

*A new federal rule would hurt free market efforts to protect waterways.*

# The Trouble With Implementing TMDLs

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**L**AST SUMMER, CONGRESS TEMPORARILY delayed the implementation of the Total Maximum Daily Load (TMDL) rule authored by the Environmental Protection Agency (EPA). This rule, which has been written in accordance with a provision of the 1972 Clean Water Act, would require states to establish water quality standards for American waterways and to conduct regular testing to see if the waterways meet the standards. For waterways that are found to be impaired, the states must determine how much pollution could be discharged into the water without it failing to meet the standards. (The TMDL acronym refers to the total amount of effluent that can be discharged into the water, which is known as a load cap.) The states must then develop and implement policies to improve the health of the waterways.

The pending TMDL rule places emphasis on the rightful goal of water quality policy — meeting ambient water quality standards. This goal could be further advanced if states were to develop allowance markets for discharge rights. These markets give dischargers along the waterway the “right” to discharge a certain amount of pollution, with the total amount of permitted pollution equaling the waterway’s load cap. Such allowance markets, which have been used successfully in air quality improvement efforts, lower the cost of achieving water quality standards. Moreover, they provide incentive for dischargers to reduce their discharge below their permitted levels; they could then sell a portion of their rightful allotment to other dischargers. In this way, allowance markets would accommodate economic

growth while preserving watersheds’ environmental health.

Unfortunately, statutory and regulatory barriers limit the implementation of allowance market systems. The new TMDL rule fails to address these barriers and, in some cases, creates additional obstacles to market development. If the federal government wants to use the powerful tools of the marketplace to clean up America’s waterways, then legislators and other officials must make a number of near-term regulatory reforms and longer-term statutory changes that would allow these markets to develop.

## ALLOWANCE MARKETS FOR WATER QUALITY

IN AN ALLOWANCE MARKET, DISCHARGERS HAVE THE right to release a certain amount of pollutants into the water. In principle, the sum of these rights, called allowances, equals the load cap. Each discharger has the freedom to determine how the effluents will be limited to the authorized amount; it is the responsibility of the discharger to select, implement, and manage effluent control technology and production process changes. Also, in an allowance market, dischargers have the freedom to buy and sell their allowances. An allowance market permits one allowance owner to reduce his effluent level in order to sell or rent the unused portion of the allowance to another party who wishes to increase discharges by an equivalent amount. The owner also may be allowed to bank an unused allowance for future use. This exchange of allowances occurs within a set of rules that provides a stable investment climate and that limits the possibility of imposing costs on third parties such as the waterway’s downstream recreational users or people who use the waterway as a water supply.

An allowance market rewards creativity by giving dischargers the discretion to seek out and implement alternative ways to control waste and to buy, sell, or save allowances. This motivates dischargers to develop and implement inno-

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vative, low-cost ways to reduce their effluent discharge. At any time, those with the greatest willingness to pay for the waste assimilation capacity of the watershed use the allowances. Meanwhile both the buyer and the seller remain in compliance with the water quality standards so as not to exceed the total watershed load cap.

### THE CLEAN WATER ACT IN BRIEF

THE TMDL REGULATIONS AIM TO ACHIEVE A STATED goal of the Clean Water Act—to restore “the chemical, physical, and biological integrity of the nation’s waters.” Currently, the principal regulatory tool for achieving this goal is the National Pollution Discharge Elimination System (NPDES) permit. Regulators issue NPDES permits to point sources such as municipal and industrial dischargers. The Clean Water Act does not require the EPA or the states to control nonpoint sources of a pollutant.

An NPDES permit authorizes the discharge of effluent into the waters of the United States based on EPA-identified stan-

dards. The EPA sets these standards by first identifying available effluent control technology for various industrial sectors. Under the permitting system, a discharger can release a total amount of effluent equal to the maximum permitted wastewater flow multiplied by the concentration of discharge released by the pollution control technology prescribed by the EPA for the discharger’s industrial sector. This does not mean that the discharger must use this

technology, but the discharger must convince regulators that the used technology is achieving the same control levels as the EPA-prescribed technology.

Typically, state regulatory agencies issue and enforce the NPDES permits. The permits can be issued for a maximum period of five years and then must be renewed. Because the regulator and the permittee prefer the certainty of basing permit compliance on technology already in place rather than on a particular performance requirement, the permits often specify the design and operation of whatever waste control technology is selected.

Once technology-based effluent limits are established and written into permits, the Clean Water Act prohibits regulators from “backsliding” — issuing less restrictive effluent limits in the future. Further, the act instructs the EPA to routinely revisit and tighten these standards as new pollution control technologies become available. These provisions work to achieve another stated goal of the Clean Water Act: the ultimate complete elimination of effluent discharge in the nation’s waters.

Currently, if waters do not meet ambient water quality standards when a permit is issued or renewed, regulators must set water quality-based performance standards for regulated dischargers. To do this, the regulated source and the state, under EPA oversight, negotiate water quality-based performance standards. These standards are based on technology that produces greater pollution removal than the EPA-prescribed technology for the discharger’s industrial sector. Often, the technology’s cost is not taken into account when these standards are formulated.

### THE PENDING TMDL RULE

FACED WITH THE NEED TO MAKE PERMITTING DECISIONS in the face of a cap, the EPA will extend the regulator-directed NPDES program when the TMDL rule does go into effect. This extension is costly, contentious, environmentally suspect, and often inequitable. The recent, highly publicized case of the Rahr Malting permit offers an illustration. The Rahr Malting Company, based in Minnesota, wanted to increase

production at its plant on the Minnesota River. To enable this, the company planned to build a wastewater treatment facility adjacent to the plant. But the Minnesota Pollution Control Agency, citing water quality problems on the river, prohibited Rahr from increasing permitted effluent discharges into the river. Instead, the state agency required Rahr’s new treatment facility to achieve zero discharge if the company wanted to expand

production. When the highly advanced on-site treatment technologies failed to achieve zero discharge, the Pollution Control Agency instructed Rahr to pay for agricultural nonpoint source reductions upstream of its treatment facility.

The modified permit was costly to both Rahr and the regulatory agency and took over two years to negotiate. The Minnesota Pollution Control Agency offered Rahr no new decision-making flexibility for how it manages its effluent. Instead, the agency required the company to install and maintain limits-of-technology controls as specified in its NPDES permit. In addition, the agency granted Rahr little opportunity to seek out equivalent effluent reductions from different sources. The company had to purchase effluent from a regulator-identified menu of nonpoint source controls. These purchased reductions became a new condition in Rahr’s NPDES permit. Once permit conditions were established, Rahr itself had little opportunity to reallocate effluent load based on cost considerations. Finally, the nonpoint source conditions in the Rahr permit raises serious



MARKETS AND THE ENVIRONMENT: Falls Lake in the Neuse river basin, North Carolina.

equity concerns. The Rahr-type system is a way for regulators to require a permitted discharger to finance effluent controls at another source (nonpoint) that the regulatory agency itself is unwilling to regulate or finance.

We expect that, once the TMDL rule is in place, there will be more cases like Rahr. The TMDL rule expands the scope of NPDES permitting so that, instead of controlling specifically identified conventional pollutants and toxic compounds, the permits will also restrict any pollutant deemed responsible for causing water quality impairments. Effluents such as nitrogen, which is currently not identified as either a conventional or toxic pollutant and has historically remained outside the purview of the act, could be controlled by NPDES permits if the effluent discharges are identified as the cause of a water quality impairment.

The TMDL process requires state regulators to predict and manage future loads under a load cap. The pending TMDL rule instructs the states to reserve a share of the cap (the assimilative capacity) for future growth. Thus, when a new or expanding firm wishes to discharge into an impaired body of water, regulators are responsible for allocating a portion of the load reserved for future growth to this applicant. Once the reserve is exhausted, regulators would reallocate assimilative capacity among competing dischargers when new sources want to enter the watershed. The market system would allocate a scarce resource like this assimilative capacity in an efficient way, but the EPA does not offer the allowance market option as an alternative way to command-and-control in making this allocation.

### BARRIERS TO ALLOWANCE MARKETS

WE CAN SUMMARIZE THE CLEAN WATER ACT AND ITS supporting regulatory framework, including the pending TMDL rule, as regulator-directed and technology-oriented. The burden is on the regulator to identify and mandate effluent control strategies for each source. In the case of impaired waters, regulator responsibilities are extended to allocating discharge permits under the watershed load cap.

**Limiting choice of control options** By placing these demands on the regulator, the Clean Water Act and the TMDL rule make it impossible for an allowance market to develop. In an allowance market, the dischargers must have the freedom to choose the means to control their waste discharge. The current NPDES permit process restricts this freedom in significant ways. While the statute requires only that the numerical effluent limits be written into NPDES permits, these permits often contain conditions regarding the operation and maintenance of specific technologies and pollution control processes that the permit holder must implement and maintain. Such permit conditions limit the ability of dischargers to modify control equipment and operations without first undergoing potentially costly permit revisions.

The permit system also encourages the selection of EPA-identified technologies. Technically, dischargers are free to use whatever pollution control technology they arrange with state regulators, as long as the technology's per-

formance meets the EPA's technology-based performance standard. However, there are disincentives to deviate from the technology favored by the EPA. The cost savings from adopting a different technology — even if it is more appropriate for the specific operation — may be offset by the higher engineering and legal costs of securing regulatory approval. There may also be legal uncertainties about whether an alternative technology will be deemed in compliance with the permit if the technology fails to meet performance standards.

This technology-oriented system discourages dischargers from seeking out and implementing innovative means to meet effluent limits. In 1997, the General Accounting Office (GAO) reviewed EPA's efforts to reinvent environmental regulation and confirmed a general unwillingness among regulated parties to deviate from suggested technologies. The GAO assessed EPA's initiatives for "reinventing government," which were designed, in part, to provide additional decision-making flexibility to parties subject to environmental regulation. While environmental groups and federal agency representatives believed that the Clean Water Act and its regulations were flexible enough to allow and encourage innovation, state regulators and dischargers — those at the ground floor of implementation — did not. The GAO concluded that the statutory framework actually imposes "requirements that have led to and reinforce many of the practices that the agency is most seeking to change." State regulators and dischargers felt that legislative action was necessary to protect innovators from legal and regulatory challenges.

As further evidence of this effect, investment in research and development projects for innovative environmental technologies is shrinking. A recent Environmental Law Institute study concluded that venture capital financing for environmental innovation fell from \$200 million in 1990 to \$30 million in 1996. The study blames the dearth of environmental innovation on the technology-based permitting process that reduces incentives for improving control performance.

The EPA itself recognized the inflexibility in the permitting process and conducted an internal agency review of possible reforms. The review concluded that permit reform needed to focus on measurement and assurance of performance, and on providing flexibility in how a regulated party meets performance standards. The review concluded that moving away from current command-and-control permitting practices to more performance-oriented permitting would be a long and uncertain process.

**Restricting the opportunity to trade** The opportunity to buy, sell, and save allowances is the second necessary condition of an allowance market. However, the Clean Water Act undermines the incentives and opportunities to buy and sell discharge control responsibilities. Unlike the federal air quality program, the Act contains no provision for the trading of pollution-control responsibility. It does not expressly prohibit exchanges, but the absence of an explicit legislative sanction for the creation of an allowance market

system raises legal uncertainties. In a 1992 report, the GAO concluded that allowance trading under the Clean Water Act would be difficult because of the “perceived legal risks that the programs will be overturned and disallowed by regulators and the courts.” The silence on allowance markets in the pending TMDL rule only reinforces this perception.

The language of the Clean Water Act and the behavior of the regulatory agencies restrict both the supply of and demand for allowances. The supply of allowances offered in the market is dependent on the willingness and ability of dischargers to reduce their effluent below allowance holdings, but the act discourages that willingness and ability. Because effluent standards are supposed to reflect the maximum possible effluent control, a discharger that aggressively controls its discharges sends the message to regulators that more stringent limits are attainable. Hence, superior performance is penalized, not rewarded. The incentive for dischargers to do no more than meet their permit conditions truncates the supply of allowances and ultimately undermines the possibility of an allowance market.

Dischargers that are willing and able to increase their discharge by purchasing unused allowances create allowance demand. The Clean Water Act’s “anti-backsliding” provision prohibits an NPDES-permitted discharger from buying allowances to discharge more effluent than specified by a technology-based performance standard. EPA’s draft trading policy explicitly acknowledges this limitation when it states that, under the Clean Water Act, “all dischargers must install appropriate treatment to achieve” their technology-based requirements. A regulated discharger can only purchase allowances from another discharger when both have water quality-based performance standards.

## AN ALTERNATIVE

THE TMDL PROGRAM RAISES THE CHALLENGE OF MANAGING effluent discharge under an effluent cap. Markets are an obvious option for reallocating scarce discharge allowances, but the legal and regulatory barriers described above make it unlikely that regulators will exercise this option. However, if government avoids or significantly modifies the individual NPDES permitting process, then there are opportunities for developing market-like systems.

North Carolina’s Tar-Pamlico river basin program offers an example of how allowance markets can be effective if regulators can avoid the barriers erected by the NPDES permitting process. In the Tar-Pamlico watershed, North Carolina officials determined a total load cap for nitrogen and phosphorus for the 13 dischargers in the watershed. Instead of assigning effluent control responsibility through the NPDES permit process, the state forged an agreement with an association of the dischargers that established a total nutrient cap for the dischargers. The association of dischargers allocated allowances among its members in a way that assured that, as a whole, the total discharge meets the cap. Once members received their allowances, they began to freely reallocate allowances among themselves under the association’s internal exchange rules. However, no matter how the

allowances are redistributed, the 13 dischargers, together, cannot exceed the nutrient limit determined by state officials.

Because the program was developed outside the Clean Water Act’s NPDES permit process, individual dischargers have the discretion to determine how and at what levels they will control their discharge. In this way, the system offers flexibility without the fear of triggering anti-backsliding suits and with the certainty that improved performance will not result in more stringent individual permit limits. Individual dischargers do not need to use specific control practices, nor do they have to gain regulatory approval to change or experiment with nutrient control practices. Moreover, the state has granted broad power to the association to reallocate allowances among its members without each member having to enter into a formal regulatory approval process with the government.

North Carolina grants this extensive decision-making flexibility as long as the association can document that aggregate discharges fall within the load cap. Thus far, the decision-making flexibility has allowed association members to control their total effluent discharge for a fraction of the original cost estimates. Over the past 10 years, during a period of prolonged economic growth, the association has not exceeded the discharge cap even once – an enviable compliance record.

The program was able to avoid individual NPDES permitting because the effluents of concern — nitrogen and phosphorus — were not specifically identified in the Clean Water Act. Under the TMDL rule, however, such a program might be illegal. Once regulators designate a waterway as impaired, the new regulations require that effluent-based limits for the targeted pollutant be written into point source NPDES permits. This will significantly diminish the opportunity to develop an allowance market program.

## WHAT CHANGES ARE NEEDED FOR ALLOWANCE MARKETS?

GIVEN THE FORMIDABLE OBSTACLES ERECTED BY THE Clean Water Act and the supporting regulatory system, what can be done to advance allowance systems as a part of the nation’s water quality program? New permitting approaches can overcome some of the obstacles within the existing statutory and regulatory framework, but lawmakers will have to change the Clean Water Act itself in order to allow widespread movement toward allowance markets.

**Regulatory reforms** In the short run, regulators can promote discharge decision-making flexibility by issuing watershed or group permits. This would formally validate the arrangement between the Tar-Pamlico association and North Carolina. A watershed permit could take a variety of forms but, in general, would assign a mass load cap to a group of dischargers over an identified waterway. Dischargers covered by the watershed permit would not have to comply with any individual NPDES permit and would not be bound to adopt specific pollution control technologies. Instead, the dischargers would have discretion on how to achieve the required controls and would have the opportunity to allocate and reallocate the

mass load cap among themselves. In these important ways, the watershed permit would allow the creation of an allowance market among those covered by the permit.

North Carolina has proposed, and the EPA has accepted, a type of watershed permit for point sources in the Neuse river basin. This proposal would establish individual NPDES limits for wastewater treatment plants, but then would waive these permits if the dischargers joined a discharger association. The state would then establish a total nutrient load cap for the association through a legally binding contract and the association members would be responsible for meeting the cap. The Neuse approach attempts to meet new TMDL-induced permitting requirements for issuing individual NPDES permits and then waives the requirement if the discharger participates in a group permit.

Absent any significant statutory change, however, few will abandon the current permit system because the potential costs are too high. For regulators, the risks include legal challenges that can overturn programs that took years and scarce agency resources to craft. Dischargers face the threat of noncompliance and poor public relations.

**Statutory changes** For more widespread adoption of allowance markets, Congress must establish a more performance-based foundation to the Clean Water Act that explicitly allows the possibility of allowance markets. Without explicit statutory direction and authority, the EPA and state agencies may conclude that they do not have the authority or the obligation to make this transition.

Congress should explicitly affirm that the ends of the act are to secure ambient water quality goals, not to eliminate all discharge. The zero discharge goal is the antithesis of the ambient approach contained in the Clean Water Act provision that authorized the EPA to formulate a TMDL rule.

Congress should also explicitly acknowledge that exchanging pollution control responsibility is an acceptable means of achieving water quality objectives. The recognition and support for the concept of a watershed permit for federally regulated dischargers would provide a concrete and realistic vehicle to make this acknowledgement. If properly drafted, such congressional support could also be a catalyst for the EPA to implement a more performance-oriented permitting system.

Toward this end, Congress should specifically authorize a large-scale (state or regional) allowance market for a particular watershed, lake, or estuary system. Such action would provide statutory authorization to deviate, if necessary, from the specific language of the Clean Water Act so as to create a market-like mechanism for addressing a regional water quality problem. A congressionally sanctioned pilot market would provide a market model for the water program that could be transferred to other areas. Staffing the water regulatory program with personnel that understand and advocate allowance markets within the agency would further encourage and support this transfer.

This action would be similar to the action Congress took in creating the sulfur dioxide allowance trading in the air program. The sulfur dioxide program deviated from the conven-

tional regulatory program by providing dischargers with the decision-making flexibility necessary for an allowance market. Congress provided EPA clear and unambiguous authority to encourage the development of an allowance market that would ensure the sulfur dioxide cap would be achieved.

Finally, Congress should repeal the Clean Water Act's anti-backsliding language and replace it with provisions that allow dischargers to purchase allowances as a means of compliance. Such a statutory change would increase both the supply of, and demand for, discharge allowances. Increasing market activity in allowance buying and selling would stimulate innovation in pollution prevention. The resulting fixed supply of allowances would help to assure that water quality load limits would not be exceeded.

## CONCLUSION

REGARDLESS OF THE FATE OF THE PENDING TMDL RULE, future water quality policymakers will have to devise ways to achieve water quality objectives under a fixed load cap. Unfortunately, the pending TMDL rule will extend the current regulator-directed regulatory program in order to achieve ambient water quality goals.

Allowance markets are the best way to secure the water quality standards required by the TMDL program. An allowance market offers the promise of generating pollution prevention incentives, reducing costs, and ensuring joint achievement of economic growth and water quality standards. For allowance markets to become part of the nation's water quality program, government must shift the responsibility for identifying and implementing pollution control technologies from the regulators to the regulated.

Allowance trading explicitly recognizes that a centralized agency has limited ability to know all of the pollution control alternatives available to each individual discharger. By adopting allowance trading, regulators will no longer have to focus on identifying and implementing technology but instead will establish water quality goals and monitor and enforce the attainment of those goals. **R**

## READINGS

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