particular attention to their over-reliance on technical and

¹¹ See, e.g., *infra* note 115 and accompanying text; see generally EPA, Final Rule: Revisions to the Water Quality Planning and Management Regulation and Revisions to the National Pollutant Discharge Elimination System Program in Support of Revisions to the Water Quality Planning and Management Regulation, 65 Fed. Reg. 43586, 43586 (2000) (EPA's TMDL regulations are designed to provide "clear goals for identification of impaired waterbodies and establishment of TMDLs.") [hereinafter "Final TMDL Regulations"].

¹² See, e.g., *infra* text accompanying notes 67-71.

¹³ See *infra* Part III.

¹⁴ See *infra* Part II. The criticisms advanced in this article regarding the adverse effect of the TMDL program on participation are based on the TMDL program in existence before EPA's TMDL regulations were revised in July 2000, see Final TMDL Regulations, *supra* note 11, although as noted, *infra*, EPA's latest regulations do not alleviate the problems.

scientific tools. In the second part, the central role of the citizen in integrating watershed management into water quality protection programs is detailed. The multiple ways in which citizens are impeded from participating in water quality control decisions—a problem that is often overlooked in discussions of how to better incorporate watershed management in water quality control programs—is outlined in the third part. In the fourth and final part, several reforms will be offered that can be used to increase the extent to which the public serves as an active participant in the quest for cleaner waters.

I. THE CLEAN WATER ACT'S FRAMING ERROR: IGNORING THE ART AND EXAGGERATING THE SCIENCE OF WATERSHED MANAGEMENT

Current federal laws and regulations that attempt to integrate watershed management into water quality regulation insist on the use of scientific and technical tools that outstrip the capabilities of existing watershed management science. While these unrealistic federal requirements are effective when they serve as default or motivating requirements for states that refuse to meet minimum national requirements, they are not effective when they function as mandatory requirements that supplant all other approaches to protecting water quality. Currently, however, these federal requirements appear to preempt all other approaches to improving water quality. In this section, the problems with this current regulatory approach are detailed. The resulting adverse consequences for citizen involvement—the essential component of any successful water quality protection strategy—are then outlined in Parts II and III.

A. *The Water Quality March*

There is considerable evidence that Congress is enamored with scientific and associated technical approaches to addressing environmental problems.¹⁵ Not only do technical approaches garner great respect from the public, but these super-rational approaches also allow congresspersons

¹⁵ See, e.g., Holly Doremus, *Listing Decisions Under the Endangered Species Act: Why Better Science Isn't Always Better Policy*, 75 WASH. U. L.Q. 1029 (1997) (criticizing Congress' "strictly science" mandate for listing endangered and threatened species because it is scientifically unrealistic and essentially impossible); Wendy E. Wagner, *Congress, Science, and Environmental Policy*, 1999 U. ILL. L. REV. 181 (arguing that Congress tends to misframe many policy questions arising in environmental law as capable of being resolved by science).

to avoid controversy that could potentially cost them their jobs in the next election.¹⁶ It is thus not surprising to see this infatuation with scientific answers and methods reflected in Congress' effort to integrate the concepts of watershed management into water quality control programs. While Congress is right to integrate watershed management into water quality control, it has done so in the wrong way by misframing watershed management as predominantly a technical exercise.

Both in the initial 1972 statute and in subsequent major amendments to the Clean Water Act, Congress developed an extravagant and obsessively rational approach to integrating watershed concepts into water quality control programs.¹⁷ While the Clean Water Act includes a number of watershed planning requirements,¹⁸ as well as requirements for adding restrictions on point sources when water is degraded,¹⁹ only the TMDL program seeks to accomplish both of these objectives simultaneously. Specifically, the TMDL program endeavors to impose enforceable limits on both point and nonpoint sources based on the needs of the receiving waters.²⁰ Characterized here as the "water quality

¹⁶ See, e.g., Wagner, *supra* note 15, at 221-57 (providing examples and literature that suggest a number of reasons why Congress may misframe environmental policy questions as science problems).

¹⁷ See 33 U.S.C. § 1313(d) (1994). As Professor Houck observes: "As [Bill Rodgers] has noted, the TMDL process is a 'monument to the ambitions of rational decision making.' At the bottom of this monument, however, is 'an acutely political judgment' as to whose ox will be gored." Oliver A. Houck, *The Regulation of Toxic Pollutants Under the Clean Water Act*, 21 Env'tl. L. Rep. 10528, 10546 (1991) (quoting 2 W. ROGERS, ENVIRONMENTAL LAW 281 (1986)).

¹⁸ See, e.g., 33 U.S.C. § 1288 (requiring area-wide waste treatment management plans); § 1313(e) (advocating comprehensive water-quality program planning); § 1329 (calling on states to develop watershed management plans).

¹⁹ See 33 U.S.C. § 1314(l) (the "Individual Control Strategy" program).

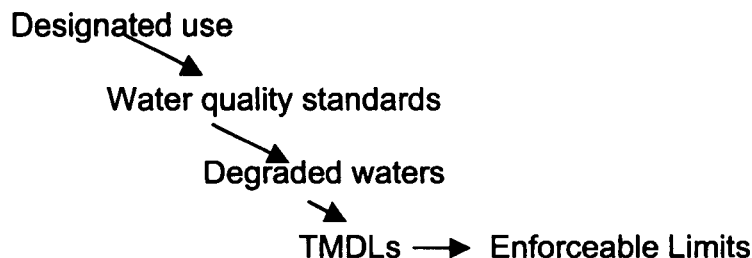
²⁰ See 33 U.S.C. § 1313(d). The EPA defines a TMDL as

a quantitative assessment of pollutants that cause water quality impairments. A TMDL specifies the amount of a particular pollutant that may be present in a waterbody, allocates allowable pollutant loads among sources, and provides the basis for attaining or maintaining water quality standards. TMDLs are established for waterbody and pollutant combinations of waterbodies impaired by point sources, nonpoint sources, or a combination of both point and nonpoint sources.

Final TMDL Regulations, *supra* note 11, at 43588; see also FACA REPORT, *supra* note 7, at 10 (observing that while "[m]any provisions of the [Clean Water] Act address impaired waters and authorize actions to improve water quality . . . only the § 303(d)(1) TMDL program provisions focus broadly on waters that do not meet water quality standards, including beneficial uses."). But see *infra* note 49 (discussing the contention that TMDLs do not apply to nonpoint sources).

march,” the legislation sets forth a series of consecutive, technical exercises that must be satisfied in order to develop an enforceable TMDL program that incorporates watershed management principles.²¹ See Figure 1.

Figure 1: The Water Quality March



In the first step, the state identifies, with minimal federal interference,²² the ideal public uses for the water, including aspirations that a particular river or stream be “swimmable,” “fishable,” “drinkable,” etc.²³ During the second step of the march, the state sets specific standards that match the various uses.²⁴ For contact recreation, for example, a state could decide that coliform levels must be below a particular quantitative standard, or it could simply provide a qualitative standard that identified the end goal (e.g., “no pollution will be tolerated that causes the river to be unsuitable for swimming.”).²⁵ In the third step,

²¹ For a more detailed discussion of these requirements, see Adler, *supra* note 9, at 209-230.

²² States at a minimum are directed to ensure waters are “fishable and swimmable.” See, e.g., Adler, *supra* note 9, at 209 n.35 (describing uncertain origin of “fishable and swimmable” requirement). Waters must also not be degraded below their existing condition unless “necessary to accommodate important economic or social development.” 40 C.F.R. § 131.12(a)(2) (1999).

²³ See 33 U.S.C. § 1313(c)(2)(A) (“Such standards shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial, and other purposes.”).

²⁴ See 33 U.S.C. § 1313(c)(2). The EPA must approve the standards, § 1313(c)(2)-(4), although it has typically provided the states considerable discretion due in part to the considerable scientific uncertainties involved in the exercise. See, e.g., 40 C.F.R. § 131.11.

²⁵ See 40 C.F.R. §§ 131.3(b), 131.11 (providing states with latitude to set criteria based on pollutant concentrations or narrative statements). Some federal restrictions also apply to this stage, primarily in the form of more specific anti-degradation requirements. See, e.g., Adler, *supra* note 9, at 213-15.

the state uses its monitoring resources to identify those waters that are not meeting their designated use.²⁶ This requires matching the water quality data of the state's waters against the standards set for each waterbody based on its designated use.²⁷ In the fourth and final step, the state develops enforceable pollution control plans for degraded waters based on its quantification of the loading of pollutants and its understanding of problem sources within the watershed.²⁸ Both point and nonpoint sources of the problematic pollutants are typically considered and their contributions to the problem assessed. A plan is then developed that requires these sources to reduce their loading to a level that ensures that the water will ultimately meet its designated use (the total maximum daily load).²⁹

B. *Potholes and Missteps in the Water Quality March*

Despite its curb appeal, practical implementation of this march has faltered at nearly every step. Only the first step of the march—statewide zoning of waters according to their intended and aspirational uses—seems to occur without significant bureaucratic turmoil.³⁰ The next step, which involves developing water quality standards that provide measurable criteria for determining whether the pollution is low enough to satisfy a designated use (such as being swimmable or fishable),³¹ has been fraught with delays and inconsistencies. For the first fifteen or more years after passage of the Clean Water Act, many states were reluctant to adopt quantitative water quality standards.³² But even when states do set

²⁶ See 33 U.S.C. § 1313(d)(1)(A). More specific federal guidance on how to determine or rank impaired waters is quite limited. See, e.g., Adler, *supra* note 9, at 217.

²⁷ See *id.*; see also Houck IV, *supra* note 9, at 10477 (“identifying polluted waters is, from the point of view of the science involved, the easy step.”).

²⁸ See 33 U.S.C. § 1313(d)(1)(C).

²⁹ For the TMDL program, these allocation requirements (which include an obligation to consider nonpoint sources) are imposed on the states mainly through regulatory requirements. See 40 C.F.R. §§ 130.2(g), (i) (defining “load allocation” and “total maximum daily load” to include nonpoint sources). For a summary of the TMDL process, see U.S. EPA, GUIDANCE FOR WATER QUALITY-BASED DECISIONS: THE TMDL PROCESS, at <http://www.epa.gov/owow/wtr1/tmdl/decisions/dec3.html> (Chapter Three: Development and Implementation of the TMDL) (last visited Oct. 11, 2000).

³⁰ At least there is little in the literature regarding problems at this step.

³¹ See *supra* note 24 and accompanying text.

³² See, e.g., ROBERT V. PERCIVAL ET AL., ENVIRONMENTAL REGULATION: LAW, SCIENCE, AND POLICY 938 (2d ed. 1996) (reporting that “[s]tates were slow to promulgate water quality standards, despite issuance of EPA criteria. Most states failed to

specific pollutant levels for different uses, their standards can vary by as much as 1000-fold with regard to how much pollution can be tolerated to support waters for recreation or basic uses.³³ With respect to the third step, which instructs states to monitor the quality of their waters,³⁴ as of 1996 only 19 percent of all water miles had been assessed.³⁵ As might be expected from the sequential nature of the march, however, the greatest failures have occurred during the last step of the march where the statute seems to contemplate that states implement watershed management concepts into an enforceable water quality plan.³⁶ To date, progress in

promulgate numerical standards for toxics or adopted standards far more lenient than those recommended by EPA's criteria.").

³³ See, e.g., *Natural Res. Def. Council, Inc. v. United States EPA*, 16 F.3d 1395, 1398, 1403-1405 (4th Cir. 1993) (holding that the EPA could approve water quality standards set by the states of Maryland and Virginia that allowed dioxin concentrations almost 1000 times more lenient than recommended by the EPA because of inherent scientific uncertainties regarding risks of dioxin).

Efforts to include more holistic biological criteria become even more difficult to apply with precision, see, e.g., Adler, *supra* note 9, at 261 (observing how some of these water quality measurements "require human observation and subjective judgment, compared to straightforward objective numeric measurements, which often can be done by automatic monitoring methods."), despite their important role in helping to understand water quality. See, e.g., PUBLIC EMPLOYEES FOR ENVIRONMENTAL RESPONSIBILITY, MURKY WATERS: OFFICIAL WATER QUALITY REPORTS ARE ALL WET 25 (May 1999) [hereinafter PEER] (reporting on an EPA report that found that "[w]hen using biological integrity indicators, the results of water quality problems were dramatically higher than reported without these indicators."); Adler, *supra* note 1, at 984-85 (describing the importance of biocriteria in understanding water quality impacts).

³⁴ See *supra* notes 26-27 and accompanying text.

³⁵ See FACA Report, *supra* note 7, at 8 (citing EPA's Final National Water Quality Inventory Report to Congress for 1996); see also PEER, *supra* note 33, at 16 (reporting that only 4 states reported assessing 100 percent of stream miles, "while 32 states assessed less than 40 percent of their rivers and streams with an average of 15 percent."). To add insult to this injury, some of the water quality assessments available are of poor quality or have been reported in ways that obscure underlying problems. See, e.g., PEER, *supra* note 33, at 2-3 (concluding in executive summary that "an unfortunate mix of politics, bureaucratic inertia and bad science means that conflicting, erroneous, and manipulated sets of water quality data containing little accurate information on the actual condition of the nation's rivers and streams are routinely reported by States and dutifully compiled by the EPA for presentation to Congress and the public.").

³⁶ See, e.g., Adler, *supra* note 9, at 221-25 (describing the many technical and logistical problems that afflict the TMDL calculations, and the particular difficulty associated with attempting to quantify TMDLs in a reliable or precise way); Healy, *supra* note 5, at 423-25 (detailing the ways in which the TMDL program has been "almost a total failure," due to the EPA's historic disinterest in the program and the states' inactivity in implementing its requirements).

submitting TMDLs by the states has been painfully slow.³⁷ Although Congress declined to set deadlines in the statute, at least one court has suggested that eleven years of inactivity by a state in implementing the TMDL program constitutes a violation of the statute that the EPA must remedy.³⁸

The reason for the historic failure of the TMDL program is grounded in large part on the mistaken conception that watershed management is a relatively precise science that can produce definitive answers at each step of the march.³⁹ Indeed, in the Clean Water Act, Congress not only ignored the rampant scientific uncertainties that plague watershed management, but it developed a water quality program that seems to flaunt them. Each step of the water quality march takes the agency into another, more technically impossible exercise than the one before it. Setting water quality standards, developing comprehensive water quality monitoring programs, and setting and enforcing further pollution restrictions on problem point and nonpoint sources requires a level of scientific precision that typically does not exist. For example, because we know so little about aquatic ecology and the effects of the hundreds of manmade pollutants on our rivers and streams, setting water quality standards (the second step) involves making unverifiable approximations.⁴⁰ These scientific uncertainties, in fact, result in state-

³⁷ See NATIONAL WILDLIFE FEDERATION, POLLUTION PARALYSIS II: RED CODE FOR WATERSHEDS 1-2 (2000) [hereinafter POLLUTION PARALYSIS II], at http://www.nwf.org/watersheds/paralysis/pp2_report.pdf (last visited Oct. 11, 2000) (reporting, based on application of thirty-six separate criteria to the fifty states' water quality programs, that 75 percent of the states have failed to develop meaningful TMDL programs); Houck III, *supra* note 9, at 10439-43 (listing by location the TMDLs completed by April 1998, which includes only forty-five water segments in the entire country).

³⁸ See *Alaska Ctr. for the Env't v. Reilly*, 762 F. Supp. 1422 (W.D. Wash. 1991) (holding that the state's failure to submit a single TMDL for its hundreds of impaired waters over an eleven year period violated the statute). For a discussion and summary of all of the other litigation brought by citizens against recalcitrant states for failing to implement TMDLs, see Houck, *supra* note 3, at 10393-97; see also POLLUTION PARALYSIS II, *supra* note 37, at 86 (listing over twenty-eight states that are or have been involved in litigation over their TMDL programs).

³⁹ See generally Houck IV, *supra* note 9, at 10474-79 (detailing the series of scientific obstacles that arise in the TMDL program).

⁴⁰ The assumptions are horrific, and include the need to consider: synergisms among pollutants; varying concentrations in the sediments, water column, and micro-layer at the top of the water; acute versus chronic harms; and whether the indicator species used in the lab or out in the field are adequately representative of the ecosystem. See, e.g., PERCIVAL, *supra* note 32, at 941-42 (providing a brief, but clear accounting of the scientific uncertainties arising in setting water quality standards); Adler, *supra* note 9, at 211-12 (discussing some of the scientific uncertainties in setting water quality criteria);

specific standards and goals that are quite variable and hence particularly misguided with respect to interstate waters.⁴¹ The same problems plague what might seem to be a more straightforward exercise – monitoring the quality of surface waters. Both because of the tremendous natural variability in the background concentrations of pollutants in rivers and the different approaches available for monitoring waters, consistent methods for measuring water quality are difficult to develop.⁴² Finally, setting enforceable limits on problem sources in degraded waters requires its own set of approximations. Pollutants entering waters from nonpoint sources vary in their loading according to the type of storm event, the slope of the land, the season, the vegetative cover, and so forth.⁴³ Even point sources

Houck, *supra* note 17, at 10529-31 (detailing a series of major scientific uncertainties encountered in the effort to set ambient water quality standards that must be squarely addressed in order to arrive at a final standard); *see also* June F. Harrigan-Lum & Arnold L. Lum, *Hawaii's TMDL Program: Legal Requirements and Environmental Realities*, 15 NAT. RESOURCES & ENV'T 12, 61 (2000) (discussing how state water quality standards are inappropriate for Hawaiian streams because of the varying flow conditions among different streams).

⁴¹ *See, e.g.*, Houck IV, *supra* note 9, at 10477-78 (describing dozens of sources of variability between states' water quality standards and recounting the general concerns by commentators regarding the many "problems" inherent in ambient water quality criteria).

⁴² *See, e.g.*, Wesley M. Jarrell, *Getting Started with TMDLs* 51 (Apr. 1999) (reporting that "In most of the US, water quality and quantities in streams and lakes can change dramatically over short periods of time. . . . As a result, wherever possible, it is best to monitor water quality and flow continuously."), at <http://www.ysi.com/ysi/envweb.nsf> (last visited Sept. 1, 2000); *see also* PEER, *supra* note 33, at 17 (identifying EPA's flexible requirements for monitoring and noting that under EPA's guidelines, "almost any type of monitoring is considered equivalent to another. For example, a grab sample of dissolved oxygen taken daily is considered as scientifically valid an assessment tool as a suite of 200 parameters sampled daily along with a suite of toxicity testing and bioassessments."); Houck IV, *supra* note 9, at 10475-76 (discussing the problem of inconsistent techniques in water quality monitoring and citing OTA and GAO studies that make these same observations).

The situation is made worse by the EPA's apparent tendency to be lax on enforcing those requirements that do exist. *See, e.g.*, PEER, *supra* note 33, at 8 ("EPA has never rejected a poor report [by a state on the quality of their waters]."); *id.* at 2 (concluding that because the EPA does not enforce federal requirements, "States have no incentive to deliver accurate reports or to achieve comparability, As a result, inconsistencies in the amounts of waters monitored or evaluated as well as variations in how impairment and designated use attainment are measured, produce a hodgepodge of information that is of little value.").

⁴³ *See, e.g.*, Jarrell, *supra* note 42, at 2 (highlighting how nonpoint loads are tied to weather events, and because of the variability of the land, reporting that "runoff flow from a particular portion of the landscape is difficult to measure."); *id.* at 41-42 (concluding based on a list of factors and uncertainties encountered in determining nonpoint loads that calculating the loads is a very uncertain exercise). Making pollution

will mix and disperse into the waters in different ways that complicate efforts to develop accurate pollution reduction requirements for the various point sources.⁴⁴ To further compound these problems, legal requirements at this fourth step are very unclear and subject to debate.⁴⁵

As a result, the ultimate enforceable requirements of the TMDL program are built on a house of cards: a series of difficult and often impossible calculations that make the final requirement—additional quantitative limits on specific problematic dischargers—scientifically indefensible.⁴⁶ The water quality march thus leads the states directly into an unwelcome battle with industry and agricultural interests, while

loading determinations still more precarious is the growing realization that pollution entering the river or lake from groundwater and from the air must also be accounted for in the loading equation. *See, e.g.*, FACA REPORT, *supra* note 7, at 59-67 (making recommendations for “extremely difficult [TMDL] problems” caused by water quality impairments that result from “historic problems, atmospheric deposition, and modifications to flow.”); Jarrell, *supra* note 42, at 47-49 (discussing groundwater and air deposition contributions which likely escape any form of reliable quantification but which can be significant in some waterbodies; for example, “the Chesapeake Bay Program Office estimates that 21 percent of the nitrate entering the bay is from air sources. About 46 percent of the cadmium in Tampa Bay reportedly falls from the sky.”).

⁴⁴ *See, e.g.*, Healy, *supra* note 5, at 448-49 (describing controversies over whether mixing zones, where effluent mixes with the receiving waters, should be used in determining whether particular pollutant loadings adversely affect water quality). Additionally “point sources cause the biggest problems during dry season, low-flow periods, because the flow of the receiving water (the water the point source empties into) is less and so there is less dilution of the concentrated point source.” Jarrell, *supra* note 42, at 41. Point source loads during low flows must then be compared with nonpoint loads during high flows in determining the appropriate allocations or reductions for each, even though it appears that this comparison involves incommensurables. *See id.* at 75 (attempting to suggest how point and nonpoint source loads can be integrated in developing TMDLs).

⁴⁵ *See, e.g.*, Adler, *supra* note 9, at 258 (recounting the uncertainty of whether TMDL requirements apply in implementing antidegradation requirements); Jarrell, *supra* note 42, at 3 (“In the absence of very specific guidance documents from U.S. EPA, the key components of TMDL development and monitoring hinge upon generating valid data and communicating this data and associated results among all the stakeholders.”); *see also infra* note 49 (identifying vague requirements of the TMDL process that have led to challenges and caused delay).

⁴⁶ Professor Houck states:

The WQA and its contemporaries were monuments of faith in the commitment of state and local governments to secure clean water in the face of powerful local interests; in the ability of science to predict aquatic impacts and to trace observed impacts to their sources; and in the practicality of treating water pollution through comprehensive, regional planning.

Houck IV, *supra* note 9, at 10471.

providing them with little analytical support once the battles begin.⁴⁷ Predictably, states respond by following the path of least resistance.⁴⁸ The absence of clear, enforceable deadlines or expectations in the statute and regulations leave states with many avenues for avoiding the conflict, although EPA's new TMDL requirements may eliminate at least a few of the most egregious escape hatches in the future.⁴⁹ But to the extent that the water quality march remains discretionary, which is to some extent inevitable, water quality programs will reflect the political interests within each state.⁵⁰ Non-monied interests (such as environmentalists or the

⁴⁷ See, e.g., Houck IV, *supra* note 9, at 10480 (commenting that state TMDL programs "vaporized on the will to do a very hard thing, to make demands on large, local industries without the backing of explicit federal standards and permits and the threat of federal enforcement.").

⁴⁸ See, e.g., PEER, *supra* note 33, at 2-3 (concluding that states sometimes manipulate data to make waters look cleaner than they are, or even to look dirtier if funding is available for cleanup); POLLUTION PARALYSIS II, *supra* note 37, at 16-18 (identifying the many types of failures in state TMDL plans, including the states' failure to provide complete lists of degraded waters, or to provide for meaningful implementation of TMDLs); Houck IV, *supra* note 9, at 10473 ("the fact remains that the residual authority was there in the law for states to do more—to do exactly what they said they were good at and wanted to do—and they did no such thing.").

⁴⁹ There are a series of arguments that various interests have raised to minimize the requirements of the TMDL program, none of which has been completely successful. First, agricultural and some business interests have argued that Section 303(d) does not include nonpoint sources within the load calculation. See Adler, *supra* note 9, at 226-30; Houck IV, *supra* note 9, at 10474 & n.84. Second, it has been argued that 303(d) requires the states only to employ TMDLs in planning for water quality control, and does not necessarily require them to institute enforceable controls on sources. *Id.* at 10474 n.85. Third, in defending themselves against citizen suits, the states have argued that Section 303(d) provides no deadlines by which the states must complete their TMDL programs. Some courts, however, have held that delays of eleven years can violate the requirements. See *Alaska Ctr. for the Env't v. Reilly*, 762 F. Supp. 1422 (W.D. Wash. 1991). Finally, states have argued that the states (and the EPA) do not have the authority to review the substantive quality of their TMDL programs—only whether they exist. See, e.g., Houck II, *supra* note 9, at 10395-97 (summarizing the litigation on this feature of the TMDL program and noting some success by plaintiffs against the states and the EPA). The EPA appears to have resolved the debate to some extent with its new regulations that demand relatively specific items from the states with respect to their TMDL plans. See, e.g., Final TMDL Regulations, *supra* note 11, § 130.32, at 43667-69 (setting forth eleven mandatory elements of a TMDL, with an implementation plan requirement that has its own eight required elements).

⁵⁰ Cf. *infra* note 111 and accompanying text (discussing some states' affinity for stakeholder groups as a surrogate for greater citizen involvement). Even monitoring of waters may be selective, albeit inadvertently. For example, Professor Adler relates that "most data are collected in waters known to be polluted by point sources, . . . [and a]s a

public at large) will be influential only to the extent that they have become organized within a state and have sufficient resources to take part at each step of the water quality march.⁵¹

The exaggerated reliance on analytical tools in the TMDL program also increases administrative costs. Professor Houck estimates the administrative price of undertaking the water quality march correctly (which should not be confused with the costs of compliance) to be roughly \$4 billion per state, assuming that each state has 100 watersheds in need of TMDLs.⁵² At least in some states, in fact, Professor Houck's estimate might be overly conservative. Although not monetized, the State of Ohio, for example, has identified 10,748 river miles and 115,468 lake acres (881 listed waters in all) that require TMDL determinations and follow-up requirements on point and nonpoint sources.⁵³ To make matters worse, many states have only begun the TMDL process. In the case of Ohio, for example, TMDLs have been completed for only a few pollutants in one segment of a river: the State has scheduled TMDLs for eight additional segments over the next two years, leaving a backlog of 872 segments.⁵⁴

II. WATER QUALITY PROBLEMS BENEFIT FROM, AND MAY REQUIRE, PUBLIC INVOLVEMENT FOR THEIR RESOLUTION

The decision about how best to integrate watershed management principles into water quality control programs is not purely, or even primarily, a technical one. Given existing limits of scientific knowledge and technological capabilities, these decisions require public involvement and deliberation throughout the regulatory process: at the beginning when goals are established, in the middle when a means must be determined for implementing these goals, and at the end when the goals are enforced. Indeed, because water quality problems are so technically uncertain and so

result, waters impaired by nonpoint sources often fall through the existing monitoring and assessment net." Adler, *supra* note 9, at 258-59.

⁵¹ See generally *infra* Part III (detailing the external costs and benefits that affect citizen participation).

⁵² See Houck IV, *supra* note 9, at 10476; see also Harrigan-Lum & Lum, *supra* note 40, at 61 (observing how the costs for Hawaii to prepare TMDLs are likely to approach \$1 million).

⁵³ See U.S. EPA, Total Maximum Daily Load (TMDL) Program: 1998 303(d) List Fact Sheet: Ohio at <http://www.epa.gov/OWOW/tmdl/states/ohfact.html> (last visited Sept. 1, 2000).

⁵⁴ See, e.g., Ohio EPA, Fact Sheet on Total Maximum Daily Load Program at <http://chagrin.epa.state.oh.us/programs/tmdl/index.html> (last visited Aug. 28, 2000); see also *supra* notes 37-38 and accompanying text.

costly for the point and nonpoint sources responsible for the pollution, water quality control may be especially dependant on public input for progress to be made. The ways in which water quality decision-making benefits from, if not demands, public involvement are detailed in this section.⁵⁵

First, as long as the analytical tools are highly imprecise, as they are in the area of water quality science and watershed management, value judgments and policy choices are necessary to determine whether and how to clean up degraded waters.⁵⁶ And unless the public has indicated that it wishes these significant policy decisions to be made by scientists or technocrats without their input, then the public must be involved.⁵⁷ Indeed, without the public's participation in or acknowledgement of the significant policy decisions, not only will the decisionmakers not be accountable, but the decisions may not comport with the public's interests.⁵⁸ Particularly when painful economic sacrifices become

⁵⁵ The utilitarian values of citizen participation in specific types of pollution control programs, like the water quality control program, is elaborated in greater detail in a current research project, tentatively entitled "The Silenced Screams in Environmental Law" (working draft available from author).

⁵⁶ The allocation of reductions among various point and nonpoint sources is particularly political and nonscientific. See, e.g., Jarrell, *supra* note 42, at 41-42 (highlighting the numerous uncertainties involved in determining nonpoint loads); see also FACA REPORT, *supra* note 7, at 75 ("The Committee recommends that EPA encourage relatively more public outreach in TMDLs where 'best professional judgment' [made necessary by substantial uncertainties] will be more heavily relied upon.").

⁵⁷ The Federal Advisory Committee on TMDLs in fact criticized existing TMDL efforts by both the EPA and the states with respect to their failure to adequately include the public and interested stakeholders in the process. See, e.g., FACA REPORT, *supra* note 7, at 11 (observing that it is "critical that States and the public exchange information and views [on TMDL-related issues] early in the process," but noting that "State and EPA public communications on TMDLs need to be more inclusive and consistent than they have been to date."); *id.* (similarly observing that "[a]gencies sometimes lose sight of the need to motivate and involve those who can or are required to take action to remedy water quality impairments. Inviting and encouraging stakeholders to become involved and winning their support and commitment to implement TMDLs is important in all aspects of the program."). Unfortunately, however, the Committee did not consider the possibility that the inherent characteristics of the TMDL process may be partly to blame for the difficulties states have in involving the public in meaningful ways on water quality decisions.

⁵⁸ For example, while technocrats may ultimately find themselves responsible for making the key decisions regarding water quality, it is at least as possible that these decisions will be made even more invisibly by the well-financed or otherwise politically influential interest groups at the state or local levels. Cf. *infra* notes 111-14 and accompanying text; see also Barton H. Thompson, Jr., *The Continuing Innovation of Citizen Enforcement*, 200 U. ILL. L. REV. 185, 209-11 (describing the democratic values facilitated by citizen

necessary, as they are in trying to clean degraded waters, only broad-based public support will be sufficient to move the program forward and keep it in line with the community's goals and values.

Moreover, for complex problems involving multiple polluting sources, legal requirements often prove incomplete. Administrative resources are insufficient to establish, monitor, and enforce pollutant limits for all sources of concern, and thus usually only the largest or easiest to regulate sources are targeted. To the extent that ambitious public goals are set for local waters, then, public support and commitment is needed not only to increase "community policing" of larger sources, but also to minimize the extent to which residences and other difficult-to-regulate sources contribute pollution through overfertilization of lawns and other practices. Public education and participation in the decision-making process raises one's consciousness with regard to the pollution of others, while also forcing a recognition of one's own contribution to the problem.⁵⁹

In a related vein, involving the local community in decisions about how to improve water quality increases the information available about a resource. In a number of states, citizens already help supplement available information on a body of water, by for example, volunteering to collect basic water quality data on a regular basis.⁶⁰ Even more importantly, citizens can also bring to the decision-making process important historic facts (e.g., about water flow and episodic pollutant loads) that might have been overlooked by an agency or other stakeholders. Citizens may also be more likely to think creatively about alternative approaches to repairing waters than technicians and distant bureaucrats.⁶¹ Thus, citizens are not

suits, which include the ability of citizens to advocate values that are missing in state or federal environmental regulatory programs).

⁵⁹ See, e.g., CHESAPEAKE BAY COMMUNITIES, MAKING THE CONNECTION 190-94 (1996) (providing an index of over one-hundred "local programs" to protect Chesapeake Bay water quality); Thompson, *supra* note 58, at 226-35 (describing the valuable role that citizens have played as informants of environmental violations).

⁶⁰ See generally Thompson, *supra* note 58, at 216-26 (describing in detail the valuable role that citizens have played as monitors of violations of environmental laws and regulations); see also *infra* note 126 and accompanying text. Citizens and environmental nonprofit groups have also played a critical role in supplementing enforcement of violations of water quality requirements imposed under the Clean Water Act through citizen suits. See, e.g., Healy, *supra* note 5, at 453-59 (detailing the important role that citizen suits play in supplementing government enforcement of Clean Water Act requirements for protecting water quality).

⁶¹ See, e.g., Edith Chase, Letter to Ohio EPA on TMDL for Middle Cuyahoga River (dated July 7, 1999) in OHIO EPA, MIDDLE CUYAHOGA RIVER TMDL REPORT app E (1999) (relaying two century history of dams on the River relevant to whether and which

only needed to resolve the many inevitable decisions that cannot be adequately addressed with existing scientific and technical tools, but they also bring to the process their own, unique sources of information and ideas about how a waterbody might be repaired. Excluding their participation runs the risk of missing out on valuable information or more cost-effective ways to address a problem.⁶²

Finally, a process that alienates and hence de-legitimizes participation may suffer from public backlash on the one hand or citizen apathy on the other,⁶³ and a mismatch between public and regulatory

should be removed or repaired); *see generally* U.S. DEPT. OF INTERIOR, NATIONAL PARK SERVICE, RIVERWORK BOOK 15-57 (emphasizing throughout the citizen guide how citizens can best develop and advance their unique ideas, goals, and information for river restoration). Citizens may also be best suited to recognize when additional, obtainable information is needed about a pollution problem and to identify what that information should include. *See, e.g.*, Chase letter, *supra* (suggesting that citizen demands for more information led the state to conduct a more comprehensive assessment).

⁶² *See* JOHN C. PIERCE & NICHOLAS P. LOVRICH, JR., WATER RESOURCES, DEMOCRACY AND THE TECHNICAL INFORMATION QUANDRY 166 (1986) (concluding based on substantial empirical study of Washington State that although the public's opinions are more frequently inconsistent in comparison with technocrats on water allocation issues, "[u]nexpectedly, . . . in the public the ability to identify important water resource problems is not systematically related to either familiarity with technical terms or the knowledge of those terms."); Thompson, *supra* note 58, at 186 (arguing that "citizens play at least three critical enforcement roles" in environmental law by filing their own prosecutorial suits, by monitoring water quality on individual watersheds or environments, and by reporting information that evidences violations). Involving the public also provides enhanced access for greater stakeholder involvement in water quality decisions. As the FACA group observes, "stakeholders will support governmental decisions and take action to solve water quality problems most readily when they are involved in the overall process." FACA REPORT, *supra* note 7, at 11.

⁶³ *See, e.g.*, John C. Pierce et al., *Rational Participation and Public Involvement in Water Resource Politics*, in WATER POLITICS AND PUBLIC INVOLVEMENT 167, 176 (John C. Pierce & Harvey R. Doerksen eds., 1976) (highlighting the importance of meaningful avenues of participation (not purely symbolic opportunities), and concluding that if rational participants do not perceive that their input has been taken seriously they will "withdraw and devote their energies to more fruitful political avenues"); Wendy E. Wagner, *supra* note 15, at 265 (citing literature documenting examples of public backlash and citizen apathy arising from unaccountable environmental decision-making). Experience also shows that the more citizens can participate in meaningful ways, the more they learn about the environment and their local resources. *See, e.g.*, CHESAPEAKE BAY COMMUNITIES, *supra* note 59, at 161-76 (listing dozens of citizen and student education programs on the Chesapeake Bay, while at the same time highlighting survey results that report that nearly 90 percent of those living near the Bay support cleanup and believe it is among the most important public and private sector priorities – and support does not vary with distance from the Bay); U.S. EPA, A COMMITMENT TO WATERSHED

goals.⁶⁴ These adverse consequences may be particularly unfortunate in the area of water quality, since the literature suggests that a large number of citizens are eager to participate in these decisions.⁶⁵ Indeed, citizen

PROTECTION: A REVIEW OF THE CLEAN LAKES PROGRAM 13-16, 27-28 (1993) [hereinafter CLEAN LAKES].

⁶⁴ See, e.g., Harrigan-Lum & Lum, *supra* note 40, at 62 (observing that "[u]nless TMDL preparation is more closely tied to restoration of waterways at the federal level, there will continue to be inadequate public support for implementation of TMDLs, and monies spent on TMDL preparation in Hawaii will accomplish little beyond satisfying federal paperwork requirements."). Professor Flatt, for example, has documented significant, yet often invisible areas of slippage occurring during the permitting and enforcement of the Clean Water Act point source program. See Victor B. Flatt, *A Dirty River Runs Through It (The Failure of Enforcement in the Clean Water Act)*, 25 B.C. ENVTL. AFF. L. REV. 1 (1997). While this slippage may ultimately be shown to reflect underlying public values, the slippage is obscured by regulatory complexities and thus would seem to escape all but the most aggressive forms of public oversight. Greater public awareness of the decisions being made by administrative officials would thus seem to provide an essential and potentially potent check on the exercise of this discretion by state officials. See *id.* at 28 (arguing that if the slippage in enforcement is a reflection of public values, "it should be considered directly, rather than imposed indirectly through administrative action, where the policy decision essentially is insulated from public participation and review."). In detailing the reasons that water-quality based approaches embodied in the Clean Water Act have failed, Professor Healy also identifies a number of largely invisible sources of administrative discretion that, taken cumulatively, help to explain the failure of the TMDL and related programs. See Healy, *supra* note 5, at 416-29 (identifying EPA's delays in promulgating regulations and its permissive or vague requirements for point source discharge permits as several important sources of slippage that contribute to failure of the water quality protection programs under the Clean Water Act).

Professors Gutmann and Thompson also suggest that reciprocity can emerge out of public deliberations, in which discussants better understand and respect different moral judgments; the result also helps provide decisionmakers with a clearer understanding of the issues at stake. See, e.g., AMY GUTMANN & DENNIS THOMPSON, *DEMOCRACY AND DISAGREEMENT* 2-3 (1996) (observing that "the possibility of any morally acceptable resolution depends on citizens reasoning beyond their narrow self-interest and considering what can be justified to people who reasonably disagree with them" and concluding that based on the case studies detailed in their book, the fact that "some citizens and some officials make arguments consistent with reciprocity suggests that a deliberative perspective is not utopian."); *id.* at 196 (arguing that in an EPA effort to engage citizens in decisions regarding emissions limits for an important local industry, if "policymakers use utilitarianism as their sovereign principle, they are likely to ignore or distort the meaning of some legitimate claims that citizens make.").

⁶⁵ See, e.g., DAVID M. BOLLING, *HOW TO SAVE A RIVER: A HANDBOOK FOR CITIZEN ACTION* 240 (1994) (observing that "[t]here are more than 2000 citizen groups scattered all over the country organized to protect rivers and watersheds. There may be more than 100,000 people actively working on behalf of their rivers. That constitutes a movement, and it is growing."); CLEAN LAKES, *supra* note 63, at 3 (noting the growing interest of citizens in assisting with water quality problems and reporting that 30,000 copies of an

involvement in water quality plans may ultimately serve to speed rather than slow the process.⁶⁶

Given the benefits of participation, it is not surprising that evidence of the few successes and many failures of water quality control programs may actually correlate directly with the degree to which the public was involved in the decision-making process.⁶⁷ The success

EPA guidance manual on lake and reservoir restoration, written for a citizen audience, have been distributed); *see also* NATIONAL WILDLIFE FEDERATION *infra* note 98. Thus, current literature refutes the assumption by some that greater avenues for citizen involvement are not necessary because citizens "do not care." *See also* CHESAPEAKE BAY COMMUNITIES, *supra* note 59, at 161 (detailing very high (nearly 90 percent) citizen concern over cleanup of Chesapeake Bay, even for citizens who do not live within 100 miles of the Bay); Final TMDL Regulations, *supra* note 11, at 43589 (reporting that during the extended notice and comment period on the proposed TMDL rule, the agency received "about 34,000 comments on the proposal comprised of about 30,500 postcards, 2,700 letters making one or two points, and 780 detailed comments addressing many issues.").

⁶⁶ *See infra* note 98 and accompanying text; *cf.* Adler, *supra* note 1, at 1002 (observing how greater citizen involvement in watershed projects and the related "sense of 'place' can also be used to provide public support for funding, strengthen water resource protection and restoration programs, and encourage citizens to devote personal time to grass-roots watershed restoration."); *but see* Daniel A. Mazmanian, *Participatory Democracy in a Federal Agency*, in WATER POLITICS AND PUBLIC INVOLVEMENT, *supra* note 63, at 201, 204-06 (describing the theoretical and empirical development of the participation hypothesis (that participation is necessary for social change), but cautioning that when irreconcilable conflicts in goals and values (a circumstance that is not at all inevitable in water quality planning) are present participation is unlikely to bear fruit). *But see* GUTMANN & THOMPSON, *supra* note 64, at 2 (challenging this position by arguing that their case studies reveal that reciprocity in deliberations is not utopian and works to elevate and advance moral disagreements).

⁶⁷ *See, e.g.*, CLEAN LAKES, *supra* note 63, at 1-8, 20-35 (1993) (discussing with numerous case studies how local commitment to clean lakes equates to success); Anderson, *supra* note 2, at 378 (concluding with respect to a pilot participation project on the Neponset River Watershed, that "[t]he public meetings and education events involving a broad range of interested individuals and groups from within the watershed resulted in several small successes, as well as several large victories for water resource protection."); Houck IV, *supra* note 9, at 10486 (observing that at bottom it is the citizen volunteer groups that "in the best tradition of participatory democracy, advance the goals of law through the use of law, and no better illustration of the need for these groups exists than in the history of TMDLs."); *see also* Adler, *supra* note 1, at 1097-98 (citing successful examples of citizen participation in watershed protection and restoration projects); Anderson, *supra* note 2, at 372-77 (discussing progress of water quality controls in Chesapeake Bay, Puget Sound, and Long Island, which attempt to solicit citizen input to varying degrees, but not offering any correlation between public participation and the ultimate success of the programs).

For a more general account of the benefits (and promising paths) for better public deliberation over difficult social problems, *see generally* GUTMANN & THOMPSON,

stories—when pollution was reduced beyond the level set by technology-based standards—are almost all accomplished in watersheds where the general public led the battle.⁶⁸ The clean up of the Chesapeake Bay, which is undoubtedly the greatest success story, has been characterized by “massive amounts of public participation,” some of which predates passage of the Clean Water Act in 1972.⁶⁹ And while scientific research has played a central role in identifying the primary pollutants adversely affecting the Bay’s water quality, strong public support and participation was essential to ensuring that the research was done and that it answered relevant policy questions.⁷⁰ Public values have also proven essential on the many occasions that scientific uncertainties prevented a technical answer from emerging on how best to protect the Bay’s water quality. For example, one of the most significant advances in cleaning up the Bay was a “seat of the pants” decision by affected states and other participants to reduce the loading of key nutrients into the Bay by 40 percent by the year 2000.⁷¹ Conversely, in most states that have not made progress in

supra note 64 (in chapter 5, for example, the authors analyze EPA Administrator Ruckelshaus’ successful effort to generate public deliberation over the appropriate emissions limits on an industry that emitted high levels of arsenic into the air, but that also provided the local community with jobs; the authors also underscore the benefits of deliberation, irrespective of whether or how quickly social outcomes are reached).

⁶⁸ Citizens have not only advanced the cause of better water quality through voluntary initiatives and activities, but some grassroots groups have been at the cutting edge of the recent TMDL litigation that served to awaken a sleeping program. *See, e.g.*, Houck II, *supra* note 9, at 10397 (observing that until the last few years, EPA’s TMDL program “was basically driven by lawsuits, court orders, and consent decrees [from a series of citizen suits filed against EPA and the states].”).

⁶⁹ Adler, *supra* note 1, at 1072; *see also* CHESAPEAKE BAY COMMUNITIES, MAKING THE CONNECTION 2 (1996) (hailing the Chesapeake Bay Program as “a national and international model for estuarine restoration and watershed protection . . . [that constitutes] a unique, regional, federal-state-local partnership.”).

⁷⁰ *See, e.g.*, William Eichbaum, *The Chesapeake Bay: Major Research Program Leads to Innovative Implementation*, 14 Env’tl. L. Rep. 10237, 10238-39 (1984) (detailing the important role the public and elected officials played in securing a commitment to do additional research on the Bay, and in ensuring that the research remained relevant to the pressing policy questions).

⁷¹ *See, e.g.*, CHESAPEAKE BAY COMMUNITIES, *supra* note 69, at 2 (highlighting the significance of the 1987 Chesapeake Bay Agreement, which codified the 40 percent goal for reduction of nitrogen and phosphorous by the year 2000); *see also id.* at 37 (observing that “[t]he watershed management approach is characterized by being action oriented, driven by broad environmental objectives, and involving key stakeholders.”); *see also* Marianne D. Mason, *Saving the Chesapeake Bay, One Gazebo at a Time*, 14 NAT. RESOURCES & ENV’T 134, 137 (1999) (describing how the Maryland legislature drew “a

repairing degraded waters, opportunities for public participation appear to be minimal, despite the presence of interested citizens and grassroots organizations who may desire to play a meaningful role in the decision-making process. Although states and the EPA do not collect data on how *little* the public participates or understands their TMDL programs, some indirect measures are available. In Ohio, for example, where little progress on the TMDL process has been made,⁷² the public has been largely silent throughout the water quality march, at times against their wishes.⁷³ Similar patterns appear in other low-ranking state TMDL programs.⁷⁴

III. CITIZEN PARTICIPATION IS DISCOURAGED BY THE WATER QUALITY MARCH

Given the importance of public participation to resolving how best to improve water quality, one would expect the legal requirements to be developed in such a way as to facilitate these types of public discussions. This is not the case with the TMDL program, however. The water quality

'line in the sand' at 100 feet from the shoreline" to prohibit development (with a few narrow exceptions) in order to protect the Bay from erosion and nonpoint source runoff).

⁷² See *supra* notes 53-54 and accompanying text.

⁷³ See, e.g., Ohio EPA Division of Surface Water, Responsiveness Summary for Comments Received on the Clean Water Act – Section 303(d) List, State of Ohio – FFY 1999-2000 Draft Report 2-3 (Apr. 10, 1998) (responding to multiple concerns by approximately 50 percent of total commentors that opportunities for public participation and education were inadequate by insisting that the prioritization process met "the minimum requirements" of the law); see also *id.* at 3 (conceding that "[u]ntil 1998, Ohio EPA submitted its TMDL list to the U.S. EPA with little or no public comment or participation.").

⁷⁴ In their recent study of the states' TMDL programs, the National Wildlife Federation concluded that with respect to the "opportunities for the public to participate in the TMDL process, none of the states received a top score. . . . Common problems resulting in low scores included lack of a TMDL advisory committee with public representation, inadequate publication of hearings or opportunities for comment, inadequate responses to public comments, and lists that were difficult to interpret." POLLUTION PARALYSIS II, *supra* note 37, at 16. The criteria used to evaluate opportunities for public participation, moreover, included only basic features, such as whether the state had established an advisory committee on TMDLs that solicited adequate input from citizens; the notices on opportunities for public input were adequately publicized; public participation was provided at all stages of list development; the state responded to comments; basic documents were available to the public; and the states' lists were "user-friendly." *Id.* at 83. Interestingly, based on their application of these criteria to Ohio, the State ranked just above the average in participation and earned a "C" on its overall TMDL program, a ranking that was also above average in comparison to the other states. *Id.* at 16, 65.

march is laden with features that cumulatively serve to increase the costs of participating, while at the same time artificially reducing the perceived benefits of that participation in ways that likely discourage all but the most sophisticated or well-financed individual or groups from becoming involved. These features, in fact, help to explain why the program has floundered in the past and may continue to flounder in the future, even as more demanding federal requirements are established.

In this section, the adverse impacts of the water quality march on public participation are detailed. First, a formula is advanced that provides a crude mechanism for assessing how amenable a regulatory program is to public participation. This formula is then used to uncover a variety of obstacles to public participation and deliberation imposed by the water quality march. Each of these obstacles appear either to be unnecessary or to have assumed a role out of proportion to what is needed.

A. *The Participatory Formula*

The extent to which a regulatory program is amenable to public participation can be determined in an approximate way by considering the costs that the program imposes on the would-be participant. Neil Komesar models this quite simply in cost/benefit terms using the participant-centered model developed in his path-breaking book, *Imperfect Alternatives*.⁷⁵ Professor Komesar argues that individuals participate in transactions, whether they be market or political, based on whether there are net benefits to participating. The extent of an individual's participation, Komesar argues, is based simply on the difference between the benefits that will accrue to the person by participating and the costs of participation.⁷⁶ The remarkable simplicity and resiliency of this conceptual model provides an invaluable tool for assessing the extent to which citizens will be involved in any given policy-making endeavor.

Although the costs and benefits of participation for any individual include both internally⁷⁷ and externally imposed costs, only the externally

⁷⁵ See NEIL K. KOMESAR, *IMPERFECT ALTERNATIVES: CHOOSING INSTITUTIONS IN LAW, ECONOMICS, AND PUBLIC POLICY* 7 (1994) (introducing the "participation-centered approach" as an analytical framework).

⁷⁶ See *id.* at 8 ("The character of institutional participation is determined by the interaction between the benefits of that participation and the costs of that participation.").

⁷⁷ The fear of angering neighbors or employers, the opportunity costs of pursuing other activities, and the increased costs of local produce or other goods that might result were pollution regulations more strictly enforced are all costs that a citizen may consider in their decision whether to engage in issues affecting water quality.

imposed costs will be considered in this analysis.⁷⁸ Since these costs are imposed on the citizen from “the outside,” rather than coming from the citizen’s own value system, the regulatory process can be implicated as a possible cause of lowered participation.

B. Assessing how Amenable the Water Quality March is to Public Participation

A cost accounting reveals that the water quality march unnecessarily inflates the costs of public participation while simultaneously giving lay citizens the misimpression that their input has little value to the policy effort, which artificially lowers the perceived benefits to participating. Both the inflated costs and artificially reduced benefits to participation are considered in turn.⁷⁹

1. Inflated Costs that Impede Citizen Participation

Participating in any regulatory exercise, even one that addresses a local or regional resource, will require citizens to incur costs. These inevitable costs include the costs of accessing and digesting available information, the costs of attending hearings or other public deliberations, and the costs of consulting with other lay participants in the process or those with needed legal or scientific expertise.

Yet when one considers the implementation of the water quality march by the states and the EPA, it becomes apparent that many of these inevitable costs become inflated well beyond what is necessary. One factor that inflates the costs of participation arises from the tendency of the EPA and the states to mire their water quality programs in technical equations, without corresponding attention to highlighting the multiple uncertainties that characterize water quality science and thus require the

⁷⁸ There is admittedly some inextricable relation between internal costs and benefits to participating and the external framing and education regarding these issues. *Cf.* BOLLING, *supra* note 65, at 59 (instructing activists to create an “image for the river [that they wish to protect] that communicates something appealing, important, and threatened.”). This area of interaction is put to one side for purposes of the analysis.

⁷⁹ Professor Komesar identifies as the primary categories of costs of participation those related to the cost of information and the cost of organization. Within the cost of information, Komesar includes “the complexity or difficulty of understanding the issue in question, the numbers of people on one side or the other of the interest in question, and the formal barriers to access associated with institutional rules and procedures.” KOMESAR, *supra* note 75, at 8.

infusion of public values.⁸⁰ By portraying watershed management and related pollution control tools as scientific exercises and by making little effort to "decode" the technical language, particularly with respect to the rampant uncertainties and variability in the resulting measurements, the costs of participation are raised substantially.⁸¹ As a result, citizens must dedicate weeks or even months or years of effort to acquire a basic understanding of the basis for water quality standards, current water quality, and the options for future water pollution control.⁸² While self-education on these issues is not impossible, the lay citizen must not only invest time and sometimes money in accessing pertinent data, but must also have the confidence to challenge technical experts to ensure that their

⁸⁰ The states have been criticized for failing to be forthright about problems and gaps in their water quality data, for example. *See, e.g.*, PEER, *supra* note 33 (detailing a number of misleading practices in water quality data collection and analysis by the states and the EPA that escape notice by the public or Congress). The EPA's orientation is also decidedly technical. In its recent final TMDL regulations (and despite commentators' concerns that it would limit flexibility), the EPA added the word "quantitative" to "clarify that the TMDL must contain a quantified plan for allocating pollutant loads to attain and maintain water quality standards." Final TMDL Regulations, *supra* note 11, at 43595, 43629. The EPA also specifies the limited ways that these quantified limits can be expressed. *Id.* at 43628-29 (four approaches to expressing TMDL). In addition, according to Professor Houck, U.S. EPA has developed "a 'watershed academy' featuring 23 separate courses beginning with 'Watersheds 101' and a web of assessment systems entitled 'BASINS,' featuring national databases, assessment tools . . . , local data inputs, water quality models . . . , and 'post processing output tools for interpreting model results.'" Houck IV, *supra* note 9, at 10477.

⁸¹ The TMDL process tends to be framed explicitly as a "science-based" approach to water quality protection. *See, e.g.*, WASHINGTON STATE DEPT. OF ECOLOGY, GUIDANCE DOCUMENT FOR DEVELOPING TOTAL MAXIMUM DAILY LOADS (TMDLS): WATER CLEANUP PLANS, Pub. No. 99-23-WQ at 1 (Sept. 1999). In this technical exercise, the public is generally situated as the recipient of information and technical calculations upon which they may have a single opportunity to comment (or be educated), rather than the originator of the underlying values and goals that drive the process. *See, e.g., id.* at app. B. The agency staff, by contrast, originate and devise much of the substance of the water quality march for each waterbody. *See id.*

⁸² Citizen guides are available to assist citizens with this basic education, but they are not easy reading. *See, e.g.*, OHIO EPA DIVISION OF SURFACE WATER, A GUIDE TO DEVELOPING LOCAL WATERSHED ACTION PLANS IN OHIO 4 (1997) (detailing the rather daunting and tedious details involved in planning and implementing a watershed plan); *see also id.* at 17, warning citizens that:

Trying to interpret the Water Resource Inventory can be a difficult, if not intimidating task. This section will give you the basics to navigate your way through the 305(b) report; however, to fully utilize the report and better understand the ecology of your watershed, you may wish to thoroughly read *Volume 1: Summary, Status and Trends*.

Id.

explanations are based either on specific scientific facts or accessible policy judgments.⁸³ To the extent that decisions are portrayed as scientifically ordained when in fact they are not, then lay efforts to participate in public decisions regarding water quality become still more time-consuming and unsettling.⁸⁴

The costs of participation are not only increased by unnecessarily complicating the substance of the policy decision, but also by fragmenting the authority to resolve it. Under the current regulatory regime, dozens of water pollution control programs have been established as essentially separate and independent programs.⁸⁵ To participate in water quality programs, then, a citizen must first understand the technology-based standards in the NPDES program, the water quality standards and designated use programs, and the individual control strategy and total maximum daily load programs. If wetlands are involved in the water quality picture, still another regulatory program—run by a totally different federal agency—must be consulted.⁸⁶ Not only is this fragmentation horizontal, but it is also vertical.⁸⁷ One citizens' guide offers would-be lay

⁸³ See *infra* note 99. For example, in the Ohio TMDL for the Middle Cuyahoga River, not only do hypertechnical charts and projections form the exclusive substance of the report, but the uncertainties in the data and projections are not highlighted or quantified. Instead, point estimates (without corresponding error bars) give citizens the impression that the technical information was decisive on what sorts of modifications are necessary to attain, for example, "the Warmwater Habitat Aquatic Life Use" goal. See, e.g., OHIO EPA DIVISION OF SURFACE WATER, TOTAL MAXIMUM DAILY LOADS FOR THE MIDDLE CUYAHOGA RIVER: FINAL REPORT at 10, tbl. 2 (1999); *id.* at 19-21, tbls. 3 through 5.

⁸⁴ See, e.g., Wagner, *supra* note 15, at 193-95 (describing the challenges involved for a lay person attempting to identify uncertainties and buried assumptions in the methodology or other features of a scientific study). Indeed, if scientifically validated answers did lie at the end of the water quality march, it might be a much easier participatory exercise, since the results would match the expectations.

⁸⁵ See, e.g., BOLLING, *supra* note 65, at 145-97 (identifying the various legal tools available to save a river, each of which overlap but are implemented in very distinct ways); Adler, *supra* note 1, at 993-94 (observing the substantial fragmentation of water resource issues with a number of "entities designed to address only a single water resource issue, or single-purpose entities that have evolved to 'address' multiple uses and purposes, but that are still driven by single-minded goals," and also noting the "competition rather than cooperation" that has typified this multiple-agency approach).

⁸⁶ See, e.g., BOLLING, *supra* note 65, at 155-60 (attempting to summarize these features of the Clean Water Act for interested citizens in a five page summary).

⁸⁷ See, e.g., Adler, *supra* note 1, at 992 (observing that "both across and within the various levels of government, responsibility for water resources is divided among a multitude of agencies and entities. According to one estimate, there are well over 100,000 public entities involved in water resources in the United States."); Anderson, *supra* note 2, at 367 (observing that "[o]n the federal level, thirteen congressional

participants a list of government agency contacts involved in watershed restoration in an appendix.⁸⁸ That appendix lists not only lists forty-four discrete programs administered by five federal agencies, but it also identifies eighteen possible state agencies, two regional, and eight local authorities, all of which may have separate as well as overlapping responsibilities for some facet of a state's water quality control program.⁸⁹

A third factor that inflates the cost of citizen participation is the sheer volume of material that must be reviewed. To participate, a citizen must often access voluminous files, only a few of which are likely to be readily accessible (through the internet for example).⁹⁰ In the State of Ohio, for example, the sources and types of water quality data available on a waterbody are provided in six separate programs and must be accessed through at least four separate agency programs.⁹¹ If a citizen also seeks hydrologic information on groundwater and physical characteristics of the watershed, there are at least twenty-four additional types of documentary information available, usually located in a number of different governmental agencies and academic and nonprofit institutions.⁹²

The final cost involves acquiring the legal expertise with which to navigate the legal requirements.⁹³ Citizens must learn the points at which they can participate most meaningfully in the process, as well as how best to communicate their views and values so that policymakers will take

committees, eight cabinet agencies, six independent regulatory agencies, and the White House are involved in water policy planning. At the state level, more than 300 departments exist to regulate water use and pollution. Also, poor water quality . . . [is] regulated by local government.").

⁸⁸ See TERRENE INSTITUTE, *CLEAN WATER IN YOUR WATERSHED: A CITIZENS GUIDE TO WATERSHED PROTECTION* 67-79 (1993) (listing in a thirteen page appendix the various federal, state, regional, and local agencies that are involved in "watershed restoration and pollution control," as well as identifying the separate programs within a single agency like the EPA).

⁸⁹ *Id.*

⁹⁰ Cf. NATIONAL PARK SERVICE, *supra* note 61, at 3-12 (1988) (advising citizens interested in protecting a river how to focus their information gathering to a manageable level).

⁹¹ See, e.g., OHIO EPA DIVISION OF SURFACE WATER, *supra* note 82, at 15-17.

⁹² *Id.* at 21-22, 25, and 27.

⁹³ See, e.g., Luke W. Cole, *Macho Law Brains, Public Citizens, and Grassroots Activities: Three Models of Environmental Advocacy*, 14 VA. ENVTL. L.J. 687, 699 (1995) (outlining three models of environmental advocacy, all of which emphasize the significant information base required to participate, particularly the "power model" which "relies on a step-by-step analysis of the power dynamics of the decision.").

them seriously.⁹⁴ In some instances, for example, persons interested in a water quality decision may take the time and effort to attend and even speak at a public hearing, but may not understand the importance of also filing more detailed written comments, with supporting documentation.⁹⁵ The legal "soft spots" in a state's TMDL program (e.g., when critical decisions become invisible or their consequences drastically understated) may also escape those citizens who haven't invested considerable time in understanding the complex law and regulations. For example, some states de-list degraded waters as soon as a TMDL plan is in place, causing that waterbody to fall off of the radar screens of watchful citizens.⁹⁶ Without training, however, this regulatory maneuver would likely escape notice by most citizens and citizen groups.⁹⁷

Of course, some of these costs can be reduced by sharing them with others. In fact, the dramatic growth of grassroots organizations, formed in communities concerned about a particular river or waterbody, may be a testament to the extent of citizen effort dedicated to overcoming

⁹⁴ See BOLLING, *supra* note 65, at 99-141 (dedicating a forty-two page chapter to "inside" advice on how to work with and, if necessary, successfully combat opposition in a grassroots effort to save a river).

⁹⁵ See, e.g., OHIO EPA DIVISION OF SURFACE WATER, *supra* note 83, at 23 (observing that at a hearing attended by 120 citizens, "[t]he majority of the comments received and the responses given by Ohio EPA in regards to the Middle Cuyahoga TMDL . . . have been verbal. Three written comments were received and are included in Appendix E.").

⁹⁶ See, e.g., NATIONAL WILDLIFE FEDERATION, SAVING OUR WATERSHEDS: A FIELD GUIDE TO WATERSHED RESTORATION USING TMDLS 15 (1998) (describing how some states de-list degraded waters once a TMDL is in place and detailing the adverse consequences that flow from such an action).

⁹⁷ See, e.g., Cole, *supra* note 93, at 699 (mapping the participatory approaches available to citizens for opposing the siting of an unwanted facility, and emphasizing the numerous detailed choices that can arise, including the overarching decision of which of three participatory strategies to adopt). Effluent trading as a way to reach water quality goals also poses particular dangers with respect to ensuring meaningful opportunities for public involvement. Cf. Richard Toshiyuki Drury et al., *Pollution Trading and Environmental Injustice: Los Angeles' Failed Experiment in Air Quality Policy*, 9 DUKE ENVTL. L. & POL'Y F. 231, 278-79 (1999) (reporting that under Los Angeles' smog market [for air pollutants], pollution trades "are not subject to public review or comment. In fact, the public faces numerous difficulties finding out what companies are trading to avoid compliance with pollution control standards."). Additional measures should be implemented to ensure participation when market-trading schemes are implemented. See, e.g., Mark Van Putten, *Comments by the National Wildlife Federation on the U.S. E.P.A.'s Draft Framework for Watershed-Based Trading*, at 5 (Sept. 11, 1996) at <http://www.epa.gov/OWOW/watershed/tradecom/level3/nwf.html> (last visited Feb. 12, 2000) (recommending various protections to ensure that citizens are able to oversee trading and monitor its progress in meeting water quality goals).

current participatory barriers to water quality decision-making.⁹⁸ Yet again, in order to organize, one or more citizen leaders must invest considerable up-front costs to get others engaged. If a citizen leader does not have a sophisticated knowledge of the legal and technical intricacies of water quality control, then these costs will be quite high and will include not only the costs of locating the rules, agency staff, and implemented policies, but also the costs of gaining the expertise to know what to look for and to be able to interpret and analyze the information that is found.⁹⁹ After citizen leaders gather this information, they must then incur additional costs to catalyze others into action.¹⁰⁰ The ability to simplify and explain complicated legal and scientific concepts and the ability to motivate others into action are both qualities that someone must possess in the grassroots organization. Thus, public discourse over how best to improve the environmental quality of local resources may become a serendipitous event. If an energetic or sophisticated leader is present in a community, citizen voices may be heard.¹⁰¹ If not, the process may

⁹⁸ See, e.g., Clean Water Network directory (list of organizations that are members), at <http://www.cwn.org/docs/geninfo/netlink.htm> (last visited Sept. 3, 2000); see also Adler, *supra* note 1, at 1000-01 (observing the "groundswell of . . . 'river-oriented community revitalization projects' lauded by citizen activists."); Houck IV, *supra* note 9, at 10485 (describing the growth of grassroots groups that have formed to protect water quality); see generally NATIONAL WILDLIFE FEDERATION, *supra* note 96 (guide to help citizens navigate the TMDL process). The number of grassroots water quality organizations has apparently climbed into the thousands and has even generated demand for super-organizations that serve as the central authority and clearinghouse for issues of interest to its grassroots members. See, e.g., Clean Water Network home page, at <http://www.cwn.org/homepage.htm> (last visited Sept. 3, 2000) (describing the Clean Water Network as "an alliance of more than 1000 organizations that endorse its platform paper . . . which outlines the need for strong clean water safeguards to protect human health and the environment."); River Network home page, at <http://www.rivernetwork.org/contribu.htm> (last visited Sept. 3, 2000) (describing the River Network as dedicated to protecting and preserving "America's rivers and watersheds through building a grassroots, national movement.").

⁹⁹ See, e.g., BOLLING, *supra* note 65, at 36-37 (highlighting that technical experts "are absolutely essential ingredients for most successful river campaigns So if you don't have the expertise, you'll have to go out and find it.").

¹⁰⁰ See generally BOLLING, *supra* note 65, at 7 (warning readers that "[a]s . . . every . . . successful river saver makes clear, you can't save a river by yourself—you need partners.").

¹⁰¹ See, e.g., JOHN CRONIN & ROBERT F. KENNEDY, JR., *THE RIVERKEEPERS* 22-49 (1997) (describing the pivotal role played by one charismatic citizen, Robert H. Boyle, in establishing "Riverkeepers," a grassroots citizen organization that has made tremendous strides in combating a number of sources of pollution in the Hudson River); cf. Daniel A. Mazmanian & Jeanne Nienaber, *Prospects for Public Participation in Federal Agencies: The Case of the Army Corps of Engineers*, in *WATER POLITICS AND PUBLIC*

proceed with little to no connection to the citizenry, despite the fact that the current and future fate of public resources is being decided.¹⁰²

2. Artificially Reduced Benefits for Citizen Participation

Costs alone do not determine participation. If the benefits or stakes of participation are great, a citizen or citizens will persevere as long as the benefits of participation outweigh the costs. Of course, individual benefits of participation will vary tremendously between people and organizations, and participation levels are likely to vary for this reason. If individual perceptions of the benefits of participating are influenced by external factors such as the regulatory process, however, it is another matter entirely. In this case participation will be based not on an assessment of actual benefits, but on a distorted perception that is not accurate. Yet it appears that the water quality march has precisely this sort of adverse impact on participation because it artificially lowers the perceived benefits of participating.

Rather than being cast as a program in desperate need of public input, water quality programs are framed in ways that minimize the importance of the citizen's perceived (or real) role.¹⁰³ There are at least three features that may cause citizens to underestimate the value of their contribution to water quality control programs. The first is the technical framing of the

INVOLVEMENT, *supra* note 63, at 225, 245 (concluding from their study of public participation in the U.S. Army Corps of Engineers that the Corps' [new participation-friendly] program is evidence that the

problems of freeriding and collective action can be overcome, to some extent, if an agency is willing to underwrite information gathering and organizational costs that have usually served to impede participation in the public policy process by all but the well-organized, wealthy, and development oriented.)

¹⁰² See, e.g., *infra* note 111 (discussing stakeholder groups as a surrogate for broader efforts to include the public in decision-making).

¹⁰³ In fact, some states appear to exacerbate the hostility of their programs to public participation, either by actively excluding opportunities for comment or denying reasonable requests for more time. See, e.g., NATIONAL WILDLIFE FEDERATION, *supra* note 96, at 39 (reporting that

Some states do not adequately notify the public. They provide the minimal amount of public participation by simply publishing a public notice in the legal notice section of the newspapers Another problem is that both the listing and TMDL development processes can be technical, which makes it difficult for citizens to participate effectively.);

see also *infra* notes 111-13.

problem mentioned previously. Not only does misframing the problem as a technical one raise the cost of participation, but this misframing also gives citizens the impression that the problems are best resolved by technocrats and other experts.¹⁰⁴ Unless citizens have stubbornly invested the time and resources to learn otherwise, or have an advanced education that allows them to penetrate this technocratic insulation, they will likely walk away from opportunities to deliberate on vital public decisions about water quality control.¹⁰⁵ They will perceive that their input is superfluous, or nearly so, with respect to the "scientific" issues under discussion.

Second, water quality plans have been fractured into micro-issues that take years to coalesce into anything approaching a significant policy decision.¹⁰⁶ In setting enforceable standards for nonpoint and point sources that are discharging problem pollutants into degraded waters, for example, a protracted process must be followed for each pollutant, usually on separate segments of each stream.¹⁰⁷ A designated use is identified for

¹⁰⁴ The misframing of water quality problems as an issue largely resolved with scientific analysis has also been used by opponents of more stringent water quality controls. These opponents argue that regulatory controls cannot be imposed unless they are justified by "good science." See, e.g., ASSOCIATION OF METROPOLITAN SEWERAGE AGENCIES, EVALUATING TMDLS . . . PROTECTING THE RIGHTS OF POTWS (revised 2000) at <http://www.amsa-cleanwater.org/tmdl/tmdl.htm> (last visited Oct. 11, 2000) (identifying in the executive summary that one of the main lines of attack that publicly owned treatment works (POTWs) can launch against TMDLs that propose stringent effluent limits is whether "there is sufficient reliable scientific data" to support the state's plan; more specific recommendations on the good science approach to questioning TMDLs are identified in subsequent chapters); Houck IV, *supra* note 9, at 10476 (reporting on how some groups oppose a state's list of degraded waters as "based on inadequate science ("drive-by listings," in the words of one agriculture industry attorney . . .)."). In other words, the statutory program's unrealistic demands for technical rigor have been used by some to reverse the burden of proof for water quality controls. They argue that the regulators must scientifically establish that there is a problem before precautionary action can be taken.

¹⁰⁵ See, e.g., Mauk Mulder, *Power Equalization Through Participation?*, 16 ADMIN. SCI. Q. 31 (1971) (reporting that citizens are more likely to participate when they are both interested in an issue and feel that they can contribute meaningfully to it).

¹⁰⁶ See generally Adler, *supra* note 9, at 267 (observing that "'comprehensive' planning under the CWA has proceeded, either sequentially or simultaneously, under at least seven separate statutory programs.") After receiving negative comments on its proposal that TMDLs be completed by a state within fifteen years (or by the year 2015), the EPA revised its final rule to require that TMDLs be promulgated by the year 2010 with an added good faith five-year extension available. See Final TMDL Regulations, *supra* note 11, section 130.28(b), at 43666; see also preamble at 43613 (discussing this change in the deadlines).

¹⁰⁷ See, e.g., Final TMDL Regulation, *supra* note 11, at 43621-27, 43667-69 (describing the eleven mandatory elements of a TMDL set forth in section 130.32, and noting that the

the waterbody; water quality standards are set to match the designated use; monitoring data is gathered for the waterbody; priorities among degraded waters are set; and allocations for pollutant reductions on that waterbody are determined. The resulting water quality march takes years or even decades to complete, with many of the individual steps completely disconnected from one another in both time and substance. The fractionation of the decision-making process into micro-steps thus causes each step of the decision to become so insignificant or minor from the standpoint of the citizen that only the affected sources are likely to find it worthwhile to invest the time and resources required to participate in the process.¹⁰⁸ In a recent Ohio TMDL decision for the "Middle Cuyahoga River," in fact, a number of the 120 citizens present at the only public hearing held on that project complained that only one segment of the

eleventh element (an implementation plan) contains its own set of eight required elements). Further fractionating the process is the EPA's requirement that states first submit a comprehensive "methodology" for developing their list of impaired waters, a methodology upon which the public is asked to comment separately, yet which guides all future decisions. The EPA also presents the methodology as exclusively, or at least predominantly based on technical and quantitative criteria, although it does acknowledge the role of qualitative considerations (such as aesthetics and recreation) in developing the schedule of priorities. *Id.* at 43665, 43666 (section 130.23 lists the substantive requirements for this methodology; section 130.28(e) lists "other [qualitative] factors" that may be considered in scheduling waterbodies for TMDL establishment). One set of authors observe that, at least in Hawaii, the TMDL's narrow focus only on the loading of particular pollutants has caused the public to be less interested in TMDLs since it ignores related public objectives for water quality (such as "restoration of aesthetic qualities, habitat, and water quantity."). See Harrigan-Lum & Lum, *supra* note 40, at 61 (observing that "[a]lthough community interest is high in terms of support for improving both the appearance and water quality in listed waters The narrow focus of the TMDL program on material pollutants and temperature has not generated widespread public interest in Hawaii; much more public emphasis is being given to broader issues of [stream restoration]."); see also Adler, *supra* note 9, at 268-69 (criticizing this single-pollutant approach of the TMDL process).

¹⁰⁸ The fractionated decision-making process thus reduces the benefits of participating unless the participant knows that he or she can maintain continuity in the decision-making process for years or even decades. Not only are the costs of participating raised (because of the time commitment), but the perceived benefits are reduced to the extent that one can only be assured their participation in one or even a few micro-points within the transaction. While the EPA defines a TDML "to apply to one pollutant in a waterbody," it does not foreclose the ability of states to establish TMDLs for a larger watershed or for several pollutants at one time. Final TMDL Regulations, *supra* note 11, at 43596. The EPA appears to have added this flexibility only after soliciting comments and expressing concern over the extent to which this flexibility might cause states to "depart too far from their priority rankings." Proposed Revisions to the Water Quality Planning and Management Regulation, 64 Fed. Reg. 46012, 46028 (1999) [hereinafter "Proposed TMDL Rule"].

infamous Cuyahoga River (the river that burned) was under discussion, rather than the larger polluted watershed.¹⁰⁹ Indeed, had the citizens consulted the State of Ohio's prioritization list, they would have discovered that similar proceedings were planned for 880 other water segments in the state, each with a possible total of twenty-nine separate impairments, some of which will be addressed separately on a pollutant by pollutant basis (totaling 2366 impairments state-wide).¹¹⁰

Third, and more subtly, citizens may correctly intuit that the value of their participation is discounted by the agency and is viewed as being less valuable than the input of other, more sophisticated or influential participants.¹¹¹ At least one preliminary study has shown that agencies treat citizen input as being less important than input provided by industry.¹¹² At times, the state may reinforce this impression by restricting avenues for public participation.¹¹³

¹⁰⁹ See OHIO EPA DIVISION OF SURFACE WATER, *supra* note 83, at 23 ("Concern was expressed [at the public hearing] that the Middle Cuyahoga River was singled out for some reason and that the entire Cuyahoga River watershed should have been addressed in this TMDL.").

¹¹⁰ See EPA, Ohio 303(d) List Fact Sheet, *supra* note 53.

¹¹¹ This impression that citizen input is discounted is exacerbated by the tendency of many states to convene "stakeholder groups" essentially in lieu of holding open meetings and information sessions. See, e.g., NATIONAL WILDLIFE FEDERATION, *supra* note 96, at 20-21 (reporting that states commonly convene stakeholders to determine how best to allocate pollution loads). From these stakeholder groups, a citizen may get the impression that there are two levels of participants—those who are consulted by the agency and those who are not. Obviously the composition of these stakeholder groups is also of concern in ensuring that the citizen input that is heard is balanced and representative of the community views. See NATIONAL WILDLIFE FEDERATION, *supra* note 96, at 21 (identifying as a problem the fact that "[s]takeholder groups are often heavily weighted with industry representatives."); OHIO EPA, MIDDLE CUYAHOGA TMDL REPORT at App. E (Dec. 1999) (detailing state's efforts at public outreach, most of which consisted of holding meetings with listed stakeholders, nearly all of whom were affiliated with states, municipal organizations, or local government—only three of the forty-two stakeholders were unaffiliated or represented a citizen group) (appendix on file with author); see also *infra* note 133 (discussing why state officials may not be receptive to public input).

¹¹² See Ann Bray, Comment, *Scientific Decision Making: A Barrier to Citizen Participation in Environmental Agency Decision Making*, 17 WM. MITCHELL L. REV. 1111, 1129 (1991) (agency staff in Minnesota EPA interviewed with regard to their acceptance of commentors' scientific data revealed that 48 percent of staff believed industry data was reasonably accurate, while only 3 percent of staff believed same for citizen data).

¹¹³ See, e.g., D. Brennen Keene, Comment, *The Inconsistency of Virginia's Execution of the NPDES Permit Program: The Foreclosure of Citizen Attorneys General from State and Federal Courts*, 29 U. RICH. L. REV. 715, 734 (1995) (describing how the Virginia

3. Summary

In sum, both inflated costs and artificially reduced benefits associated with the TMDL process serve to limit citizens' participation. This result of the current regulatory process, in fact, may be no accident. Those with the greatest resources and technical sophistication may be content with (or even aggravate) the extent to which the process alienates those with fewer resources for participation.¹¹⁴

IV. REFORM

Many of the failings of the current TMDL program are forgivable. Like a number of other regulatory programs, the technical detail and bureaucratic requirements have been incorporated into the TMDL program for good reason: during the first twenty years after this program was passed into law, states were given full reign in incorporating watershed management tools into water quality control plans and accomplished little. The TMDL technical requirements appear, therefore, to be necessary for some progress to be made.¹¹⁵ The argument advanced here, however, is

legislature "grants standing to review [agency] decisions to issue or deny a [Clean Water Act NPDES] permit only to permit holders or applicants."); *see also* FACA REPORT, *supra* note 7, at 68-69 (expressing Committee concern "that merely following the minimum requirements for providing public notice of TMDL listing and development decisions will fail to inform concerned citizens of opportunities to participate and will cause agencies to lose valuable information, input, and cooperation from the public."); *see also supra* note 73 (recounting State of Ohio's ambivalence about providing meaningful avenues for public participation in response to a number of comments criticizing Ohio's approach).

¹¹⁴ The high external costs and obstacles imposed on participants by features of the TMDL process may coincidentally provide some predictive power as to whose voices will be loudest and ever-present—those with scientific and legal sophistication; organized; and abundant resources to attend to each and every micro-process. *See generally* David Zaring, Note, *Agriculture, Nonpoint Source Pollution, and Regulatory Control: The Clean Water Act's Bleak Present and Future*, 20 HARV. ENVTL. L. REV. 515 (1996) (discussing influence of agricultural interests in ensuring that nonpoint requirements in the federal statutes are lax).

¹¹⁵ *See, e.g.,* Lynda L. Butler, *State Environmental Programs: A Study in Political Influence and Regulatory Failure*, 31 WM. & MARY L. REV. 823, 828 (1990) (detailing the pervasive failure of state governments to take the initiative on environmental regulation, and outlining political and internal legal explanations for this failure); Flatt, *supra* note 64, at 33-34 (concluding based on detailed study of two state enforcement programs that states cannot be trusted with unbridled discretion over enforcement of environmental regulations, and that for enforcement of the Clean Water Act, "a true change in state enforcement and thus control of pollution requires effective EPA

that these TMDL requirements should be framed as the *default* (or after-the-fact) requirements, and that alternatives allowing for greater citizen participation are preferred provided the minimum federal requirements are met. As discussed, the reason that the TMDL program should serve as a default process is because the current, complex, and technical TMDL requirements are not optimal. Instead, they intrude on and potentially eliminate many of the forces that are likely to produce cleaner waters.¹¹⁶

In this final section, adjustments and reforms to the TMDL program are suggested that would lower the costs and increase the perceived benefits of citizen participation without undercutting current TMDL requirements that seek to ensure that the states take their water quality control responsibilities seriously. There do appear to be ways to better integrate watershed management into water quality control programs using both science and public participation that do not require revolutionary adjustments to the current legal terrain, but that do decrease,

intervention, in the form of a genuine threat of a federal takeover.”); cf. Paul D. Barker, Jr., Note, *The Chesapeake Bay Preservation Act: The Problem with State Land Regulation of Interstate Resources*, 31 WM. & MARY L. REV. 735, 758 (1990) (criticizing the State of Maryland regulations governing designation of Chesapeake Bay Preservation Areas as too flexible given the general tendency of “local government officials” to be “those most susceptible to powerful lobbying efforts by developers.”).

¹¹⁶ See also Harrigan-Lum & Lum, *supra* note 40, at 62 (concluding that “[t]he present [TMDL] program does not link watershed management and water quality improvement in ways that meet either state or community goals in a coherent, easily understood manner.”).

In its recent Final TMDL Regulations, the EPA itself seems to recognize this problem created by the tedious TMDL process, but it suggests that the statute gives it no choice but to impose inflexible requirements for the TMDL process on the states. It does not elaborate, however, on why it views the statute so restrictively. See Final TMDL Regulations, *supra* note 11, at 43590 (reporting that “[a] common theme through many comments was that the Agency should not attempt to force-fit clean up of every impairment through the TMDL process. The EPA agrees with the commentators that for some waterbodies and watersheds, existing plans and agreements may accomplish much of what this rule intends. However, the EPA believes that identifying waterbodies that are impaired and establishing TMDLs is both statutorily required and will help focus ongoing activities for more efficient attainment of water quality standards.”); see also *id.* at 43618 (reporting on numerous comments that raised concerns about the inflexibility of the TMDL process). In the next paragraph, however, the agency acknowledges that TMDLs are not required if the state has already promulgated “enforceable” controls that “will result in attainment of water quality standards by the time the next list in the listing cycle is required,” and makes more specific exemptions for parallel results emerging from other federal programs, such as Coastal Zone Management plans. *Id.* Thus, the agency does appear to allow for deviations from their mandated TMDL process to the extent that the states act promptly.

often substantially, participatory barriers that afflict the TMDL program and its related requirements.

First and most straightforward are revisions to the water quality march that consolidate and simplify the steps so that citizens can play a larger role. To some extent, this may also require separating those issues to be resolved nationally, at the state level, and locally to ensure that citizen involvement is maximized and that demands for expertise do not serve to chill citizen participation.¹¹⁷ Some issues embedded within the water quality march are perhaps best resolved exclusively at the federal level because they are far more technical than the other steps. First, the EPA could establish mandatory minimum national water quality standards or at least standard methods for determining degradation for the most serious pollutants, although this might require an amendment to the statute to be binding on the states.¹¹⁸ Nationalizing minimal pollution standards for select pollutants would serve the dual purpose of ensuring greater consistency between states (which is obviously necessary for interstate waters),¹¹⁹ while also accommodating the obvious handicap that the diffused citizenry encounters in participating on state-wide issues that

¹¹⁷ See, e.g., Adler, *supra* note 1, at 1091 (arguing that “watershed programs require planning and implementation at multiple, nested scales, allocating roles and responsibilities as appropriate to each scale.”). This tiering is also necessary to minimize the adverse consequences of over-reliance on local citizen involvement, since in some communities resources are not sufficient for local citizens to participate. See, e.g., *id.* at 1102-03 (observing that some mandatory national requirements are necessary because “[a]reas with adequate political clout, funding, and other resources may benefit from watershed restoration and protection while others remain polluted.”).

¹¹⁸ The EPA has the statutory authority to reject state standards, so it presumably could implement its oversight authority in a way that approaches binding requirements. See 33 U.S.C. § 1313(d)(2); see also Adler, *supra* note 9, at 255-56 (discussing various ways that state water quality standards could be made more consistent). The EPA actively solicited comments on this question in its proposed TMDL regulation, although it does not return to the issue in its final rulemaking. See, e.g., Proposed TMDL Rule, *supra* note 108, at 46020 (“EPA would also like comments on whether the regulation should more specifically define national minimum criteria or thresholds that define waterbodies that are impaired or threatened (e.g., existing criteria used for development of 305(b) reports).”).

¹¹⁹ See, e.g., Adler, *supra* note 9, at 253 (concluding based on a comparison to the Clean Air Act that uniform national standards have the important attribute of consistency from state to state); cf. WILLIAM H. RODGERS, JR., ENVIRONMENTAL LAW 347-48 (2d ed. 1994) (observing that water quality standards promulgated by different states have a number of similarities, and suggesting that an informal national consensus between the states on these standards may be evolving, although as water quality standards become enforceable requirements, the disparity in approaches taken by states will become more marked).

appear largely technical in nature.¹²⁰ Mandatory monitoring requirements also seem appropriate at the national level.¹²¹ Because minimal water quality standards and monitoring requirements can be designed for different types of water bodies, they comprise the two features of the water quality march that appear most capable of being nationalized.¹²²

Other, more locally-determined features of watershed management, such as setting public goals for a waterbody and identifying how best to meet the goals, can also be simplified and streamlined to facilitate, rather than limit, public involvement.¹²³ Under the proposal advanced here, identifying and prioritizing problems and determining how best to address them would be determined in the first instance by the affected communities (just as it was in Chesapeake Bay), with little procedural

¹²⁰ See, e.g., NATIONAL WILDLIFE FEDERATION, *supra* note 96, at 24 (observing that during the review of water quality standards, "[s]pecial interest groups representing industry, water suppliers, and agriculture weigh in more heavily. . . . In addition, the process of updating water quality standards can be very time-consuming which almost eliminates the public from being closely engaged in this process.").

¹²¹ See, e.g., Adler, *supra* note 9, at 217-18 (detailing that although the EPA has promulgated extensive guidance (albeit a bit late) on water quality monitoring procedures, the EPA has not made these procedures mandatory and that the statute appears largely silent on the issue).

¹²² For an example of such requirements, see EPA's latest efforts described in *Development of Nutrient Criteria Guidance for All Regions to Be Accelerated*, EPA Says, 29 Env't Rep. 609 (1998).

¹²³ This more participation-friendly approach would necessarily ensure that meaningful opportunities for public discourse and deliberation over water quality (both the ends and the means) would be facilitated. This could include the equivalent of town meetings, as well as more traditional forums soliciting public views. See, e.g., John S. Applegate, *Beyond the Usual Suspects: The Use of Citizens Advisory Boards in Environmental Decisionmaking*, 73 IND. L.J. 903, 952-53 (1998) (outlining the criteria that ensure meaningful and vigorous public participation); John S. Applegate, *Comparative Risk Assessment and Environmental Priorities Projects: A Forum, Not a Formula*, 25 N. KY. L. REV. 71, 91-108 (1997) (detailing the importance of providing open forums for public discourse over environmental issues). Thus, the call for greater public involvement advanced in this article seeks participation at a broad level, including but by no means limited to or favoring the immediate stakeholders. Recent trends to convene stakeholder groups, see *supra* note 111 and accompanying text, and recommendations by the TMDL FACA group to utilize stakeholders to develop TMDLs, see FACA REPORT, *supra* note 7, at 73-77, may actually be inconsistent with the recommendations advanced in this article. The dual assumptions that stakeholders, including environmental nonprofit groups, are adequate surrogates for citizen involvement and that stakeholder groups can be held accountable to the public are both dubious and unsupported. Until research resolves these questions, the presumption should be in favor of broad-based citizen outreach, with stakeholders emerging naturally through normal channels of broad-based citizen involvement.

constraints on how this might best be accomplished.¹²⁴ In order to ensure that the states have sufficient incentive to reinvent their programs to be more participation-friendly, however, the TMDL program should remain in place and be retained as a default requirement that can be used if the streamlined participatory approach is not carried out in a successful or meaningful way.¹²⁵ For example, in order to ensure that states have the

¹²⁴ Cf., Harrigan-Lum & Lum, *supra* note 40, at 62 (recommending that TMDLs be prepared first where there is strong community support, "thus concentrating funds for adequate data collection and implementation in areas where they will do the most good."). There may be several alternate models for such an approach. The most promising model comes from the Massachusetts Watershed Initiative, which encourages local groups to form around watersheds and to develop priorities in cooperation with the state agencies. See Anderson, *supra* note 2, at 377-78. In Massachusetts, the residents assist with collection of monitoring data, setting priorities, and developing public education projects. *Id.* at 379-82. Citizens also appear to exert a dominant influence on the priority setting and implementation of water quality plans in other watershed projects scattered throughout the country, although the extent to which they come into conflict with TMDL requirements is unclear. See, e.g., CHESAPEAKE BAY COMMUNITIES, *supra* note 59, at 43 (describing "Technical" and "Citizens Steering" committees that seek to protect the Chickahominy River watershed, one of the cleaner tributaries which drains into the Chesapeake Bay, with the technical committee providing their results to the citizen committee and other governmental entities "so that they may ensure the long-term sustainability of biotic diversity and economic prosperity in the watershed."). President Clinton's recently unveiled Clean Water Initiative may also offer assistance in lowering the costs associated with dispersed information on water quality through the development of its new, integrated database on the health of watersheds available at www.epa.gov/win. See U.S. EPA, Clean Water Action Plan: Restoring and Protecting America's Waters (1998), at <http://www.cleanwater.gov> (last visited Sept. 7, 2000). In order to be effective, however, these approaches require that the water quality march be capable of being circumvented, or brought in as a default or penalty for failed water restoration efforts.

¹²⁵ See, e.g., Adler, *supra* note 9, at 205 (observing that the EPA views the TMDL programs as the "backbone of watershed protection.") (quoting Memorandum from Rober Perciasepe, Assistant Administrator for Water, U.S. EPA, to Regional Water Division Directors and Water Program Office Directors (Aug. 9, 1996)); Houck IV, *supra* note 9, at 10484 (advocating ultimately that the TMDL approach be retained because it is "the only game in town that nonpoint sources are required to play."); Zaring, *supra* note 114, at 527-28 (discussing more generally how little is accomplished under nonpoint planning provisions because they lack enforceable requirements).

In terms of defaulting to the TMDL program, specific clarifications may be imperative to make TMDL requirements something to avoid. For the absence of monitoring data, Professor Adler has suggested that there could be a "presumption that a water body violates the [water quality standards] after a fixed period of time, absent adequate monitoring to characterize the health of the watershed by that time." Adler, *supra* note 9, at 262; see also *id.* at 264, 277-79 (suggesting based on a comparison with the Clean Air Act that deadlines and other more specific requirements for TMDL programs might increase its effectiveness). In fact, the EPA's Final TMDL Regulations take the opposite approach by exempting those waters for which there is not monitoring

appropriate incentives to seek out participation-friendly mechanisms for addressing water quality problems, an exemption could be provided for the TMDL process that allows a more streamlined approach to be taken when available data and technical resources are low and public education and involvement satisfy high EPA standards.¹²⁶ Enforceable limits imposed on sources under this streamlined process (i.e., 15 percent reduction in the problem pollutants from all point and nonpoint sources) would also need to roughly correlate with what might seem necessary based on the state of the degraded waters.

In identifying a more streamlined process, both defining the goals for a waterbody and determining how to achieve them could be collapsed into a

data. See, e.g., Proposed TMDL Rule, *supra* note 108, at 46024 (explaining that “EPA does not expect States . . . to list waterbodies for which there is no existing and readily available data and information that indicates the existence of an impairment or threat”—this expectation seems to remain unchanged in the final rule). Professor Adler also develops suggestions for ways that TMDL calculations can better predict and accommodate growth based on lessons from the Clean Air Act, see Adler, *supra* note 9, at 279-87, and ways that the EPA can be provided with greater oversight and sanction powers over recalcitrant states. *Id.* at 289-91.

¹²⁶ Included in the participation requirements, for example, could also be a more formal program that provides ready access for citizens to become involved in the collection of monitoring data and/or monitoring enforcement obligations to ensure that progress is being made in water quality protection. Cf. FACA REPORT, *supra* note 7, at 75 (recommending that “States and EPA [should] encourage and support high quality private citizen/entity water quality monitoring and clearly communicate how and when such information can be incorporated into TMDL development activities. If data are reliable, they should be used in TMDL development activities.”). Many citizen-based projects emphasize the critical role that the public can play in collecting water quality data, and the current costs of collecting it without voluntary support further suggest that including citizens not only in the goal and problem-solving stage, but also during the implementation and monitoring phases of water quality control, is essential for its success. See, e.g., CLEAN LAKES, *supra* note 63, at 13 (reporting that a “1991 survey of States showed that volunteer lake monitoring programs have been established in 19 States, 12 of them partially funded by the Clean Lakes Program The information collected by volunteers is valuable to State water quality officials during lake assessment and classification efforts.”); NATIONAL WILDLIFE FEDERATION, *supra* note 96, at 16-17 (discussing the importance of citizen-generated data in understanding watershed health); Jarrell, *supra* note 42, at 14, 16-18 (emphasizing this role for citizens and citing state official in Idaho as emphasizing the critical role the community plays in maintaining commitments in the TMDL plan and monitoring the river over time); ANN L. RILEY, RESTORING STREAMS IN CITIES: A GUIDE FOR PLANNERS, POLICY MAKERS, AND CITIZENS 299-334 (1998) (detailing important role citizens play in restoring watersheds, particularly with regard to monitoring water quality); Ann Y. Robinson, Citizen Volunteers Test the Waters (1997), at <http://www.earthweshare.org/vwmrobinson.html> (last visited Sept. 7, 2000) (describing the use of citizens to monitor the water quality of the Flint Creek in Iowa).

single decision-making exercise for an entire watershed or river.¹²⁷ In situations where information is inadequate to determine whether a waterbody meets a publicly-defined water quality goal, the state could construct presumptions of degradation that could be rebutted by additional monitoring.¹²⁸ In the alternative, the state could establish focused, and possibly even citizen-assisted monitoring programs that provide limited, but highly relevant water quality information in an expeditious fashion.¹²⁹ Determining how best to enhance water quality that falls below the public goal for a particular waterbody (currently the allocation phase of the TMDL process) could also be done in a more flexible and streamlined fashion. For example, states could be allowed to set crude, but enforceable requirements for pollution reductions for all sources (both point and nonpoint) that discharge the problem pollutant into the degraded water.¹³⁰ Such enforceable requirements could take the form of

¹²⁷ See, e.g., Adler, *supra* note 9, at 261-62, 268-69 (recommending that watersheds be addressed as a unit and that all pollutants be considered at one time).

¹²⁸ See *supra* note 125 and accompanying text (discussing this same recommendation).

¹²⁹ See FACA REPORT, *supra* note 7, at 74 (recommending that “[w]aters nominated by the public on the basis of questionable data should be targeted for additional data collection, where warranted.”); cf. Adler, *supra* note 9, at 260 (suggesting as a compromise for the limited money available to monitor and assess state waters, that monies be targeted for waters where problems are least clear, and waters “in which impairment is predicted defaulting onto the [degraded] list if impairment is not affirmatively disproven within a prescribed period of time.”).

¹³⁰ This is essentially the approach taken to address the most problematic pollutants entering the Chesapeake Bay. See *supra* note 71 and accompanying text. The most significant advantage to this approach is that it acknowledges and adjusts to the rampant uncertainties that inflict the TMDL process, while providing room for technical analysis once the data and modeling resources become more available. Cf. FACA REPORT, *supra* note 7, at 12 (suggesting that in some cases an “iterative approach [to TMDLs] will allow for expeditious progress toward attainment of water quality standards as the EPA’s guidance and the general level of scientific understanding continue to improve.”). It is possible, however, that for some water bodies, the primitive approach will also be the best and final approach to the problem. Not only does it adapt to the data- and science-poor status of watershed management, but it provides flexibility for additional primitive adjustments when the conditions of the receiving waters change or when the public goals for a waterbody change. See, e.g., Healy, *supra* note 5, at 426-29 (identifying the uncertainties and changed conditions that make efforts at detailed technical analysis and “science-justified” permits a failed exercise). Rather than initiating another detailed technical analysis of a waterbody, the primitive approach provides the state or other authority with a mechanism that allocates additional reductions fairly and expeditiously, with far fewer administrative and related transaction costs. Cf. Daniel H. Cole & Peter Z. Grossman, *When Is Command-and-Control Efficient? Institutions, Technology, and the Comparative Efficiency of Alternative Regulatory Regimes for Environmental Protection*, 1999 WIS. L. REV. 887, 902-05 (arguing that when administrative costs are considered,

technology-based types of controls on all nonpoint sources and/or setting percentage reductions for the discharge of the problematic pollutant for all sources uniformly. These more primitive requirements would then remain in force until more detailed technical analysis provides a basis for making adjustments to these requirements.¹³¹ Once additional research reveals that refinements to pollutant reduction requirements are in order, then a second round of planning can begin that more closely resembles the existing TMDL process. Other, much more creative solutions are also likely to emerge once the states and their citizens are permitted some discretion in identifying ways to minimize problematic pollutants that do not require, as a preliminary matter, that a series of tedious, technically-unrealistic steps be followed before enforceable water quality steps can be implemented.¹³²

Other more indirect approaches to lowering the costs of the water quality march should also be considered. Two approaches are suggested, one of which focuses on agency officials and the second of which focuses on the public. Under the current regulatory program, agency officials

crude approaches like command-and-control standards may be as or even more efficient than information-intensive, but more finely-tuned standards)

¹³¹ See, e.g., Adler, *supra* note 9, at 288 (recommending technology-based sorts of controls for nonpoint sources); Adler, *supra* note 1, at 1069-70 (discussing the equivalent of technology-based standards for nonpoint sources embodied in the Coastal Zone Management Act); Houck IV, *supra* note 9, at 10484-85 (observing that conceptually, nonpoint sources are very amenable to regulation through technology-based and other types of environment-blind controls; but political opposition typically prevents such regulation). But see Adler, *supra* note 9, at 270-71 (noting that in contrast to point source controls that can be required to reduce discharges regardless of cost if the receiving waters require such reductions, under the Clean Water Act "nonpoint source controls, which need not be mandatory or universal, are selected only according to notions of feasibility."). The EPA's recent TMDL regulations appear to preclude such an approach, since they require the states to establish quantitatively that the various source reductions will ensure that the waters will attain water quality standards. See, e.g., Final TMDL Regulations, *supra* note 11, §§ 130.32(b)(6), (7), & (11), at 43667-68. It is not clear from the statute, however, whether less rigid approaches are also permissible. The Clean Water Act does require that TMDLs be "established at a level necessary to implement the applicable water quality standards with seasonal variations and a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality." 33 U.S.C. § 1313(d)(1)(C). But the margin of safety could be read to permit crude, interim approaches (technology-based controls on nonpoint sources or identical across-the-board reductions in loading) provided they are coupled with additional monitoring and a commitment to revisit the waterbody at regular intervals with additional reductions if necessary.

¹³² See, e.g., CLEAN LAKES, *supra* note 63, at 10 (detailing how flexibility in federal regulations and grants governing clean lakes program facilitates innovation at the state and local level).

generally face more incentives to discourage, rather than to encourage citizen deliberation on issues relating to water quality control.¹³³ To improve the amenability of these programs to citizen participation these perverse incentives must be reversed. State delegations to administer the Clean Water Act could be approved only after a state has designed meaningful, low cost mechanisms for citizen participation and education. Grants or even awards could be meted out for innovative solutions to public participation challenges. Providing basic information, including information on how the process works and a centralization of contacts and authority and decisions, would be among the requirements to be satisfied if a state is to take control of its water quality control program.¹³⁴ In some states it might also be desirable to provide local governments with

¹³³ From the perspective of the agency official, more citizen involvement brings a potentially significant drain on staff time and already limited administrative resources. See, e.g., FACA REPORT, *supra* note 7, at 73 (observing that "conveying the complex, often technical information associated with TMDLs is difficult, time-consuming, and resource-intensive for State agencies."). Cf. Mazmanian & Nienaber, *supra* note 101, at 227-30, 245 (detailing the internal resistance to public participation within the U.S. Army Corps of Engineers and concluding that pressure for change must come from outside the agency, as well as from within). To extent that participation or citizen outreach is not required, then, it becomes a pro bono governmental activity with large opportunity costs. See generally Helen Ingram, *The Politics of Information: Constraints on New Sources, in WATER POLITICS AND PUBLIC INVOLVEMENT*, *supra* note 63, at 63, 64 (hypothesizing and then elaborating on the proposition that "inputs from new publics will be used when their utility to policy-makers is greater than the cost of using them."). Additionally, greater participation is perceived to lead to more controversy, more protracted debates, more comments, longer hearings, and a greater chance of law suits. Finally, agency officials lose control over the outcome to the extent that citizen input becomes influential. Other stakeholders are likely more worried about this adverse consequence of open participation than agencies, but agency staff may be concerned to the extent that they get directions from the governor or have their own personal goals for water quality that they seek to advance in their public service position.

¹³⁴ The new TMDL regulations provide only minimal assurances for public participation (§ 130.36), requiring simply that states provide a notice and comment period at various stages in the TMDL process and that states develop mailing lists to ensure that their notices are widely disseminated. See Final TMDL Regulations, *supra* note 11, at 43634-35, 43669-70. However, the EPA is also in the process of revising its general 1981 public participation policy, a policy that recognizes the need to provide citizens with high quality information and meaningful access to the decision-making process. Ideally, this broader policy document could be tailored to the specific demands of the TMDL process in order to provide the states with clear direction as to the types of participation programs that are considered adequate. See, e.g., EPA, Notice, Review of Environmental Protection Agency Public Participation Policies, 64 Fed. Reg. 66906, 66908 (1999) (detailing the types of materials that should be provided to ensure that the public is adequately informed).

additional legal authority to protect local water quality.¹³⁵ While localities play an important role as participants (or stakeholders) in the TMDL process, the authority to act independently of the Clean Water Act to address land use or other problems that degrade water quality would provide yet another important opportunity for public involvement.

With respect to enhancing the public's voice in water quality decisions, at least two separate approaches could lower the costs of participation and counteract the artificially reduced benefits of that participation. The first set of reforms would endeavor to facilitate collective action by citizens. This could be accomplished by providing generous funding for grassroots activities, a gesture that both motivates collective action and reduces the costs of organizing.¹³⁶ Certain states or communities could also take the lead and create an elected position for an environmental quality representative who helps inform and advocate on behalf of the larger community. While current elected local officials may also serve this role, focusing the responsibilities helps to ensure that those serving as environmental officials adequately represent citizen views on environmental quality decisions and have the time available to develop the needed expertise. The second reform, directed at the public itself, would provide high quality, balanced information to citizens (as is currently done in the Chesapeake Bay watershed), thus lowering at least some of the costs of participation and restoring the artificially reduced stakes that currently distort the public participation picture. Currently, citizen guides that assist citizens with the technical issues associated with water quality abound,¹³⁷ but much less effort has been dedicated towards helping citizens navigate the legal maze in order to put their technical knowledge into practice.¹³⁸

¹³⁵ See, e.g., Butler, *supra* note 115, at 927-31 (advocating changes in state-local authority structures that discourage or actively prevent local governments from acting to address environmental problems).

¹³⁶ Pursuant to President Clinton's Clean Water Initiative, *supra* note 124, a series of grants and awards are already available to help community groups organize and engage in watershed protection agencies. See Clean Water Action Plan, *supra* note 124, at ch. 3.

¹³⁷ See, e.g., BOLLING, *supra* note 65; NATIONAL PARK SERVICE, *supra* note 61; NORTH AMERICAN LAKE MANAGEMENT SOCIETY, LAKE AND RESERVOIR RESTORATION GUIDANCE MANUAL (Lynn Moore & Kent Thornton eds., 1988); OHIO EPA DIVISION OF SURFACE WATER, *supra* note 82; TERRENE INSTITUTE, *supra* note 88; Center for Watershed Protection, Watershed Leadership Kit CD-ROMs, at <http://www.cwp.org> (last visited Oct. 4, 2000).

¹³⁸ See *supra* note 137 (none of the guides provide assistance on the legal requirements). In fact, in several of the guides, for example, TERRENE INSTITUTE, *supra* note 88, citizens are encouraged to develop community goals and implement plans without even outlining for citizens the parallel procedures for protecting water quality under the Clean Water Act.

The technical guides are also not especially helpful in calling attention to the many uncertainties and assumptions that afflict water quality science.¹³⁹ Yet detailed citizen guides could help demystify environmental policy-making for citizens in their local communities.¹⁴⁰

V. CONCLUSION

One of the reasons that water quality programs have not progressed quickly or successfully stems from features of the regulatory process that alienates, rather than invites, citizen involvement. As the methods for protecting water quality become increasingly rigid and dependent on technocratic solutions, they crowd out meaningful opportunities for citizen input by raising the costs and lowering the perceived benefits of joining the decision-making exercise. This is particularly problematic since the current technocratic/legalistic artifice has a weak foundation—resting on little data, sorely incomplete science, and difficult political decisions about allocating loads among polluters, many of whom otherwise escape meaningful regulation. Without public input and support, these programs are destined to drift in a state of analytical paralysis. Watershed management will only become successfully integrated in our water quality programs once these significant participatory failings have been mended.

By contrast, there is one guide available that does orient the citizen toward the law. The National Wildlife Federation has developed an excellent guide to assist citizens in participating in the TMDL process. *See* NATIONAL WILDLIFE FEDERATION, *supra* note 96. The guide is invaluable, but obviously cannot assist citizens with state issues that often arise in unique ways during the TMDL process. *See, e.g., id.* at 15, 17, 21 (identifying, where possible, certain problems that arise in “some” states, but lacking more detailed discussion of the problems because of the national nature of the guide). Thus, much more work, often on a state-specific level, is necessary to provide citizens with the help that they need. Additionally, the National Wildlife Federation Guide has not been widely publicized by states or even the U.S. EPA, making it a difficult tool for many citizen activists to locate.

¹³⁹ *See, e.g.,* OHIO EPA DIVISION OF SURFACE WATER, *supra* note 82, at 12-29 (warning citizens that after accessing “multiple lines of” technical data, “conclusions may only be an educated best guess,” but failing in the subsequent detailed explanations of water quality indicators to identify any sources of uncertainty or variability in the multiple measures or quantitative figures).

¹⁴⁰ If law students developed these citizen materials, in fact, it could be a dual success for the citizen and the students: the students would learn how to practice environmental law and accomplish something tangible and positive at the same time. The current discontent with legal education, and the particular frustration of environmental law professors, in particular with respect to the current challenge of teaching a complex substantive course in a relatively passive classroom setting, may provide added impetus for such a project.