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TMDLs The Revolution in Water Quality Regulation

By Jennifer Ruffolo

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C A L I F O R N I A

R E S E A R C H B U R E A U

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EXECUTIVE SUMMARY

Congress enacted the Clean Water Act in 1972. In the Act, Congress created two overlapping approaches to regulating water quality. One, familiar to all who follow water quality issues, regulates discharges from sewers, factory pipes, and other “point sources.” The other, which lay quiescent for almost 12 years, requires states to establish quality standards for their lakes, rivers, and other water bodies, and to do whatever is required to meet those standards. Since pollution from point sources has been largely (though not completely) cleaned up, this requirement leads in the direction that states regulate and clean up water pollution from all other sources. This may include runoff and irrigation return flows from farms, runoff from forestry operations, and runoff from urban areas. It is an understatement to characterize this as a major escalation of water quality control efforts.

This “new” approach to water quality stems from Section 303(d) of the Clean Water Act. Section 303(d) requires states to identify all the water bodies that do not meet applicable water quality standards, and for those “impaired” water bodies, states must establish TMDLs, or total maximum daily loads. TMDLs define how much of a pollutant a water body can tolerate on a daily basis and still meet the relevant water quality standards. All of the sources of the pollutant in the watershed combined, including nonpoint sources, are limited to discharging no more than that total limit. The TMDL is supposed to be an objective, quantitative standard against which water quality can be measured.

This section of the Clean Water Act was essentially ignored for years. The EPA and the states were fully occupied with developing the standards and permit program for point sources, known as the National Pollutant Discharge Elimination System, or NPDES. However, environmental lawsuits and the courts breathed life into §303(d), beginning in 1984 with *Scott v. City of Hammond*. In this case, the Seventh Circuit ruled that EPA had to develop TMDLs if the states failed to do so. In a series of similar lawsuits across the country, what became known as the “theory of constructive submission” was used to force EPA to issue lists of impaired water bodies and establish TMDLs. Another landmark decision, *Sierra Club v. Hankinson*, showed that the courts were prepared to force EPA and the states to develop TMDLs on specific schedules, and even to require EPA to review recalcitrant states’ NPDES permits and programs. EPA is under court order in 13 states to produce TMDLs; in 16 additional states, complaints have been filed seeking orders to force EPA to produce TMDLs. In 11 more states, notices of intent to sue have been filed seeking EPA action on TMDLs.

Not surprisingly, this wave of litigation has not passed California by. A growing number of California’s water bodies are either subject to consent decrees to develop TMDLs, or are the subject of notices of intent to file lawsuits that may have that outcome. These include:

- Eighteen north coast watersheds including portions of the Garcia, Gualala, Lower Klamath, Upper Klamath, Albion, Mattole, Eel, Mad, Trinity, and Ten Mile Rivers;

- Newport Bay and San Diego Creek;
- Several watersheds in Los Angeles and Ventura Counties, including portions of the Los Angeles, Santa Clara, and Ventura Rivers, Malibu Beach, Venice Beach, and Santa Monica Bay;
- San Francisco Bay and the Sacramento/San Joaquin Delta.

A great deal about the full meaning of the TMDL requirements is yet unclear, evolving, and somewhat unpredictable. Litigation has thus far determined where and when TMDLs will be developed in California, and more lawsuits are possible, if not likely. There are not yet any statewide policies or regulations guiding TMDL development, and the State Water Resources Control Board has no TMDL program or budget.

There are other problems with TMDLs:

- California lacks sufficient data to determine which water bodies are clean and which need TMDLs, and must rely in many cases on regional board staff's best professional judgment.
- Various interest groups differ on how to define polluted water bodies.
- There are no prescribed rules for establishing and implementing TMDLs, so regional boards are making them up as they go along.
- Because of the uncertainty of the outcomes, both point source and nonpoint source representatives are taking issue with every step of TMDL development and implementation. This opposition leads to delays in establishing TMDLs, which leads to more lawsuits.

California is caught between tectonic forces. Federal law demands that the Regional Water Quality Control Boards and the State Water Resources Control Board develop TMDLs. Yet they have received little additional funding to carry out these mandates. At the same time, delays in establishing TMDLs bring about more lawsuits, and courts are ordering EPA and California to prepare TMDLs on extremely tight schedules. These schedules force regional boards to "just do the numbers" and issue the TMDLs, without preparing implementation plans.

California has no choice but to establish TMDLs for its impaired water bodies. However, there are many unanswered questions about how the state will develop and implement TMDLs. The key unknowns are as follows:

- What is an impaired water body?
- What is the appropriate level of scientific knowledge to establish that a water body is in fact impaired?
- When will TMDLs be prepared? And how long will it take to prepare them?
- What happens during the time between the listing of a water body and the establishment of a TMDL? Can the Regional Boards issue new NPDES permits or permits for expanded facilities?
- Who is responsible for establishing TMDLs: the EPA or the state?

- Should all Regional Boards pursue the same approach to TMDLs? Or should different approaches be employed for different watersheds?
- Will TMDLs include implementation plans? Or will TMDLs be simply the allocations?
- Do TMDLs really cover nonpoint sources?
- When and how will TMDLs be implemented?
- How should the state pay for TMDL implementation?
- What will it cost to develop and implement TMDLs?

Depending on how these issues are resolved, TMDL requirements may prove to be the most important change in environmental law in California since the Endangered Species Act, and the most significant change in water quality control since the Clean Water Act itself.

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INTRODUCTION

California's "modern" legal arrangements for cleaning up its rivers, lakes, and coastal waters go back 30 years to the state's Porter-Cologne Act and especially to the federal Clean Water Act of 1972. The main thrust of the CWA was to require cities and industries to clean up the waste water they discharged from their "point sources," which were mostly sewer outfalls and an assortment of other pipes and ditches. This approach had much to recommend it. A sizeable portion of water pollution came from these kinds of sources, the pollution was orderly in the sense that it was already contained in a pipe or channel, there was little ambiguity about who caused the pollution, and workable treatment technologies existed. There were complaints, it was expensive, but enormous progress was made in cleaning up the state's surface water.

The Clean Water Act also included a second, conceptually different and broader approach to cleaning up our water. This second approach drew little attention when the CWA was passed, or for more than a decade after that, until it was "discovered" by environmental litigants and the courts. It required each state to assess the actual water quality of each of its water bodies. Even after imposing stringent controls on point water pollution sources, it is perhaps not surprising that most states found that many water bodies were still somewhat polluted. The second front of the CWA seems to require states, including California, to establish the total amount of each category of pollutant that each water body can absorb each day without becoming "polluted" (called Total Maximum Daily Loading, or TMDL) and to somehow ensure that that limit is not exceeded.

Exactly how this TMDL requirement is going to work is far from clear; almost everything about it is cloaked in controversy or at least ambiguity. However, the weight of court decisions from around the country and especially in California suggest the very real possibility that water quality regulation is in the act of changing in quite fundamental ways. The most important change is also the simplest: if water bodies must be made cleaner, then one of two things must happen. Either point sources, such as municipalities and factories, must clean up their discharges even further, even though additional purity comes at great expense, or nonpoint sources, such as farms, timber operators, and urban runoff, must be subject to stringent water quality controls that they have avoided so far.

TMDL requirements have the potential to greatly expand the scope, impact, and economic cost of water quality regulations, and could change the way that the agriculture, forestry, and construction industries do business. Estimates of the regulatory cost of this program range from \$5 million to \$1 billion, excluding the costs to industries and urban areas of pollution controls needed to meet more stringent standards.

This report gives an overview of California's water pollution control programs and the current status of water quality in the state, since that is the familiar status quo that TMDL requirements may substantially alter. The report then describes the history and legal decisions that have made TMDLs important and explains some of the unresolved issues that make TMDLs such a controversial subject. Finally, it offers some observations on the implications of TMDLs for water quality and pollution control.

Water Pollution Control

The federal Water Pollution Control Act, commonly known as the Clean Water Act (CWA), governs pollution in the nation's streams, lakes, and estuaries.¹ Signed by President Nixon in 1972, the goal of the CWA is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. This goal is pursued through several programs, including:

- Grants and low-interest loans for constructing municipal wastewater treatment plants;
- Standards for the allowable levels of pollutants in wastewater;
- Permits for discharging wastewater;
- Permits for dredging and filling in water bodies; and
- Regulations for the operation of underground storage tanks.

Under the Porter-Cologne Act,² the State Water Resources Control Board (the Board or SWRCB) regulates water quality in the state by establishing waste discharge policies and administering state and federal programs to control water pollution. Nine regional boards (Regional Boards or RWQCBs) set waste discharge requirements for categories of discharges and issue individual permits. The RWQCBs also establish regional water quality plans, called Basin Plans, for controlling pollution in a manner consistent with the statewide policies established by the SWRCB.

Although the Porter-Cologne Act preceded the CWA by three years, the requirements of the CWA have driven California's water pollution control program. This section will first briefly discuss the history of federal water pollution control and the difference between "technology-based" and "water quality-based" standards for clean water. It will then describe the separate and combined federal and state programs for regulating point and nonpoint sources of water pollution.

From a Water Quality to a Technology-Based Approach

When Congress passed the CWA in 1972, it opted for nationwide technology-based standards for controlling water pollution.* This approach contrasted with the water quality standards-based approach of the earlier federal Water Quality Act of 1965.³ Under water quality standards-based pollution control, states regulate dischargers according to their impact on receiving water quality. The theory behind water quality standards-based regulation is utilitarian. As one observer put it, "Water is meant to be used, and a legitimate function is the assimilation of wastes. Decisions about water use should be made by people who use it, local communities, industries, and authorities."⁴ This approach calls for local authorities to determine the uses they want for their water,

* This section draws heavily from Oliver Houck, *TMDLs: The Resurrection of Water Quality Standards-Based Regulation Under the Clean Water Act*. July 1997. 27 Environmental Law Reporter 10329. pp. 10330-10331.

set appropriate criteria and standards, assess the impacts of discharges on the criteria, and abate those discharges that exceed the criteria.

Unfortunately, it wasn't that straightforward. Congress, commentators, and the courts found that no step in the process worked. States developed beneficial use determinations for water bodies that were highly variable, with more protective states losing business and industry to less protective states in "a race to the bottom."⁵ Information on the biological conditions of waters was insufficient. Impact assessment was imprecise, and states were overwhelmed by the chore of tracing impacts to the many dischargers. Abatement of excessive discharges simply didn't happen.

When Congress passed the CWA, it adopted a different strategy. Water pollution was viewed as a national problem that required federal intervention. Water should simply be clean, and nationwide technology requirements for urban and industrial point sources were the tool chosen to obtain clean water. (In addition, Congress created a program that eventually spent \$40 billion for the construction of municipal wastewater treatment plants.)

Nonetheless, many states, including California, as well as industry representatives, argued that water pollution control should remain a standards-based proposition implemented by the states.* In response, Congress inserted Section 303 into the CWA as a backstop provision. Section 303 requires states to prepare a list of waters that don't meet water quality standards *after* implementation of the technology based controls. It isn't perfectly clear just what Congress had in mind with this section. One possibility, increasingly favored by the courts, is that under §303, water quality standards would be used in the event that technology-based standards didn't quite get the job done.

Point Source Controls

The Clean Water Act recognizes two types of water pollution: that discharged by "point sources" and that discharged by "nonpoint sources." Point sources include factories, water treatment plants, and any other "discernible confined discrete conveyance." Nonpoint sources include all the other sources, such as storm water, erosion, and natural runoff. This section will describe the federal and state regulatory programs covering point sources.

Clean Water Act

The CWA regulates discharges to water bodies under the National Pollutant Elimination Discharge System (NPDES) permit program. Typically administered by states, the permit program requires "point sources" of discharges to obtain permits and to treat their discharge to specified standards. EPA uses the best available control technologies to set

* Houck reports that at hearings on the CWA, among those testifying in favor of water quality-based standards were the Governors of New York, Nebraska, and Georgia; the Chair of the California State Water Resources Control Board; the President of the American Water Works Association; the Chair of the American Iron and Steel Institute; and the Senior Vice President of the American Petroleum Institute.

the effluent standards for various categories of discharges. The NPDES program focuses on the treatment of effluents from point sources before they get into streams and other water bodies. The CWA allows states to adopt and enforce water quality standards or limits on pollutants as long as the requirements are at least as strict as those required by the CWA. The EPA can delegate the entire NPDES program to a state if the state's water quality control program is consistent with the requirements set forth in the CWA. EPA provides the state with funding to carry out the NPDES program; thus the SWRCB and Regional Boards issue and enforce the NPDES permits.

In addition, the CWA requires states to adopt water quality standards. Water quality standards specify a "beneficial use" of each water body, and standards for how clean water bodies must be to meet the designated beneficial uses.⁶ These beneficial uses include drinking water supply, industrial supply, wildlife, and recreation. EPA must approve the states' standards, and states must review and modify their standards, if appropriate, every three years.

Certain types of discharges are exempt from NPDES permit requirements, even though they have some "point source" characteristics. These include return flows from irrigated agriculture, stormwater runoff from mining, and runoff from oil and gas exploration and production processes.

NPDES permits are good for no more than five years, at which point dischargers must have their permits renewed. Permits can be terminated or modified for various reasons, including violations or changes in conditions that require a reduction or elimination of the permitted discharge.

Porter–Cologne Act

Unlike the CWA, California's Porter–Cologne Act⁷ does not distinguish between point and nonpoint sources of water pollution. Instead, California's water pollution control law focuses on "discharges" to water bodies, and regulates the quality of those discharges and the receiving waters. The Porter–Cologne Act is a water quality–based approach to pollution control.

The SWRCB and Regional Boards develop statewide water quality control plans and regional basin plans. As required by federal law, the plans include water quality standards. The standards are established by the SWRCB and Regional Boards. Any person or corporation that intends to discharge a waste into a water of the state must obtain and comply with a "waste discharge requirement" (WDR) issued by the appropriate RWQCB. The WDR is based on the relevant water quality standards, water quality control plan, and basin plan. The WDR and the NPDES permit are essentially one and the same for point source discharges.

Nonpoint Source Controls

Nonpoint source pollution is typically controlled through structural "best management practices," or BMPs. For example, a BMP for preventing runoff from irrigated agricultural fields might be a vegetated buffer strip around the fields, or a drainage ditch leading to a pond that collects irrigation water for reuse. EPA has developed BMPs for all kinds of nonpoint sources, and has determined that agricultural nonpoint source

pollution can be reduced by 20 to 90 percent through measures aimed at soil retention and control of runoff.⁸

There are a variety of nonpoint source pollution control programs. When Congress amended the CWA 1987, it added the §319 nonpoint source grant program. In response to the requirements of the §319 program, the SWRCB prepared California's nonpoint source management plan. In addition, amendments to the federal Coastal Zone Management Act brought about additional nonpoint source management requirements for coastal areas. These requirements and California's responses are described in the following sections.

Clean Water Act §319 Program

Under the CWA, states must develop nonpoint source management plans,⁹ which, if approved by EPA, can be implemented with federal grants.* Section 319 programs rely on a variety of non-regulatory approaches to controlling nonpoint source pollution. These include voluntary efforts, incentives, education, and training, all of which aim to alter or avoid land use practices and other activities that cause polluted runoff. Legal authority to impose regulatory controls on nonpoint source pollution must originate in the states' own water quality laws or local laws.

Last year, California received \$5.6 million in §319 grant money from EPA. Approximately half of the funds supported SWRCB and Regional Board staff; the other half was used for grants to implement nonpoint source controls, demonstration projects, and outreach programs. In the current fiscal year, California's grant has been doubled to \$10 million. Governor Davis' proposed budget for fiscal year 1999-2000 includes an additional \$6 million in federal §319 grant money and 30 positions for nonpoint source control efforts.

Porter-Cologne Act

California cannot regulate nonpoint source discharges under its NPDES program because the NPDES does not cover nonpoint sources. However, California can regulate nonpoint sources by issuing WDRs under its Porter-Cologne authority. The Porter-Cologne Act

* Congress amended the CWA in 1987 to add the §319 nonpoint source program. Section 319 requires states to prepare and submit for EPA's approval a nonpoint source *assessment report*. The report must identify: the waters impaired by nonpoint sources, the sources causing the impairments, processes for developing BMPs and management measures to control categories of nonpoint source pollution and to control particular sources, and state and local programs for controlling nonpoint source pollution. States must then prepare *management programs* for controlling nonpoint source pollution. The programs must identify the BMPs and management measures that the state will undertake to reduce all the pollutant sources identified in the assessment report. The program must also specify the programs that will implement the BMPs, schedules for implementation and a certification that the state has adequate authority to implement the management program. If EPA approves the management program, then the state is eligible for grants from EPA at a 60/40 federal/state match to help implement the nonpoint source controls. If the state's program fails to meet the criteria, or a state fails to prepare a program, then EPA prepares the assessment report and relays its actions to congress. States without programs are not eligible for EPA's financial or technical assistance in controlling nonpoint source pollution.

contains no exemptions for nonpoint source discharges, but allows the Regional Boards to waive WDRs if the waiver is not against the public interest.¹⁰ Thus, California has broad statutory authority to regulate (or not regulate) any and all forms of waste discharges to waters, including nonpoint sources. Generally, the Regional Boards have waived WDRs for dairies, ranches, timber harvesting, and other nonpoint sources.

California's Nonpoint Source Management Plan

In response to the requirements of CWA §319, the SWRCB developed its Nonpoint Source Management Plan in 1988. The plan established a three-tiered management approach that is used by the SWRCB and Regional Boards to address nonpoint source problems:

- Voluntary implementation of best management practices;
- Regulatory-based encouragement of best management practices; and
- Effluent requirements.

The plan states that Regional Boards will generally refrain from imposing effluent requirements on nonpoint dischargers who use best management practices. It is generally up to the Regional Boards to decide which management option(s) to use to address particular nonpoint source problems.

There is no formal statewide regulatory program for nonpoint source control comparable to the water quality control plans and standards that have been set for point sources. Very few WDRs have been issued for nonpoint sources, with the exception of large confined animal feeding operations and large city stormwater systems.* Instead, regional board staffs have worked with local governments, Resource Conservation Districts, and landowners to encourage the use of and obtain financial support for implementation of best management practices. In a few cases, regional boards have used the second tier approach, regulatory encouragement, to get landowners to implement management practices in exchange for a waiver of WDRs. But for the most part, the state has relied on the voluntary first tier approach of the nonpoint source management plan.

All of the funding for nonpoint source programs has come from the federal §319 grant program. Efforts to add general fund support for nonpoint source control have not succeeded. This past year, Governor Wilson eliminated the Legislature's augmentation of \$5.7 million in general funds that would have covered nonpoint source programs and water recycling research.

* Amendments to the Clean Water Act established requirements for storm water NPDES permits for large- and medium-sized communities (more than 100,000 inhabitants) and large construction sites. A second phase of the program will address smaller communities and smaller construction sites. Certain confined animal feeding operations are defined as point sources and must be permitted under the Clean Water Act. See 40 CFR Part 122.23.

Coastal Zone Act Reauthorization Amendments

Section 6217 of the federal Coastal Zone Act Reauthorization Amendments of 1990 (CZARA) calls for states to “develop and implement management measures for nonpoint source pollution to restore and protect coastal waters.”¹¹ The purpose of §6217 is to enhance cooperation between land and water use management agencies, and to ensure that enforceable mechanisms exist where voluntary measures are inadequate to protect coastal waters from nonpoint source pollution.

In response to §6217, the SWRCB reviewed its 1988 nonpoint source management program. Instead of developing a separate plan for the coast only, the state chose to incorporate the requirements of CZARA into its statewide nonpoint source management plan. From early 1994 until September 1995, the SWRCB worked with the California Coastal Commission to prepare the “California’s Coastal Nonpoint Pollution Control Submittal.”

EPA and the National Oceanic and Atmospheric Administration (NOAA) reviewed this plan. They concluded that the proposed program needed more specific implementation measures to assure that nonpoint source pollution would be controlled.

California’s submittal was “conditionally approved.” As a condition of approval, SWRCB and the Coastal Commission are developing five-and ten-year action plans that describe in greater detail the management measures and authorities that will be used to control nonpoint source pollution. Conditional approval allowed EPA to continue to fund California’s §319 program. If California fails to comply with the conditions for approval, EPA could reduce funding for clean water and coastal programs.

Water Quality Management Plans

Clean Water Act §303(e) requires states to carry out a Continuing Planning Process, or CPP. The resulting water quality management plans form the basis for states’ regulatory programs for point and nonpoint sources alike.¹² EPA must approve the state’s CPP, and EPA must also approve periodic updates.

EPA regulations require the water quality management plans to specify regulatory and nonregulatory programs that the state will use to control nonpoint source pollution. Specifically, states must identify BMPs to control runoff from land excavation, agriculture, and timber management activities, mines, construction, and urban stormwater.¹³

California’s CPP consists of the statewide water quality control plans and the nine regional basin plans. Basin plans provide the regulatory framework for controlling the activities and factors that affect water quality in the State. Regional Boards must amend their basin plans as new water quality standards and control measures are developed.

Watershed Management

Since California began implementing the federal NPDES program, its efforts centered on controlling the traditional point sources of water pollution, such as municipal sources and factories. Nonpoint sources, such as dairies, mines, and construction activities, were not ignored, but were not subject to the same stringent regulatory program that has been

created for point sources. Recently, however, the SWRCB has begun to shift its focus to watershed management, a broader approach that addresses point and nonpoint sources in a specific hydrologic and geologic region.

In early 1997, Governor Wilson proposed a “Watershed Management Initiative.” In June 1998, the SWRCB issued a draft Integrated Plan for Implementation of the Watershed Management Initiative.¹⁴ According to the Plan, the goal is to achieve water quality in all of California’s watersheds by “supporting the development of local solutions to local problems with the full participation of all affected parties.”¹⁵

The types of activities planned for each watershed vary. For example, in the Russian River/Bodega Bay watershed in southern Mendocino and northern Sonoma counties, the North Coast RWQCB has identified many goals that cut across traditional program lines. These goals include protecting surface and groundwater, reducing nutrient and sediment loads in certain areas, and helping local efforts to improve riparian areas. To accomplish these goals, the RWQCB has:

- Instituted new permitting programs for controlling pollution caused by storm water runoff from industrial sites and urban areas;
- Created outreach programs to work with the dairy industry to reduce nonpoint source pollution; and
- Is developing outreach and enforcement programs to control sediment and erosion stemming from the increasing installation of vineyards on hillsides and other areas.¹⁶

This approach represents a significant departure from the technology-based, state and federally-imposed regulatory scheme that has been the focus of water pollution control since the CWA was passed. Limits on point source effluent are still the main component of each Regional Board’s regulatory program, but they are now part of a broader effort to achieve clean water. The SWRCB and RWQCBs are carrying out the permit programs required under the CWA and the Porter-Cologne Act, while simultaneously working with local governments and interest groups to educate the public and landowners and try new approaches to achieve clean water.

TOTAL MAXIMUM DAILY LOADS

The regulatory structure described so far has evolved over decades, and is widely accepted and understood (with occasional conflicts, of course). It is about to change, at least if the present trend of court decisions continues. The change stems from a long-ignored requirement of the Clean Water Act. If NPDES permits and technology-based limits on discharges of wastewater alone do not achieve these standards, then the states must develop Total Maximum Daily Loads, or TMDLs to further limit discharges of pollutants to these water bodies to the point where they will meet water quality standards.

A TMDL defines the amount of a particular pollutant that a water body can absorb on a daily basis without violating applicable water quality standards. Once this load is determined, the regulatory agency allocates a portion to each source of that pollutant within a particular watershed. The portion allocated to point sources is known as a “waste load allocation” or WLA, and is to be enforced through conditions inserted into NPDES permits. The portion allocated to nonpoint sources and naturally occurring pollutants is known as a “load allocation” or LA, and is to be enforced through the state’s nonpoint source management program.

TMDLs have been required by Section 303(d) of the CWA since it was first passed in 1972. But it is only in the last few years that any TMDLs have been established. This has occurred largely because environmental groups have been suing the EPA and various states, including California, over their failure to prepare TMDLs.

This section will describe TMDLs and the recent events that have brought the TMDL requirements to life. It first describes the quality of California’s waters. It then lays out the litigation situation in California and discusses the main technical and legal issues surrounding TMDL development and implementation.

California’s 303(d) list

Section 303(d) of the CWA¹⁷ requires states to identify the waters for which the effluent limitations required under the NPDES program or any other enforceable limits are not stringent enough to meet any water quality standard adopted for such waters. The states must also rank these impaired water bodies by priority, taking into account the severity of the pollution and the uses to be made of the waters. Lists of prioritized impaired water bodies are known as the “303(d) lists” and must be submitted to EPA every two years.

The most recent 303(d) list was approved by the SWRCB in May 1998. The State Board’s list comprised lists prepared by each of the nine Regional Boards, and included 472 stream segments, rivers, lakes, and estuaries. Many of these water bodies were listed for more than one pollutant. As a result, the list contained 1,380 pollutant/water body combinations. This was a net increase of 22 pollutant/water body combinations over the 1996 303(d) list. The EPA reviewed California’s 303(d) list, as required by the Clean Water Act. EPA approved the list in November, but also added 37 water bodies for 12 pollutants. Thus, California has a list of more than 500 water bodies that fail to meet applicable standards.

In developing its list, the State Board selected water bodies that met any one of six “listing factors.”¹⁸

1. Effluent limitations or other pollution control requirements not stringent enough to assure protection of beneficial uses;
2. Fishing, drinking water, or swimming advisory currently in effect;
3. Beneficial uses are impaired or expected to be impaired within the next two years;
4. The water body is on the previous 303(d) list and either monitoring continues to demonstrate a violation of objectives or no monitoring was done;
5. Data indicate fish tissue concentrations in edible body parts of fish or shellfish exceed applicable tissue guidelines or criteria; and
6. Water quality is of such concern that the Regional Board determines that the water body needs to be afforded a level of protection offered by a 303(d) listing.

The types of pollutants for which water bodies were listed covered a wide spectrum, including pesticides, metals, sediment, nutrients or low dissolved oxygen, bacteria and pathogens, and trash or debris. For each polluted water body, the list describes the likely source. Sources include many nonpoint sources and some point sources, such as:

- range land,
- manure lagoons,
- erosion/siltation,
- streambank modification/destabilization,
- silviculture,
- riparian grazing,
- animal operations,
- logging road construction/maintenance,
- industrial point sources,
- natural sources,
- surface mining,
- municipal sources,
- urban runoff/storm sewers, and
- a variety of agricultural activities.

Definition of TMDLs

Section 303(d) also requires that for each of the impaired water bodies on the list, and in accordance with the priority ranking, the state or EPA must calculate a TMDL. The TMDL is the amount of each pollutant that can be added to each water body each day. Such loads must be set at the “level necessary to achieve the applicable water quality

standards,” taking into account seasonal variations and a margin of safety to account for “any lack of knowledge concerning the relationship between effluent limitations and water quality.”¹⁹

TMDLs are a Water Quality Standards–based Approach

EPA’s regulations fill in some of the details of TMDLs as follows:²⁰

- *Total Maximum Daily Load (TMDL)*. The sum of the individual wasteload allocations for point sources and load allocations for nonpoint sources and natural background. If a receiving water has only one point source discharger, the TMDL is the sum of that point source waste point allocation plus the load allocations for any nonpoint sources of pollution and natural background sources, tributaries, or adjacent segments.
- *Wasteload allocations (WLAs)* are the portion of a receiving water’s loading capacity that is allocated to one of its existing or future point sources of pollution. WLAs constitute a type of water quality-based effluent limitation.
- *Load allocations (LAs)* are defined as the portion of a receiving water’s loading capacity that is attributed either to one of its existing or future nonpoint sources or pollution or to natural background sources. Load allocations are best estimates of the loading, which may range from reasonably accurate estimates to gross allotments, depending on the availability of data and appropriate techniques for predicting the loading. Wherever possible, natural and nonpoint source loads should be distinguished.

It is important to note that this quantitative *water quality-based approach* to pollution control contrasts with the *technology-based effluent limits* imposed by the NPDES program. Under the latter, EPA sets standards for various industrial categories of wastewater, which can be attained if the industries make use of certain pollution control technologies. Under the TMDL program, it is up to EPA or the state to determine the quantities of pollutants that can be tolerated in a water body, and to assign portions of the total allowable pollutant load to the various sources.

The Broad Reach of TMDLs

EPA’s regulations do not specify the process by which the states should develop TMDLs, LAs, and WLAs. They do, however, describe how states should prepare the list of impaired water bodies required by CWA §303(d), and prioritize the water bodies on the list. The regulations require each state to establish TMDLs for the priority water bodies identified on the 303(d) lists. They also specify that the TMDLs must be set “at levels necessary to attain and maintain the applicable narrative and numerical water quality standards with seasonal variations and a margin of safety that takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality.”²¹ States must also establish TMDLs for all pollutants preventing or expected to prevent attainment of water quality standards.

EPA’s regulations also describe the process for submission and approval of 303(d) lists and TMDLs.²² Briefly, states must submit their 303(d) lists to EPA by April 1 of every

even-numbered year, and schedules for submission of TMDLs are determined by EPA and the state. EPA has 30 days to approve or disapprove the 303(d) list and any TMDLs submitted to EPA. If EPA approves the list and TMDLs, the *state must incorporate them into its water quality management plan*.²³ If the EPA disapproves the list or the TMDLs, it has 30 days in which to prepare its own list for the state and establish applicable TMDLs.

The requirement that TMDLs and associated allocations be incorporated into California's water quality management plans is important. This is the mechanism by which TMDLs are supposed to be incorporated into NPDES permits as new effluent limits for point sources. It is also the means by which the LAs are supposed to be implemented by California's nonpoint source management program. The creation of numeric limits for nonpoint source pollutants is a significant change from the current approach to nonpoint source controls. As described previously, California relies on voluntary compliance with BMPs as its primary means of controlling nonpoint source pollution. As will be discussed later in this paper, this requirement greatly troubles the nonpoint source community.

EPA has issued guidance documents that further clarify TMDLs. Guidance documents lack the force of regulation, but are often prepared by EPA to assist states with program implementation prior to issuing formal regulations. A fact sheet published by EPA describes both the TMDL process and the individual components of the TMDL. The TMDL should include:²⁴

- 1. Problem Statement.** A description of the water body or watershed setting, beneficial use impairments of concern, and pollutants or stressors causing the impairment.
- 2. Numeric Target(s).** For each pollutant or stressor addressed in the TMDL, appropriate measurable indicators and associated numeric target(s).
- 3. Source Analysis.** An assessment of relative contributions of pollutant or stressor sources to or causes of the use impairment and the extent of needed discharge reductions or controls.
- 4. Loading Capacity Estimate.** An estimate of the assimilative capacity of the water body for the pollutant(s) of concern.
- 5. Allocations.** Allocation of allowable loads or load reductions among different sources of concern, providing an adequate margin of safety. These allocations are usually expressed as wasteload allocations to point sources and load allocations to nonpoint sources... *The TMDL equals the sum of allocations and cannot exceed the loading capacity* (EPA's emphasis). In the TMDLs that EPA has prepared so far, under court order, these allocations have been quite general.
- 6. Monitoring Plan.** Plan to monitor effectiveness of TMDLs and schedule for reviewing and (if necessary) revising TMDLs and associated implementation elements.

Each TMDL must also include an implementation element, which is a "...description of best management practices, point source controls, or other actions necessary to the

TMDL, usually a plan describing how and when necessary controls or restoration actions will be accomplished, and who is responsible for implementation.”

States must include approved TMDLs and associated implementation measures in State water quality management plans. According to EPA’s fact sheet, TMDLs are an analytical basis for planning and implementing pollution controls, land management practices, and restoration projects needed to protect water quality. In other words, the TMDL program is to become a basis for not just NPDES permit effluent limits and conditions, but also many other water pollution control efforts that fall outside the traditional realm of water quality regulation. It is this long reach into the realm of land management practices that has made TMDLs such a controversial issue.

EPA’s guidance and fact sheet demonstrate the broad reach of the TMDL program. For example, EPA expects states “to develop TMDLs for their water quality–limited waters where technology-based effluent limitations or other legally required pollution control mechanisms are not sufficient or stringent enough to implement the water quality standards applicable to such waters.”²⁵ In addition, the TMDL process provides a mechanism for integrating the management of both the point and nonpoint pollution sources that together may contribute to a water body’s impairment.”²⁶

Other statements, although a little cryptic, reinforce the suggestion that EPA intends that TMDLs should strengthen nonpoint source control programs. An August 1997 memorandum²⁷ to EPA’s regional administrators from the Assistant Administrator for Water stated that although technology–based controls have dramatically reduced water pollution, remaining problems must be addressed by looking at individual watersheds. The memorandum goes on to say that the “TMDL program is crucial to success because it brings *rigor, accountability, and statutory authority* to the process.” (Emphasis added.) The watershed approach requires that CWA programs, such as TMDLs, “need to be meshed better with numerous other programs and authorities, such as local source water protection programs, the Federal Agricultural Improvement and Reform Act of 1996, and locally–led watershed protection efforts.”²⁸

EPA sees the TMDL program as primarily a state effort. The August 1997 memorandum emphasizes that responsibility for the TMDL program rests primarily with the states. The memorandum acknowledges that if states fail to meet the obligations of CWA §303(d), the EPA regions must step in. However, it is EPA’s goal that every state will fully meet the requirements of §303(d) and will undertake actions needed to implement approved TMDLs.

Further, EPA acknowledges that TMDLs improve water quality only if the pollutant allocations are *implemented*, not when a TMDL is established. The same memorandum states that §303(d) does not establish any new implementation authorities beyond that which exists elsewhere in state, tribal, local, or federal law.²⁹ Implementation of nonpoint source controls will rely on states’ individual authorities.

Last, the EPA memorandum demonstrates EPA’s intent that TMDLs will encompass all sources of pollution, regardless of whether and how those sources are currently regulated.³⁰ States are to work with EPA, tribes, and local governments to use any and all means at their disposal to implement the WLAs and LAs. Grants, education programs, outreach, financial incentives, and regulation are among the tools that states can draw

upon to implement TMDLs. Thus, to a large degree, the success of TMDLs depends on the strength of states' individual water pollution control statutes, nonpoint source control programs, and ability to work with all the interested parties on a watershed basis to develop acceptable implementation strategies.

Lawsuits Have Focused Attention on TMDLs

Litigation has been the driving force behind the emergence of TMDLs as an important issue. After determining that no submission of TMDLs is often equal to an inadequate submission, the courts have moved on to find that many states' lists of impaired water bodies are inadequate. They have also found that EPA has acted "arbitrarily and capriciously" in approving states' inadequate submissions. The courts frequently have required EPA to step in and develop TMDLs on a state's behalf. Courts have also issued rulings that force states and EPA to develop TMDLs on specified schedules, and have also required EPA to coordinate and share listing information with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. Appendix A contains a detailed description of TMDL lawsuits brought against EPA since the 1980s.

A landmark Illinois case brought in the early 1980s, *Scott v. City of Hammond*, resulted in the "theory of constructive submission." Illinois had simply not submitted a list of its polluted water bodies, as required by §303(d). The court held that this absence was equivalent to a very short and obviously inadequate list. Under the theory, the court found that EPA had a duty to enact the §303(d) requirements itself if states failed to prepare the required 303(d) lists and TMDLs. However, for some time, courts did not address the quality of the TMDLs prepared by the states, or the reasonableness of schedules for producing TMDLs. States were proposing 25 and even 50-year schedules for completing TMDLs.

Sierra Club v. Hankinson marked the turning point at which courts began to address the adequacy of states' TMDL programs.* In the early 1990s, the Sierra Club sued Georgia over every aspect of its TMDL program, including the number, adequacy, and pace of preparation of TMDLs. Georgia had listed 340 water bodies on its 303(d) list, had completed two TMDLs, and was working on two more. The state projected a total of 28 TMDLs over the next 10 years. The court found Georgia's schedule to be inadequate, noting that at Georgia's pace, it would take more than 100 years to prepare the TMDLs for the current 303(d) list. In 1996, the court ordered Georgia to complete all TMDLs within five years on a prescribed schedule. Further, NPDES permits would be revised or terminated within one year following each TMDL, and permits for new discharges into impaired water bodies would be accompanied by TMDLs to achieve water quality standards. The court ordered that if Georgia failed to comply with this schedule, EPA would withdraw certification of Georgia's NPDES program.

* This description relies on Oliver Houck, *TMDLs, Are We There Yet? The Long Road Toward Water Quality-Based Regulation Under the Clean Water Act*. August 1997. 27 Environmental Law Reporter 10391. pp. 10393-10396.

Nationwide, fourteen cases have resulted in consent decrees, settlements, or court decisions requiring EPA and states to act. The contents of the consent decrees and orders have become almost standard. Most of the recent consent decrees call for 10 or 11-year schedules for establishing TMDLs for the impaired water bodies on a state's 303(d) list. The decrees can be quite specific, calling for TMDLs on defined segments of water bodies. At the same time, settlements are becoming more complex, requiring extensive EPA oversight and involvement in state programs. For example, settlements are requiring EPA to review and evaluate states' NPDES programs as well as states' continuing planning processes (CPPs) and monitoring programs. Some settlements have required EPA to provide technical training and financial support for a state's TMDL efforts.

In some cases that have not yet been decided or settled, plaintiffs are taking an even bigger swing at states' water pollution control programs. In several of these cases, plaintiffs are seeking court orders for EPA to revoke delegated state NPDES permitting programs and to prohibit any issuance or renewal of NPDES permits unless and until the state implements an adequate TMDL program. Plaintiffs are asking EPA to take over where the states, in the plaintiffs' view, have failed to properly implement the Clean Water Act.

Current California Litigation

California has not escaped the onslaught of TMDL litigation. In California, three lawsuits have resulted in consent decrees, while two new cases were filed within the last six months. This section summarizes the issues raised in these cases.

North Coast Rivers.

In December 1995, the Pacific Coast Fishermen's Association (PCFFA) filed a lawsuit against EPA. The plaintiffs alleged that EPA lacked a schedule for developing TMDLs for numerous rivers in north coast watersheds.³¹ In a March 1997 consent decree, the parties agreed to an 11-year schedule for developing TMDLs for 17 rivers, including the Mattole, Mad, Eel, Trinity, Garcia, and Gualala Rivers. The consent decree specifies that EPA will establish the TMDLs if California does not.

Under this "Supplemental TMDL Establishment Schedule," the state will produce two TMDLs per year from 1998 through 2007. This supplemental schedule comes in addition to the state's §303(d) priority list of more than 500 impaired water bodies throughout the state, for which TMDLs must be developed. One observer notes that this might signal a strategy to other environmental groups to single out certain water bodies or watersheds for separate treatment in each state.³²

California could not establish the Garcia River TMDL within the prescribed timeframe, so EPA issued it in December 1997. EPA has also prepared draft TMDLs for the south fork of the Trinity River and Redwood Creek. The TMDLs prepared by EPA include descriptions of the water quality problems to be addressed; numeric targets for reduction of sediments; analyses of the sources of sediments; and the TMDLs and load/wasteload allocations themselves. Each TMDL contains a table describing the sources of sediments, such as roads, gully erosion, naturally occurring landslides, and human-

induced landslides. For each source category, the table lists the historic sediment load, the amount that can be controlled through management practices, and the remaining natural load. The TMDLs do not allocate specific amounts of sediment to individual landowners or other sources.

Newport Bay

Another consent decree was entered in November 1997 for Newport Bay in southern California. Defend the Bay filed a notice of intent to sue over EPA's failure to establish TMDLs for both Upper and Lower Newport Bays. Upper Newport Bay has been closed to the designated beneficial uses of water contact recreation and shellfish harvesting since 1978. Although EPA and the Regional Water Quality Control Board had established a schedule for preparing sediment and nutrient TMDLs for Upper Newport Bay, the plaintiff did not believe the Regional Board would meet that deadline or that the TMDLs established thereby would comply with §303(d) requirements. The decree sets out a four-year schedule for establishing TMDLs in Newport Bay, and requires EPA to ensure TMDLs are developed if the Regional Board fails to do so. EPA established and approved TMDLs for nutrients and sediment in 1998. These TMDLs set quantitative annual limits on nutrients and sediments, but do not allocate those limits very specifically.

Los Angeles Region

In December 1997, the Santa Monica Baykeeper and Heal the Bay filed a notice of intent to sue EPA over the adequacy of the approved 303(d) lists and TMDLs in Los Angeles and Ventura Counties. They alleged that EPA and the region failed to comprehensively survey water bodies; list and prioritize the impaired waters; prepare TMDLs for those water bodies; and integrate TMDLs into the state's CPP. NRDC also claimed that EPA violated the CWA by failing to review California's CPP and, in light of the state programs' shortcomings, should terminate California's NPDES permit program.

A settlement was signed in December 1998, and entered in January 1999. The consent decree orders the state and EPA to prepare 92 TMDLs in 13 years. The settlement sets forth a minimum pace of TMDL development that calls for five TMDLs to be prepared each year.

Sacramento Regional County Sanitation District

In June 1998, the Sacramento Regional County Sanitation District (SRCSD) filed suit against the State Board and the Regional Boards for the San Francisco Bay Region and Central Valley Region. Unlike all the litigation discussed so far, the SRCSD suit concerns *the 303(d) listing process and the standards and criteria used to determine what is an impaired water body*. The SRCSD alleged that the state adopted the 303(d) lists of impaired water bodies without first ascertaining the economic, environmental, and social costs and benefits that could result from adoption of the list. Therefore, this constitutes a violation of the state Administrative Procedures Act, the California Environmental Quality Act, and the Porter-Cologne Act.

SRCSD's lawsuit reflects the main concerns of the municipal and industrial discharger community about the TMDL program:

- They fear that they will get stuck with the costs of cleaning up waters to meet TMDLs;
- They believe that the marginal improvements to water quality that will result from additional expensive point source treatment will be negligible;
- They fear that the state and EPA will not have the political or regulatory clout to ensure that nonpoint sources reduce their runoff to meet their load allocations.
- They fear that the only assured reductions in pollution levels will come from further restricting the effluent limitations in NPDES permits for point sources.³³

The central issue in the lawsuit is the set of criteria used to identify impaired waters, and whether they are properly adopted as standards, in accord with the requirements of the Porter-Cologne Act and the state's Administrative Procedures Act.* As discussed earlier in this paper, water quality standards consist of beneficial uses and water quality criteria or objectives. The narrative objectives are at the heart of the lawsuit: the dischargers do not like the way the state has applied the narrative objectives. They believe the Regional Boards have employed random, capricious numeric targets to interpret the narrative objectives. They filed the lawsuit to force the State to develop a clear process for listing water bodies and to ensure that the dischargers and other interested parties have a say in how the 303(d) lists are developed.³⁴

San Francisco Bay and Delta and Central Valley

On October 2, 1998, the San Francisco Bay Keeper organization notified EPA of its intent to sue for its failure to develop and implement TMDLs, WLAs, and LAs for San Francisco Bay, the Sacramento-San Joaquin River Delta, and their tributaries, including the Napa, Sacramento, and San Joaquin Rivers. Bay Keeper would like EPA to establish a schedule of five years for development and implementation of TMDLs for high priority listed waters. They also want assurances of funding for TMDL development with opportunities for citizen participation. Bay Keeper is particularly interested in ensuring that NPDES permits for discharges of toxics such as dioxin, copper, and nickel be revised to reflect the WLAs developed through the TMDL process.

* The lawsuit states that the SWRCB's *Listing Guidelines* for developing the Regional Boards' 1998 §303(d) lists of impaired water bodies allowed use of criteria and guidelines that were not adopted as regulations. The types of guidelines specifically allowed in the Guidelines include FDA Action Levels, NAS Guidelines, and US EPA tissue criteria for the protection of wildlife. None of these criteria have been adopted by the state as numeric water quality objectives. See SWRCB, *1998 Clean Water Act Section 303(d) Listing Guidelines for California*, August 11, 1997.

UNCERTAINTIES OF TMDLS

Now that lawsuits have forced California and EPA to “take the TMDL bull by the horns,” there are many questions about where TMDLs are going and how all the interested parties will be affected. One question is whether the water quality standards-based approach can work at all. Although the theory sounds reasonable (pollution can be reduced by determining and abating the effects of individual dischargers), it hasn’t worked yet. Prior to the passage of the CWA, the federal pollution control statute relied on state water quality standards programs, but it did not work. With the CWA, Congress put primary reliance on the technology-based standards to clean up the nation’s waters.

TMDLs are troublesome to all of the parties involved in water quality regulation. EPA or the Regional Boards must prepare TMDLs in response to court orders, but have no additional funding to do so. Point sources fear that TMDLs will result in increasingly stringent limits in their NPDES permits. Nonpoint sources fear that they will be subject to quantitative limits on discharges and even permits. Both point and nonpoint sources expect they will experience higher compliance costs. Environmental groups fear that the states won’t aggressively implement the TMDL program or enforce the allocations that result from TMDLs.

The TMDL program might be very expensive. California has 1,380 pollutant/water body combinations on its 303(d) list. EPA estimated the cost of TMDLs to range from \$4,000 to \$1 million apiece, which would price California’s TMDL program between \$5.5 million and \$1.4 billion for just one TMDL per impaired water body.³⁵ Those figures do not include the costs of basin plan amendments or pollution controls that would be required to meet TMDL allocations.

These and other questions have created great uncertainty in the TMDL stakeholder community. Fears about the regulatory changes and costs that could result from TMDLs are causing the stakeholders to challenge the State Board and Regional Boards at every step of the process. Until the State or the courts resolve these uncertainties about what the TMDL program is and where it is going, TMDLs will continue to be adversarial and litigious. The following section will describe some of the unknowns and uncertainties of TMDLs.

Identifying Impaired Water Bodies

Naturally, many questions and concerns have arisen concerning the listing process, since once a water body is on the 303(d) list, a TMDL and potentially more stringent pollution controls will be forthcoming. Section 303(d) requires states (or EPA if states fail to act) to prepare TMDLs for all waters for which effluent limits are not sufficient to meet any applicable water quality standards. These impaired water bodies are known as “water quality limited segments,” or WQLS. Prior to developing TMDLs, states must first select the WQLS, prioritize them, and submit their 303(d) list to EPA every two years. Once the list has been submitted and approved by EPA, the state must develop TMDLs for the WQLS in priority order.

EPA's regulations direct states to base listing decisions on "all existing and readily available water quality-related data and information."³⁶ Any water body not meeting any applicable water quality standard is to be put on the list.

The term "water quality standards" is defined by federal regulation as follows:

*"Water quality standards are provisions of state or federal law which consist of a designated use or uses for the waters of the United States and water quality criteria for such waters based upon such uses. Water quality standards are to protect the public health or welfare, enhance the quality of water, and serve the purposes of the (Clean Water) Act."*³⁷

Standards must contain two components: the designated beneficial uses of water, and the water quality criteria (called "objectives" in California) designed to protect those uses.* Beneficial uses include such designations as municipal or industrial supply, recreation, fish and wildlife habitat, agricultural supply, or groundwater replenishment.

The objectives may be stated in narrative or numerical form. For example, a numerical objective for a metal or a pesticide might be stated as "parts per million" or "micrograms per liter." Numerical objectives are used in setting effluent limits for point source permits. If not exceeded, they will protect the specified beneficial uses of the water body. Narrative objectives present general descriptions of water quality that must be attained through pollution control measures, and serve as the basis for developing detailed numerical objectives. For example, a narrative objective for sediment in San Francisco Bay reads as follows:

*The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses.*³⁸

To prepare its 303(d) list, a state must apply its water quality standards to the water bodies throughout the state. If pollutants are found in a water body at concentrations greater than or equal to the relevant objectives, then the beneficial uses are impaired and the water body should be placed on the 303(d) list.

Interpretation of Narrative Objectives

It would seem relatively straightforward to determine which water bodies should appear on a state's 303(d) list. However, controversy abounds in this simple sounding process. A primary problem with determining whether waters belong on the 303(d) list is the application and interpretation of narrative objectives. As discussed above, narrative objectives lack numeric thresholds, above which a water body is considered to be polluted. Instead, narrative standards describe a condition that must be met in order for a water body to meet its beneficial use designation. Narrative objectives are broad and vague, and must be quantified in order to determine whether the quality of the water

* The subsequent description of water quality objectives and beneficial uses in California is from the Central Valley Regional Water Quality Control Board's *A Compilation of Water Quality Goals – March 1998 Edition*, pp. 1-16.

meets the objectives. Determining whether a water body meets a narrative objective forces states and EPA to grapple with the difficult task of quantifying a threshold for a pollutant that they already recognized as inherently difficult to measure.³⁹

To apply California's narrative objectives, Regional Board staff must find suitable numeric indicators, such as fish tissue data or other aquatic life criteria, to determine whether the water body meets the objective. Not only is the selection of a numeric criterion controversial, but in addition, the very process of using a substitute to interpret the narrative objective troubles point source dischargers.

This is one of the grounds for the Sacramento Regional County Sanitation District's pending lawsuit against the State Board. The District disagrees with the way the state has applied the narrative objectives. The District believes that the Regional Boards have employed arbitrary, capricious numeric targets, with no relationship to the toxicity of the pollutants, to interpret the narrative objectives. They argue that the State Board should have adopted explicit numeric objectives instead of the narrative objectives, in which case the public would have had an opportunity to review and comment.⁴⁰

Ultimately, the point source dischargers fear that the State and Regional Boards' interpretations of narrative objectives will result in unnecessarily stringent limits in their permits.

Adequate Data

Another significant problem with listing is that the data on which states base their 303(d) listing decisions has been inconsistent and in some cases inadequate.⁴¹ EPA's regulations instruct states to use all existing and readily available water quality-related data and information to assemble its TMDL list.⁴² This information can include waters for which water quality problems have been reported by local, state, or federal agencies; members of the public; or academic institutions.⁴³

Accusations of using "old" data or inappropriate data have been leveled against states, as have accusations of "drive-by listings,"⁴⁴ that are based on anecdotal evidence and guesses. Some have complained that while EPA guidance calls for states to make use of all credible data, states have made little effort to seek outside monitoring data.

In California, concerns have been expressed about the adequacy and certainty of the scientific data used to determine whether a water body is in fact impaired. When numeric data is used, it generally comes from Regional Board monitoring programs, which are usually based on monitoring reports from NPDES permittees. The data vary greatly amongst the regions, depending on the region's monitoring funding and the reliability of NPDES permittees' monitoring programs. Even within a region, water quality data frequently cannot be consolidated or compared. This is because the various organizations that collect information about water quality, such as citizen monitoring groups or NPDES permittees, use different strategies developed for their particular program objectives and funding requirements.⁴⁵

EPA has yet to issue guidance or regulations that would standardize the type of monitoring data used to develop 303(d) lists. Thus, 303(d) lists are often based on

agency staff's best professional judgment, given the variety of data sources and data quality.

Questions about the Process

Other questions have arisen over California's process for listing impaired water bodies and developing TMDLs. These concerns arise from the state's failure to adopt any regulations explaining the process, timing, and requirements for preparing the 303(d) list, establishing TMDLs, and taking water bodies off the 303(d) list.

As described above, the State Board issued guidelines for the regions to use in preparing the 1998 303(d) list.⁴⁶ The guidelines were prepared by an ad hoc workgroup of staff from the Regional Boards, State Board, and US EPA. They were not adopted by the State Board as regulations, thus were not subject to review and scrutiny by the regulated community, other interested parties, or the Office of Administrative Law. Further, the guidelines address only the selection of impaired water bodies for the 303(d) list. They do not identify any criteria for prioritizing the impaired waters, establishing TMDLs, or standards for removing water bodies from the list.

Lacking statewide protocols for carrying out the §303(d) requirements, the State Board and Regional Boards have had to develop their programs as they go along. The regulated communities are very uneasy about this approach. For several years, the point source community has complained that the 303(d) list creates surrogate numeric standards that have not been reviewed or approved as regulations.⁴⁷ They are concerned that the economic impact of using these surrogate standards has not been adequately assessed, as required by the Porter–Cologne Act.⁴⁸

Both the point and nonpoint source communities wonder how long it will take for the TMDLs to be incorporated into the regional basin plans, and from there into NPDES permits and nonpoint source control programs. And they are concerned about how much it will cost them to meet the new standards that will be in effect once TMDLs have been established.

One significant consequence of this uncertainty is that point sources will oppose new restrictions on permits based on TMDL limits that they do not believe were properly adopted.⁴⁹ This will lead to more contentious regulatory proceedings and even lawsuits, and a general hardening of positions on all sides.

Some clarification of these issues may be forthcoming when EPA issues proposed regulations on many aspects of the §303(d) requirements. The regulations are expected to be issued in the spring of this year, and will be based on the conclusions of the Federal Advisory Committee on TMDLs, established in November 1996 by EPA. The Committee recommended that EPA assist states with funding to determine whether water bodies have attained the relevant water quality standards, including narrative objectives. They also recommended that EPA issue guidance and regulations that explain how states are to apply narrative criteria in 303(d) listing decisions.⁵⁰

Restrictions on New Discharges

The purpose of TMDLs is to get impaired waters clean enough to comply with water quality standards. Once a TMDL is established for an impaired water body, the Regional Board must incorporate its wasteload allocations into point source dischargers' NPDES permits. A TMDL for any given water, however, might not be completed until several years after the water body is initially placed on the 303(d) list. During the interim, federal law and regulation clearly prohibit the state from issuing new or additional NPDES permits for discharges into that water body.

The CWA prohibits new or additional discharges into impaired waters.⁵¹ To carry out this provision, EPA's regulations prohibit states from issuing new permits to new sources or new dischargers if the discharge from its construction or operation will cause a violation of water quality standards.⁵² Neither EPA nor the states have consistently implemented these prohibitions on new sources.⁵³ However, the TMDL program may force states and EPA to carry out these prohibitions, with significant consequences for developers, and growing communities.

The Federal Advisory Committee considered this issue. Some committee members were concerned that enforcing the restrictions might encourage the spread of development to less-polluted areas with fewer restrictions on land or water use. Others were concerned about the effects of the restrictions on local economies and industries.

The Committee recommended that EPA and the states fully implement these statutory and regulatory restrictions on new or expanded discharges. They believed that the restrictions provide a powerful incentive to point sources to clean up the water before a state completes and implements a TMDL. The Committee believed that stakeholder-driven efforts to stabilize and improve water quality could lead to attainment of water quality standards and thereby avoid the need for a TMDL. They suggested that during the period between 303(d) listing and TMDL development, stakeholders could develop a plan that could trade point and nonpoint sources discharges, and thereby attain water quality standards without a TMDL.

TMDLs and Nonpoint Sources

Nonpoint source pollution is a challenging problem for water quality regulators. California's nonpoint source control efforts have met with mixed success, and the SWRCB is in the process of improving its nonpoint source program. Appendix C describes current water quality problems and the difficulties associated with nonpoint source control.

Section 303(d) of the CWA simply requires states to identify impaired water bodies and to develop the TMDLs for pollutants. It says nothing about allocating loads to nonpoint sources, implementation, or nonpoint source compliance. However, EPA has consistently interpreted §303(d) as including waters impaired by nonpoint sources. As early as 1975, EPA called for the allocation of nonpoint source loadings as part of TMDLs. It has continued to do so in its regulations, guidelines, and draft strategy documents through the most recent guidance on listing procedures and TMDL development.⁵⁴ The inclusion of nonpoint sources in TMDLs is explicit in EPA's recent policy guidance for TMDL development:

*For all section 303(d) listed waters impaired solely or primarily by nonpoint sources, each EPA Region should work in partnership with each State to achieve TMDL load allocations for nonpoint sources...(and) each State should describe its plan for implementing load allocations for nonpoint sources.*⁵⁵

Nonetheless, nonpoint sources disagree with EPA's interpretation of §303(d). They have made their position clear in several forums, including the meetings of the Federal Advisory Committee and state regulatory arenas. In brief, agricultural and timber interests argue that the TMDL program does not apply to them, and was written as a point source program. As they see it, TMDLs and the lists of impaired waters are to be developed to address problems remaining after technology-based controls are imposed on point sources; therefore, §303(d) is concerned only with point sources.

The U.S. Forest Service wrote to EPA to protest the application of §303(d) to nonpoint sources. In the Forest Service's opinion, the TMDL program was written "with point sources in mind." The Forest Service supports the application of management practices to forestry, but without specific limits on pollutants. They point to the CWA §319 program for nonpoint sources as evidence that Congress intended §303(d) to address only point sources.⁵⁶

The California Farm Bureau also opposes inclusion of agriculture in TMDLs, arguing that Congress clearly left the nonpoint source arena to the states.⁵⁷ They fear that requiring farmers to meet numeric limits on pollutants will create a "de facto permit,"⁵⁸ which could lead to state agency enforcement of those limits. The Farm Bureau has gone so far as to institute its own Nonpoint Source Initiative. The Initiative recognizes that nonpoint source pollution control from agricultural lands is a high priority. The Farm Bureau is organizing local, landowner-based groups on a watershed basis to develop processes and methods for participants to implement nonpoint source management. They are forming a nonprofit foundation to develop research and education programs to help California farmers and ranchers in implementing effective management measures.

Nonpoint sources are not alone in their resistance to TMDLs. Many states would also like to rid themselves of §303(d) requirements. The August 1997 meeting of the Association for State and Interstate Water Pollution Control Administrators featured a proposal to remove all deadlines from the TMDL program, in favor of "unique, non-regulatory, cost effective approaches" to deal with nonpoint source pollution.⁵⁹

Point sources are both relieved and anxious about nonpoint source inclusion in the TMDL program. On the one hand, the point source community is pleased with the overall direction of TMDLs, which demonstrates that nonpoint sources are significant continuing water quality problems. On the other hand, point sources are concerned that lacking any federal authority to control nonpoint sources, the states and EPA will require additional point source reductions to meet the new TMDL limits.

Staff and Resources

California has no TMDL program, per se. Each Regional Board makes use of various staff to prepare TMDLs (in addition to other duties), amounting to roughly two or three

people per region. There is no separate federal or state funding to obtain additional staff for TMDLs.

The Los Angeles RWQCB is the sole exception. It is the only Regional Board that has created a TMDL unit, and is restructuring its water quality efforts to fit its TMDL strategy.⁶⁰ The Region includes roughly 60 percent of the impaired waters from the state's 303(d) list. No state general funds support the unit; instead, the RWQCB uses a combination of CWA §319 funds as well as other CWA funds.⁶¹

Each regional board's approach to TMDLs varies, as do the TMDLs themselves. The San Francisco Bay RWQCB is developing a "master TMDL work plan" for each unit that describes what it will take to do TMDLs for each priority water body and the pollutants impairing that water body. The plan will describe the process to be used, a preferred approach, and the funds needed to carry out the approach. After the regional board staff have prepared this work plan, they will determine how and where to obtain implementation funds. (One staff member estimated it might take \$20 to \$30 million to do all the TMDLs in the San Francisco Bay Region.)⁶² At the Central Coast RWQCB, staff are trying a series of pilot TMDLs in an attempt to defuse the agricultural community's concerns that TMDLs will lead directly to permits to farm. The staff in that region is trying to make use of ongoing activities in priority watersheds to establish TMDLs. However, the staff believes that their RWQCB won't adopt a program for TMDL development until they have sufficient funding.⁶³

Technical TMDLs

The need to establish and implement TMDLs has surfaced within the context of California's relatively new watershed management approach to controlling nonpoint source pollution. Unfortunately, the TMDL agenda is driven by lawsuits and court-ordered schedules demanding that EPA (and the state) complete specific numbers of TMDLs within fairly short timeframes. In contrast, the watershed management approach requires a longer-term view of solving problems in the watershed by using a variety of techniques. Most of the techniques used to date are voluntary and nonregulatory; that is, they do not involve the use of permits or numeric effluent limits. While some observers argue that they do not result in clean water either, others working with the landowners and stakeholder groups believe that this is the only effective approach that can get them to cooperate, rather than resist.

Under the pressure of three settlements in TMDL lawsuits, the EPA and regional boards have agreed to do two TMDLs per year in each region. These TMDLs are not necessarily those for high priority watersheds (as identified in the SWRCB'S Watershed Management Initiative) but are those for which TMDLs can be established relatively easily. Staff at the regional boards fear these will be no more than "token TMDLs" that have little effect on water quality.⁶⁴ Because of the need to do them quickly, EPA has authorized the regional boards to prepare "technical TMDLs." Technical TMDLs meet the CWA §303(d) requirements for load allocations, but do not include implementation and monitoring plans.

It is unclear when the technical TMDLs will be implemented. Implementation is implied, but not statutorily required, in CWA §303(d). As mentioned above, the State Board has not adopted regulations or policies governing the implementation of TMDLs. In addition, to implement TMDLs, the Regional Boards must first amend the TMDLs into their basin plans. It is not clear how and when the Regional Boards will approach the basin plan amendment process for the many TMDLs that must be developed throughout the state. And, until these allocations are incorporated into basin plans, they cannot be implemented through NPDES permits, WDRs, or nonpoint source controls.

The focus on preparing technical TMDLs almost guarantees that it will be many years before California sees TMDL limits implemented, especially for nonpoint sources, unless the courts intervene with new creativity. This is because Regional Boards have limited staff and resources for TMDLs. All available resources will be devoted to preparing the TMDLs, LAs, and WLAs. Regional Board staff recognize that implementation plans should be written at the same time as TMDLs are established. For now, there are insufficient staff resources to do so.

This focus on technical TMDLs also forces the SWRCB and RWQCBs to take a legalistic and defensive approach to TMDLs. They must define issues narrowly and create a watertight package that meets the legal definition of TMDL to avoid further litigation. The SWRCB and Regional Boards would prefer to use the watershed approach, but must shift staff efforts to the technical TMDLs in order to meet the tight schedules set by the consent decrees.⁶⁵

The conflict between short-term accountability and long-term effectiveness is the Achilles Heel of TMDLs. To satisfy court orders and avoid further litigation, TMDLs must be established fairly quickly. The load and wasteload allocations are essential to avoiding further legal action. However, education, outreach, and program implementation take longer and do not lend themselves to the kind of accounting that EPA and state agency managers need to show progress on TMDLs. And at the moment, the need for quantifiable progress on TMDLs prevails because that is where EPA and the state are legally vulnerable.

Implementation

For improving water quality, the most important part of the TMDL is the implementation program. According to SWRCB and regional board staff, technical or token TMDLs won't solve the water quality problems found in the watershed. Implementation plans are critical, and may include a variety of regulatory and quasi-regulatory activities. In particular, implementation plans must include landowner involvement. TMDLs without implementation plans are threatening to landowners and provoke resistance rather than cooperation. A key to successful TMDL development is the involvement of landowners in identifying problems on their property and in developing solutions.⁶⁶

With the current focus on avoiding further legal challenges, EPA has backed off on implementation requirements. Whereas the recent guidance documents discussed earlier in this paper called for implementation plans, now EPA "expects" that states will implement TMDLs.⁶⁷ The Regional Boards must first amend their basin plans before they

can impose additional requirements on dischargers. An EPA representative stated that it might take up to 15 years before control measures are implemented to comply with an adopted TMDL. No one knows whether the courts will require swifter and more aggressive implementation.

IMPLICATIONS

For the most part, SWRCB and Regional Board staffs see TMDLs as a tool that will help improve water quality within watersheds. The staffs believe TMDLs are useful, for nonpoint sources in particular, because the quantitative, enforceable load allocations will hold nonpoint sources accountable for specific reductions in pollutants. However, the large number of questions and uncertainties surrounding TMDLs make it almost impossible to know whether TMDLs will help improve the quality of California's waters.

California has no choice but to establish TMDLs. However, the success of TMDLs will depend on how the state resolves three main issues:

- First, California must establish its policy for TMDLs. This could include amending the Porter-Cologne Act with findings and procedures for establishing TMDLs. It could also include adoption by the State Board of regulations and standards for TMDL establishment and implementation.
- Second, the Legislature and administration must determine how to cover the costs of TMDL development and implementation. A range of funding options exist, from using general funds to imposing fees on both point and nonpoint sources of pollution.
- And third, the state must determine the economic implications of TMDLs. The costs of additional pollution controls to meet the load allocations and wasteload allocations could be very high. It is important that these costs be considered in developing the state's TMDL policies and procedures.

END NOTES

¹ 33 USC 1251-1387. Amended by Public Law 97-117 in 1984, and P.L. 100-4 in 1987.

² California Water Code Sections 13000–14958.

³ P.L. No. 89-234, 79 Stat. 903 (1965).

⁴ Houck, Oliver. *TMDLs: The Resurrection of Water Quality Standards–Based Regulation Under the Clean Water Act*. 27 Environmental Law Reporter 10329 (Hereinafter Houck 1) p. 10330.

⁵ Houck 1 In note 10.

⁶ 33 USC Sec. 1313 (a).

⁷ California Water Code, Sections 13000 et. seq.

⁸ Dianne K. Conway, *TMDL Litigation: So Now What?* Virginia Environmental Law Journal 17: 83-121. p. 88.

⁹ Clean Water Act §319, 33 USC 1329.

¹⁰ California Water Code §13269.

¹¹ 16 USC §1455.

¹² 40 CFR 130.6 describes the contents of the water quality management plans. They must include the following: TMDLs for pollutants in impaired waters; effluent limitations and schedules of compliance; municipal and industrial waste treatment program and schedules; and nonpoint source management and control.

¹³ 40 CFR 130.6(c) 4.

¹⁴ State Water Resources Control Board and Regional Water Quality Control Boards, *Integrated Plan for Implementation of the Watershed Management Initiative*, June 1998. (Hereinafter the Implementation Plan.).

¹⁵ The *Implementation Plan* calls for better coordination and integration of the water quality activities of the SWRCB and Regional Boards, and the EPA. These include development of standards and permits, monitoring, assessment of water quality, planning and nonpoint source programs. The Plan also calls for coordination and involvement of local stakeholders, local governments, and other interests. A significant feature of the *Implementation Plan* is that it describes what can be done with existing resources and funds. Resources are directed at the highest priority efforts within each of the nine regions, as determined by each of the Regional Boards.

The *Implementation Plan* consists of one chapter for each Regional Board, EPA, and the SWRCB. Each chapter describes the organization's goals and priorities, and the strategies to be used to achieve those goals. The strategies include an annual component, describing the activities to be undertaken in that year and a five-year plan component. The chapters include a baseline budget for the current year and estimated budgets for future years. Funded and unfunded activities are described, and the priorities and strategies that will be used to justify requests for additional funding. The chapters will be updated annually, beginning in March 1999.

¹⁶ SWRCB, *Implementation Plan*, Chapter 1, p. 2.1-4.

¹⁷ 33 USC Sec. 1313 (d).

¹⁸ State Water Resources Control Board, *1998 Clean Water Act Section 303(d) Listing Guidelines for California*. August 11, 1997. (Hereinafter *SWRCB Listing Guidelines*.) Prepared by an ad hoc workgroup of staff from the Regional Boards, State Board, and US EPA.

¹⁹ 33 USC Sec. 1313(d)(1)(C).

²⁰ Definitions of TMDLs and associated concepts are listed in 40 CFR 130.2.

²¹ 40 CFR 130.7(c)(1).

²² 40 CFR 103.7(d).

²³ State water quality management plans form the basis for state's regulatory programs for point and nonpoint sources. They are required by CWA Sections 205(j), 208, and 303, and 40 CFR 130.6.

²⁴ EPA, *Total Maximum Daily Load Fact Sheet*. p. 3. Available at <http://www.epa.gov/region09/water/tmdl/fact.html>

²⁵ EPA, *Guidance for Water Quality-Based Decisions: The TMDL Process*, April 1991, (Hereinafter *EPA TMDL Guidance*) <http://www.epa.gov/OWOW/tmdl/ratepace.html>. p. 1.

²⁶ The guidance describes the process for developing TMDLs, implementing control actions, and assessing water bodies for compliance with water quality standards. The guidance calls for a "phased approach," in which a TMDL is established, "appropriate control actions taken on all pollution sources," and follow-up monitoring performed to assure that water quality standards are met. If monitoring indicates that water quality standards are not yet met, a revised TMDL is required. Insufficient data is not an excuse to delay implementing water quality-based pollution controls – the phased approach can be used to establish load reductions, even when the impairment is due to nonpoint sources or where there is inadequate data or inadequate modeling. And last, EPA emphasizes that it will not approve a TMDL in which some of the load reductions are allocated to nonpoint sources unless a state can assure that the nonpoint source reductions will occur.

²⁷ Memorandum from Robert Perciasepe to Regional Administrators and Regional Water Division Directors. *New Policies for Establishing and Implementing Total Maximum Daily Loads*. <http://www.epa.gov/OWOW/tmdl/ratepace.html>. (Hereinafter *New Policies for TMDLs*.)

²⁸ *Ibid.* p. 1.

²⁹ *Ibid.* p. 4.

³⁰ *New Policies for TMDLs* presents two new policies for TMDL development by states, with assistance from EPA:

"1. Each EPA Region should secure a specific written agreement with each State in the Region establishing an appropriate schedule for the establishment of TMDLs for all waters on the most recent section 303(d) list, beginning with the 1998 list.... These state schedules should be expeditious and normally extend from eight to thirteen years in length...."

"2. For all section 303(d) listed waters impaired solely or primarily by nonpoint sources, each EPA Region should work in partnership with each State to achieve TMDL load allocations for nonpoint sources.... For all section 303(d) listed waters impaired solely or primarily by nonpoint sources, each State should describe its plan for implementing load allocations for nonpoint sources. The state implementation plan may describe how load allocations will be achieved by nonpoint sources for individual waters, for several waters within a watershed, or for all affected waters in the State.... States may submit implementation plans to EPA as revisions to State water quality management plans, coupled with a proposed TMDL, or as part of an equivalent watershed or geographic planning process. At a minimum, each State implementation plan should include:

- Reasonable assurances that the nonpoint source load allocations established in TMDLs...will in fact be achieved. These assurances may be non-regulatory, regulatory, or incentive-based, consistent with applicable laws and programs;
- A public participation process; and
- Appropriate recognition of other relevant watershed management processes, such as local drinking water protection programs, urban storm water management programs, State section 319 management programs, or State section 303(e) continuing planning processes.”

- ³¹ Pacific Coast Federation of Fishermen’s Associations, et al. v. Marcus, et al., No. 95-4474 MHP (N.D. Calif.).
- ³² Conway, op. cit., p. 111.
- ³³ Personal communication with Tom Grovhaug, Larry Walker & Associates, December 7, 1998.
- ³⁴ Personal communication with Roberta Larson, DeCuir & Somach, December 15, 1998.
- ³⁵ U.S. EPA, Office of Water. *TMDL Development Cost Estimates: Case Studies of 14 TMDLs*. <http://www.epa.gov/OWOW/tmdlcost.html>.
- ³⁶ 40 CFR 130.7(b)(5).
- ³⁷ 40 CFR 130.2 (c) and 131.3(I).
- ³⁸ San Francisco Bay Regional Water Quality Control Board, *Water Quality Control Plan*. p. 3-3.
- ³⁹ Conway, op.cit. p. 108.
- ⁴⁰ Interview with Roberta Larson, DeCuir & Somach, December 15, 1998.
- ⁴¹ Conway, op. cit., p. 104. See also Federal Advisory Committee on TMDLs *Final Report, Chapter 3: Identifying Impaired Waters*. The Advisory Committee found that some waters were being listed on the basis of inadequate data and that some states may be omitting waters from their 303(d) lists for which some, though inadequate, data and/or information indicates nonattainment of standards.
- ⁴² 40 CFR 130.7 (b) (5).
- ⁴³ Conway, op. cit., Note 132.
- ⁴⁴ Houck, Oliver. *TMDLs III: A New Framework for the Clean Water Act’s Ambient Standards Program*. 28 Environmental Law Reporter 10415. (Hereinafter Houck 3) p. 10436.
- ⁴⁵ Conway, *op. cit.*, p. 106.
- ⁴⁶ SWRCB *Listing Guidelines*.
- ⁴⁷ Interview with Tom Grovhaug, Larry Walker and Associates, December 17, 1998.
- ⁴⁸ California Water Code, Section 13241, requires that the regional boards consider economic impacts when establishing water quality objectives.
- ⁴⁹ Interview with Tom Grovhaug.
- ⁵⁰ The Federal Advisory Committee’s final report is available at <http://www.epa.gov/OWOW/tmdl/advisory.html>.
- ⁵¹ 33 USC §1312(a).
- ⁵² 40 CFR 122.2 and 122.4.
- ⁵³ Federal Advisory Committee on TMDLs, *Final Report. Chapter 3: Identifying Impaired Waters*. July 1998. p. 16.

⁵⁴ Houck, Oliver. *TMDLs, Are We There Yet? The Long Road Toward Water Quality-Based Regulation Under the Clean Water Act*. 27 Environmental Law Reporter 10391 (Hereinafter Houck 2) p. 10400.

⁵⁵ EPA, *New Policies for TMDLs*, p. 4.

⁵⁶ Houck 2, p. 10400.

⁵⁷ Telephone conversation with Carolyn Richardson, Director of the Department of Environmental Advocacy, California Farm Bureau Federation, November 25, 1998.

⁵⁸ Letter to Ross Liscum, North Coast Regional Water Quality Control Board, from Tess Dennis, Attorney, California Farm Bureau Federation, May 27, 1998. p. 5.

⁵⁹ Houck 3, p. 10435.

⁶⁰ Telephone conversation with Wendy Philips, Los Angeles RWQCB, January 12, 1999.

⁶¹ The Los Angeles region's TMDL unit consists of a chief and four technical staff. They plan to prepare eight TMDLs per year, with implementation plans, once they get the unit up and running. With the recent settlement calling for 58 TMDLs in Los Angeles and Ventura Counties within a 12-year timeframe, the unit has its work cut out for it.

⁶² Telephone conversation with Tom Mumley, SFBRWQCB, January 12, 1999.

⁶³ Telephone conversation with Angela Carpenter, Central Coast RWQCB, January 13, 1999.

⁶⁴ Telephone conversation with Angela Carpenter, Central Coast RWQCB, January 13, 1999.

⁶⁵ Interview with Walt Pettit, Executive Officer, SWRCB, January 13, 1999.

⁶⁶ Telephone conversation with Dennis Salisbury, North Coast RWQCB, January 13, 1999.

⁶⁷ Telephone conversation with Janet Hashimoto, Chief of Monitoring and Enforcement Office, EPA Region 9. January 26, 1999.

GLOSSARY

Best Management Practices-methods, measures, or practices selected by an agency to meet its nonpoint source control needs. BMPs include but are not limited to structural and nonstructural controls and operation and maintenance procedures. BMPs can be applied before, during, or after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters.

Continuing Planning Process-required by Clean Water Act §303(e) and 40 CFR 130.5. States must submit for EPA's review and approval a continuing planning process. The process must include procedures for development and updating of plans for effluent limits, waste management plans, basin plans, TMDLs, procedures for revision, and demonstration of adequate authority for implementation.

Clean Water Act-the Federal Water Pollution Control Act, 33 USC §1251 et. seq.

Coastal Zone Amendments Reauthorization Act of 1990-requires states with approved coastal zone management programs to develop a coastal nonpoint source pollution control program.

Effluent Limitation-any restriction established by a state or the EPA on quantities, rates, and concentrations of chemical, physical, biological, and other pollutants that are discharged from point sources into water bodies.

Federal Advisory Committee on the TMDL Program-established in 1996 by the EPA. The Committee was charged with recommending ways to improve the TMDL programs required by Clean Water Act §303(d). The committee was a subdivision of the National Advisory Council for Environmental Policy and Technology (NACEPT) and was established under the authority of the Federal Advisory Committee Act.

Load or Loading-an amount of matter that is introduced into a receiving water. Loading may be either human-caused (pollutant loading) or natural (natural background loading).

Load Allocation (LA)-the portion of a receiving water's loading capacity that is attributed to one of its existing or future nonpoint sources of pollution or to natural background sources.

Loading Capacity-the greatest amount of loading that a water can receive without violating water quality standards.

National Pollutant Discharge Elimination System-the wastewater discharge permit system established by the Clean Water Act. Permits regulate the discharge of wastewater from municipal and industrial point sources, as well as certain concentrated animal feeding operations. More than 200,000 sources are regulated by NPDES permits nationwide.

Nonpoint Source Pollution-pollution that is not discharged from a point source. It is usually caused by rainfall or snowmelt moving over and through the ground. As the runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and even underground sources of drinking water. Some of the sources and pollutants include:

- Agricultural lands and residential areas: excess fertilizers, herbicides, and insecticides;
- Urban runoff and energy production activities: oil, grease, and toxic chemicals;
- Construction sites, crop and forest lands, and eroding streambanks: sediment;
- Abandoned mines: acid drainage;
- Irrigation practices: salts; and
- Livestock, pet wastes, and faulty septic systems: bacteria and nutrients.

Point Source-any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. As defined in the Clean Water Act, this term does not include agricultural stormwater discharges and return flows from irrigated agriculture.

Publicly Owned Treatment Works (POTWs)-any device or system used in the treatment (including recycling and reclamation) of liquid municipal sewage or industrial wastes which is owned by a state or municipality.

Regional Water Quality Control Boards (RWQCBs)-the governing bodies of the nine water quality control regions in California. Each Board consists of nine members appointed by the Governor. The regional boards act to protect water quality by adopting region-specific water quality control plans, called Basin Plans. The Basin Plans contain water quality standards that are specific to surface waters and groundwater within a particular region or portion thereof. The Basin Plans are implemented through the issuance of waste discharge requirements, or permits.

State Water Resources Control Board (SWRCB)-the state agency responsible for protecting water quality in California under the Porter-Cologne Act. The Board consists of five full-time salaried members, appointed to four-year terms by the Governor. The Board adopts enforceable policies for water quality control and regulations to protect water quality from discharges of waste to water or to land where water quality could be adversely affected. Together, the State Water Board and the Regional Boards carry out a comprehensive program for managing water quality in California, as well as for effective state administration of federal water pollution control laws.

Storm Water Permits-NPDES permits for storm water systems that are separate from wastewater treatment systems. Permits are required for storm water systems serving communities with more than 100,000 inhabitants, and for storm water discharges associated with industrial and construction activity involving at least five acres. In the future, smaller urban areas, construction sites, and retail and commercial activities will be covered by the permit requirements.

Total Maximum Daily Load (TMDL)-a quantitative assessment of water quality problems, contributing sources, and load reductions or control actions needed to restore and protect individual water bodies. The TMDL is the sum of the load allocations for

nonpoint sources and natural background pollutants, the wasteload allocations for point sources, and a margin of safety.

Waste Discharge Requirements (WDRs)-requirements as to the nature of any proposed discharge, existing discharge, or material change in an existing discharge with relation to the conditions existing in the disposal area or receiving waters upon or into which the discharge is made or proposed. The requirements shall implement any relevant water quality control plans that have been adopted, and shall take into consideration the beneficial uses to be protected, the water quality objectives reasonably required for that purpose, other waste discharges, the need to prevent nuisance, and the water quality objectives established under Water Code Section 13241.

Water Quality Limited Segments (WQLS)-those water bodies or parts of water bodies that do not meet water quality standards after applying technology-based effluent limitations required by the Clean Water Act.

Water Quality Standards-provisions of state or federal law that consist of a designated use or uses for the waters and water quality criteria for such waters based upon such uses.

Water Quality Management Plan-required by Clean Water Act §§205(j), 208, and 303(e). Includes a state or area-wide waste treatment management plan developed and updated in accordance with the provisions of the Clean Water Act and associated regulations. California's water quality management plan consists of a series of statewide plans adopted by the State Water Resources Control Board, and a basin plan adopted by each of the nine Regional Water Quality Control Boards.

Watershed-natural boundaries delineating the areas that drain to water bodies, including lakes, rivers, estuaries, wetlands, streams, and the surrounding landscape.

Waste Load Allocation-the portion of a receiving water's loading capacity that is allocated to one of its existing or future point sources of pollution.

ACRONYMS

BMP-Best Management Practices

CPP-Continuous Planning Process

CWA-Clean Water Act

CZARA-Coastal Zone Amendments Reauthorization Act of 1990

FACA-Federal Advisory Committee Act

LA-Load Allocations

NPDES-National Pollutant Discharge Elimination System

POTW-Publicly Owned Treatment Works

RWQCB-Regional Water Quality Control Board

SWRCB-State Water Resources Control Board

TMDL-Total Maximum Daily Load

WDRs-Waste Discharge Requirements

WLA-Waste Load Allocation

WMI-Watershed Management Initiative

WQLS-Water Quality Limited Segments

APPENDIX A: SUMMARY OF TMDL LITIGATION

Although the TMDL requirement has been in the Clean Water Act since 1972, EPA did not energetically pursue the §303(d) requirements until a series of citizen lawsuits forced it to do so. Instead, initially EPA folded the §303(d) program into its regulations for basin planning, a process required under various sections of the CWA.* In 1974, EPA issued regulations governing basin plans, which include effluent standards for all industrial, municipal, and nonpoint source controls.† These plans would also establish TMDLs. EPA issued a draft notice of regulations establishing a set of pollutants for which states should establish TMDLs, but these draft regulations languished. Without the list of target pollutants, states could not assess water bodies nor prepare TMDLs.

Thus, throughout the 1970s, not much occurred in the TMDL arena. Some states submitted a few lists of impaired water bodies; most submitted nothing. CWA §303(d) has no explicit requirement for EPA to intercede if the states fail to act. It only requires EPA to approve or disapprove state submissions, and to issue lists of impaired waters and establish TMDLs if state actions are inadequate. EPA took the position that intervention was called for in response to inadequate state performance, but not in response to no state performance.‡

The Theory of Constructive Submission

A landmark ruling of the Seventh Circuit court established that EPA had to act if states failed to submit lists of impaired waters or TMDLs. In *Scott v. City of Hammond*, an Illinois district court found in 1981 that EPA had no authority to require states to submit TMDLs for Lake Michigan, nor did EPA have the authority to promulgate its own TMDLs. However, that decision was reversed by the circuit court in 1984, which reasoned that “the prolonged failure of a state to submit anything could amount to a constructive submission to EPA of no TMDLs.”§ This would trigger EPA’s duty to act, unless there were sound reasons for the state’s failure to issue TMDLs. In reversing the Illinois district court’s ruling, the circuit court relied on the “apparent expectation of Congress that the §303(d) process would actually take place” to rebut EPA’s insistence that it had no explicit authority to act in the absence of a state submittal.**

Similar lawsuits followed, and the constructive submission theory was invoked to force EPA to issue lists of impaired waters and promulgate TMDLs for states that failed to do so. A lawsuit filed in Oregon, *Northwest Environmental Defense Center v. Thomas*, led to a consent decree in 1987 with a timetable for federal action if Oregon did not submit

* CWA §§106, 208, and 303(e)

† 40 CFR §130

‡ Houck 2. p. 10393 and note 36.

§ Ibid. pg. 10393-10394.

** Ibid.

its list of impaired waters. Starting in 1991, a series of Alaska cases required EPA to promulgate TMDLs, because the state had not attempted to do so. However, these cases did not establish standards for the adequacy of the lists or the TMDLs established by the states.

The next round of lawsuits indicated that virtually any state action would suffice to stave off a court order for EPA to intervene. After the *Scott* decision, the states of Illinois, Indiana, and Michigan submitted their determinations that TMDLs were unnecessary for Lake Michigan. EPA approved the submissions and was challenged by the National Wildlife Federation.* The Federation claimed that these minimal submissions constituted a submission of no TMDLs, triggering EPA's duty to promulgate the load allocations itself. In 1991, the Illinois district court rejected the Federation's argument, finding that since the states had submitted something and EPA had approved it, the statutory requirement was fulfilled. Similar findings were made in a Minnesota case brought by the Sierra Club, in which it alleged that the state had developed too few TMDLs and was moving too slowly to implement them. However, because the state had complied with the letter, if not the spirit, of the §303(d) requirements, the court ruled against the Sierra Club.†

The constructive submission theory required the EPA to persuade the states to act, or to enact the §303(d) program itself. If states took any action, regardless of the extent of the action or the length of the schedule for developing TMDLs, the courts did not require further review by EPA. The next volley of litigation addressed the question of the quality of the states' TMDLs and the quality of EPA's response.

Court-Ordered Schedules for Listings and TMDL Development

The state of Idaho submitted no TMDLs until 1989, and by 1992 had submitted 36 TMDLs that EPA reviewed and approved. A lawsuit brought by the Idaho Sportsmen's Coalition initially requested that EPA step in and establish TMDLs. However, the court went on to find EPA's approval of the TMDLs to be arbitrary and capricious. EPA ultimately approved a list of 962 impaired water bodies in Idaho. The next phase of the case led to a court order requiring EPA to develop, in cooperation with Idaho, a schedule for developing TMDLs for those water bodies. A third phase of the case challenged the adequacy of the schedule. EPA and Idaho had proposed a 25-year schedule with no set deadlines, only expected dates and targets for completing TMDLs. The court noted in its 1996 decision that those 25 years could easily turn into 50 or 75, and nothing "could justify so glacial a pace." The court suggested that a five-year completion date would be more reasonable.‡

At the same time, the Sierra Club brought a lawsuit challenging every aspect of Georgia's TMDL program, including the number, adequacy, and pace of preparation of the

* *National Wildlife Federation v. Adamkus*, No. 87 C 4196, 1991 WL 47374 (N.D. Ill. Mar. 28. 1991)

† Houck 2, pg. 10394 and notes 54, 58.

‡ Ibid. pg. 10396.

TMDLs.* The state had listed 340 impaired water bodies, had completed two TMDLs, and was working on two more. Georgia was projecting a total of 28 TMDLs over the next 10 years. The court found Georgia's schedule to be inadequate, noting that at Georgia's pace, it would take more than 100 years to prepare the TMDLs for only the waters currently on the list. The court also found Georgia's existing TMDLs to be inadequate because they omitted load allocations from nonpoint sources. In August 1996, the court issued its order requiring completion of TMDLs within five years on a prescribed schedule. Further, NPDES permits would be revised or terminated within one year following each TMDL, and permits for new discharges into designated impaired water bodies would be accompanied by TMDLs to achieve water quality standards. The court ordered that if Georgia failed to comply, EPA would revise the state's delegated NPDES program, or withdraw certification of the program.†

By December 1996, EPA was under court orders to prepare TMDLs in Oregon, Alaska, and Georgia. Litigation to compel EPA to list impaired water bodies or produce TMDLs was underway in Idaho, New York, Georgia, New Jersey, Pennsylvania, Delaware, West Virginia, Louisiana, New Mexico, Kansas, California, Washington, and Oregon. Notices of intent to sue had been filed in Alabama, Florida, Mississippi, North Carolina, Wyoming, and Arizona.‡ In response, EPA increased pressure on the states to comply with the §303(d) requirements. In early 1996, EPA required states to submit their lists of impaired water bodies by April 1 of that year. By July 26, 17 states had yet to submit any list. EPA moved the deadline to December, and instructed the EPA Regional Administrators to begin preparing their own lists, where necessary.§

Other Significant Court Decisions and Settlements

The Adequacy of TMDLs

The theory of constructive submission did not address concerns about the adequacy or the pace of TMDL development. Courts rejected the constructive submission argument in several situations:**

- Where a state was working on TMDL development, even though the state's WQLS list had been disapproved by EPA;
- Where a state had submitted only two TMDLs while continuing development of merely twenty-nine others; and
- Where a state has made some TMDL submissions, even though the court determined they were inadequate.

* *Sierra Club v. Hankinson*, No. 1:94 cv 2501-MHS, 1996 WL 534909 (N.D. Ga. Mar. 25, 1996).

† Houck 2, pg. 10396.

‡ Ibid. in note 103.

§ Ibid. pg. 10396.

** Conway, op.cit. Pg. 95.

Adequacy of Load Allocations

Environmental and industry plaintiffs challenged the adequacy and reasonableness of the TMDL for dioxin established by EPA for the Columbia River.* The court upheld the TMDL and concluded that a TMDL need not set wasteload allocations for all point sources and load allocations for all nonpoint sources.

Schedules for Establishing TMDLs and Review of State NPDES Programs

The first court case that produced a court-ordered schedule for TMDL production was filed by the Sierra Club in Georgia in the early 1990s.† Georgia had prepared some TMDLs, which the court found to be “totally inadequate.” The court also found EPA had acted arbitrarily and capriciously in approving Georgia’s TMDLs, and ordered EPA to ensure that TMDLs were established for all listed waters within five years. Eventually, the parties negotiated a schedule for developing TMDLs between 1998 and 2005, and signed a consent decree that requires EPA to prepare the TMDLs if Georgia fails. The consent decree is notable because it was the first time that the courts responded to plaintiffs’ complaints about the adequacy of a state’s NPDES program and EPA’s oversight of that program. The consent decree required EPA to review Georgia’s Continuing Planning Process and to propose terms for reissuing NPDES permits in the watersheds for which TMDLs are established.

Cases that Target States’ NPDES Programs

In some cases, plaintiffs have taken aim not just at states’ TMDL programs, but at their delegated NPDES programs and grant funding from EPA. Lawsuits in Kansas and New Jersey request the courts to order EPA to withdraw its approval of the states’ NPDES authorization.‡ The Kansas suit even requests that the court order EPA to stop making permit-related grants to Kansas and to refrain from issuing or renewing NPDES permits until Kansas has an adequate CPP program approved by EPA. These lawsuits attempt to force implementation of TMDLs using hard ball strategies that EPA has been reluctant to employ, but which EPA could pursue independent of court orders.

* *Dioxin/Organochlorine Center, et al. v. Rasmussen*, (57 F.3d 1517 (9th Cir. 1995))

† *Sierra Club, et al. v. Hankinson*, 939 F.Supp 865 (N.D. Ga. 1996)

‡ *Kansas Natural Resources Council, Inc., et al. v. Browner*, No. 95-2490-JWL (D. Kansas); and *American Littoral Society, et al. v. EPA*, No. 96-339(MLP) (D. N.J.)

APPENDIX B: CALIFORNIA TMDLS

Although no TMDLs have been implemented yet in California, several are in various states of preparation. This Appendix does not list all of the state's TMDL efforts. Instead, it highlights a few of the different approaches that Regional Boards are taking to prepare TMDLs.

TMDLs Prepared by the Regional Boards

Stemple Creek Watershed. The Stemple Creek Watershed TMDL in northern Marin and southern Sonoma counties addressed excessive sediment and nutrients from nonpoint sources. Most of the problems stem from concentrated animal feeding operations, rangeland grazing, and landslides. Sediments have formed a sand bar that impedes tidal mixing of saline and fresh water in the Estero de San Antonio. Sediments have filled many deep holes in Stemple Creek, reducing the stream's habitat value. Livestock have had access to streams and have destroyed the riparian vegetation and trampled the streambanks, leading to further erosion problems. Excessive nitrates and ammonia from animal wastes have made the stream toxic to aquatic life.

The regional board staff used a watershed planning approach and worked with many local governments, interest groups, and landowners to develop the TMDL over a five-year period. The TMDL includes numeric targets for dissolved oxygen, temperature, ammonia, and sediment reductions. The total cost of the effort was \$500,000, and required one full-time regional board staff member. Many organizations contributed to the development of the watershed enhancement plan and TMDL, including the Coastal Conservancy, the Marin Community Foundation, and Dean Witter Foundation.

This TMDL is viewed as a model for waters impaired primarily by agricultural and other nonpoint sources because of the unique approach taken to develop the TMDL and the implementation plan. The San Anselmo School "Shrimp Clubs" were a key to getting dairymen involved in the efforts. The school clubs were learning about riparian vegetation and its importance in restoring habitat for endangered species. The Shrimp Clubs visited dairies and planted riparian vegetation. Their involvement helped get dairymen engaged in the TMDL process. In addition, the Stemple Creek TMDL relies on a cooperative working relationship with the Sonoma-Marin Farm Bureau's Animal Waste Committee. The Committee produced animal waste management guidelines and a procedure for investigating and resolving complaints about uncomplying landowners.

Highlights of the implementation plan are as follows:

- Landowners are encouraged to develop comprehensive ranch management plans to identify problem areas and corrective actions. Technical assistance will be available from several sources, including the USDA's Natural Resource Conservation Service, the UC Cooperative Extension, and the Southern Sonoma and Marin County Resource Conservation Districts. Funding for corrective

actions will be available through several agencies, including the USDA's Environmental

- Quality Incentive Program (EQIP) and Wildlife Habitat Incentive Program (WHIP), as well as the organizations that contributed to developing the TMDL and watershed enhancement plan.
- The Sonoma/Marin County Farm Bureau has an active Animal Waste Committee. The committee has established animal waste control guidelines to protect water quality, and a protocol for landowner representatives to seek a solution for complaints. The Farm Bureau is developing a landowner monitoring program to assess water quality, and if water quality declines, to seek the source of the problem and correct it.
- Under the TMDL, landowner development and implementation of ranch plans is strictly voluntary. Further, development of a ranch plan does not result in an enforceable commitment on the part of the landowner to implement the plan, as implementation may depend on the availability of funding. However, in order for the Regional Board to track the success of the TMDL, land owners will submit the water quality components of their ranch plans to the Regional Board in those cases where the numeric targets are not being attained.
- If a significant number of landowners fail to submit the water quality component of their ranch plans to the Regional Board, or fail to implement the ranch plans, the Regional Board may change the TMDL to require submittal of the ranch plans. The Board may also use its authority to issue WDRs or Abatement Orders for significant discharges of sediments or nutrients.

Trash TMDLs. The Los Angeles RWQCB is preparing unusual TMDLs for one of the most persistent problems in its region: trash. Both the East Fork of the San Gabriel River and the Los Angeles River are full of trash. One TMDL will rely on public education and improving sanitation practices, the other will use the "regulatory incentives" approach.*

On the San Gabriel River, the source is primarily picnic trash. The solution is fairly simple: create an alternative to dumping their trash on the ground and educate them about the cumulative effects of littering. The trash TMDL being prepared will call on the US Forest Service to increase the number of trashcans and the number of trash pickups. It will also call for public education and anti-litter campaigns.

On the Los Angeles River, the problem is much more complicated. The river collects all the garbage and refuse thrown into it as it winds through 57 cities on its way to the estuary. To get urban residents to stop throwing trash into the river will take some creative solutions. The Regional Board intends to bring all the cities and the major sources of packaging materials (e.g., fast food restaurants) together to develop solutions.

* Telephone conversation with John Bishop, Los Angeles RWQCB, January 27, 1999.

Cities will ultimately be responsible for reducing the amount of trash in the river because they will have to comply with their NPDES storm water permits.

San Francisco Bay TMDLs. The SFRWQCB is working on a number of problems throughout San Francisco Bay.

Mercury. Mercury is both an historic and current pollution problem in the Bay. Mercury was used in gold processing, and discarded with waste rock and water. This waste mercury is now distributed throughout the Bay in sediments that wash down rivers and streams from the Sierra foothills. At the same time, mercury is discharged from abandoned mines, such as the New Almaden Mine in the South Bay, and a small amount is found in POTW discharges. And last, mercury gets into the Bay by aerial deposition. Combustion processes all over the globe emit mercury into the atmosphere, and it moves throughout the world with prevailing winds. As a result of its ubiquitous nature, everyone and no one is responsible for the mercury loads in the Bay, which exceed human health and aquatic life standards. The Regional Board has convened an open technical committee to work on the mercury problem.

Exotic Invasive Species. The Regional Board staff is also working on a TMDL for exotic species throughout the Bay. This effort will focus on ways of managing ships' ballast water so that exotic organisms are not imported into the Bay. Some ideas under consideration include requiring the exchange of ballast water at sea and the filtration of all ballast discharges.

Copper and Nickel. In the south bay, copper and nickel are naturally occurring problems. The City of San Jose has made \$3.5 million available to develop TMDLs for copper and nickel. The TMDL efforts are part of a wider regional watershed effort to address stormwater and habitat issues in the South Bay. Of the \$3.5 million, up to \$800,000 is being spent on facilitating meetings of a working group with representatives of a broad range of interests. The remainder is to be spent on technical studies.

TMDLs Prepared by EPA

The EPA has completed several TMDLs in California as required under the terms of three settlement agreements. The completed TMDLs include the Garcia River Sediment TMDL, and the San Diego Creek/Newport Bay TMDLs for sediment and nutrients. EPA has also prepared draft TMDLs for sediment for the south fork of the Trinity River and Redwood Creek on the north coast.*

North Coast Rivers. On the north coast rivers, sediments have accumulated in the riverbeds and streams and have eliminated the deep pools, contours, and gravels that are

* EPA's draft and final TMDLs are available on line at the EPA Region 9 web site at <http://www.epa.gov/region09/water/tmdl>

essential to migration, spawning, and growth of juvenile fish. The sediments come from natural erosion and accelerated erosion from timber harvesting.

Under the terms of the March 1997 consent decree in the PCFFA lawsuit, EPA was required to establish two TMDLs by December. The North Coast RWQCB prepared draft TMDLs for the Garcia River, the south fork of the Trinity River, and Redwood Creek. However, the RWQCB did not take final action to adopt the TMDLs in time to meet the terms of the consent decree. Under state administrative procedures, the RWQCB and the SWRCB must adopt each TMDL, and then the Office of Administrative Law must review and approve the TMDL as a regulation. These administrative processes were not moving fast enough to meet the timetable of the consent decree. Thus, EPA issued the TMDLs, relying heavily on the work that the North Coast RWQCB had already completed.

The TMDLs issued by EPA include descriptions of the water quality problems to be addressed; numeric targets for reduction of sediments; analyses of the sources of sediments; and the TMDLs and load/wasteload allocations themselves. Each TMDL contains a table describing the sources of sediments, such as roads, gully erosion, naturally occurring landslides, and human induced landslides. For each source category, the table lists the historic sediment load, the amount that can be controlled through management practices, and the remaining natural load. The TMDLs do not allocate specific amounts of sediment to individual landowners or activities. Nor do they dictate the types of measures that should be employed to achieve the numeric targets. Instead, the TMDLs refer to the state's obligation under the CWA to incorporate the TMDLs and appropriate implementation measures into the state's water quality management plans and regional basin plans. Thus, it will be left to the RWQCB to devise ways to achieve the TMDL targets.

Newport Bay Sediment and Nutrient TMDLs. Similarly, the EPA issued the Newport Bay TMDLs in order to meet a timetable set by a consent decree. The October 1997 consent decree called for establishment of nutrient and sediment TMDLs in San Diego Creek and Newport Bay by January 15, 1998. The Santa Ana RWQCB adopted the TMDLs in October 1997, but the state's administrative procedures could not be completed in time to meet the January 1998 deadline.

The TMDLs issued by EPA are virtually identical to those adopted by the Regional Board, with virtually identical numeric targets. EPA established numeric targets for the following indicators of sediment loading:

- Acreage distribution of four key habitat types in Upper Newport Bay, including marine wildlife, mudflats, salt marsh, and riparian habitats;
- Marine habitat depth in Upper Newport Bay of no less than seven feet below mean sea level;
- Total annual average watershed sediment load of no more than 125,000 tons per year (a 50 percent reduction);

- Dredging of Upper Newport Bay sediments no more often than once every 10 years with the long term goal of reducing dredging to no more than once every 20-30 years; and
- Ensuring at least 50 percent capacity of each sediment control basin prior to onset of the wet weather season and associated increase in sediment discharges.

The Regional Board adopted an implementation, monitoring, and review plan for the TMDLs in October 1997. Some of the actions that will be taken include dredging of sediments by the Army Corps of Engineers, and cities and the county within the watershed will take erosion control measures. Some of these activities will be undertaken pursuant to the cities' stormwater NPDES permits. EPA and the Regional Board expect that the desired levels of sediment reductions will occur in 10 years.

APPENDIX C: WATER QUALITY PROBLEMS

Despite a broad array of water pollution control programs, the nation and California still have significant water pollution problems. Through the NPDES permit program, most industrial and municipal sources have been brought under control. Their discharges of wastewater must be treated with the best available or best practicable technology to meet the stringent effluent limitations specified in their permits. At the same time, most polluted runoff remains uncontrolled. It is widely recognized that nonpoint sources account for most of the remaining water pollution problems in California.

This appendix will describe the status of water pollution in the nation and California, and some of the issues surrounding nonpoint source control.

We Still Have Polluted Water

Every two years states must report on the condition of their waters and the EPA provides a summary report to Congress. In 1996, the EPA reported that:

- Of the rivers and streams surveyed (19 percent of all stream miles) 36 percent were partially or fully impaired and water quality threatened in an additional eight percent;
- Of the surveyed lakes (40 percent of all lake acres) 39 percent were partially or fully impaired, with water quality threatened in an additional 10 percent;
- Of the estuaries surveyed (72 percent of all estuarine waters) 38 percent are reported to be partially or fully impaired, with water quality threatened in another four percent.*

Clean Water Action Plan

In October 1997, Vice President Gore directed the EPA and the Department of Agriculture (USDA) to develop a strategy for how the nation will achieve the goals of the CWA (i.e., all waters clean enough for fishing and swimming). In February 1998, the EPA and USDA presented the *Clean Water Action Plan*, which relies on a watershed approach to meet the goals of the CWA. The agencies acknowledged that half of the nation's 2000 watersheds have serious or moderate water quality programs, and about 40 percent of assessed waters do not meet water quality goals.

The Action Plan notes that the NPDES discharge permits are a proven tool for reducing water pollution. But the Action Plan states that polluted runoff is now the leading source of water pollution. Nationwide, agriculture affects 70 percent of impaired rivers and streams and 49 percent of impaired lakes. Other nonpoint sources of water quality impairment include forestry, construction, urban runoff, mining, and removal of streamside vegetation, none of which are regulated under the NPDES program.

* USDA, USEPA, *Clean Water Action Plan: Restoring and Protecting America's Waters*, February 1998. p. 7.

Controlling Nonpoint Source Pollution

Despite widespread acknowledgement that nonpoint sources are substantial causes of water pollution, they remain somewhat loosely regulated. Under California's 3-tiered nonpoint source management plan, voluntary implementation of BMPs is the preferred approach to controlling polluted runoff. The only CWA mechanism* for implementing nonpoint source controls is the §319 grant program, which essentially pays nonpoint source dischargers to install physical controls to reduce the amount of polluted runoff that results from their activities. Under the NPDES program, point sources must pay to obtain a permit, pay to install and implement treatment technology, and in California must pay annual fees of up to \$10,000 to continue to discharge their treated effluent into waters of the state.†

In addition to this regulatory framework, there are at least four reasons why regulators have focused their attention on point source rather than nonpoint source pollution. They are:

- Federal and state efforts have focused on complying with point source requirements;
- Most federal and state funding has been for point source programs;
- Regulators perceive that nonpoint sources are more difficult to control; and
- Regulating nonpoint sources is politically difficult.

Regulators' Focus has been on Point Sources

Following passage of the CWA, EPA was occupied with promulgating technology standards for point sources and working with states to develop the NPDES program. California was busy preparing its water quality control plans and basin plans to comply with Porter–Cologne and CWA requirements. Because the federal law required states to prepare and implement a technology–based regulatory program aimed at cleaning up municipal and industrial point sources, that's where California's efforts focused.

Funding has been for Point Sources

EPA provides funding to California to carry out programs required by the CWA. EPA grants for the NPDES permit program are separate from the grants for the §319 nonpoint source program. Grants for the NPDES program have historically outweighed nonpoint source program grants by a ratio of between 10 and 20 to one. Prior to the 1987 CWA amendments that created the §319 program, there were no grants for nonpoint source programs.

* The USDA has separate authority for grant programs to help farmers implement best management practices to control runoff and erosion.

† It should be noted that the federal government spent more than \$7 billion on construction grants and loans for municipal wastewater treatment plants in California.

California's spending on point source control far exceeds the amount spent on nonpoint source control. EPA grant money supports the SWRCB and Regional Board's NPDES permitting and enforcement programs. Combining state and federal funds, the state spends approximately \$34 million annually for its point source program. In contrast, the 1998-99 spending level for nonpoint source programs was \$7.2 million. This included a \$5.6 million EPA §319 grant.

Recent SWRCB budget figures demonstrate the difference in funding between the state's point and nonpoint source programs (these figures exclude the \$90 million EPA grant for municipal sewage treatment plant construction loans):

Selected Water Quality Program Activities	1997-98	1998-99	1999-2000 (Proposed)
NPDES, WDR, Chapter 15	\$31,381,000	\$33,995,000	\$36,418,000
Nonpoint Source	\$6,286,000	\$7,231,000	\$13,525,000*

Source: Governor's Budget, January 1999.

Nonpoint Sources Perceived To Be Difficult To Control[†]

For a variety of reasons, Congress excluded nonpoint sources from the NPDES program. These reasons include:

1. The alleged number and variety of nonpoint sources;
2. The site-specific nature of the pollution; and
3. The lack of known control technologies.

Nonpoint source control measures, or BMPs, are for the most part well known and straightforward techniques that can be applied to current activities. Proper grading controls, manure lagoons, proper road construction, wetlands construction, and other similar practices can substantially reduce runoff and absorb excessive nutrients and other chemicals. Their implementation can require more care and precautions compared to traditional business practices. Some practices are relatively simple, such as planting buffer strips or fencing off riparian areas from livestock, while others can be complex, such as building drainage and water treatment systems or retention ponds for confined animal feedlots. Implementation of BMPs can be very expensive.

* The additional \$6 million would come from additional federal §319 grant money from the Clean Water Action Plan and would pay for an additional 30 positions. Congress has not yet appropriated this money.

[†] This section borrows heavily from Oliver Houck, *TMDLs III: A New Framework for the Clean Water Act's Ambient Standards Program*. 28 Environmental Law Reporter 10415, August 1998. pp. 10424-10425.

Political Difficulties

Nonpoint sources are relatively unregulated in part because of the fierce resistance of nonpoint source groups to regulation by water quality agencies. Timber, mining, and agricultural interests believe that Congress chose not to regulate nonpoint sources under the CWA because of the difficulty in addressing the variations in climate, terrain, geology, and land use, as well as the poor scientific understanding of the relationship between runoff and pollution levels in water bodies. Therefore, they believe that state water quality planning processes are and should be the primary avenue for controlling nonpoint sources of pollution.

When it comes to state programs, the nonpoint source representatives generally favor California's first tier voluntary approach to nonpoint source control. They also support §319 programs because they offer financial assistance and are typically voluntary, not mandatory. Nonpoint source representatives like the voluntary approaches because they do not want to be regulated by state or federal water quality regulators. They do not want to obtain a permit to raise crops, harvest timber, or graze cattle on their own lands. For many farmers, ranchers, and timber operators, it is a question of protecting their property rights and managing their land as they see fit.

Most nonpoint source representatives strongly oppose any program, whether it is a WDR, watershed management, TMDL, or other approach, that would set numeric limits on polluted runoff. They resist the imposition of specific management measures on individual landowners to comply with state or federal water quality guidelines. They fear that any such measures will lead to permits and actual enforcement of the numeric limits by water quality regulators.