Clearer Structure, Cleaner Water:

Improving Performance and Outcomes at the State Water Boards

Little Hoover Commission

January 2009

State of California

LITTLE HOOVER COMMISSION

January 22, 2009

The Honorable Arnold Schwarzenegger
Governor of California

The Honorable Darrell Steinberg
President pro Tempore of the Senate
and members of the Senate

The Honorable Dave Cogdill
Senate Minority Leader

The Honorable Karen Bass
Speaker of the Assembly
and members of the Assembly

The Honorable Michael Villines
Assembly Minority Leader

Dear Governor and Members of the Legislature:

Clean water is a cornerstone of California's economic and environmental well-being.

As the state's lead water quality guardians, the State Water Resources Control Board and the nine Regional Water Quality Control Boards play a critical role in the state's health. Their job is to protect and improve the state's aquifers, rivers, lakes and shoreline.

For that job, however, the boards today must rely on regulatory tools that are not adequate to address modern threats to water quality, resulting in a system that has lost the confidence of the very people it needs to ensure clean water. The governor and Legislature must exercise their leadership to reform the current system into one that assures transparency, consistency and accountability, and demonstrates that it is improving water quality.

The boards face a daunting task. For decades, the boards' actions, supported by substantial federal investment – have led to a dramatic decrease in water pollution from wastewater treatment plants and other so-called "point sources," which discharge into water or the ground from a pipe. The current threats to the state's water quality, however, are far more difficult to solve, even as demand for clean water increases from a growing population and an economically important agricultural industry.

Stormwater pollution, caused when rains pummel the impervious surfaces that dominate cities and suburbs and sweep debris and contaminants into the state's waters, is one of the biggest water quality problems facing the state and country. Local governments, homebuilders and many industries face expensive fixes to limit and capture stormwater, and water boards are struggling with how to best regulate a diffuse pollution source. Other non-point sources, including agricultural runoff and decades-old legacy pollutants, also present challenges.

California relies on a system created nearly four decades ago, with a state board and nine separate regional boards that enjoy enormous autonomy. While regional decision-making remains essential to solutions that fit local conditions, the current structure places too little emphasis on accountability and outcomes. No one is holding regional boards truly

accountable for protecting and improving water quality. Regional boards, in turn, are overwhelmed by their tasks. The inability of the state board to implement statewide policies, practices and standards leads to inconsistencies and inefficiencies in how regional boards operate, creating the perception by water users, environmentalists, local governments and others that the boards' actions often are arbitrary and unfair.

The boards' continuing struggles with information technology, data and science lead to conflict over information, instead of policy. This complicates the ability for the public and policy-makers to get an accurate reading on the state of the state's water quality, and to determine which regulatory programs are effective in improving water quality.

California's current system for ensuring water quality does not rank the biggest threats to water quality and systematically match its finite resources to address the most serious of them using the tools of scientific and economic analysis. In this report, the Commission recommends the state board make better use of data to identify the biggest threats to water quality. The Commission recommends making greater use of science in determining the cause and remedies to water contamination as well as economic analysis to inform which options offer the greatest improvement within the available resources.

The Commission recommends reducing the size of the regional boards to seven members, all appointed by the governor, and making the regional chair a full-time position. The state board should be expanded to nine members, with five members, also appointed by the governor, representing a statewide perspective. The remaining four would be regional chairs serving staggered, two-year terms. Regional boards should focus on setting policy, not issuing permits.

While this review focuses on the water boards' duties to regulate water quality, the Commission is hopeful that it can become part of a broader conversation the state needs to engage in about its overall governance strategy for water. With a crashing Sacramento-San Joaquin River Delta, declining fish species, and continuing questions about how best to deliver water from north to south, California policy-makers must use 2009 to create an overall governance structure that can produce thoughtful responses that acknowledge the intertwined issues of water quality, water rights and water supply.

Facing increasing demand for water and the likelihood of diminishing supply, California undoubtedly will have to rely on cleaner local water supplies to meet future needs. The water boards will play a key role in this as they carry out their mission to protect and improve water quality. Reforming those boards is a first step, and one that is urgently needed.

Sincerely,

Daniel W. Hancock
Chairman

CLEARER STRUCTURE, CLEANER WATER:
IMPROVING PERFORMANCE AND OUTCOMES AT THE STATE WATER BOARDS

Table of Contents

Executive Summary i
Background 1
An Outdated System 27
Strengthening Ties, Solving Problems 57
Conclusion 93
The Commission's Study Process 97
Appendices 99
- Appendix A: Public Hearing Witnesses 101
- Appendix B: Little Hoover Commission Public Meetings 103
- Appendix C: Selected Acronyms 105

Notes 107

Table of Sidebars & Charts

Levels of Wastewater Treatment 4
Regional Boards 7
The Importance of Basin Plans 8
Water Board Statistics 9
Total Number of Pollutants 10
State Water Policies 11
Fees, not General Fund, Drive Boards' Budget 12
Stormwater Permits 16
State of the State's Waters 17
Water Board's Efforts to Improve Programs, Processes 24
Cities of Arcadia, et al. vs. Los Angeles Water Board 28
Funding Constraints Limit Programs 36
Staff May Be Too Concentrated in Sacramento 38
A Missed Opportunity 45

U.S. Navy's Stormwater Permit Illustrates Difficulties..... 52
How Proposition 218 Affects Stormwater..... 53
Other States' Governance Structures..... 60
Comparing the Water Boards to the Air Resources Board..... 70
Regional Science Institutes a Key to Better Science at Boards..... 71
Proposed Water Board Governance Structure..... 72
Low Impact Development a Key Response to Stormwater..... 81
Watershed-based Permitting..... 84
Central Coast Board Shifts Focus Toward Outcomes..... 85
Proposed Economic Analysis for Water Boards..... 87

Executive Summary

California is attempting to solve modern water pollution problems with an antiquated system.

Nearly four decades after the Legislature created the legal foundation to police water quality in the state, the governance structure surrounding the State Water Resources Control Board and the nine Regional Water Quality Control Boards is showing its age. The boards are overwhelmed and under-achieving, and have lost the confidence of a diverse array of water stakeholders.

The decentralized regulatory and permitting structure – with largely autonomous regional boards issuing permits, conducting enforcement and carrying out a wide array of other duties – has created a system that lacks consistency, accountability and transparency, and is unable to match resources to priorities. In fact, lack of prioritization is a fundamental weakness in state water quality regulation. The water boards' broad and ambitious mandate – to protect all waters at all times – set by state and federal law, makes it difficult to set priorities. This mandate, coupled with a state board that does not exercise enough authority over regional boards and the boards' failure to consistently consider the costs and benefits of various clean-water solutions, leaves California's water quality system with dozens of priorities and, in effect, no clear, statewide priorities.

The state needs a smarter strategy to support the boards' critically important mission: protecting and improving the state's 7,800 square miles of surface water, as well as its ground water aquifers. Demand for water will grow in a state expecting a population boom. And as Governor Arnold Schwarzenegger's drought declaration in summer 2008 underscored, water is a scarce resource. The boards' work will have a profound impact on California's future: Clean water is essential to the environment, the economy and the state's well-being.

Despite the importance of water, there are ominous signs of water quality problems throughout the state. The ecological health of the Sacramento-San Joaquin River Delta, the country's largest estuary and the key cog to the state's daily efforts to deliver water from water-rich Northern California to parched Southern California, is

deteriorating, partially due to water quality problems. Fish that rely on the Bay Delta, from the Delta Smelt to the Chinook Salmon, are disappearing, due to a combination of factors, including water pollution. Beaches are closed due to water quality issues, and groundwater in parts of the Central Valley is tainted with contaminants.

As these problems indicate, the state and regional water boards face enormous challenges as they attempt to find and lessen the sources of pollution.

Urban stormwater is one of the biggest challenges the state faces. Stormwater pollution is essentially caused by modern city life, as rainwater sweeps metals, lawn fertilizer and other pollutants from city and suburban streets into nearby streams, lakes and the ocean. These sources of pollution are diffuse and difficult to control. For example, the San Francisco Bay regional board has been working for a decade to determine ways to reduce copper pollution in the Bay. The answer may lie in changing the composition of brake pads in cars, which leave copper residue on roads that is pushed into the Bay during storms.

No topic dominated the Commission's study like stormwater regulation. It is the area in which the boards' patchwork of permits has an effect on virtually everyone in California. More than 30,000 stormwater discharges are subject to permits (compared to about 2,200 permits for wastewater treatment) that regulate the behavior of large and small cities, construction sites and industry. A diverse group of water users – the military, small and large businesses, home builders, local governments and more – face enormous costs as they try and control and limit stormwater pollution. Regional boards issue many of the permits, and boards have differing philosophies and policies toward stormwater regulation in the absence of statewide policies and scientific consensus on causes and solutions. As a result, stormwater discharges are subject to significantly different levels of regulation depending upon the region. The costs of cleaning up stormwater are enormous, fueling the debate about who should pay. The costs of stormwater pollution, however, are far greater, as beach closures impact the state's economy and environmental damage threatens to impair wildlife.

Other problems are equally difficult. Agricultural runoff contaminates water throughout the Central Valley and other regions, and efforts are just getting underway to address it. Many regions are seeking to lower levels of salinity in water, which limits its use for drinking supplies or irrigation. So-called legacy pollutants, which

settled into waterways years, decades or even a century ago, remain harmful today. Mercury used to aid gold mining in the Sierra Nevada in the 1800s continues to pollute many northern California water bodies.

And while implementation of the federal Clean Water Act and the state's Porter-Cologne Water Quality Control Act, the two key laws governing water quality, have made profound improvements in wastewater treatment discharges, wastewater remains a critical statewide problem. Local governments, representing small, poor communities as well as larger, richer urban areas, are struggling to pay for upgrades needed to protect the state's waters and ensure they are safe to swim in, fish in or drink. An EPA report noted that California would need to spend more than $18 billion to properly upgrade and expand wastewater treatment.

In its study of California's water boards, the Commission focused on the boards' role in water quality regulation, by design excluding the state water board's administration of water rights. Quality and supply and the rights to that supply are profoundly intertwined and worthy of broader analysis and discussion. The Commission urges the state to use this report as a guide to improving water quality regulation, as well as a starting point for the important discussion on the much larger water issues facing the state, a discussion that must embrace water rights, water supply and restoration of the Sacramento-San Joaquin River Delta. Clean water is essential to the state's water future, but clean water is an unattainable goal without clear policies on the state's other pressing water issues.

Through public hearings, meetings of two Commission-created advisory committees, extensive interviews with stakeholders and a review of available research, the Commission identified the following critical problems with California's efforts to regulate and improve water quality:

- ***The relationship between the state and regional boards is not well-defined, leading to inconsistencies and inefficiencies among boards, an inability to set statewide priorities and a lack of focus on holding regional boards accountable for clean-water outcomes.*** In statute, the state board has significant authority to steer regional board policies and provide statewide leadership. In practice, however, the state board does not provide enough oversight and regional boards have dramatically different approaches to similar problems, statewide priorities are unclear and there is not enough effort

to understand which regional boards are the most effective at implementing clean water laws.

- ***The state and regional boards lack mechanisms to collect and analyze data properly, use scientific research and cost-effectiveness reviews to drive decision-making and provide useful information to the public, policy-makers and other researchers.*** Regional boards acknowledge they do not always have sufficient data to make decisions, determine whether programs are effective, or analyze whether the costs of regulation are worth the incremental benefits to our water supplies. The state has struggled to implement an information technology system and coordinate scientific research so that it is applied in regulatory processes. Basin plans, the key regulatory document dictating most regional board processes, are out of date in most regions.
- ***An antiquated regional board structure limits candidates for regional boards, hinders transparent decision-making and asks volunteer board members to do too much.*** Regional boards face complex decisions that require water expertise that some board members do not have. Compounding that difficulty are ex parte rules that limit board members' ability to communicate with stakeholders, who in turn feel they are not able to work with boards in a collaborative manner. Federal and state conflict-of-interest provisions dramatically limit the pool of potential qualified candidates.
- ***The appeals process is broken.*** Few stakeholders expressed confidence in the appeals process, arguing it was unclear why the state board decided to hear an appeal or not, and that the state board often appeared unwilling to overturn regional board decisions. In addition, because of their role as an appellate, the state board is reluctant to intervene in regional board matters that could benefit from a state board perspective before appeals are needed.
- ***The state – both water boards and other state agencies – is struggling to adapt appropriate strategies to address non-point source pollution.*** Non-point source pollution provides enormous challenges to the state and will require multi-agency responses, but the state has no structures in place to address water quality problems that stem from land use, centuries-old pollution and air pollution. Urban stormwater is a vexing problem with costly solutions, yet the state has not developed an adequate system for assessing and prioritizing this problem and other non-point source pollution problems.

Inherent to the water boards' inability to achieve better results is the governance structure. Regional decision-making is a cornerstone of California water quality regulation, and it remains a sound structure, due to differing local conditions. But the boards have become too autonomous, and despite efforts by the state board to close the gulf between the boards, the structure creates in appearance and practice 10 different agencies instead of one. State board members, as co-equal gubernatorial appointees with regional board members, have been unable or unwilling to exercise authority over the regional boards. Examples abound of differing policies and processes at different regional boards that are incompatible with the goal of a coherent and cohesive state policy on water quality. Regional boards have had dramatically different policies on water recycling, a key statewide issue, for example. And boards have different methods of defining impaired water bodies, unduly complicating efforts to compare problems in different regions.

In part due to this autonomous structure, there is little focus on clean-water outcomes or accountability. Regional boards admit they have difficulty in analyzing watersheds to determine whether their programs are protecting and improving water quality – the boards' focus on issuing permits and determining whether dischargers abide by permits leaves too few resources dedicated to analysis of whether anything is actually working. In addition, the state board has made little effort to understand why regional boards have dramatically different enforcement statistics, even accounting for size. While the state board does have the authority to set statewide policies, set budgets and hear appeals of regional decisions, a disconnect remains between the state board and the nine regional boards.

The boards also acknowledge they have difficulty prioritizing water quality problems. Seventy-four separate revenue streams, most of which must be spent on specific purposes, prevent the boards from shifting resources toward planning or enforcement, for example. During these dire economic times, it is unlikely that the boards will receive more state funding. But they should have more flexibility to match existing resources with priorities.

In addition to the difficulty in pointing resources toward the most pressing problems, the boards fail to use any type of cost-benefit analysis to help determine priorities. While full-scale cost-benefit analysis is costly and may not be warranted in many regulatory proceedings, the boards could do a better job of considering costs to find the quickest, cheapest solutions to improve and protect water quality. Simply ignoring the costs of compliance means that, too

often, the price is not worth the prize when the boards set tough standards.

Underlying many of the conflicts facing the boards is a lack of data and scientific research as well as poor information technology systems. This has led to continual conflict among boards and stakeholders over information, before even beginning the discussion on proper policy.

Data collection remains a key problem. Water quality monitoring is sporadic throughout the state, leaving water boards to regulate on the basis of incomplete information. A 2004 report noted that as much as 75 percent of the state's rivers, streams, lakes and reservoirs were unmonitored. The boards struggle to organize what data they do have, however. One analysis of the water boards' program to protect and enhance wetlands was hampered because more than 40 percent of the files for the program could not be located.

The state board has struggled to implement a new IT system, making it difficult for the public, policy-makers and even board staff to conduct basic analysis. Incredibly, many board programs still rely on paper records, rather than computerized data. Environmental groups, such as the California Coastkeeper Alliance and Heal the Bay, are much better at using water board data to provide valuable information to the public than the boards can themselves.

And while the boards conduct and fund scientific research, the state has thus far done a poor job of coordinating or consolidating that research or working to infuse it into regulatory programs. Much more research is needed – the boards face a difficult challenge in regulating non-point sources such as stormwater, as there remains a lack of knowledge regarding the best, most cost-effective methods for reducing this kind of pollution – but the boards have failed to use science available to them in an efficient, effective manner.

The lack of data and science mean that the core regulatory document for each region – the basin plan – often is decades out of date. As basin plans guide virtually all regulations in each region, this undermines the legitimacy of the state's regulatory efforts. Basin plans list the uses of water bodies and the limits on contaminants in each of the water bodies to support those uses. Despite this, the state has not committed the resources to update them: Less than 3 percent of the boards' nearly 1,600 employees are dedicated to updating basin plans. The boards' funding structure, which relies mostly on fees to support specific permitting programs and almost no

General Fund dollars, leaves little money available for this critical task. The state must give this task higher priority, commensurate with the role the plans play in ensuring and protecting water quality.

In addition to such basic information problems, the boards' appeals process undermines confidence in the board system. The state board is the appellate body, and acts when petitions are filed protesting a regional board action. The state board rarely overturns regional board decisions, however, and the state board does a poor job of explaining to stakeholders how it considers appeals and why appeals are denied. In addition, the appellate role prohibits the state board from taking a more active approach to regional board issues before conflicts lead to appeals and later, costly litigation. Stakeholders suggested there is a reluctance to launch an appeals process, for fear of reprisal.

Regional board members face an increasingly difficult job, particularly for a position that is essentially a volunteer post. Permits and other issues facing board members involve complex issues that are difficult for many board members who lack technical water backgrounds to understand.

Adding to the difficulty of the job are outdated ex parte rules that often prohibit board members from interacting with stakeholders outside of time-constrained public meetings. This works against the kind of communication between stakeholders and board members required for problem solving, and leaves water users and others in the water community with no avenue to discuss complex issues with board members.

A federal and state eligibility/conflict-of-interest rule, dubbed the 10 Percent Rule, eliminates many potential board members from consideration for an appointment, making it difficult for governors to fill 81 regional board positions. Five of the nine regional boards had one-third of their board positions unfilled during periods of the Commission's study. This high vacancy rate impairs boards' abilities to establish quorums and conduct important business.

Even the smoothest-running government agency, however, would struggle with the challenges facing the water boards. Modern water pollution problems are increasingly difficult and increasingly outside of the typical regulatory purview of the boards. Some studies, for example, suggest that mercury contamination in waters along the California coastline is caused by coal-burning power plants in China.

The state must understand that water pollution is a critical problem that will require creative, multi-agency responses. Aerial deposition, for example, creates water pollution, and will require a joint response from water and air regulators. Land-use planning has a profound impact on water quality, requiring more thought from the state and local governments on how to slow and capture fast-moving stormwater that collects pollutants and deposits them in our waters.

All of these problems require important structural and procedural changes.

Toward a Reformed State Agency

A new, ideal system should include the following characteristics:

- ***A unified state water quality agency.*** Completely distinct regional boards may have been appropriate in past decades, but current common problems – urban stormwater, for example, or impairments caused by the same contaminants – call for a more centralized regulatory approach unified by a common vision and common processes. A unified state agency can better identify key problems and priorities in the state and align resources to address those problems. Efficiencies gained by a stronger bond between the state and regions will lead to clean water outcomes faster and cheaper.
- ***Local input.*** The need for local input on water quality objectives remains important, as water bodies are unique, with their own problems and solutions. Water quality objectives should continue to be set at the regional level, with vigorous debate and discussion among local stakeholders, while still subject to state oversight.
- ***A focus on accountability and outcomes.*** The public, and policy-makers, have a right to clearer information from the boards as to the state of the state's waters, and to which programs are effective – and which are not. Additionally, the boards must re-focus their mission, from ensuring that dischargers are abiding by their permits to this fundamental question: Are the state's programs protecting and improving water quality?
- ***Integrated science, accessible data.*** As water pollution problems increase in complexity, there is a need for a stronger scientific presence within board programs. The state board needs scientific advisors to help guide and coordinate research and utilize that research in regulation. In addition, the boards' dearth of water quality data must be rectified, and

> it can be: There are numerous federal, state and local agencies, as well as other groups, collecting information. The state must pull that information into an integrated system that allows the boards and others to access and use the information that already has been gathered.

To increase efficiency, improve cohesiveness between the state and regional boards and to better develop statewide priorities, the state board and regional boards must be reformed. The Commission proposes creating a 9-member state board, with five of the board members representing statewide perspectives. The remaining four members would be chairpersons of regional boards, serving staggered, two-year terms on a rotating basis. Regional board chairs, as well as the five state board members would be full-time, appointed by the governor and confirmed by the Senate.

Regional boards should be reduced in size from nine to seven members, with the six part-time members – aside from the chairperson – paid a per diem. The six part-time regional board members should represent various constituencies, including local government, industry, agriculture and nongovernmental organizations, as well as one spot reserved for a scientist or engineer with a background in water issues. Regional boards' missions should focus on broad policy issues, such as updating basin plans and setting regional priorities.

Regional executive officers, and the executive director of the state board, would have expanded authority to issue permits, allowing the boards to focus on quasi-legislative actions such as developing up-to-date basin plans. Permits would continue to be issued in public hearings conducted by executive officers or the executive director. Regional executive officers would report to the executive director of the state water board.

This new model would allow a stronger tie between the state and regional boards, create a "strong chair" model at the regional boards that would create new board leadership in the regions and at the state level and focus the state regional boards on policy, not permits. The state board would have better understanding of regional issues, and vice versa. The model retains the idea of regional decision-making, however, allowing regional input on setting water quality standards and beneficial uses. By reducing the regional board size, governors should have an easier time filling all board positions.

Other changes also are needed.

Ex parte rules must be reformed to allow more communication between decision-makers and stakeholders. The regulated community should have greater opportunity to talk with board members who have such significant power to influence their activities. The boards should adopt rules similar to those used by other state regulatory boards such as the Integrated Waste Management Board, which allow communication between regulators and the regulated as long as it is disclosed at public meetings. These new rules should extend to executive officers if they are issuing permits.

A separate appeals board, comprised of water experts and appointed by the governor, should be created to hear appeals of state and regional decisions. This would restore confidence in the appeals process and allow the state board to become more active in regional board decisions before they are made.

To increase regional board accountability and provide better information to the public, the state should create easy-to-understand report cards for major water bodies throughout the state. Modeled after the report card issued by the environmental group Heal the Bay for state beaches, the report cards would provide the public with clear information about whether waters were safe to use, and whether board regulatory programs were effective. The state would need to conduct a thorough, inclusive process to determine the criteria for issuing grades, and report cards could be produced by either the state board or an outside entity, such as a water research institute like the Southern California Coastal Water Research Project or the University of California.

The boards must improve their use of science and data. The state should create a water science advisory board to help the state board determine needed areas of research, coordinate various research projects going on across the state and help the water boards incorporate research into regulatory programs. No new bureaucracy is needed – the board would consist of experts in water science who would provide advice to the state water board during regular meetings staffed by the state board.

Along with creating these new avenues to increase the use of science at the boards, the state is in desperate need of a water quality data library. The state should create an independent water data institute that would serve as a link to various federal, state and local agencies, as well as other groups, that gather water quality data. An independent institute would provide a clearinghouse where the public and policy-makers could find and compare water data. This would

help the state leverage all of the water data that is gathered by various entities around the state but is currently not organized and analyzed.

Of critical importance to the water boards' effectiveness is updating basin plans in every region. The boards' reliance on out-of-date basin plans, of which many are simply unresponsive to the current, non-point water pollution issues the boards face, hinders many of their programs. The boards should emulate the model created by the Santa Ana Regional Water Quality Control Board, which created a stakeholder task force that led to robust research, consensus-building and a largely re-written basin plan in 2004. Stakeholders – not the cash-strapped state – funded the basin plan update. Authorizing regional board executive officers to issue permits and take other quasi-judicial actions will free up the board members to focus on modernizing basin plans.

The water boards, and other state agencies, must focus on solving water quality problems in creative and collaborative ways. The water boards must increase the use of public education programs, and stakeholder task forces to confront current and complex issues, as well as improving their use of regional monitoring to determine the overall effectiveness of problems and spot new trends. The boards should find ways to examine watersheds and develop solutions that increase watershed health. Water quality regulators and air quality regulators must work together to address air pollution's effects on water, and discussion must occur among state leaders regarding land use decisions that impact water quality.

Finally, the water boards should incorporate cost-effectiveness tests into their analysis of programs to help them prioritize and find the most cost-effective solutions to water quality problems. The goal is not simply to eliminate costly fixes, but to help the regulated and regulators find ways to improve water quality in the most cost-efficient manner possible and meet statutory requirements to balance water quality needs with other factors, such as economics.

Throughout its review of the water boards, the Commission met many board members and staff who were professional, dedicated and tireless in their mission of protecting water quality. Many were aware of the criticisms of the boards' structures and processes and working diligently to improve the boards. Efforts are underway at the state board to improve the information technology system, for example, and to adopt more statewide policies that provide direction to regional boards. The problems the Commission found were not due to a lack of passion or professionalism by board personnel, but rather

structural and systemic issues that can be and must be changed. This gives the Commission confidence that the water boards can improve their performance in the coming years.

Recommendation 1: To move toward a more consistent, transparent and accountable governance structure that allows for both statewide policy and regional flexibility, reform the State Water Resources Control Board and the Regional Water Quality Control Boards by strengthening ties between the boards, refocusing the boards on broad policy-making and restoring confidence in the appeals process. Specifically, the state should:

- Restructure the State Water Resources Control Board as a full-time, 9-member board charged with creating state policy, setting priorities and overseeing regional board activities. Members of the board should be appointed by the governor and confirmed by the state Senate. Five members of the state board would serve solely as state board members, including one person who would be chairperson of the state board, as named by the governor. These members should have the following backgrounds: One in engineering, one in water rights law, one in water quality, one in water-related science or resource economics, and another would represent the public. The position of regional chairperson would become full-time. Four regional chairpersons would serve on the state board for staggered, two-year terms, with membership rotating among all nine regional board chairpersons.
- Reconstitute the nine Regional Water Quality Control Boards as seven-member boards with six part-time members and a full-time chairperson, all appointed by the governor. The chairperson would be charged with monitoring statewide policies that are implemented at the regional level. Boards would continue to be stakeholder-boards, with six part-time members with the following backgrounds: experience in water supply, conservation or production; irrigated agriculture; industrial water use; local government; water science or engineering; and experience with a nongovernmental organization associated with recreation, fish or wildlife. Regional boards would focus on updating basin plans, adopting Total Maximum Daily Loads and other quasi-legislative functions.
- Empower the executive officers of each Regional Water Quality Control Board and the executive director of the State Water Resources Control Board to issue permits, allowing the boards to focus on updating basin plans, setting broad policy and focusing on upcoming water quality challenges. Executive

officers would become Career Executive Assignment positions and report to the executive director of the State Water Resources Control Board. Regional boards would conduct an annual evaluation of the executive officer that would be taken under advisement by the executive director.

- Exempt state and regional board members, regional board executive officers and the state board executive director from ex parte rules within the state Administrative Procedure Act that prohibit interaction with regulated entities. Instead, require board members and permit-issuing executives to disclose their contacts with regulated entities at public meetings, as is currently done by other boards such as the Integrated Waste Management Board.
- Create a new appeals board that would address appeals of quasi-adjudicative functions such as permits and enforcement actions. Removing the appeals process from state board jurisdiction would restore confidence in the process and allow the state board to take a more proactive approach in regional board issues. The members should have backgrounds in water issues and would be appointed by the governor to hear appeals. The board would follow Administrative Procedure Act policies in conducting hearings.

Recommendation 2: The state must improve and increase its use of data, scientific research and planning to better inform the public, respond to current and future water quality problems and focus more on accountability. Specifically, the state should:

- Create a Water Science Advisory Board for the State Water Resources Control Board. Members, appointed by the state board, should have backgrounds in environmental science and engineering. The board would help both the state and regional water boards and other state water agencies coordinate research, propose needed research, advise the boards on how to incorporate research into regulatory processes and increase the effectiveness of scientific peer review.
- Create an independent Water Data Institute that would act as a state library for water quality and supply data. The institute would pool information from various state agencies and other water monitoring groups to provide accessible information to the public, regulators and researchers.
- Develop report cards. Report cards for each major water body should allow the public easy access to information they can use and could act as a way to hold regional boards

accountable for their effectiveness. The report cards should be developed and published by regional science institutes or an independent entity, such as the University of California.

- Launch a statewide effort to ensure that all regions have up-to-date basin plans. Regional boards should propose stakeholder-financed efforts similar to the one conducted by the Santa Ana Regional Water Quality Control Board.

Recommendation 3: The state must increase focus on clean-water outcomes and emphasize collaboration, creativity and problem-solving to address current water quality problems. Specifically, the state should:

- Collaborate with other government agencies. Because land use, automobile emissions and other factors outside the traditional purview of the water boards are major contributors to non-point source pollution of water, the water boards must work with other government agencies on solutions. The state water and air boards should routinely meet to develop regulatory strategies to address air pollution's effects on water. The state should revive the Environmental Protection Council, which already exists in statute and consists of the heads of each of the boards and departments within Cal/EPA.
- Emphasize a watershed approach. To increase focus on outcomes and solving complex problems, the water boards should develop more processes aimed at watershed health.
- Use stakeholder task forces. As the Santa Ana Regional Water Quality Control Board has done, other regional boards should increase the use of stakeholder task forces to work through difficult regulatory issues.

Recommendation 4: The water boards must develop standardized economic analysis procedures to help set priorities and determine the most effective and efficient means to improve water quality.

- To fully implement Porter-Cologne's demand that water quality regulations be reasonable, given other economic and social factors, the boards must institute the use of economic analysis into decision-making. Cost-effectiveness analysis also would increase transparency of board decision-making and help the boards set priorities.

Background

As the state's lead water regulators, California's state and regional water boards are water cops with vast influence on the environment, economy and urban planning.

The boards' mission is as complex as the state is diverse, protecting water quality everywhere from the rain-soaked North Coast and the San Francisco Bay Delta to the Mojave Desert and the concrete streambeds of Los Angeles.

Collectively, their jurisdiction includes 10,000 lakes, 200,000 miles of rivers and 3,000 miles of coastline.[1] The boards police more than 100 contaminants, ranging from the mercury that has polluted water since the Gold Rush to the trash generated by modern city life. They issue more than 50,000 discharge permits to the biggest cities and the smallest wastewater treatment plants.[2]

Today, the state and the boards face enormous pressures on water, one of California's most valuable assets. Continued population growth strains publicly-owned systems designed to treat and dispense wastewater. Pollution caused by everything from automobile brake pads to lawn fertilizer surge from city streets into streams, rivers and the ocean when it rains. In rural California, pesticides and animal waste, produced by an agricultural industry that is a key driver of the economy, pose continuing threats to community drinking water. Throughout the state, the use of water for agriculture, wastewater treatment and other necessary functions increases salinity in water, complicating its re-use.

Adding to the boards' difficulties is this: Only a fraction of the state's waters are monitored and assessed. We truly cannot answer the most basic questions concerning the state of the state's waters: Is California water safe to drink, safe to swim in, safe to fish in or safe for aquatic life? For a majority of the state's waters, we do not know.

Amid these challenges, the need for clean water has never been greater. The state Department of Finance projects California will grow to 48 million people by 2030, with much of the growth occurring in water-poor Southern California.[3] While the state currently meets most of its agricultural, municipal and industrial water needs most

years, demand is growing. Water conservation practices have been effective – cities use about the same amount of water today as they did in the mid-1990s, despite adding 3.5 million more people.[4] Water use in urban areas, however, is expected to grow to 11.4 million acre-feet in 2020 from 8.8 million acre-feet in 2003, a 77 percent increase.[5] On top of this growing demand, experts believe global climate change will reduce the state's snow pack, which is a key source of water; increase sea levels; and, otherwise alter the state's hydrologic conditions.

Water quality is a key factor in the state's ongoing discussion on water supply. In short, water quality is water supply. Clean water is needed for drinking water, to help fish and to help farmers. Recycling both wastewater and urban stormwater are clearly needed to handle inevitable growing demand. Thus, as water quality is critical to the state's future, so too are the state and regional water boards.

The Commission took up the study of California's state and regional water boards to determine whether their structure and duties, and their relationship to each other, were adequate and appropriate for the challenges they face today. The boards and their staff members work hard and face complex problems. The issues regularly are contentious. The stakes are immense for Californians today and tomorrow.

From 'The Big Stench' to Porter-Cologne

The beginning of water quality regulation in its present form dates to the Dickey Water Pollution Act of 1949, which created nine regional boards and the State Water Pollution Control Board. At the time the new law was passed, California's post-war population was swelling, raw sewage was dumped directly into the ocean and Central Valley steams were inundated with industrial waste.[6] The Berkeley shoreline of San Francisco Bay was referred to as "The Big Stench" in the 1940s because of the pollution – human, industrial and other – draining through the city to the bay.[7] Prior to the Dickey Act, the official response to the outbreaks of water-borne disease and major degradation of state waters was a confusing and ineffective jumble of local and state governmental jurisdiction over water quality policy.

The Dickey Act marked the first major effort to implement state oversight of water quality. The nine-member state board and five-member regional boards created through the act were invested with the authority to impose requirements on discharges into water. It

also created a regional approach to water quality regulation that continues today. "Water pollution is largely a local or regional problem," members of the Assembly Committee on Water Pollution, who drafted the act, concluded.[8]

While the structure created by the Dickey Act remains, many of its philosophical and practical underpinnings since have been discarded. The Dickey Act, for example, considered waste disposal a beneficial use of water; that is not the case today. The Dickey Act also did not give the state the authority to require dischargers to clean up discharges that were in violation of requirements.[9]

In part because of these issues, California lawmakers and regulators called for an update of the Dickey Act in the late 1960s.

That overhaul was unveiled in 1969 as the Porter-Cologne Water Quality Control Act, ushering in the modern era of water quality regulation. Named for Assemblyman Carly V. Porter and Senator Gordon Cologne, the law was described as the toughest water quality act in the nation.[10]

Porter-Cologne outlined concepts that continue to be the cornerstone of state water quality policy today:

- ***Discharge is a privilege, not a right.*** Porter-Cologne's preamble states that "the quality of all the waters of the state shall be protected for use and enjoyment by the people of the state," and the act allowed the state to permit all discharges to surface water and ground water, and prohibit discharges entirely – a broad and powerful mandate.
- ***Reasonableness is required.*** Despite that broad authority, however, the law requires regulators to balance environmental protection with other factors. The "waters of the state shall be regulated to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible," according to the statute.[11]
- ***Basin plans as the underlying regulation.*** Regional boards were required to develop water quality control plans, which would set the uses of each water body in the region, the water quality objectives needed to meet those uses and a program to ensure implementation of those objectives. These so-called "basin plans" remain the core regulatory document for each region today.

Levels of Wastewater Treatment

There are three levels of wastewater treatment. The Clean Water Act requires secondary treatment for most wastewater treatment plants in the United States:

- ***Primary.*** Mechanical methods, such as filters and scrapers, are used to remove pollutants. This process removes solid materials.
- ***Secondary.*** Biological methods, which reduce organic matter through bacterial metabolism, are used to remove pollutants.
- ***Tertiary.*** Mechanical, biological and chemical methods, which remove nutrients or other pollutants that resist other treatments.

California's enactment of Porter-Cologne was part of a burgeoning environmental movement in the state and around the country sparked in part by dramatic examples of water pollution, most notably a spectacular fire on the pollutant-soaked Cuyahoga River in Cleveland and a massive oil spill that marred the Santa Barbara coastline.

Following Porter-Cologne, the United States Congress enacted the Federal Water Pollution Control Act Amendments of 1972, now commonly referred to as the Clean Water Act. The act emulated many aspects of California's groundbreaking law.

State, Federal Acts Provide Broad Mandate

Both Porter-Cologne and the Clean Water Act are remarkable for their broad ambition. Porter-Cologne demands the "quality of all the waters of the state shall be protected." The Clean Water Act goes even further, stating that a national goal for the discharge of pollutants into the navigable waters to be eliminated by 1985, with an interim goal that "water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983."[12]

Critics of these lofty goals note two problems. By calling for the protection of all waters, Porter-Cologne makes it difficult for the state's water regulators to set priorities. In addition, few could argue that Congress or the California Legislature have ever funded the environmental agencies charged with carrying out these laws to the level needed to accomplish their enormous tasks.

UC Berkeley Professor of Law John Dwyer included the Clean Water Act as an example in his 1990 paper titled "The Pathology of Symbolic Legislation," in which he argued that Congress approves unrealistic environmental legislation to score political points, while leaving regulatory agencies, and, often the courts, to turn symbolic goals into reasonable standards and programs.[13]

The Clean Water Act, still the central federal law governing water quality, sought to protect the country's surface waters in two key ways. Water quality standards must be set for specific water bodies, and permits are issued requiring dischargers to use the best available technology to meet those standards. The permit program is called the National Pollutant Discharge Elimination System (NPDES). The

NPDES program required minimum standards based on the best available technology, and thus most municipal wastewater treatment plants upgraded to what is referred to as secondary treatment.

For the first decade of the Clean Water Act, regulators focused on implementing technology-based standards on point source discharges – contaminants that came out of the end of a pipe.

That focus began to shift in the mid 1980s and early 1990s, however, to the Clean Water Act's second approach to protect water quality, one that emphasized outcomes as measured by the condition of water bodies. This part of the act requires states to assess water quality, determine which water bodies are unhealthy and then take steps to improve those "impaired" water bodies. Each state is required to produce a list of impaired water bodies, referred to as the 303(d) list. Once a water body is listed as impaired, the state is required to prepare a total maximum daily load (TMDL), which determines the amount of pollutants that can be safely discharged into the water. This determination, essentially a pollution budget for each water body, then is used as a basis for assigning discharge limits to each discharger into the impaired water body.

Though both were original components of the Clean Water Act, the impaired water bodies list and the creation of total maximum daily loads largely were ignored by the United States Environmental Protection Agency (US EPA) and states until environmental groups, through successful litigation, forced regulators to comply. In California, lawsuits have led to consent decrees requiring water boards to develop TMDLs in three areas of the state in adherence with timelines developed in court.[14]

The strict new requirements served as a stick to improve water quality. Historically, the Clean Water Act also provided a carrot: federal money. The act's generous Federal Construction Grant Program initially covered 75 percent of project costs for wastewater treatment plants and upgrades and launched the largest nonmilitary public works program since the Interstate Highway System.[15] Since 1972, the federal government has contributed more than $76 billion to construct and improve plants around the country.[16] Federal funding amounted to $1.2 billion between 1972 and 1987 in the San Francisco Bay Area alone.[17]

The federal act gave water quality regulatory power to US EPA, but also allowed US EPA to delegate permitting and other duties to the states. California became the first state to assume Clean Water Act responsibilities soon after the act was approved by Congress.[18]

Despite this delegation, US EPA wields significant clout over states. In California, US EPA has final say over numerous programs, and the state and regional boards spend considerable time working with the EPA to ensure they are in compliance with federal regulations. As an example of US EPA's prominence in state and regional board matters, the San Diego Regional Water Quality Control Board declined to approve a stormwater permit for southern Orange County in February 2008 after an US EPA representative spoke out against the permit during a public hearing.[19] The permit is being revised to address the US EPA's concerns.

While Porter-Cologne was amended in 1972 to include language aimed at increasing consistency between state law and the Clean Water Act, there are differences. Among the differences:

- The Clean Water Act does not regulate discharges to ground water, for example, while Porter-Cologne does.
- The Clean Water Act exempts agriculture from regulation; Porter-Cologne does not.
- The Clean Water Act requires water quality standards to be set to the level that protects water, while Porter-Cologne allows regulators to consider other issues, such as economic considerations and past, present and probable beneficial uses of the water body.[20]

Regional Boards: The Frontline for Water Quality

Both of the state's major water quality regulation laws, the Dickey Act and Porter-Cologne, embraced the concept of nine powerful regional boards comprised of representatives of industry, local government and other stakeholders impacted by board decisions. Porter-Cologne expanded the regional board from five members to nine members, as it remains today. The nine members are appointed by the governor, confirmed by the state Senate and must reside or have a business in the region in which they serve.

Source: Adapted from the State Water Resources Control Board. "Regional Boards." http://www.swrcb.ca.gov/regions.html. Accessed March 4, 2008.

The Importance of Basin Plans

Basin plans are the key regulatory document in any region. "The basic purpose of the state's basin planning effort is to determine the future direction of water quality control for protection of California's waters," according to the introduction in the North Coast Regional Water Quality Control Board's basin plan.

Basin plans, called water quality control plans in the Porter-Cologne Water Quality Control Act, fulfill requirements outlined in both federal and state law. Porter-Cologne requires regional boards to develop basin plans that outline the following:

Beneficial uses. There are 23 beneficial uses defined by the state water board, ranging from drinking water to agricultural supply to recreational uses such as swimming. In addition, some regional boards have adopted unique beneficial uses, such as a "cultural" designation signifying water used for cultural purposes such as Native American subsistence fishing in the North Coast region. Basin plans typically list hydrologic units in the basin and the beneficial uses attributed to each segment.

Water quality objectives. Porter-Cologne calls on regional boards to assign water quality objectives that "in the Regional Water Board's judgment, are necessary for the reasonable protection of the beneficial uses and for the prevention of nuisance." In developing water quality objectives, regional boards are required to analyze the following factors:

- Past, present and probable future beneficial uses of water.
- Environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto.
- Water quality considerations that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area.
- Economic considerations.
- The need for developing housing within the region.
- The need to develop and use recycled water.

Within basin plans, water quality objectives can be numeric limits, in which the amount of a contaminant must be less than the regional board requires, or narrative limits, such as the Central Valley Regional Water Quality Board's description of limits on floating material in water, which states, "Water shall not contain floating material in amounts that cause nuisance or adversely affect beneficial uses." While some water quality objectives for specific contaminants are applicable across the basin, there are also site-specific objectives. Water quality objectives become the basis of permits issued by the board.

Implementation plan. Each basin plan includes a discussion of how the board will carry out the protection of water quality, including where discharges are prohibited, action plans for specific water bodies and other policies, such as total maximum daily loads.

Surveillance and monitoring. Basin plans also include descriptions of various monitoring programs within the region.

Basin plans are amended after public hearings, and amendments must be approved by the regional board, the state board, the Office of Administrative Law and US EPA. While the federal Clean Water Act requires states to update water quality standards every three years, regional boards typically only address a handful of issues in basin plans every three years due to staffing shortages. Thus, the last statewide initiative to conduct a major basin plan update was done in the mid-1990s.

Sources: North Coast Regional Water Quality Control Board. January 2007. "Water Quality Control Plan for the North Coast Region." Central Valley Regional Water Quality Control Board. October 2007. "The Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region. The Sacramento River Basin and the San Joaquin River Basin." The Porter-Cologne Water Quality Control Act. Ken Harris, Assistant Director, Office of Information Management and Analysis. October 16, 2008. Personal communication with Commission.

The regional boards' main duties are to:

- ***Create and update basin plans.*** Basin plans are the key regulatory document for each region, listing uses for specific water bodies, standards needed to protect those uses and plans to implement those standards.
- ***Issue permits or waivers.*** Dischargers – be it companies, local governments or even individuals – must receive permission from the regional boards to discharge. Discharges to surface water are issued a permit through the federal NPDES. Discharges to the ground are issued a permit through the state Waste Discharge Requirement (WDR) process. In addition, the boards can issue a general permit for an entire industry, requiring each discharger within the category to file notice with the boards that they are complying with general permit rules. Finally, boards can issue a waiver to a category of dischargers, which typically requires dischargers to pay a fee and participate in water quality monitoring but does not include other requirements. Permits are typically reviewed, updated and renewed every five years.
- ***List, respond to impaired water bodies.*** Regional boards develop biannual lists of impaired water bodies as required by the federal Clean Water Act. To remedy a given impairment, the Clean Water Act requires states to develop total maximum daily loads for each water body, which limit the amount of contaminants allowed into a water body. Each discharger is given a limit through the TMDL, which also includes an implementation schedule.
- ***Monitor discharges and compliance with permits.*** Regional boards require dischargers to monitor their discharges and provide reports to the boards. Some regions also require dischargers to contribute to regional monitoring programs that assess overall water quality in a watershed. As part of their oversight role, regional boards also inspect wastewater treatment facilities and other dischargers.
- ***Enforce regulations.*** Regional boards take enforcement actions, including issuing fines, against dischargers who are violating terms of their permits. Money from fines is placed in the Clean Up and Abatement Account, a fund managed by the state board. Regional boards can request money from the fund for a project, though distribution is controlled by the state board. Regional boards also can enter into an agreement that

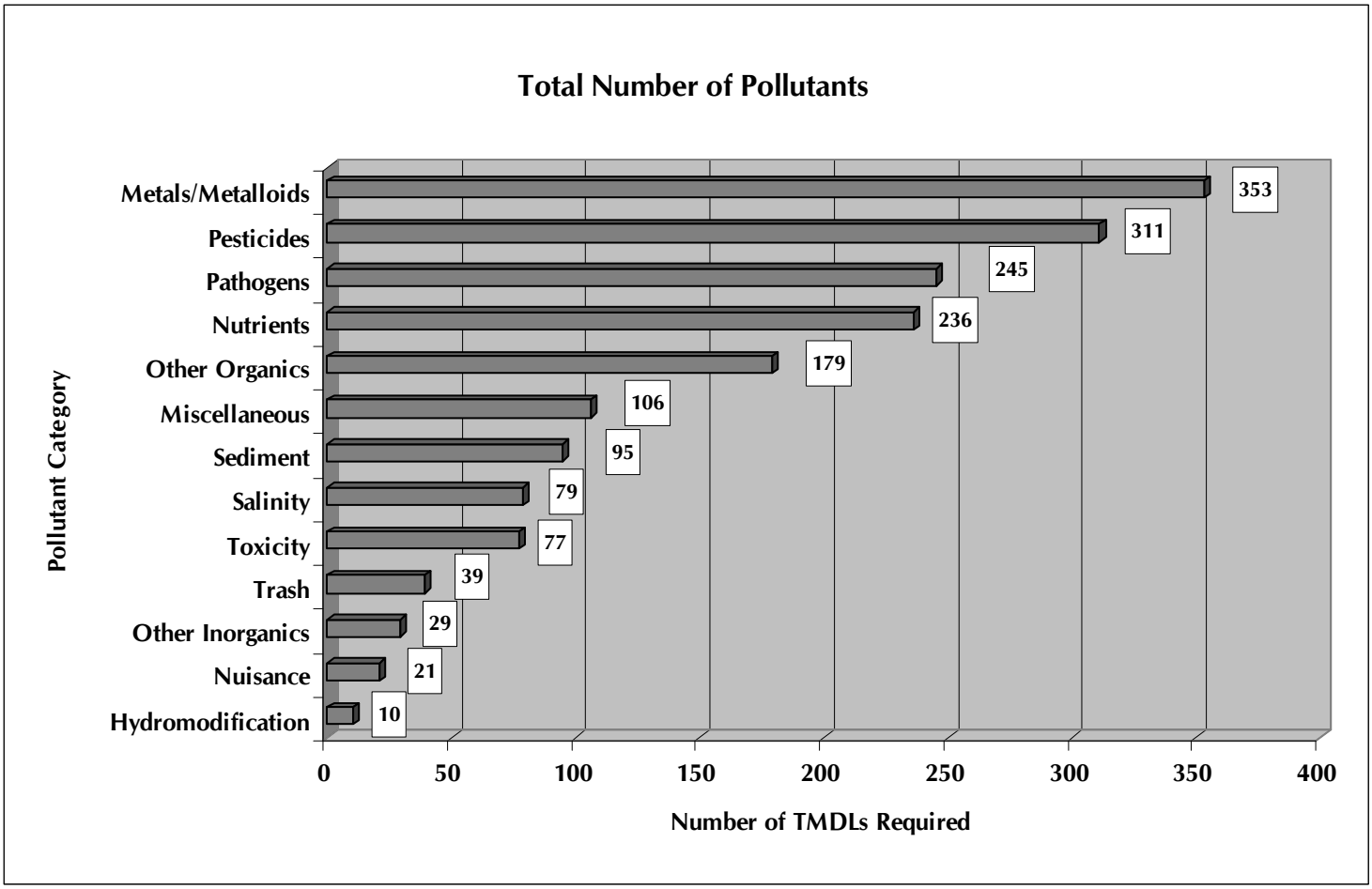
Water Board Statistics

Individual National Pollutant Discharge Elimination System permits cover 639 facilities in the state. Another 1,765 facilities are regulated through a general NPDES permit. About 6,800 facilities are regulated through a WDR permit. In 2006, California had 2,237 impaired water body-pollutant lists. (Water bodies are listed by segment; therefore, the same river or lake can be listed more than once for differing contaminants based on different portions of that water body.) Currently, the state is addressing 1,001 water body-pollutant lists through 134 TMDL plans, though it has considerable work ahead, with 1,780 TMDLs still to be developed.

Sources: State Water Resources Control Board. April 30, 2008. "Water Boards Baseline Enforcement Report, Fiscal Year 2006-07." Pages 18, 25. Also, State Water Resources Control Board and Water Education Foundation. April 21, 2008. "Water Education Workshop for Board Members." Section 3: TMDLs.

can reduce fines in exchange for the discharger performing a supplemental environmental project, or SEP, such as increased monitoring, habitat restoration or public awareness campaigns.

Regional boards typically hold monthly public meetings, in which they vote to adopt permits, take enforcement actions, implement TMDLs and conduct other business.



The chart shows the types of contaminants causing impairments to California waters that require the state to adopt total maximum daily loads or otherwise reduce the amount of the contaminant in water. Pesticides and metals are the leading causes of impairment in the state.

Source: State Water Resources Control Board. "California 2006 303(d) List. Total Number Pollutants Listed by Pollutant Category." http://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/303dlists2006/epa/stats_2006_303dlist.xls. Accessed September 12, 2008.

State Board: Designed to Set Policy, Provide Oversight

In contrast to the regional boards, the State Water Resources Control Board is comprised of full-time board members. Each of the five members is appointed by the governor and confirmed by the Senate. All but one member must represent a specific expertise, including a civil engineer, a professional engineer, an attorney with water rights experience and someone with experience in water quality issues. The governor appoints the chair.

Porter-Cologne's framers intended decision-making largely to be conducted at the regional level, while the state board was to provide oversight and direction for the regional boards. In a presentation to regional board members in April 2008, Third Circuit Court of Appeal Associate Justice Ronald Robie, who years earlier helped draft Porter-Cologne, noted that the act enhanced the role of the state board and renamed the regional boards "California Regional Water Quality Control Boards" to emphasize that they were part of one state agency, not separate, local agencies.[21]

The state board's most important duties are:

- ***Setting state policy.*** Where it sees the need for statewide consistency on an issue, the state board can adopt a statewide policy to guide regional boards. The board currently has 16 statewide policies, on issues ranging from enforcement to implementing toxics standards.

State Water Policies

The State Water Resources Control Board can set statewide policies to help guide regional board policy. Statewide policies are intended to decrease inconsistency among the boards and address important statewide issues. The board has adopted 15 policies, and has amended some of those policies. Here those policies and the dates they were adopted or last amended by the board:

- Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits (April 15, 2008)
- Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options (May 16, 2005)
- Water Quality Control Policy for Developing California's Clean Water Act Section 303(d) List (September 30, 2004)
- Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program (May 20, 2004)
- Water Quality Enforcement Policy (February 19, 2002)
- Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (February 24, 2005)
- Water Quality Control Policy for Guidance on Development of Regional Toxic Hot Spot Cleanup Plans (September 2, 1998)
- Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304 October 2, 1996)
- Water Quality Control Policy for the Enclosed Bays and Estuaries of California (November 16, 1995)
- Policy for Regulation of Discharges of Municipal Solid Waste (July 21, 2005)
- Pollutant Policy Document for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (July 21, 2005)
- Sources of Drinking Water Policy (February 1, 2006)
- Water Quality Control Policy on the Use and Disposal of Inland Waters Used for Powerplant Cooling (June 19, 1975)
- Policy Regarding Water Reclamation (January 6, 1977)
- Maintaining High Quality Water/Antidegradation Policy Implementation for NPDES Permitting (October 24, 1968)

Fees, not General Fund, Drive Boards' Budget

Beginning with the 2002-03 budget, the water boards have increasingly relied less on the general fund and more on fees from permit holders, federal funding and other special funds to sustain their activities. The General Fund contributed more than $101 million to the boards in the 2001-02 budget year, for example, but only accounts for $38.7 million in the 2008-09 budget year. In 2008-09, the General Fund comprises only about 5 percent of the boards' $733 million budget.

Board activities are funded by 74 separate revenue streams in the 2008-09 budget year, with most of the streams funding specific programs.

Thus, as the boards' duties have grown, along with the economy and population, the state has contributed less and less to their mission. The boards have the authority to raise fees every year, but that funding level is set by the Legislature and governor during the budget process.

- ***Reviewing regional board activity.*** The state board reviews and approves or denies some regional board actions, including basin plan amendments and TMDLs. The state board also has authority to set the regional boards' annual budgets.
- ***Issuing statewide permits.*** The state board also issues some statewide permits, such as stormwater permits for urban areas under 100,000 people, industrial uses, construction and the state Department of Transportation.
- ***Providing financial assistance.*** The state board oversees the distribution of federal and state dollars to help improve water quality. Funds administered by the board include the Clean Water State Revolving Fund Program, which provides about $400 million annually in loans to help improve wastewater treatment facilities and other improvements and the Clean Beach Initiative, which uses voter-approved bond borrowing to improve water quality along the state's coastline.
- ***Hearing appeals.*** The state board acts as an appellate for many regional boards quasi-adjudicatory decisions. Actions taken by regional boards, such as permitting and enforcement, can be petitioned to the state board. The state board determines whether to hear the petition and can then uphold the regional boards' action, remand the action back to the regional board with instructions on changes the state board desires, or take some other action, such as making changes to a permit or enforcement action on its own.

- ***Monitoring.*** The state board operates statewide monitoring programs, such as the Surface Water Ambient Monitoring Program (SWAMP), or Ground water Ambient Monitoring and Assessment (GAMA), with the goal of providing statewide water quality information and trends. The board also staffs the new California Water Quality Monitoring Council, which was created through legislation in 2006 and is charged with working to coordinate various monitoring efforts throughout the state to provide better water quality information to the public.
- ***Water rights.*** The state board has broad power to determine who can use surface water in the state. The board issues water rights permits, approves changes in water right permits,

and enforces permits. The Commission did not review the board's administration of water rights.

The State-Regional Relationship

The history and structure of the regional water quality control boards have important implications for implementing statewide water policies and establishing common standards. Just as all of the members of the state board are appointed by the governor, so too are all the members of each of the nine regional boards, making them semi-autonomous units. In addition, basin plans crafted in each region can set different limits on the same contaminants in different water bodies based on local conditions.

Despite language in Porter-Cologne stating that the state and regional boards "shall, at all times, coordinate their respective activities so as to achieve a unified and effective water quality control program in this state," California's approach to safeguarding and improving water quality relies on an inherently inconsistent system.[22]

In her testimony to the Commission, state board chairwoman Tam Doduc described the state boards' formal oversight of regional board activity as hearing petitions of regional board decisions, setting state policies, approving basin plan amendments and setting the budgets of regional boards.

Attorneys for both the state and regional boards are located together in Sacramento to ensure that legal advice provided to the boards is consistent.

There are other avenues to increase consistency among boards, which has been an issue championed by chairwoman Doduc during her tenure. Executive officers of the regional boards meet monthly with the state board executive director. All state and regional board members meet occasionally as the Water Quality Coordinating Committee. The committee met in San Diego in April 2008, for example, for a two-day seminar for regional board members on the water boards' history and current challenges, and again in October 2008 for a two-day seminar that included discussion of innovative practices at different regional boards.

Though statutory language requires consistent policies and procedures, critics of the current system say the relationship between the state and regional boards is ill-defined. Several reform efforts in the past five years have sought to alter the relationship between the

boards, arguing that a different structure would better focus the state's strategy and use its resources more efficiently. Those efforts, all of which failed, include:

- ***2003: Abolishing the boards.*** Governor Schwarzenegger's California Performance Review (CPR), launched soon after he took office in 2003, sought to abolish both the state and regional boards as part of a major overhaul of the California Environmental Protection Agency (Cal/EPA). The overhaul would have shifted many environmental regulation duties from the quasi-independent boards to state departments. The CPR called for a new division within Cal/EPA, called the Division of Water Quality that would have issued discharge permits, developed basin plans and performed most duties of the boards. Backers of the idea suggested that placing a state department in charge of water regulation would increase consistency and efficiency throughout the state. Opponents attacked the plan in part because it could limit the public's ability to shape policy.
- ***2005: Giving the state board more authority over regional staff.*** AB 1727 (Aghazarian) would have allowed the state board to appoint the executive officer of each regional board. As the top staff person in each region, executive officers have tremendous power to set staff priorities and shape policy. Currently, executive officers are exempt positions in state government and are hired and fired by the regional boards. The 2005 proposal, sponsored by the Schwarzenegger administration, sought to give executive officers more power to issue permits and, by giving hiring authority of executive officers to the state board, give more control over daily policy to the state board.
- ***2007: Revising the composition of the regional boards and giving the state board more authority to usurp regional boards.*** SB 1001 (Perata) sought to reduce the number of regional board members to seven from nine and broaden qualifications for board members to allow anyone with a "demonstrated interest and proven ability in the field of water quality" to be eligible for a regional board position.[23] A component of this legislation allowed the state board to assume the duties of a regional board if the state board determined the regional board was not complying with state and federal water quality laws.

Water Quality Regulation Has Improved State's Waters

Porter-Cologne and the Clean Water Act as well as the work of water regulators have significantly improved the quality of California's waters over the past three decades. Most discharges are regulated, leading to a sharp decline in point source contamination.

Billions of dollars of federal and state assistance has helped cities and communities build and improve wastewater treatment plants, dramatically reducing the amount of fecal matter in rivers and bays. Federal expenditures on municipal sewage treatment led to a jump in the number of Americans being served by wastewater treatment from 42 percent in 1970 to 74 percent in 1985.[24]

In California, one analysis showed that between 1971 and 2000, discharge volume and contaminant emissions into the Southern California coastal waters from large municipal-owned wastewater treatment plants fell 90 percent, despite substantial population growth.[25] A wastewater treatment facility built after the Clean Water Act's passage by the East Bay Municipal Utility District in the San Francisco Bay Area reduced the amount of metals in treatment discharge by 70 percent.[26]

The Bay Area's "Big Stench" is no more.

California has marked other clean water successes in recent years.

Efforts to control contaminant runoff from abandoned mines have reduced water pollution in the Central Valley. A cleanup effort in summer 2007 at Abbott and Turkey Run mines stabilized 20,000 pounds of mercury that would have run into Cache Creek, and the construction of a lime neutralization treatment plant at Iron Mountain Mine reduced the amount of metals running from the mine into the Sacramento River by 95 percent.[27]

A 2006 evaluation of projects funded by the Clean Beach Initiative, which has used voter-approved bond funds to improve water quality along the state's coastline, showed that five of eight projects designed to divert stormwater runoff into sanitary sewer systems reduced bacteria at beaches. While the evaluation also found that some of the projects were not successful, it noted that millions of gallons of contaminated runoff had been removed from state beaches and that lessons learned from the projects could improve water quality in the future.[28]

Stormwater Permits

The state and regional boards both issues stormwater permits in California. Most permits are broken into four categories:

- ***Municipal program.*** For medium (100,000 to 250,000 people) and large (more than 250,000) areas, regional boards issue a permit to municipal separate storm sewer systems (MS4). Most of these permits are issued to a group of co-permittees. For example, the Los Angeles Regional Water Quality Control Board issues one stormwater permit for all of Los Angeles County, with the permit including all of the cities within the county. There are 85 co-permittees for that permit. In all, there are 26 permits issued in the state for medium- and large-sized urban areas that regulate discharges from about 300 cities, counties and special districts. For small communities, the state board has adopted one general permit that covers about 190 cities, counties and special districts.
- ***Construction program.*** The state board adopted a general permit for construction in the state that disturbs one acre or more of land. There were about 20,000 such construction sites in the state in spring 2008. Generally, the permit requires construction sites to develop Storm Water Pollution Prevention Plans and reduce pollutants using available technologies.
- ***Industrial program.*** The state board adopted a general permit that covers runoff from about 9,500 industrial facilities. Like the construction permit, industry is required to develop Storm Water Pollution Prevention Plans and reduce pollutants using available technologies.
- ***Caltrans program.*** The state board issued a statewide permit for the California Department of Transportation (Caltrans), which designs, constructs and maintains the state highway system, including bridges and tunnels. The permit requires Caltrans to develop a Storm Water Management Plan.

Sources: State Water Resources Control Board and Water Education Foundation. April 21, 2008. "Water Education Workshop for Board Members." Section 5 "Regulating construction storm water discharges." Also, State Water Resources Control Board and Water Education Foundation. April 21, 2008. "Water Education Workshop for Board Members." Section 5 "Regulating industrial storm water discharges." Also, State Water Resources Control Board. "Storm Water Program – Caltrans Program." www.waterboards.ca.gov/water_issues/programs/stormwater/caltrans.shtml.

The San Diego Regional Water Quality Control Board led an effort in early 2000 to revitalize the San Diego Marina area by removing gasoline and diesel fuel from soil and ground water. The last of five Cleanup and Abatement Orders was lifted in 2005.[29]

Current Threats

Despite these successes, the state is clearly not meeting the lofty goals of the Clean Water Act and Porter-Cologne. Examples of water quality problems abound: Several recent studies show rapidly declining numbers of pelagic fish species in the Sacramento-San Joaquin River Delta, including the endangered Delta Smelt, in part due to water quality.[30] A 2006 study of 181 private wells in Tulare County showed that more than 40 percent had higher-than-allowed levels of nitrates.[31] In one day in 2005, volunteers collected 61,117 discarded bottle caps along California's coastline.[32]

Nearly four decades after California and the federal government sought to eliminate water pollution, the state's waters still face enormous threats.

Wastewater remains a problem. Improvements in wastewater treatment are the most important legacy of water quality regulation in the country and in California, yet wastewater continues to contaminate the state's waters. Some treatment plants have chronic problems, landing them on the EPA's quarterly "Watch List" of the most troubled discharge facilities in the state. Included on the EPA's April 2008 list were 10 publicly-owned plants that have been violating conditions of their permits continually for more than two years.[33]

"There are lots of really badly maintained, undercapitalized, undermanaged systems, even in affluent areas," Alexis Strauss, director of the water quality division for US EPA Region 9, told the Commission.[34]

Underscoring her point, the EPA in April 2008 ordered seven sanitary districts in Marin County – one of the wealthiest counties in the United States – to make changes to their systems due to repeated sewage spills caused by deteriorating sewer pipes. According to the order, the Mill Valley system recorded 110 sewage spills between December 2004 and February 2008.[35]

State of the State's Waters

How clean – or dirty – are the state's waters? A dearth of water quality monitoring and the state's failure to create an accessible site for available information depicting water quality in California makes answering this question difficult. Here are three separate reports depicting the state of the state's waters:

Clean Water Act Section 305b Report. The Clean Water Act's Section 305b requires each state to assess the condition of its waters and submit the results to US EPA every two years. Using information gathered through US EPA's Environmental Monitoring and Assessment Program, the 2006 report, the most recent, focuses on assessments of two types of water in the state: coastal bays and estuaries and wade-able, perennial streams. Results included:

- The report suggests most of the state's coastal waters are in "fair" or "good" condition, based on US EPA criteria. High phosphorous levels were found in much of San Francisco Bay, while Southern California ports reported sediment chemical contamination.
- Analysis focused on the number of benthic macroinvertebrates, such as crayfish, dragonflies and snails, living in streams versus the number that would be expected to live there based on models. Overall, the report suggests 67 to 78 percent of wade-able perennial streams in California are in "good" condition.

California Water Plan. In the 2005 update of the California Water Plan, water quality conditions were reviewed by focusing on four areas: surface water; ground water; drinking water; and, environmental water, defined as the water that serves as habitat for fish, birds and other animals. The plan outlines current issues within each area:

- ***Surface water.*** Thirteen percent of the total miles of the state's rivers and streams were listed as impaired by at least one contaminant. About 15 percent of the state's lake acreage is impaired.
- ***Ground water.*** Sixty-two percent of the state's wells met standards for contaminants. In each of the state's hydrologic regions, however, 24 to 49 percent of public water supply wells exceeded acceptable levels for one or more contaminants.
- ***Drinking water.*** Public water systems in the state collect water from about 15,000 ground water and 1,000 surface water sources. About one-quarter of these sources have at least one contaminant at higher-than-allowable levels.
- ***Environmental water.*** While providing no specific measurements describing the extent of water quality impairment on riparian and aquatic habitats, the Water Plan noted that habitats can be affected by "legacy" pollutants, such as mercury.

Heal the Bay report card. The Southern California environmental group Heal the Bay has graded water quality at beaches for 18 years. The group assigns letter grades to beaches, based on monitoring data collected by local governments and dischargers on fecal indicator bacteria, considered to be the best indicator of whether beach water is safe for swimming.

In its annual report card published in May 2008, 87 percent of 379 beach locations received an A or a B. Los Angeles County recorded the lowest grades in the state, with 71 percent As and Bs. Avalon Harbor Beach on Catalina Island, ranked last, received an F.

Sources: State Water Resources Control Board. October 2006. "Water Quality Assessment of the Condition of California Coastal Waters and Wadeable Streams." Also, California Department of Water Resources. February 14, 2006. "California Water Plan Update 2005: A Framework for Action." Volume 2, Chapter 13. Also, Heal the Bay. May 21, 2008. "18th Annual Beach Report Card."

According to a 2008 US EPA estimate, California would need to spend $18.2 billion to upgrade its wastewater treatment infrastructure to meet all water quality and public health needs.[36]

Despite these needs, federal funding for improvements is waning. The initial funding program enacted with the Clean Water Act now provides far less money than it once did. In the 1970s, federal dollars paid for 75 percent of projects. Congress stopped providing grants in 1987, launching in their place a revolving loan program, which provides low-interest loans for wastewater treatment plant upgrades. Federal contributions to the State Revolving Fund have shrunk to $48 million in 2008 from $144 million in 1996, while upgrade costs have increased.[37]

Non-point sources the biggest threat. A much bigger and broader threat comes in the form of so-called "non-point sources" of water pollution, such as urban stormwater runoff, agricultural runoff and legacy pollutants, all of which are diffuse and have no single pipe or source to control. Non-point source pollution is responsible for 76 percent of California water impairment.[38]

Non-point sources were largely ignored as a source of pollution in need of regulation during the first decades of the Clean Water Act and Porter-Cologne. But as point source pollution diminished and many water bodies remained impaired, attention turned to non-point sources. The Clean Water Act was amended in 1987 to include non-point sources in the NPDES permitting program.

Non-point sources are much more difficult to regulate for obvious reasons. The pollution is diffuse and difficult to trace to its sources. Its episodic nature makes non-point sources of water pollution even more difficult to monitor and assess.

Water quality experts note that non-point source regulation, unlike point source regulation, is still a relatively new process and that effective programs, funding sources and scientific understanding have not been fully developed.

Stormwater. Rain storms sweep debris and pollutants from roads, parking lots and other impervious surfaces that dominate city landscapes into waterways, creating pollution in creeks, rivers, lakes and the ocean.

In essence, modern life is the source of stormwater pollution. Urbanization has led to more paved, impervious land and more complex water pollution problems with unusual and hard-to-regulate

sources. Land use decisions that increase the amount of non-permeable surfaces in a city, for example, lead to more runoff. Studies conducted in the San Francisco Bay have found that copper from automobile brake pads, which falls from brakes onto streets and then is washed into storm drains during rain events, is a major source of pollution in the Bay.[39]

Many of the most complicated and contentious issues facing water boards and the entities they regulate involve urban stormwater. Stormwater permits affect an enormous percentage of the population: More than 30,000 stormwater discharges are subject to permits, covering every populous area of the state, compared to only 2,200 wastewater permits.[40]

Financially-strapped local governments complain that stormwater requirements eat up money that could be spent on police protection, social services and other local priorities. One study found that stormwater programs cost local governments between $18 and $46 per household annually.[41]

Despite these difficulties, it is clear that stormwater pollution must be dealt with. One recent study noted that metals from stormwater increased from 6 percent to 34 percent of the total metals pollution in water along the Southern California coastline between 1971 and 2000.[42]

Modern water regulators face this central dilemma: Urban development for decades has focused on collecting stormwater and conveying it quickly away from homes and other buildings to prevent flooding. The concrete channels throughout the Los Angeles County basin direct 500,000 acre-feet of stormwater into the ocean every year, for example.

Stormwater managers must develop strategies that in many ways run counter to those designed to prevent flooding. To protect the ocean and other water bodies from the lawn fertilizers, pet waste, pesticide, oil, grease and trash that is flushed from city streets by rain, a key solution is to retain stormwater so that the soil catches contaminates as the water percolates into the ground. Other strategies to address stormwater pollution include, cleaning streets, changing individual behaviors such as over-fertilizing lawns, or treating stormwater in a similar manner to treating wastewater. The state and regional water boards, through their permitting process, seek to require cities, industries, construction activities and the state's highway system to change practices to limit runoff and prevent contaminants from reaching streams, rivers and bays.

For much of the short history of stormwater regulation, rules have emphasized effort over outcomes. The Clean Water Act's 1987 amendment regarding stormwater requires cities and other regulated entities to reduce stormwater pollution to the "maximum extent possible," but Congress never defined that term. Typical stormwater permits have required cities to develop and submit plans explaining their efforts. The vagueness surrounding the regulation is in contrast to wastewater regulation, which typically provides treatment plants with numerical limits for certain contaminants.

Some water users noted the differences in the way Congress treated point sources and non-point sources: When the Clean Water Act was approved in 1972, Congress gave states specific direction to require numeric limits in permits, and the federal government provided significant funding through a grant program to improve wastewater treatment facilities. Through the 1987 amendment, the grant program became a loan program, and Congress did not require numeric limits in permits regulating cities.

"With point sources, Congress provided both a carrot and a stick," Mark Gold, president of Heal the Bay, said. "With non-point sources, there is neither a carrot nor a stick."[43]

Disagreements now abound over many stormwater programs. It is more difficult to monitor, and more difficult to determine whether specific programs are effective. A blue ribbon panel of experts convened by the State Water Resources Control Board noted in a 2006 report that both regulated entities and environmental groups complained that stormwater permitting "has become overly complex, and that it is extremely difficult, if not impossible to objectively determine if a facility, operation or municipality is in compliance with permit requirements."[44]

During the Commission's study process, the National Research Council published a lengthy and damning report on national stormwater policy, essentially declaring it a failure. "EPA's current approach to regulating stormwater is unlikely to produce an accurate or complete picture of the extent of the problem, nor is it likely to adequately control stormwater's contribution to water body impairment," the report strongly states.[45]

To improve effectiveness, California's water boards are attempting to place more numeric limits or measurable requirements into stormwater permits, which is creating conflict with many stakeholders. Regulated entities complained to the Commission that

the boards were using standards adapted for point sources in their efforts to better regulate stormwater.

This dilemma must be addressed by the state as it works toward improving water quality and water supplies in the future. Many argue that stormwater should not be treated as a problem, but as a resource. Captured and treated stormwater could be reused. The state's water future – in which recycled water must play a larger role – may in part depend on improving stormwater strategies.

Irrigated agriculture and dairies. In rural areas, runoff from agriculture and dairies plays a role in water pollution. Studies show that nitrates, often linked to farming practices, are affecting drinking water in parts of the Central Valley. A 2007 report issued by the Central Valley Regional Water Quality Control Board summarized more than two years of monitoring and found, among other things, toxicity to algal species throughout the valley that is generally associated with herbicides and metals, such as copper, and sediment toxicity throughout the valley likely due to certain types of pesticides.[46]

In part due to legislation enacted in 1999, regional water boards have begun to increase regulatory authority over irrigated agriculture, which is exempt from the Clean Water Act. The two regions with the most agricultural activity both have adopted conditional waivers of waste discharge requirements in the past five years that affect agricultural practices. Farmers are required to agree to the conditions of the waiver or face an individual waste discharge requirement.

The Central Valley Regional Water Quality Control Board oversees about 7 million acres of cropland, while the Central Coast Regional Water Quality Control Board regulates a much smaller area – about 600,000 acres.[47] The two boards take somewhat different approaches to regulating water quality in their districts, based in part on their sizes.

The Central Coast board requires farmers to participate in water quality education classes, participate in monitoring efforts and file regular reports with the board detailing activities geared toward improving water quality. The Central Valley board requires farmers to participate in – and fund – coalitions that perform monitoring. Based on that monitoring, the coalitions prepare management plans to address problem areas. Individual farmers are not required to submit reports as they are in the Central Coast region. The Central Valley board has found some difficulty in ensuring that all

agricultural operations required to join a coalition do so – they have issued more than 1,400 enforcement orders requiring non-participating landowners to do so.[48]

While the Central Coast's irrigated agriculture program includes operators that discharge into ground water, the Central Valley program only includes those who discharge to surface water.[49]

In May 2007, the Central Valley Regional Water Quality Board issued a Waste Discharge Requirement covering all dairies in the region in existence since October 2005 – about 1,600 operations. Most of the dairies that operate in California are located in the Central Valley region, and before the new requirements, most had not been regulated. This had led to problems – a study of 425 wells at 88 dairies found that 63 percent of dairies' water was contaminated by nitrates.[50] The new order requires dairies to prepare reports on how they handle animal waste and other potential contaminants and monitor ground water quality. Dairy operators must enroll in a class designed to teach them how to comply with the new regulations.

Dairy representatives estimate the new regulations will cost each dairy $30,000 to $36,000 each year and require them to change business practices.[51]

Environmental groups argue that the regulations are long overdue and do not go far enough to successfully address the contamination. They note, for example, that the regulations contain no numeric limits or enforcement provisions. Two groups, the Environmental Law Foundation and Asociacion de Gente Unida por el Agua, have sued the state board over the regulation. The lawsuit remains pending.[52]

Legacy Pollutants. Another threat to the state's waters is so-called legacy pollutants, or pollution that stems from historic practices. These pollutants stem from agriculture, manufacturing and mining activities that have been banned or are no longer practiced. Legacy pollutants' historical nature pose a significant challenge for regulators: It is often impossible to hold former dischargers accountable, and removal of contaminants can be difficult and costly.

Major legacy pollutants include:

- ***Mercury.*** Used in 19th century gold mining practices in the Sierra Nevada mountains, mercury is now a prevalent contaminant in the Central Valley and San Francisco Bay regions. A study released in September 2008 showed that while some contaminants in sport fish declined during a 30-year period, mercury levels in fish remained relatively constant.[53]
- ***Polychlorinated Biphenyl (PCBs).*** PCBs were used in numerous products until they were banned in 1979, after they were identified as causing cancer in humans and disrupting animal reproduction. Despite the ban, PCBs linger and remain at high levels in San Francisco Bay and some Southern California lakes.[54]
- ***Perchlorate.*** Perchlorate, used in rocket fuel in the last half of the 20th century, has contaminated water in Sacramento County and Southern California, mostly in areas formerly used by the United States Department of Defense and the National Aeronautics and Space Administration. The Central Valley, Santa Ana and Los Angeles Regional Water Quality Control Boards have worked with industry and the federal government to control and remove perchlorate.

The Challenge Going Forward

California ushered in state-governed water quality protection with the passage of the Dickey Act in 1949, which set a regional course for regulation. The sweeping ambition of the Porter-Cologne Act in 1969 raised expectations that the state could eliminate water pollution, and established the principles for how California would regulate point source discharges. It made clear that discharge was a privilege, not a right, that solutions had to strike a reasonable balance between environmental protection and other concerns, and established basin plans as the foundation of regional regulation.

At the federal level, the similarly ambitious Clean Water Act followed in 1972. In its first incarnation, it attacked point source pollution such as industrial discharges and wastewater treatment. The act has evolved to focus on non-point sources and developing solutions for impaired water bodies, most notably total maximum daily loads for identified contaminants. This new focus has not come with the same level of federal funding that was available in the 1970s and 1980s, however.

Water Board's Efforts to Improve Programs, Processes

To their credit, the state water board has made several recent efforts to improve its programs and respond to criticism. Examples of the boards' reform efforts include:

- ***Strategic Plan Update.*** Adopted in September 2008, the water boards' Strategic Plan Update 2008 – 2012 outlines priorities for the water boards, both in terms of clean-water outcomes and in improving processes. The plan calls for the boards to prioritize programs for important watersheds, such as the Klamath River basin, for example, and prioritize needed basin plan updates. The plan also addresses concerns involving transparency and consistency, and calls for the development of state and regional water board work plans that include ways to measure performance. The plan has numerous specific goals with dates these goals will be achieved that will allow the Legislature, governor and stakeholders to assess board effectiveness. The plan was adopted after a one-and-a-half-year span that allowed significant stakeholder and staff input.
- ***New Offices.*** During the past two years, the state water board has created new offices within the board to improve effectiveness. The Office of Information Management and Analysis is intended as a way to improve both the boards' information technology systems and its ability to provide the public with useful information. The office was created on July 1, 2008 and oversees IT systems such as California Integrated Water Quality System (CIWQS) and also will produce routine reports depicting water board activities and outcomes. The Office of Research, Planning and Performance was created in 2006 to help better coordinate scientific research, work on strategic planning and develop performance measurement targets to help improve accountability within the water board system. The Office of Public Participation was created in 2007 to help strengthen the boards' efforts to involve the public in decision-making processes.
- ***Expert Panels.*** The state board has used panels of experts to review failing programs and make recommendations for change. In two cases, the reviews have helped the board make improvements to critical programs – the CIWQS and the Surface Water Ambient Monitoring Program (SWAMP) – that needed extensive restructuring. Both reviews were facilitated by Stephen Weisberg of the Southern California Coastal Water Research Project. In both cases, initial reviews of the programs – made public by the state water board – provided a harsh assessment of the programs but offered clear direction to make changes. For example, the review of CIWQS found that bifurcated management of the system and a broad, overly complex scope set the system up for failure. In both cases, a second review conducted about a year later showed significant improvement.
- ***Water Quality Improvement Initiative.*** Unveiled in May 2008 by the Schwarzenegger administration, the Water Quality Improvement Initiative was a comprehensive legislative proposal to reform some aspects of the water boards. The initiative called for the creation of a water quality council comprised of the chairpersons of each regional board to help improve consistency, and for the state and regional boards to establish priorities and report regularly to the Legislature on whether those priorities had been met. In addition, the initiative would change the state's interpretation of the 10 percent rule to allow potential appointees to serve on a board as long as they do not have income from an entity permitted by that specific board. Other proposals include delegating permitting authority from the regional boards to the regional board executive officers to allow the regional boards to focus on broader policy issues. In all, the initiative contained more than a dozen proposals for change.

California's main regulatory tools to enforce its clean water laws are the State Water Resources Control Board and nine regional water quality control boards. The state board sets policy and oversees the regional boards. The regional boards, which largely act independently of each other, develop basin plans and issue permits, monitor the results and assess fines when necessary. To a great degree, their structure and their policies reflect the major water protection laws passed in 1949, 1969 and 1972 with their heavy emphasis on point source pollution.

These laws have significantly reduced much of pollution that plagued California in the 1960s and 1970s, especially water contamination from point sources. But with the state's continued economic and population growth over the decades, some problems, such as sewage discharges, still escape a complete solution, in some cases because of cost. Other problems have emerged that defy easy solutions, such as stormwater runoff and agricultural runoff, as well as legacy pollution from old mines or contaminants from now-banned industrial practices. They now represent the biggest challenges California and its water boards face in living up to its commitment to provide clean water to its people now and in the future.

An Outdated System

Enacted in 1969, the Porter-Cologne Water Quality Control Act placed California in the vanguard of environmental protection.

In recent years, however, the water quality regulatory system developed nearly four decades ago is showing signs of its age. The system has not adapted to address modern water quality issues. Pollution from sources such as urban stormwater and agricultural runoff is now the biggest threat to surface water and groundwater. Legacy pollutants, such as mercury from mining practices, as well as aerial deposition from automobiles and other sources, also contaminate water. The traditional system of issuing permits to dischargers and monitoring those dischargers is not well-equipped to handle complicated issues that involve land use, diffuse pollution sources and complex scientific inquiry.

Regional boards are overwhelmed. Basin plans, the key regulatory document for each region, are decades out of date. Priorities are not matched to the most important threats to water quality. Process trumps a focus on clean water outcomes. Volunteer regional board members face increasingly difficult decisions that require a sophisticated understanding of water science and have profound ramifications for both the environment and the economy. Transparency, a key tenet of democratic government, is missing in regional board processes, as stakeholders complain they have little ability to interact with board members and do not always understand the rationale behind decisions. Regional boards across the state have differing philosophies and processes, and the state board has not adequately exercised its authority to ensure that the boards operate as one state agency, rather than 10 separate entities. Though the system is set up to protect water for the people of California, it is virtually impossible for the public to find easy-to-understand information on water quality in the state.

The result is a troubled system that lacks credibility with stakeholders, ranging from environmentalists to regulated businesses and local governments to the Legislature. In a disturbing illustration of the mistrust between the water boards and the water community, several stakeholders declined to publicly testify to the Commission

about the boards because they were concerned there would be reprisals for publicly airing their complaints.

Worst of all, it is difficult to determine if the boards' regulatory programs are effectively cleaning and protecting California's waters. Many argue they are not.

"During the past 15 years, we have flat-lined in the effort to protect water quality," argues LaJuana Wilcher, a former administer with US EPA who advocates for a nation-wide overhaul of water quality regulatory practices.[55]

Cities of Arcadia, et al. vs. Los Angeles Water Board

Litigation involving 21 municipalities in Los Angeles County, the Building Industry Association (BIA) and the Los Angeles Regional Water Quality Board illustrates the difficulties boards are having regulating stormwater with out-of-date basin plans.

In 2004, as the Los Angeles board was conducting a triennial review of its basin plan, the cities and BIA asked the board to review its water quality standards in relation to stormwater regulation. Sections 13000 and 13241 of the Porter-Cologne Water Quality Control Act require the boards to enact standards that "attain the highest water quality which is reasonable," and the boards must consider several factors, such as probable beneficial uses of water, environmental characteristics of water, water quality conditions that could be reasonably achieved, and economic considerations, when it sets standards. The regulated entities argued that the basin plan's standards were developed before stormwater regulation was in place, and that due to stormwater's unique nature, new standards should be developed and applied in stormwater permits and during the TMDL process.

The board did not review the standards, arguing that the standards were adequate because the boards had considered the reasonableness factor and other factors when they were first developed. The state board approved the 2004 basin plan and declined to hear a petition for review from the regulated entities. In 2005, the group sued the board in state superior court, arguing that both stormwater permits and TMDLs were based on water quality standards set without consideration of stormwater issues. According to the lawsuit, the cities projected needing to spend several billion dollars complying with numeric limits on trash and trace metals as part of two TMDLs that were enacted based on existing water quality standards.

In July 2008, Judge Thierry Patrick Colaw sided with the plaintiffs, concluding that during the creation of the original basin plan and subsequent revisions, "there is no substantial evidence in the record to show that the boards have ever analyzed the 13241/13000 factors as they relate to stormwater." Colaw ordered the Los Angeles water board, and the State Water Resources Control Board, which has ultimate authority over the basin plans, to review water quality standards in the Los Angeles basin plan as they relate to stormwater.

The order created angst and confusion in the region, as the state board concluded that it could not authorize any new activity, including construction and industrial activities, until the matter was resolved. The judge later allowed the water quality standards to stand while the board conducted its review, and thus construction and industrial activity were allowed to resume.

But the lawsuit reveals what many stakeholders told the Commission: Stormwater regulation has been developed during the past 20 years based on standards that were largely created before nonpoint source water pollution was even considered. Other regional boards also have basin plans and water quality standards that were developed for point sources but are now being used in stormwater regulation.

Sources: Porter-Cologne Water Quality Control Act, sections 13000 and 13241. State Superior Court Judge Thierry Patrick Colaw. July 2, 2008. Judgment, Cities of Arcadia, et. Al. vs. State Water Resources Control Board and Los Angeles Regional Water Quality Control Board. Michael Lauffer, Chief Counsel, State Water Resources Control Board. July 16, 2008. Memo to Dorothy Rice, Executive Director, State Water Resources Control Board. State Superior Court Judge Thierry Patrick Colaw. August 28, 2008. Order, Cities of Arcadia, et. al. vs. State Water Resources Control Board and Los Angeles Regional Water Quality Control Board.

Through two public hearings, meetings of two Commission-created advisory committees, extensive interviews with stakeholders and a review of existing research, the Commission identified the following critical problems with California's efforts to improve and protect water quality:

- ***The relationship between the state and regional boards is not well-defined, leading to inconsistencies and inefficiencies among boards, an inability to set statewide priorities and a lack of focus on holding regional boards accountable for clean water outcomes.*** In statute, the state board has significant authority to steer regional board policies and provide statewide leadership. In practice, however, the state board does not provide enough oversight and regional boards have dramatically different approaches to similar problems, statewide priorities are unclear and there is not enough effort to understand which regional boards are the most effective at implementing clean water laws.
- ***The state and regional boards lack mechanisms to collect and analyze data properly, use scientific research and cost-effectiveness reviews to drive decision-making and provide useful information to the public, policy-makers and other researchers.*** Regional boards acknowledge they do not always have sufficient data to make decisions or determine whether programs are working. The state has struggled to implement an information technology system and coordinate scientific research so that it is applied in regulatory processes. Basin plans, the key regulatory document dictating most regional board processes, are out of date in most regions.
- ***An antiquated regional board structure and poor appeals process limits candidates for regional boards, hinders transparent decision-making, and asks volunteer board members to do too much.*** Regional boards face complex decisions that require water expertise that some board members do not have. Compounding that difficulty are ex parte rules that limit board members' ability to communicate with stakeholders, who in turn feel they are not able to work with boards in a collaborative manner. Federal and state conflict-of-interest provisions dramatically limit the pool of potential qualified candidates. And few stakeholders have confidence in the appeals process.
- ***The state – both water boards and other state agencies – is struggling to adapt appropriate strategies to address non-point source pollution.*** Non-point source pollution provides enormous challenges to the state and will require multi-

agency responses, but the state has no structures in place to address water quality problems that stem from land use, centuries-old pollution and air pollution. Urban stormwater is a vexing problem with costly solutions, yet the state has not developed an adequate system for assessing and prioritizing this problem and other non-point source pollution problems.

Inconsistencies and Inefficiencies

The framers of California's water quality regulatory system envisioned a decentralized governance structure that would lead to different objectives and standards in different regions. That is appropriate, as different regions have different hydrological conditions, and a contaminant may impact one water body differently than another.

But numerous stakeholders suggested that too often, regional board policies and processes vary dramatically, even on some of the most important statewide water issues. Examples include:

Water recycling. The Legislature in 1991 declared its support for increasing water recycling in the state by calling for the state to use 700,000 acre-feet of recycled water by 2000 and 1 million acre-feet by 2010. The 2000 goal was not met, and many believe the 2010 goal will not be met either.[56] Regional boards play a critical role in water recycling projects because reused water is often injected into ground water basins, giving boards authority to regulate that discharge. Boards have taken widely different approaches to recycled water projects; in fact, all boards do not offer the same type of permits for recycled water, with some issuing a NPDES permit and others regulating projects through water reclamation requirements.

"Inconsistent regulation of water recycling by state and local officials leads to confusion and uncertainty in how to design and manage water reuse systems and appears to have led to overly restrictive regulation and added costs, creating an obstacle to achieving the full potential for water reuse," a 2003 report on water recycling noted.[57]

The state board noted in 2007 that, "Regional Water Boards have established varying requirements for recycled water used for irrigation. Some have established limitations for salts in recycled water and others have not. Some water recycling irrigation projects have ground water monitoring requirements, but most do not."[58]

This can have profound effects: Los Angeles spent seven years working with the Los Angeles Regional Water Quality Control Board to obtain a permit to use recycled water for landscape irrigation

purposes such as watering golf courses.[59] This frustration led to legislation in 2007 to allow entities seeking water recycling permits to bypass regional boards and obtain a permit from the state water board instead.[60]

The state board is currently working on the creation of a statewide policy on water recycling.

Stormwater. Stormwater policy also varies widely from board to board. The Central Valley board issued a relatively brief stormwater management permit (62 pages) for the city of Stockton in December 2007 that required the city to determine its own best management practices to address stormwater cleanup. By comparison, the Los Angeles board issued a draft stormwater management permit to Ventura County in August 2007 that was nearly twice as long (115 pages) and far more specific about the tasks the county and cities within the county should perform and the numeric limits on specific pollutants in stormwater. The permit listed specific best management practices that could be used and detailed how often streets should be swept.[61]

"Instead of a statewide plan and comprehensive approach to stormwater, precedents are being set, conditions for permits are being imposed and numeric limits are being imposed in a fragmented, case-by-case manner," said Terese Ghio, past president of the Industrial Energy Association.[62]

The California Stormwater Quality Association, a group including local government stormwater managers and private consultants, has been advocating for several years that the state board develop a comprehensive stormwater policy for medium- and large-size cities that they argue would improve the effectiveness of stormwater regulation and better allow measurement of that effectiveness. So far, however, the state board has not taken that up.[63]

Thus, regional boards have radically different approaches to stormwater regulation, one of the most difficult and contentious water pollution issues facing the state.

Monitoring, reporting and other processes. How regional boards develop information and report water quality data also differs. A 2006 report reviewing the state's Surface Water Ambient Monitoring Program – which is intended to gather and report statewide information on water quality – outlined several notable inconsistencies among regions. The review found, for example, that the North Coast Regional Water Quality Control Board and the

Central Valley Regional Water Quality Control Board appeared to be compiling their lists of impaired water bodies differently, with the North Coast region declaring much larger swaths of water bodies impaired, while the Central Valley board listed much smaller segments. The result makes it difficult to compare impaired water bodies in the two regions. The report also noted that bioassessment tools – used to help determine the health of a water body – had been developed differently by different regional boards.[64]

A report published by the State Water Resources Control Board in 2006 depicting water quality across the state noted that regional board water quality "assessments cannot be successfully integrated into an accurate statewide report because regions use a variety of assessment approaches and do not always apply criteria consistently."[65]

A US EPA review of inspection and enforcement activities by regional boards noted that it was difficult to compare regions because inspection reports and permit compliance reviews were done differently in different regions. "The documentation was not standardized across the RWQCBs (Regional Water Quality Control Boards) or the various water programs," the EPA noted.[66]

While the state water board's newly-created Office of Information Management and Analysis is attempting to improve the board's use of data and coordinate data gathering and reporting, inconsistent approaches to monitoring and data gathering limit the ability of the public and policy-makers to determine the health of the state's waters and whether various state strategies to improve water quality are effective.

Mark Lubell, an assistant professor in the Department of Environmental Science and Policy at the University of California, Davis, said he had attempted to study whether one of the state's main thrusts on water policy – gathering local water interests together to develop long-term water resource plans, referred to as Integrated Regional Water Management Planning – was protecting water quality. He found that due to different data gathering and monitoring in different watersheds, it was impossible to compare different water bodies in a meaningful way. Thus, he was unable to determine whether a major statewide initiative – one that has consumed hundreds of millions of dollars – is effective.[67]

Inconsistencies among boards also lead to inefficiency and expense. The Riverside County Flood Control and Water Conservation District reported that it spent nearly $2 million during a five-year period

preparing three different sets of reports and permit applications because the three regional boards overseeing pieces of the district all required different paperwork.[68]

The state board can address regional inconsistency in multiple ways, including through rulings on appeals. The most effective avenue, however, would be through state board policies, which are intended as guidelines for all regional boards to follow. Currently, there are only 16 statewide policies.

State board officials complain that enacting policies is a long, staff-intensive process. Because some policies require scientific research, policies can take several years to develop. In addition, the state board is required to follow California Environmental Quality Act processes, which often take a year or longer.

Little Focus on Outcomes or Accountability

Are regional board permits, enforcement actions and other programs working to protect and improve California water quality? It is difficult to say.

Throughout the review process, the Commission found an alarming lack of information on the effectiveness of state water quality regulations. Regional boards submit a significant amount of data to the state board, from lists of impaired water bodies to work plans outlining upcoming plans, but there is not enough analysis done by the state board to determine program effectiveness. The state board does not provide enough leadership in directing regional board activity based on analysis of what is working, and what is not working.

Too much discussion within the boards – and among stakeholders – is focused on processes; not enough attention is paid to whether these processes lead to the desired clean-water outcomes.

Examples include:

- In a report summarizing current water quality monitoring practices and suggesting changes, an executive of the San Diego Regional Water Quality Control Board noted that monitoring and surveillance information and analysis was not integrated into board programs, with the result being "the Regional Board is unable to efficiently assure discharger compliance with regulatory requirements and effectively

measure the performance and success of its own regulatory activities."[69]

- In a 2008 report detailing enforcement activities of the boards, the state water board noted that the boards do not track the environmental benefits of enforcement actions, such as the amount of pollutants reduced in water or the acres of wetlands or beaches restored. "This information could be collected when the enforcement case is resolved," the report notes. But it currently is not.[70]

There are numerous reasons for the lack of focus on outcomes.

Reviews by US EPA of water board practices are influential in directing the boards' activities, due to US EPA's authority over Clean Water Act activities. Many of US EPA's reviews of California measure the boards' processes and outputs, not outcomes. For example, most of what US EPA measured in its 2007 "Enforcement and Compliance Assurance State Review Framework" report for California focused on processes, such as data inputs, penalties assessed and timely reporting, instead of environmental outcomes.[71]

In addition, board members, staff and stakeholders argue the boards simply do not have enough resources to ensure programs are working. Regional monitoring, which allows boards to take a broad look at the health of a watershed, is under-funded. Regional monitoring is done in addition to self-monitoring conducted by permitees to ensure they comply with conditions of their permits, and is usually funded through the General Fund, not user fees. An advisory group formed by the state water board produced a report in 2000 with recommendations for surface water monitoring that suggested it would cost between $59 and $115 million annually to conduct a comprehensive monitoring program.[72] In the eight years since, funding has never reached that level. In the 2007-08 fiscal year, the state and regional boards spent about $9.5 million, or about 16 percent of the minimum amount recommended – on ambient monitoring.[73]

In some instances, court cases also create pressure to focus more on processes than outcomes. A 1999 settlement between environmental groups and the US Environmental Protection Agency has forced the Los Angeles Regional Water Quality Control Board to develop 92 total maximum daily load plans in 13 years, and a 1997 settlement set up an 11-year schedule for the North Coast Regional Water Quality Control Board requiring two TMDLs per year.[74] Some stakeholders argue that the tight timeline has led regional boards to quickly adopt

TMDLs without adequately determining whether they will have a positive impact on water quality.[75]

Regardless of these pressures, stakeholders with numerous different perspectives complained to the Commission that a lack of focus on outcomes has led to a lack of accountability for regional boards. Local government officials and business interests subject to stormwater permits argue that some regional boards' zeal to regulate leads to too-stringent requirements, which should be reined in by the state board. Environmentalists argue that the state board does not do enough to ensure that regional boards are conducting timely enforcement actions to ensure that regulated entities are not fouling the state's waters in violation of their permits.

Regional boards differ considerably in their enforcement activities. A 2008 state board report on enforcement noted a wide range in the percent of violations that received enforcement among the regional boards, with one board pursuing only 30 percent of violations and another pursuing 97 percent. The report noted that the "variation in enforcement actions reflects differing emphasis on enforcement at the Regional Water Boards."[76] There was no further discussion or analysis as to why that was, or whether one region or another was performing more effectively.

In her testimony to the Commission, Linda Sheehan, executive director of the California Coastkeeper Alliance, referred to that report as an example of the state board's reluctance to hold regional boards accountable for their actions. Sheehan said the report did not delve further into reasons why regional boards' performance on enforcement varied. "Under its current authority and structure, the state board can and must – but generally fails to – call out under-performance at the Regional Board level," she said.[77]

Funding Constraints Limit Programs

While offering many different perspectives on various problems facing the water boards, stakeholders and board officials were virtually unanimous on one issue: They argue there is not enough money made available to accomplish the state's clean water goals.

An unmet needs analysis performed by the state water board in 2001 found that the state and regional boards would need 260 percent more funding than they were receiving to fully carry out current duties and future duties based on emerging issues. The Legislative Analyst's Office concluded that the assumptions made by the state board in determining unmet needs were reasonable. The report noted the following staffing deficiencies:

- ***NPDES wastewater program.*** While the state and regional boards need 233 staff, there are about 100.
- ***NPDES stormwater program.*** While the state and regional boards need 400 staff, there are about 100.
- ***Wetlands and 401 certification.*** While the state and regional boards need 134 staff, there are 16.
- ***Waste Disposal Requirement program.*** While the state and regional boards need 290 staff, there are 77.
- ***Land disposal program.*** While the state and regional boards need 164 staff, there are 70.

This lack of staff hinders the boards' abilities to perform duties. A Legislative Analyst's Office report found that more than one-fourth of major wastewater treatment facilities had permits that had expired because regional boards had not updated them. In addition, until the summer 2008, the water boards had yet to assess fines for 9,592 mandatory minimum penalty violations that occurred between 2000 and 2007. While a state board effort begun in summer 2008 is attempting to address the fine backlog, this lengthy period between violation and actual fine limits the deterrent effect that prompt enforcement actions might have.

The boards are funded largely through fees and other non-General Fund sources. In the water boards' budget for the 2008-09 fiscal year, for example, only $38.7 million of the boards' $733.1 million budget came from the General Fund.

While the boards have the authority to raise fees to meet program costs, they cannot raise fees above the amount set in the budget every year by the Legislature and governor. In other words, the governor and Legislature would have to agree to dramatically raise fees if they wanted to increase staffing to the levels called for in the water boards' report. Policy-makers have been unwilling to do so.

In its budget analysis in 2008, the Legislative Analyst's Office recommended a new fee for all water users to pay for water board programs, suggesting that a fee of less than $10 on every water utility hookup in the state would raise nearly $20 million for the boards.

Sources: State Water Resources Control Board. April 30, 2008. "Baseline Enforcement Report." Legislative Analyst's Office. February 20, 2002. "Analysis of the 2002-03 Budget Bill. Legislative Analyst's Office. February 20, 2008. "Analysis of the 2008-09 Budget Bill." Linda Sheehan, Executive Director, California Coastkeeper Alliance. April 24, 2008. Written testimony to the Commission.

Boards Unable to Prioritize

California has no current mechanism to appropriately prioritize water quality problems and steer resources toward the solutions to those problems.

Faced with a broad mandate to protect all of the state's waters, the water boards have been unable to focus on the most important water bodies or the most pressing contamination problems. Testimony to the Commission largely centered on urban stormwater issues, which has a dramatic impact on local government and business, as well as the environment. Should addressing stormwater be the boards' top priority? Many argue it should, but the state board has not indicated that it is, or should be, its top priority.

There are true impediments to prioritization. The boards' increasing reliance on fees limits their ability to match resources to needs, for example.

California's water boards have an annual budget of more than $700 million, with most money coming from fees and other non-General Fund sources.[78] Board activities are funded by 74 separate revenue streams, which are often fees assessed for specific programs.[79]

"Our actions are very much budget-driven," Karl Longley, chairman of the Central Valley Regional Water Quality Control Board, told the Commission. "The money is typically in an account and cannot be used outside of that account or for other purposes. If there was a mechanism for the executive officers and the boards to redirect resources given proper justification, it would allow us to be more diligent in addressing priorities."

Critical activities such as basin planning, enforcement and ambient monitoring, all funded through the state General Fund, received less money for staff than did other activities, even those that could be considered a lower priority.

Aside from administration, for example, staffing levels for the water boards' underground storage tanks program are the highest of any program overseen by the boards. The program regulates gas stations and other facilities that store potential contaminants underground, and is paid for entirely by fees from regulated businesses. At one time, leaking underground storage tanks were a major problem in the state. However, increased regulation has lessened the threat: The

Staff May Be Too Concentrated in Sacramento

About 45 percent of the state and regional water boards staff works for the state board in Sacramento. Some stakeholders suggested the boards could re-allocate some staff to improve regional board performance.

"… in many key areas, personnel are congregated at the state board, rather than on the ground in the regions, where the vast majority of actual permitting and enforcement is taking place,'' Linda Sheehan, executive director of the California Coastkeeper Alliance, told the Commission in her testimony.

According to water board budget year 2008-09 information provided to the Commission, for example, 42 percent of the water boards' enforcement staff and 45 percent of the boards' basin planning staff work for the state board.

During difficult financial times when the water boards should not expect new monies from the General Fund, the boards could look at deploying some staff in Sacramento to regional boards.

Sources: Linda Sheehan, Executive Director, California Coastkeeper Alliance. April 24, 2008. Written testimony to the Commission. Page 2. State Water Resources Control Board. November 24, 2008. "Budget Information for Little Hoover Commission, FY 08-09." Provided to the Commission.

number of active cases involving leaking underground storage tanks has fallen dramatically in the last 12 years, from 20,177 in 1995 to 11,899 in 2007.[80] Despite the change, the state and regional boards still have nearly 200 staff assigned to the program – far more than those working on stormwater permits, enforcement activities or even TMDLs.

The underground storage tanks program may warrant as much staffing as it receives. The boards do not conduct routine studies of their staffing and programs to determine whether staffing levels and priorities match.

Water users and environmentalists complain that the boards are not focused on addressing the state's biggest water quality issues or realistically solving problems.

In the foothills of the Sierra Nevada, for example, a small sanitation district with a treatment plant that serves 83 people faces a $574,000 fine for violations of its NPDES permit for minor discharges into a creek bed that is dry most of the year. The sanitation district may need to spend more than $4 million upgrading the facility, despite a letter from the state Department of Fish and Game that the fish the board's regulations are trying to protect do not live in the creek and a letter from the state Department of Public Health noting that the "current degree of treatment is adequate to protect public health."[81]

In Los Angeles, local governments complain that they face expensive wastewater treatment upgrades because the Los Angeles Regional Water Quality Control Board continues to require that effluent in Ballona Creek, which is a fenced-off, concrete-lined channel, be treated to allow for swimming and other forms of contact recreation.[82]

In the Central Valley, an effort to establish a total maximum daily load (TMDL) for methylmercury is focused on reducing mercury in the current discharges of wastewater and stormwater systems, despite studies showing that 75 to 80 percent of the mercury in the Sacramento-San Joaquin River Delta is not coming from those discharges. The mercury pollution is a result of mining practices dating to the 1800s. Regulated entities there argue they may be

forced to spend millions of dollars upgrading their systems even though the upgrades are not likely to result in a dramatic reduction of mercury in the water.[83]

Meanwhile, environmentalists note that non-dairy feedlots, such as those for cattle, which have the potential for causing major water quality damage, go unregulated in the Central Valley. And until an effort was initiated in summer 2008, the regional boards had levied more than 700 penalties during the previous eight years that had gone uncollected.[84] By not pursuing penalties in a timely manner, the deterrence affect that might come from enforcement efforts is lost.

Stakeholders told the Commission that the boards often are too narrowly focused on regulatory programs to work on larger solutions to the state's most pressing water quality problems, such as legacy pollutants, urban stormwater and agricultural runoff.

"There have not been enough forward-looking policies in the last decade," said Craig Wilson, an attorney representing the dairy industry and the former chief counsel of the State Water Resources Control Board. "The boards have been bogged down in minutia."[85]

One problem may be that the boards actually engage in too many prioritization processes. A 2008 report for the Ocean Science Trust intended to help the boards increase the use of science in decision-making noted that the "water boards prioritization processes are complex and numerous." The report listed six different activities or processes that the boards routinely conduct to set priorities.[86]

The state board made an effort to begin infusing prioritization into its system in 2008 with the adoption of a new strategic growth plan. The plan calls for prioritizing TMDL implementation in important watersheds such as the Klamath and Bay Delta, for example.

Struggling with Information Technology

One of the most profound problems facing California's water boards is its inability to develop information technology systems that can improve efficiency and provide better information to the boards, the public and policy-makers. Gathering data and using it to produce useful information is a key job of the water boards: There are at least 25 provisions in state statutes requiring the water boards to accumulate and produce information about water.[87]

Some of the best and easiest-to-use information about state water quality is produced not by the state, but by other interested groups. The California Coastkeeper Alliance has created on its Web site an interactive map showing the state's impaired water bodies using data culled from the state water board. The state does not have any similar maps on its Web site. Heal the Bay, a Southern California-based environmental group, produces weekly report cards on beaches across the state using monitoring information gathered by the water boards and local governments. The president of the group said that occasionally water board staff ask his group for data because it is better organized.[88]

Much of the monitoring data submitted to the regional water boards is still not electronic, and databases are not well organized. A 2006 report on a water board program designed to protect wetlands areas noted that when researchers sought to review 429 files regarding the program, they could only locate 257. More than 40 percent of the files could not be found.[89]

The state board's central information technology system, the California Integrated Water Quality System (CIWQS), has had a troubled history. CIWQS has been criticized by both the Legislative Analyst's Office and an independent review panel as unreliable, difficult to use and responsible for data-entry backlogs throughout the system.

"The State Water Board has a less functional system for water quality management than it had before CIWQS was implanted," the independent review panel concluded in a July 2007 report.[90]

The LAO noted that the state water board circumvented the Legislature in the initial stages of developing CIWQS. Turned down for funding by the Legislature in the 2002-03 budget year, the state board went ahead with the project anyway, seeking funds from US EPA.[91] Funding was less then originally intended, however, and the independent review panel found that a major problem with the system was that it was not funded appropriately to handle all of the functions the boards sought from the system. The panel also noted that the governance of the program was bifurcated between the EPA and two divisions within the state water board, leading to little accountability or proper oversight.[92]

In a follow-up report released in May 2008, the same panel found that significant progress had been made in improving the system but that there were still problems regarding the accuracy of data, the ability of the system to produce useful reports and the use of the

system by the public.[93] Faulty algorithms in the programming can create false violations, for example, and it is still difficult for the public to navigate the system and determine what kinds of water quality issues are relevant in their region. A report on enforcement actions produced by the state board in 2008 highlighted continuing problems with CIWQS: A chart depicting violations of stormwater permits showed five regions reporting more facilities with violations than the number of facilities inspected – an impossibility.

The noncompliance rate "for the stormwater program is likely misleading due to the quality of information in the CIWQS database," the report notes.[94]

Lack of Data

The water boards issue permits, set standards and adopt TMDLs every year that have serious consequences for both business and the environment, and water board officials acknowledge some of the those decisions are essentially made without sufficient information. Lack of monitoring data, the vastness of California's waters and a still-growing understanding of water science contribute to regulatory guesswork. The effect of regulation is often unknown.

"We base our decisions on such little data," Pamela Creeden, executive officer of the Central Valley Regional Water Control Board, acknowledged at a Commission advisory committee meeting.[95]

In Creeden's region, the controversial waiver for waste discharge requirements for irrigated agriculture adopted in 2006 notes that "although there is information that discharges of waste from irrigated lands have impaired waters of the state, information is not generally available concerning the specific locations of impairments, specific causes, specific types of waste, and specific management practices that could reduce impairments and improve and protect water quality."[96]

A joint effort by Cal/EPA and the state Resources Agency which sought to illuminate various environmental issues in California showed the difficulties facing the state. According to the 2004 "Environmental Protection Indicators for California" report, 80 percent of the state's shoreline, 72 percent of the bays, harbors and estuaries, and 75 percent of rivers, streams, lakes and reservoirs were unmonitored in 2002, making it impossible to determine whether those water bodies were safe for swimming.[97]

The lack of information is not altogether due to a simple lack of funding for more monitoring. It is also a failure by the state to better coordinate information. Numerous state and federal agencies – ranging from the United States Geological Survey to the state Department of Water Resources and Department of Fish and Game, as well as local monitoring groups – gather water data. But there has been a limited effort by the state to pull that data together to make it accessible to regulators, the public and others who would be interested.

This lack of coordination limits the state's ability to protect and improve water quality and determine what programs are working. For example, water monitoring done through billions of dollars doled out through voter-approved water bonds, such as Propositions 13, 40 and 50, have not been collected in a standardized format with the same type of quality assurance, leaving it difficult to compare monitoring and data.

The California Environmental Data Exchange Network (CEDEN) has been intended as a way to link various water databases together. According to the CEDEN Web site, "CEDEN is a growing statewide cooperative effort of various groups involved in the water and environmental resources of the state of California," and the purpose of the network is "to allow the exchange of water and environmental data between groups and to provide access to the public."[98]

CEDEN remains under development, however. The project was recently transferred from the Department of Water Resources to the state water board, with the state water board allocating $500,000 in fiscal year 2007-08 to the project.[99]

Lack of Science

Countless water users, environmentalists and water experts noted that the water boards do not engage in sufficient scientific research to support new regulation. In his testimony to the Commission, United States Navy Rear Admiral Len R. Hering, Sr. suggested the state's water boards lacked credibility because they did not have a rigorous science program.[100]

The water boards do conduct and fund a significant amount of scientific research. A survey compiled in 2008 by the state water board found 95 current research projects funded by the state and regional boards.[101] The boards also have a peer review program, requiring reviews of all science in regulatory programs, run in

partnership with the University of California. And some regional boards contribute to independent science-based groups that conduct relevant research: The San Francisco Bay Regional Water Quality Control Board is a contributor to the San Francisco Estuary Institute, a nonprofit organization that conducts research and monitoring in the San Francisco Bay. Three regional boards in Southern California and the state board are partners in the Southern California Coastal Water Research Project, a joint powers agency that conducts research and monitoring along the Southern California coastline.

The problem, however, is that the state board has had no mechanism to keep track of board-funded research, centralize information gathered in that research and analyze the research to ensure it informs board programs across the state. The result is an inefficient use of scientific resources, as well as a public perception that the water boards are not using science in their decision-making.

The board created a new Office of Research, Planning and Performance in 2006, which is still in its development stage. The survey of ongoing research was a first effort by the state board to get a better understanding of scientific studies throughout the regions.

Compounding the boards' inability to coordinate research and better infuse it into decision-making is the increasingly complex problems the boards face. Even a robust scientific program would be challenged to find cost effective solutions to such difficult issues as non-point source pollution or watershed-wide issues. Presentations at a 2008 meeting of the American Association for the Advancement of Science concluded, for example, that pesticides that run off the land and mix in rivers and streams combine to produce a greater toxic effect on salmon than the pesticides would have individually.[102] How do the boards design regulation to respond to that information?

Two reports in the last three years – one commissioned by the state water board and another by the Ocean Science Trust – have sought ways to improve the use of science within water quality regulations in California, and each report has acknowledged the complexity of the subject matter the water boards are attempting to tackle. The report commissioned by the Ocean Science Trust listed these subjects as in need of more scientific inquiry:

- Total maximum daily loads and water quality objectives:
    - ✓ Better understanding of watershed functioning and pollutant origin and dynamics.
    - ✓ Developing scientifically based pollutant standards and water quality indicators.

- ✓ Evaluating the effectiveness and cost-to-benefit ratio of TMDLs as a regulatory tool.

- Stormwater and non-point source impacts, origins and controls:
  - ✓ Understanding the origins, impacts, and the efficacy of management practices and measures related to stormwater, urban and agricultural nonpoint sources, and hydromodification.
- Emerging contaminants:
  - ✓ Understanding the sources and impacts of emerging contaminants.
  - ✓ Determining how best to control emerging and legacy pollutants.
- Climate change impacts on water quality:
  - ✓ Assessing the predicted water quality impacts of climate change using authoritative, non-politicized science.
  - ✓ Developing a strategic approach to predicted climate change impacts and their effects on the current regulatory framework.[103]

Water users complain that the boards too often implement regulations without a sound understanding of the science behind the problems or solutions.

"Stormwater science and technology lag behind regulatory implementation," Chris Crompton, manager of the Environmental Resources Section for Orange County Public Works Department, told the Commission.

Without adequate data and science, it is difficult for the water boards to determine the biggest threats to water quality and the best use of limited resources to address those threats.

Outdated Basin Plans Undermine Credibility

Throughout much of the state, basin plans – the key document outlining water quality standards for the region – are outdated. The chairman of the Central Valley Regional Board said the salinity standards in his region's basin plan have not been updated since the 1970s.[104] The executive officer of the Lahontan Regional Board said most sections of his region's basin plan are 14 years old.[105]

In addition to being outdated, there is evidence that aspects of the original basin plans were created in the 1970s without scientific study or even accurate data. "Many basin plan elements are found to lack a solid technical and scientific foundation," notes a review of the Los Angeles Regional Water Quality Control Board's basin plan conducted in 2003 by consultants hired by regulated entities.[106] A similar review of the Central Valley Regional Water Quality Control Board's basin plan noted that numerous water quality objectives placed into the basin plan were provided in a memo from the state board and were not based on local conditions.[107]

While basin plans are supposed to be updated every three years, regional boards have rarely had the resources to conduct a full review, complete with new scientific research.

Budget information provided by the state board shows that most regional boards have fewer than three staff members working on basin plan updates. Of 1,592.7 employees in the entire system in fiscal year 2007-08, just 41.2 – or 2.6 percent – were dedicated to basin planning.

"Currently, basin planning updates are being conducted as a routine, housekeeping type of function instead of a true analysis of current conditions," said Terese Ghio, past president of the Industrial Environmental Association and also a former member of the San Diego Regional Water Quality Control Board.[108]

The last major statewide basin plan update was in 1994. Many stakeholders note that the update occurred just as non-point source regulation began to truly be implemented, and current basin plans do not account for stormwater, despite its differences from a typical point discharge.

Numerous conflicts arise in each region due to this problem, leading to arguments over information and science before water users and

A Missed Opportunity

In 2002, Californians approved Proposition 50, a $3.44 billion general obligation bond designed to improve water quality in the state. In 2006, voters approved Proposition 84, a $5.388 billion general obligation bond designed to improve water quality, flood control and parks. Both propositions included extensive funding for integrated regional water management plans (IRWMP), which is intended to bring various groups together in a region to create a plan to improve water quality and supply. Funding goes both to the creation of the plans and to implement projects called for in the plans.

Proposition 50 earmarked $500 million for IRWMP, which has been spent. Proposition 84 earmarked $1 billion for IRWMP, most of which had not been spent when the Commission was conducting its study. IRWMP projects have been positive in many regions of the state, and regional water boards have participated in some of the projects.

However, at a time when virtually every regional board in the state is struggling to impose regulation based on badly out-of-date basin plans, the IRWMP funding appears to be a missed opportunity. Instead of creating new plans for each region, some of the funding could have gone to help regional boards work with stakeholders to revise and modernize basin plans. According to the propositions, however, the money is intended for local groups and local projects, not state government-sponsored functions.

While an up-to-date basin plan would not likely accomplish all of the things an IRWMP calls for – basin plans would be less likely to spell out how a region could increase water supply, for example – there is little question that one of the most important issues facing water quality in the state is outdated basin plans. An effort to redo basin plans can bring stakeholders together to help plot out the state's water future – the same goal that IRWMP has – without creating an entirely new bureaucracy.

The state could have used some of the $1.5 billion in bond money approved during the last four years for water planning to update basin plans.

Sources: Smart Voter. Proposition 84: Water Quality, Safety and Supply. Flood Control. Natural Resource Protection. Park Improvements. State of California. http://www.smartvoter.org/2006/11/07/ca/state/prop/84. Also, Smart Voter. Proposition 50 Water Quality, Supply and Safe Drinking Water Projects. Coastal Wetlands Purchase and Protection State of California. http://www.smartvoter.org/2002/11/05/ca/state/prop/50/. Also, State Water Resources Control Board and Department of Water Resources. June 2007. "Proposition 50 Chapter 8 Integrated Regional Water Management Grant Program Guidelines Proposal Solicitation Packages Second Round."

other constituencies even begin to debate appropriate policy. Regulated entities contend that most water quality standards and beneficial uses were developed prior to stormwater regulations, and because stormwater is significantly different than point source discharges, basin plans should be updated to include standards specific to non-point sources.

State and regional board officials acknowledge this problem.

"The Basin Plans, originally written in the 1970s and periodically updated, currently do not fully reflect the Water Board's fast-growing body of knowledge and evolving regulatory approaches to regional and statewide concerns such as stormwater, non-point sources (e.g. irrigated agriculture), and biological integrity," reads the state water board's current strategic plan.[109]

The plan calls for all basin plans to be updated, but not until 2015.

A major obstacle in updating basin plans is money. The water boards do not generate any fees that could be applied to basin planning, so it is one of the few programs funded solely through the General Fund. This is, in part, why major updating efforts have not occurred.

Appeals Process Flawed

Appeals were cited by State Water Resources Control Board chairwoman Tam Doduc as a key piece of the state board's authority to direct regional board activities. Any aggrieved person can appeal a regional board decision – such as a permit, or enforcement action – to the state board, which then has the power to overturn the regional board or send the issue back to the regional board with direction on changes that should be made.

The Commission found, however, that many stakeholders do not have confidence in the appeals process.

Regional board decisions rarely are overturned by the board. According to information provided to the Commission, the state board received 231 appeals of regional board actions between July 1, 2001, and June 30, 2008. The board upheld regional board actions on 193 of those appeals, modified regional board actions on 33 appeals, and is still making a determination on 5 appeals. The board reversed 14 percent of the regional board actions that were appealed to it in this seven-year period.[110]

In addition, the process of reviewing potential appeals appears troubling. As described by Gary Wolff, vice chairman of the State Water Resources Control Board, the state board's executive director and chief counsel vet appeals and then make a recommendation to the board members as to whether that appeal should be heard by the board or not. It is up to board members to seek out staff to have a broader discussion on the potential appeal, and if board members do not respond, the executive director issues a letter to the petitioner with a decision as to whether the appeal will go forward. Wolff acknowledged that in recent years, most of the decisions to consider appeals are based on whether a legal violation has occurred – not whether an action contradicts state policy or could clear up a controversial issue.

Of particular concern is the inadequate explanation given to would-be petitioners. For example, Laurel Firestone, an attorney representing the Visalia-based Community Water Center, told the Commission that she received a one-page letter informing her that the state board would not review a petition she filed concerning the Central Valley Regional Water Quality Control Board's 2007 waiver for waste discharge requirements for dairies. The waiver was a controversial issue, marking one of the first efforts to regulate dairies in the country. Firestone said she received no further explanation from the board as to why her petition was denied. It was only at the Commission's hearing that she learned that there was a five-page explanation, a public document, on why the board denied the petition, but it was written by the board's chief counsel.

Two environmental groups, including the one represented by Firestone, since have gone to court to block the waiver, arguing it does not go far enough in regulating dairies.

"It is pretty common to have an appeal dismissed without explanation," noted Linda Sheehan, executive director of the California Coastkeeper Alliance, at the Commission's April 2008 hearing.

While chairwoman Doduc touted the appeals process as a key check on regional board behavior, she acknowledged one flaw.

"The petition process is a reactive process," she noted. "I think the state water board does need to be more proactive in terms of reaching out to regional boards, the various stakeholders and identifying emerging issues and getting ahead of the curve."

The problem, however, is that because the state board handles appeals, it is not allowed to comment or intervene on an action taken by a regional board that could be appealed to the state board. The state's Administrative Procedure Act prohibits anyone who might have a role in an appellate process from expressing an opinion on a proceeding if an appeal is possible.[111] Thus, the board's role as judge prevents it from taking a proactive role in some regional board activities.

"Most 'coordination' (between the state and regional boards) is reactive and happens at the end of processes when something goes wrong and there are appeals or lawsuits," Chris Crompton, manager of environmental resources for Orange County, told the Commission in written testimony. "This 'back-end coordination' is inefficient and hence costly, and has real environmental impacts from delayed decisions/actions."[112]

Outdated Rules Limit Critical Communications

Another factor that undermines stakeholder confidence in the system is the boards' strict prohibition against ex parte communications. Both state and regional board members are subject to Chapter 4.5 of the state Administrative Procedure Act, which prohibits communication between board members and anyone subject to an adjudicative proceeding, such as the issuance of a discharge permit, enforcement action or water rights permit.[113]

Some water users and others involved in the process complain that ex parte rules limit regulated entities' ability to discuss important and complex issues with board members. Instead, local governments, businesses and other stakeholders are often limited to just a few minutes of testimony before the board during a formal hearing, despite the profound fiscal impact board decisions can have on these regulated entities.

Carole Besswick, chairwoman of the Santa Ana Regional Water Quality Control Board and a former member of the South Coast Air Quality Management District, told the Commission that one of the biggest differences between the water boards and air district boards was that air board members had much more freedom to talk to the people they regulated. As an air regulator, Beswick noted she frequently interacted with those she regulated, which helped her better understand the issues she and stakeholders faced.[114]

Others also have complained about the water boards' ex parte rules, even other state agencies. In a 2000 letter to the state water board, the state Department of Water Resources complained that the water boards' "strict reading of the ex parte communication rules is not in the public interest, because it reduces the ability of the public and parties to seek assistance from the board and staff on complicated water rights issues and to work toward resolving problems."[115]

Ex parte rules are different at other state boards and commissions. The Integrated Waste Management Board was created in 1989 and the law enacting the board included what is referred to as a "sunshine" rule. Section 40412 of the Public Resources Code allows for communication between board members and regulated entities as long the board member fully discloses the communication at a public meeting.[116] Other boards, such as the California Public Utilities Commission and the state Air Resources Board, have similar provisions. The "sunshine" rule allows regulators to interact with stakeholders so that they can become better informed, but at the same time ensures that all such communications are known to everyone interested in the proceeding.

"As for the fairness of the process, the regulated community is frustrated by the fact that members of the SWCRB and the nine RWQCBs say they are unapproachable under state law," complained Mick Pattinson, president and CEO of Barratt American Homes, a Southern California homebuilder. "While it is perfectly acceptable and appropriate to speak with elected city, state and federal officials, it is unfathomable that the same rights do not apply to unelected board members."[117]

10 Percent Rule Limits Appointees

Governors have long struggled to find interested, qualified people to serve on regional water boards. With nine positions on each board, and because the positions are virtually voluntary, with only a $100 per diem paid per meeting, appointments are a continuing problem.

As the Commission conducted its study, five of the nine regional boards each had three vacancies, leaving a third of these board spots unfilled. Some boards have gone with as few as five members for months at a time. This can lead to difficulties in achieving the quorum necessary for a board to take action, slowing down decision-making and impacting the environment and businesses waiting for permits or other actions.

Part of the difficulty in finding appointees stems from the so-called 10 Percent Rule, which is embedded in both federal and state law. The Clean Water Act prohibits anyone from serving on a board that issues permits if they have earned "a significant portion of his income directly or indirectly from permit holders or applicants for a permit."[118] Similar language was adopted into state statute. The EPA later interpreted significant to mean 10 percent or more of income.

The 10 Percent Rule goes beyond typical conflict-of-interest rules, which forbid people from participating in decisions that could affect their income, by prohibiting someone from even serving on a water board if they have a conflict. The rule has dramatically narrowed the pool of potential water board candidates who were interested or qualified to serve.

For example, Sari Sommerstram, a watershed consultant with a Ph.D. in resource planning and conservation, was appointed to serve on the North Coast Water Quality Control Board by Governor Arnold Schwarzenegger. Despite her background in water, she was not allowed to continue on the board due to the 10 Percent Rule. Her husband raised trees which were sold to timber companies for use in reforestation, and because those same companies were regulated by the water board, she had to leave the board soon after she joined it.[119]

Additionally, while each regional board has a slot for a county supervisor, it is virtually impossible to find a supervisor who qualifies for a board position because counties are subject to regulation under stormwater permits and because in most medium- and large-sized California counties, supervisors are full-time county employees.

For a governor, identifying 81 people interested in serving on a regional board who do not have a 10 Percent Rule conflict is a daunting task.

There is widespread consensus among stakeholders and others in California that the 10 Percent Rule should be changed. In her testimony to the Commission, however, Alexis Strauss of US EPA noted that it was extremely difficult to change US EPA regulations. Others noted that because California is one of only a few states with part-time political appointees making permit decisions – Colorado and Virginia are two other states with state water boards – there is little interest in Washington, D.C., to enact regulatory reform.

An Increasingly Complex Job

As water quality regulations evolve to handle increasingly complicated pollution programs, some suggest a part-time board has a more difficult time making appropriate decisions.

State Water Resources Control Board member Art Baggett told the Commission that many routine permits have grown from 10 to 12 pages when he joined the board in 1999 to more than 100 pages today, in part because the state has stepped up enforcement of permits and dischargers are now more concerned about every detail.[120] Permits can take up a significant amount of board time at monthly meetings. Due to permits' increased complexity, many stakeholders suggest that regional board members simply rubber stamp staff suggestions because they do not have the knowledge base to question the details.

A former board member told the Commission that the boards can be overwhelmed by volumes of paperwork that are difficult to understand without a background in water science.

Terese Ghio, who served on the San Diego Regional Water Quality Control Board, told the Commission that many regional board members were simply unqualified to render decisions on technical and science-based regulations. Ghio noted she had a background in wastewater treatment and was able to question staff on permit technical issues, but many other board members are not.

Even with technical expertise, Ghio noted the difficulty of the job. "In some cases, it was thousands of pages given to us one week before the meeting," she said.

As the complexity of permits and other regulations grows, it is unclear whether regional boards can act as a check on staff, or other stakeholders, to ensure they are making the right decision for the environment and the economy.

U.S. Navy's Stormwater Permit Illustrates Difficulties

The United States Navy receives an industrial stormwater permit from the San Diego Regional Water Quality Control Board for operations on three Naval bases along ports in the San Diego region. The 2002 permit has created conflict between the board and the Navy, and the Commission heard public testimony from the Navy and received written testimony from the executive officer of the San Diego board regarding the conflict. The Commission is not taking a side in this dispute, rather, the Commission points to the issues surrounding the Navy's stormwater permit as illustrative of several systemic problems: The boards are attempting to regulate non-point source pollution with standards that were developed before non-point source pollution was regulated, leading to a credibility problem among stakeholders who argue non-point standards should be different; the boards do not have the resources to conduct appropriate research to justify regulations or find cost-effective solutions to easing pollution problems; the boards are not as collaborative with stakeholders as they could be, which results in disputes that hinder progress toward protecting water quality; and, the relationship between the state and regional boards is unclear.

The Navy makes several contentions regarding their 2002 permit and the toxicity standard required in the permit:

- The standard is nearly impossible to meet without building a $300-million water treatment facility.
- The board is using a standard created in the 1974 Water Quality Control Policy for the Enclosed Bays and Estuaries of California, which states that it is not intended for land runoff.
- Based on letters between the Navy and the state water board, the state board and the regional board have differing interpretations of the 1974 Water Quality Control Policy for the Enclosed Bays and Estuaries of California which would lead to differing regulations, but the regional board has ignored the state board's opinion and the state board has done nothing to direct the regional board on the issue.
- A study conducted by the Navy shows that even when Navy stormwater is higher than the toxicity standard, the receiving water – the water to which the stormwater flows – still is not toxic. Thus, the Navy argues that the standard is stricter than necessary to protect San Diego Bay.
- The Navy study was completed in 2006 and offered two alternatives for the board to use when measuring toxicity, yet the board for two years did not responded to those suggestions. "We believe the board did not consider the study because it does not have the technical expertise to review it,'' Rear Admiral Len R. Hering Sr. said in his testimony to the Commission.

The board argues that the permit and its use of the toxicity standard are valid. It contends that:

- The board's basin plan states that "all waters shall be maintained free from toxic substances in concentrations that are toxic to or produce detrimental physiological responses in human, plant, animal, or aquatic life…" and that the board is properly interpreting that broad standard and standards within the Water Quality Control Policy for the Enclosed Bays and Estuaries of California, which actually calls for the eventual phasing out of all discharges into the state's bays.
- The Water Quality Control Policy for the Enclosed Bays and Estuaries of California sets the toxicity standard the Navy is required to abide by for all "industrial process waters," which the board interprets as the Navy's stormwater. The state board's interpretation that "industrial process waters" does not refer to stormwater could be considered by the state board if the Navy appealed its permit to the state board, which it has not done.
- The board allowed the Navy four years from the date of the 2002 permit to begin complying with the toxicity standard.
- There are Best Management Practices, such as detention basins, filtration and wetlands, that the Navy could create to meet the standard that would be cheaper than a treatment facility, but the board is prohibited by state law from dictating to the Navy or other regulated entities how they comply with their permits.
- The Navy's argument that the board should measure pollution in the receiving water, instead of measuring the Navy's stormwater, is simply a way for the Navy to make no improvements to its stormwater discharge, and all dischargers should be measuring and improving their discharge.
- The Navy was allowed to present the findings from its study to the board in a 2006 public hearing, and the board may use some of the information from the study in the re-issuance of the permit, which is scheduled for 2009.

As the Commission was finalizing this study, the San Diego board was preparing a draft of a proposed new stormwater permit for the Navy that was scheduled to be adopted in early 2009.

Sources: Rear Admiral Leendert "Len" Hering, Sr., United States Navy. April 24, 2008. Verbal and written testimony to the Commission. Also, John Robertus, Executive Officer, San Diego Regional Water Quality Control Board. September 26, 2008. Memo to the Commission.

State Has Difficulty Addressing Modern Water Problems

As focus in water quality regulation has shifted from point source pollution controls to non-point source pollution, the water boards have found it increasingly difficult to address and reduce water pollution. Many non-point source pollution problems require solutions outside of the water boards' typical regulatory programs, and more interaction with other state and local regulatory agencies.

Consider: Studies suggest that some mercury contamination in water along the California coastline is caused by coal-burning power plants in China.[121] Other water pollution problems stem from sources closer to home, but are still difficult for water boards to address. Studies conducted by the Southern California Coastal Water Research Project have found that local air pollution contributes to water pollution. One study showed that 50 to 100 percent of trace metals in stormwater runoff were deposited from the air.[122] Pollution from both vehicles and stationary sources, such as power plants, ends up in the water.

"The old models that EPA has put forward to deal with stormwater as if it were just a subset of wastewater are not models that carry us forward," Alexis Strauss, director of the Water Division for EPA's Region 9, told the Commission.

The water boards need help from other regulatory agencies, particularly the state air resources board and other air districts. In an attempt to begin addressing aerial deposition, the state Air Resources Board and the state Water Resources Control Board met in a joint public session in February 2006. The boards heard presentations on the impacts of airborne metals and mercury

How Proposition 218 Affects Stormwater

Approved by voters in 1996, Proposition 218 requires local governments to obtain the approval of two-thirds of voters, or a majority of property owners, to raise certain fees or taxes. The proposition excluded sewer, water or trash collection, however, allowing cities and counties to raise fees on utilities based on the vote of elected officials.

Efforts to consider stormwater services as a utility exempted from Proposition 218 were challenged, and in 2002, an appellate court decision in Howard Jarvis Taxpayers Association v. City of Salinas found that charges imposed by the city to pay for stormwater management were not utility fees and therefore were not exempt from Proposition 218 requirements.

Because of this, many local government officials complain that they are unable to pay for stormwater management services in the same way they pay for wastewater treatment, despite facing the same kind of regulation as wastewater treatment. Stormwater funds must come from the general funds of each municipality and compete with other services, such as police and fire protection. One regional water board official noted that wastewater treatment operations in his region had an overall budget of about five times that of stormwater agencies.

Efforts to amend Proposition 218 have been made in the Legislature but have been unsuccessful. SCA 12, by state Sen. Tom Torlakson, D-Antioch, in 2007 would have exempted new or increased stormwater and urban runoff management fees from Proposition 218's requirements, but it did not make it through the legislative process.

Sources: Legislative Analyst's Office. December 1996. "Understanding Proposition 218." Senate Local Government Committee. June 27, 2007. Tom Mumley, Assistant Executive Officer. July 31, 2008. Personal communication with Commission. Bill Analysis, SCA 12 by state Sen. Tom Torlakson, D-Antioch.

in water and pledged to work together to continue investigating the issue. But no formal relationship has been created.

One avenue receiving attention as a way to better address non-point source pollution is through a broader focus on watershed health. The idea is to seek creative and collaborative ways to reduce water pollution when typical regulatory practices are not working. Several efforts involving the water boards have been made to increase the focus on watershed-wide planning and projects.

The state board launched a Watershed Management Initiative in 1995, which required each regional board to develop management strategies for each of its watersheds and funded positions at each regional board to work on watershed issues. Today, each regional board continues to employ a full-time or part-time person who works on watershed issues, mainly as a liaison between the boards and local watershed coalitions. In addition, efforts by CalFed – the joint state-federal agency overseeing the Bay Delta – and a watershed council created by Cal/EPA and the state Resources Agency have sought to encourage watershed-level management and planning in recent years. The state Department of Conservation, which is within the Resources Agency, is currently using money from Proposition 50 and other state funds to continue work on adopting a statewide watershed program that would help develop local watershed management plans and projects.[123]

Despite these efforts, the state is still struggling with implementing true watershed management. The watershed council created by the state has disbanded, and many facets of its strategic plan, such as getting all state agencies to agree on a common set of watershed boundaries or coordinating regulatory programs at the watershed level, have not occurred. An interagency task force of deputy directors that met for an 18-month period in 2005 and 2006 has disbanded. Interest among state leaders in the topic has waxed and waned.

The EPA and San Francisco Bay Regional Water Quality Board attempted to create a watershed permit that would regulate all entities, including non-point sources, discharging into one watershed, for example. The effort was abandoned, however, because the regulators and stakeholders could not come up with solutions to fairly regulate very different sources all in one permit.

The state has promoted the idea of watershed planning as a way to improve water quality and water supply, by distributing money through bonds in the past several years for local planning efforts.

About $640 million was proposed in Proposition 50 for Integrated Regional Water Management Planning (IRWMP) projects, for example, and another $1 billion is earmarked in Proposition 84 for similar projects.

Participation in the IRWMP process by regional boards has been mixed, however. Some boards, such as the Santa Ana Regional Water Quality Control Board and the North Coast Regional Water Quality Control Board, have been active participants. Others have not.

Strengthening Ties, Solving Problems

In a February 7, 1969, letter to the chairman of the State Water Resources Control Board, Assemblyman Carley V. Porter lamented that the state's preeminent water quality law was 20 years old. "… we are indeed in different times and facing different situations than existed in 1949," Porter wrote. The letter urged a comprehensive review of the 1949 Dickey Act, and led to a major overhaul that became known as the Porter-Cologne Act that passed later that year.[124]

Four decades after the creation of Porter-Cologne, a similar letter could be written about it: We are in different times and face different situations than the Porter-Cologne framers imagined in 1969.

Through its study process, the Commission found two inseparable issues. First, water quality problems in the state, and efforts to address them, are becoming increasingly complicated. This was underscored by a report released in October 2008 by the National Research Council that essentially declared two decades of national stormwater regulatory policy a failure.[125] Second, as it grapples with these complex water quality problems, California acts through a decentralized governance structure that lacks accountability and transparency, and is unable to match resources to priorities. As a consequence, many in the water community – from environmental groups to regulated entities – have lost confidence in the system.

The two issues combined lead the Commission to conclude that major reform is needed. A 40-year-old regulatory structure is simply not equipped to handle current problems.

A new, ideal system should include the following characteristics:

- ***A unified state agency.*** Completely distinct regional boards may have been appropriate in past decades, but current common problems – urban stormwater, for example, or impairments in different water bodies caused by the same contaminants or sources – call for a more centralized regulatory approach with a common vision and common

processes. A unified state agency can better identify key problems in the state and align resources to address those problems. Efficiencies gained by a stronger bond between the state and regions will get to clean water outcomes faster and cheaper.

- ***Local input.*** A need for local input on water quality objectives remains, however, as water bodies are unique, with unique problems and solutions. Water quality objectives should continue to be set at the regional level, with vigorous debate and discussion among local stakeholders.
- ***A focus on accountability and outcomes.*** The public, and policy-makers, have a right to clearer information from the boards as to the state of the state's waters, and to which regulatory programs are effective – and which are not. Additionally, the boards must expand their scope beyond ensuring that dischargers are abiding by their permits toward this fundamental question: Are our programs protecting and improving water quality?
- ***Integrated science, accessible data.*** As water pollution problems increase in complexity, California needs to integrate more scientific analysis into board programs. The state board needs scientific advisors to help guide and coordinate research and use that research in regulation. In addition, the boards' dearth of water quality data must be rectified, and it can be: Numerous federal, state and local agencies, as well as other groups, already are collecting information. It is time for the state to make a serious effort to collect that information into an integrated system to allow the boards and others to use it to improve outcomes.

This system – one unified agency, with local input, an emphasis on accountability and outcomes and better use of science and data – will allow the boards and their communities to communicate better with stakeholders, and to better address problems. This should launch collaborative efforts in each region to focus on the most important tasks: updating basin plans, using science and economic analysis to drive decision-making, assessing program effectiveness and, when warranted, making swift changes.

Above all, California's water boards must set priorities. A mission to protect all waters everywhere to the same level – as stated in Porter-Cologne – simply is not possible, given the resources of the state, local governments and others. Water bodies must be prioritized, and so too must solutions. Economic analysis is needed to determine where the state can get the most clean up or pollution prevention for

each dollar spent. Collaboration centered around watersheds is needed to spark innovative solutions to water quality problems that are caused by and affect entire ecosystems.

Some water board officials noted they thought of themselves as water cops. This is an apt description – the boards' job is to police and protect the waters. But just as modern policing has evolved to include the concept of community policing – with police working within neighborhoods to help prevent crime – so to must the water boards work in a collaborative way with water users and others who benefit from clean water to find solutions to water quality programs. Non-regulatory approaches could be appropriate answers in some watersheds.

The key to board effectiveness in the future is up-to-date basin plans, built on current science and an understanding of non-point source pollution. Basin plans were created more than 30 years ago. Many water quality standards have not been updated since, and may not have been based on sound science or monitoring data when they were created. This creates a fundamental lack of credibility in the boards' decision-making. The state, with stakeholder support, must launch an effort to ensure these foundational regulatory documents reflect the current status of water use and needs, as well as water protection priorities.

The water boards have made recent efforts to improve. New offices designed to improve information management, strategic planning and public participation are positive steps, and the boards should be commended for recognizing weaknesses and seeking ways to address those issues. The Commission met countless board members and staff who were working diligently to better programs and board performance. But the state water board's boldest proposal, the 2008 Water Quality Improvement Initiative, only recommend changes within the current structural framework. The Commission believes a more profound change is required, one that will involve thoughtful and committed leadership and engagement by the governor and Legislature.

Change will be difficult. The Commission found that while virtually all stakeholders had a laundry list of complaints regarding the water boards, most did not endorse a major structural overhaul. Many water users and others in the water arena preferred processes and actions taken by specific regional boards that benefited them. The Commission's goal is different: Its recommendations seek to drive change that will protect and enhance water quality through a process that is more fair, transparent and effective.

The Commission recommends reconstituting the state board as a nine-member board, with five of the board members serving solely on the state board and four members serving both on the state board and as a full-time chairperson of a regional board. The regional chairpersons would rotate on and off the state board, and serve staggered, two-year terms. All regional board chairpersons would be full-time, and appointed by the governor. A state board that includes a mix of state and regional perspectives should produce a more unified agency and allow the state board a better understanding of regional issues and vice versa. Regional board buy-in to state board policies and priorities would be increased, while the state board would continue to have a majority of voting members considering issues from a statewide vantage point. Statewide priorities and policies would be more likely to be implemented under this structure.

Other States' Governance Structures

During its study, the Commission examined the governance structures surrounding water quality regulation in other states to determine if there was a better model than the structure in California. California is unique: No other state governs water quality with a gubernatorally-appointed state board and gubernatorally-appointed regional boards.

Some states – including Virginia and Colorado – have appointees administering water quality, but both of those states have one board overseeing the entire state. Most states have a bureaucracy that sets water quality standards, although some have a decentralized system, in which regional offices set standards and administer other programs, and many have a stakeholder board involved in some aspects of decision-making.

The Commission could find no evidence that one governance style or another led to cleaner water. Nonetheless, there may be lessons California can learn from other states' systems. California may learn from the following states that are comparable in terms of size and geography:

- ***New York.*** The Division of Water within the New York State Department of Environmental Conservation handles National Pollutant Discharge Elimination System (NPDES) program activities, water quality monitoring, standards, total maximum daily loads (TMDLs), non-point source programs, water resource permitting, permitting for discharges to ground water and dam safety. The Department of Environmental Conservation has a central office in Albany and nine regional offices throughout the state. The department maintains a Water Management Advisory Committee, which began in 1979 and is made up of environmental, business, municipal, academic and citizen representatives. The committee allows water policies and issues to be vetted and informed by stakeholders.
- ***Oregon.*** The Oregon Department of Environmental Quality administers the NPDES program. There is a central office in Portland and three regional offices. The regional offices issue permits, handle compliance issues and take informal enforcement actions or refer potential enforcement issues to the central office. The central office issues general permits, develops state regulations and policies and oversees regional offices. While the department sets water quality standards, a gubernatorally-appointed Environmental Quality Commission approves those standards and hears appeals regarding penalties assessed by the department and other issues.
- ***Florida.*** The Florida Department of Environmental Protection administers the NPDES program. Six regional offices issue most point source permits and ensure compliance with those permits, while the main headquarters issues all stormwater permits for the state. Florida also has five water management districts, which administer flood management programs and control water rights and flow issues. Each district is run by nine gubernatorial appointees, and each district has taxing authority to raise money to improve water quality and supply.

Sources: United States Environmental Protection Agency. March 10, 2005. "Permitting for Environmental Results: NPDES Profile: New York and Indian Country." Washington D.C. United States Environmental Protection Agency. September 27, 2005. "Permitting for Environmental Results: NPDES Profile: Oregon and Indian Country." Washington D.C. United States Environmental Protection Agency. March 10, 2005. "Permitting for Environmental Results: NPDES Profile: Florida and Indian Country." Washington D.C. Robert Moresi, senior hydrogeologist, Black and Veatch, Tampa, FL. September 19, 2008. Personal communication with Commission.

This new structure will eliminate barriers between the boards and improve communication and collaboration among regions. It is the surest way to provide both a unified state agency while maintaining regional input through a regional board. While the regional board chairpersons will become full-time positions, the other members of the regional board will remain part-time volunteers paid a per diem. The regional board chairpersons will represent the state board in their districts and be point persons for monitoring implementation of state policy at the regional level.

Other structural changes are needed. To improve confidence in the system and ensure accountability, the appeals process must be stripped from the state board and handled by a separate appeals board. This will ensure appropriate oversight of board activities, restore confidence in the appeals process and, in addition, allow the state board more leeway to interact with regional boards before they make key decisions.

To increase emphasis on science, the state should create a science advisory board to help the state and regional boards coordinate research and ensure that research is properly integrated into regulation. Regional boards also should be encouraged to become involved in an independent, collaborative scientific institute such as the Southern California Coastal Water Research Project, which brings regulators and the regulated together to jointly sponsor scientific research.

The state also must create an independent data institute to help gather, coordinate and present water data. Acting as a water data library, the institute would allow the boards and others to tap into the vast amount of water quality information that is gathered, but currently not synthesized.

The Commission realizes these are ambitious proposals, particularly in a period where both the state and local governments face daunting fiscal crises. But there are savings to be had through these strategies, which can create government efficiency, leverage resources of multiple agencies and stakeholders, and reduce the conflict that can consume both public and private resources without producing better outcomes.

Protecting and improving water quality is a challenging task, but one essential to the state's vitality and growth.

Strengthening Ties, Redefining Roles

The Commission considered abolishing the regional boards in favor of a bureaucracy controlled in Sacramento. This idea was proposed in Governor Schwarzenegger's California Performance Review and holds some appeal: One department could improve efficiencies and consistency.

But many board officials and other stakeholders made a compelling case for the concept of regional decision-making for water quality regulation.

"The water quality problems of the rainy North Coast are just fundamentally different than the water quality problems of the Central Valley or the Colorado River desert," Craig Wilson, an attorney for the dairy industry and former chief counsel of the state board, told the Commission. "I think having an agency that responds to those differences is important."[126]

Santa Ana Regional Water Quality Control Board chairwoman Carole Beswick was persuasive in her argument for a regional board approach, noting that an appointed board can work with businesses and other stakeholders in a way that a civil servant would likely not.[127]

The Commission concludes that regional decision-making remains a sound approach.

Yet the Commission encountered numerous problems with the current regional board structure. Boards appear to have dramatically different approaches on some important policy issues and processes. Despite Porter-Cologne's framework giving the state board oversight authority of regional boards, the state board does not routinely exercise that authority and there is little accountability in the system to ensure that regional boards are achieving desired results or following state policies.

"The state board is extremely reluctant to get involved in decisions made at the local level," US Navy Rear Admiral Len Hering, Sr. told the Commission.[128]

In addition, governors of both parties have struggled to find 81 appointees at any given time who are qualified and interested in serving on regional boards, and as the complexity of water quality regulation has increased, it is questionable whether voluntary boards

are capable of awarding proper permits, making other technically difficult decisions, and acting as a check on staff as they were intended to be.

The Schwarzenegger administration sought to address some of these issues through its proposed Water Quality Improvement Initiative. To address inconsistency problems, the initiative proposed the Water Quality Council, which would consist of the chairpersons of the nine regional boards and the chair of the state board. The council would hold public hearings and address issues of inconsistency by making suggestions to the state board. The council also would help the state board set statewide priorities.

The initiative also called for the reduction in size of regional boards from nine to seven members, and, in recognition of the regional boards' struggles to handle complex issues, proposed allowing executive officers to issue federal NPDES permits. Changes to the 10 Percent Rule that would only prohibit someone from serving on a regional board if they earned income from an entity permitted by that board – not all boards – would widen the pool of potential regional board appointees.

The initiative is a good start, but does not go far enough.

Instead of creating a new council, the state board should be reformed to include some regional board representation. Five members of the state board would be appointed by the governor to represent statewide interests, and have backgrounds similar to the current requirements, with one exception: instead of two spots for engineers, there should be one engineer position and another position for a scientist or resources economist with experience in water-related areas. Four other members of the state board would be serving simultaneously as the chairperson of a regional board. All of the members would be appointed by the governor, with the governor selecting the four regional board chairpersons to serve on the state board for two-year terms.

All nine regional board chairpersons should work full-time, allowing them to better coordinate and implement statewide policies, while also allowing them more time to work with executive officers and staff members in each region and to serve as a check on staff. All regional board chairpersons should have a background in water quality issues.

The Commission supports the administration's proposal to shrink regional boards to seven members. The boards should continue to be

stakeholder boards, with the part-time members earning a per diem, which should be raised to $500 per meeting, as the administration proposed, and allowed to grow with inflation. Raising the per diem would help make these positions more attractive to a wider group of people, not just those who can afford such a time-consuming, semi-volunteer position.

The state board would continue to set statewide policies and priorities. In addition, the state board would be more capable of working with regional boards in advance of controversial decisions made at the regional level.

The six part-time regional board members should represent the following backgrounds: experience in water supply, conservation or production, experience in irrigated agriculture, experience in industrial water use, experience in local government, experience as a water-related scientist or engineer, and experience with a nongovernmental organization associated with recreation, fish, wildlife or the environment.

In addition, executive officers at each regional board would be allowed to conduct most permitting activity. Permits would still be issued through a public hearing process with executive officers conducting hearings that allowed water users as well as the public to comment on permits. Executive officers would become career executive assignment positions reporting to the executive director of the state board. At the state level, the executive director would issue state permits through a similar public process.

Regional boards would be required to conduct an annual review of the executive officer's performance, which would be taken under advisement by the executive director. This would further strengthen the relationship between the state and regions.

This new structure has the following advantages:

- ***Stronger tie between the state and regions.*** Overlapping regional and state board membership allows for a clearer structural relationship between the state board and regional boards. The frequent interaction between some regional board chairpersons, as they met as the state board, and the state board members would allow regions to share more information, to better set and implement similar priorities and to strengthen the concept of the boards as one state agency. In addition, changing the executive officer position from a regional board employee to a career executive assistant hired

by the executive director of the state board would further improve the relationship between the regional boards and the state board.

- ***Strong chair bolsters leadership, clarifies state priorities.*** Implementing a "strong chair" system, in which the chairperson of the regional boards is full-time and the other members are not, allows the chairperson to develop more expertise in pertinent issues and become the true leader in the region on water quality. This concept is based on the successful model used by the state Air Resources Board.
- ***Retains regional decision-making.*** While the overlap between the boards would improve consistency and efficiency, regional boards would still adopt basin plans, adopt TMDLs and otherwise control water quality policy in their region.
- ***Focuses state and regional boards on planning and policy.*** By delegating permitting authority to regional executive officers and the executive director of the state board, state and regional boards would have more time to discuss and consider broader policies and update basin plans. This is the appropriate responsibility of the boards.
- ***Improves governor's ability to fill appointments.*** This proposal would reduce the number of state and regional water board appointees from an unworkable 86 to a more feasible 68. Governors should have an easier time finding 54 part-time regional board appointees, compared to the current 81.

Increasing Transparency and Accountability

Several aspects of the water boards' governance structure that hinder transparency and accountability require change.

Communication should be improved. Strict ex parte rules limit the ability to discuss issues with the regulated community. This leaves discussion to public hearings, in which speakers are often limited to a few minutes of testimony. These limits prevent communication between regulators and the regulated that could help boards better solve problems. The result is a lack of trust among stakeholders of the boards, and a lack of understanding as to why boards take the actions they do.

The Commission believes the water boards should adopt ex parte rules used by other boards, such as the Integrated Waste Management Board, that allow for communication between regulators and the regulated as long as they are disclosed in a public meeting.

If executive officers and the executive director are allowed to issue permits, they too should be allowed to communicate with all stakeholders as long as it is disclosed.

For greater understanding and better outcomes, communication should be encouraged.

Appeals process should be reformed. Many water users and others in the water community complained about the appeals process, arguing the state board rarely heard appeals and rarely was willing to overturn regional board decisions. The state board process of determining which appeals to consider is too staff-driven and often it is unclear to stakeholders why the board has not taken up an appeal. This adds to the mistrust stakeholders have for the boards.

Additionally, the state board's appellate role prohibits it from interacting with regional boards before they issue a controversial permit or make another decision that could be subject to appeal. The Administrative Procedure Act, which governs much of the boards' processes, require an absence of bias, prejudice or interest in a proceeding by a body that could hear the issue on appeal. Thus, the system is set up to create distance between the state and regional boards on decision-making, contributing to inconsistency and lack of communication and interaction between the state and regional boards.

Change is needed to restore confidence in the appeals process.

In an effort to improve the water boards' appeals process, the Commission examined how other state and federal environmental agencies that make quasi-judicial decisions, such as issuing permits, handle appeals.

Large local air quality management districts, such as the South Coast Air Quality Management District and the Bay Area Air Quality Management District, have hearing boards that handle appeals of district board decisions. The boards are appointed by the district board members and are paid a per diem for each meeting. The hearing board for the Bay Area Air Quality Management District, a five-member board consisting of an attorney, an engineer, a member of the medical profession and two members of the public, meet between three to five times each quarter to hear requests for a variance from district rules and appeals of abatement orders and permits.

US EPA also has an appeals board, which hears appeals of regulatory actions taken by US EPA under the Clean Water Act, the Clean Air Act, the Safe Drinking Water Act and five other environmental laws. US EPA's Environmental Appeals Board consists of four administrative law judges, who are appointed by the administrator of US EPA, who in turn is appointed by the President. A panel of three of the four board members hears each case. The board typically hears appeals based on the terms of federal permits or fines assessed by US EPA.

The Commission believes the water board appeals process should be separated from the board, to improve trust in the process and to give the state board room to become more involved in regional board issues before they get to the appeals stage.

A hearing board model is the best fit for the water boards. A board comprised of three administrative law judges, with backgrounds in water-related issues and appointed by the governor, should be created to hear appeals.

Anyone, whether regulated entities or members of the public, would be allowed to appeal a regional or state board decision to the appeals board, which would be required to review petitions for appeal and make decisions based on whether the action under the appeal was legally appropriate and consistent with state or regional policy. The board should follow guidelines set out in the state's Administrative Procedure Act for appeals processes, and should be required to issue a ruling on an appeal within 90 days of hearing. Petitioners who were unsatisfied with the results of an appeal could then go to court, as they do now.

Report cards would provide easy-to-understand information and add accountability. One of the most valuable and easily accessible reports published on water quality in the state is the Beach Report Card created by the environmental group Heal the Bay. Now in its 18th year, the report card gives a letter grade to more than 375 locations year-round, and has become so well respected that its grades have been used to obtain funding for water quality projects and cited during the water boards' process of listing impaired water bodies.

The grading process has gone through several iterations during the report cards' history, and the current formula requires weekly testing at each site for three indicator bacteria. The grading formula – a key to the credibility of the report cards – has been validated by the California Beach Water Quality Workgroup, an ad hoc committee that

includes regulators, regulated entities, local governments and environmental groups, and is geared toward whether a beach is safe for swimming.

These report cards are important in two ways: They provide easily understandable information to the public, and they hold water quality regulators and dischargers accountable for outcomes. Beaches with poor grades indicate regulators and the regulated are not achieving the clean water called for by law.

Statewide, the Commission found an alarming lack of easy-access information about water quality, and an equally alarming lack of focus on clean water outcomes by the water boards. While the state does maintain a list of impaired water bodies to fulfill Clean Water Act requirements, it is difficult for the public to use that list to discern whether water bodies are truly safe for swimming, fishing or other uses.

To address both of these issues, the Commission believes the state should create a report card system for water bodies across the state based on Heal the Bay's Beach Report Card. Publicly accessible, easy-to-understand letter grades for water bodies throughout the state would act as a scorecard for regional boards, by answering this simple question: Are programs working to protect and improve water quality?

The report cards could emulate the state Air Resources Board's Air Quality Index, which has become an important tool for the public in assessing whether air quality is safe or not. Water body report cards could eventually provide a similar tool.

This is a long-term project. More monitoring would be needed, and decisions would need to be made regarding grading formulas. While the Beach Report Card is geared toward whether ocean water is safe for swimming, other water bodies could be graded for fishing or other beneficial uses. This process could be organized by the state water board with assistance from an expert panel, such as the California Water Quality Monitoring Council, by a research institute such as the Southern California Coastal Water Research Project, or the University of California. The program could be tested on a pilot basis on significant water bodies with routine monitoring already in place, and then expanded.

Report cards eventually could be used by the state board to measure regional board effectiveness, and for policy-makers to determine where water quality improvement projects are most needed.

Integrating Science

The boards acknowledge the need for improving and integrating the use of science in their decision-making processes. In a 2005 report commissioned by the state board to improve the use of science and engineering within the boards, consultant William Vance spoke with numerous board staff and wrote, "In general, the Regional Boards acknowledge their limitations in scientific expertise … ." Recommendations in the report focus on "creating a means or mechanism that will enable the Regional Boards to obtain scientific advice and recommendations from technical experts not readily accessible today."[129]

Too often, this deficit leads to disputes about science and information, rather than a productive discussion on developing an appropriate policy.

Numerous recommendations for adding more science to water quality regulation have been made in the last few years. US Navy Rear Admiral Len Hering, Sr. told the Commission he thought the water boards should emulate the state Air Resources Board and develop its own research center to work on water quality problems and solutions. A report published in March 2008 by the California Ocean Science Trust listed 25 recommendations for improving links between academic scientists and the water boards, including building a directory of water quality experts with specific expertise to help regional boards find scientists to work with, designating a seat on the state board for a scientist, and reforming the contracting process to improve working relationships with outside scientists.[130]

The report by Vance listed four possible structural changes, all submitted by regional and state board staff:

- Set up "blue ribbon" science panels that would provide advice and guidance on complex scientific issues.
- Create a science advisory panel that would provide technical review, comment and suggestions on Regional Board field studies and interpretation of data.
- Create a pool of in-house experts that would be available to any of the Regional Boards on an as-needed basis (i.e., for expertise currently not available, such as economic analysis or risk assessment).
- Set up an expeditious mechanism for consulting or contracting with experts in other state, federal or local agencies on highly technical issues or projects.[131]

Comparing the Water Boards to the Air Resources Board

Several stakeholders told the Commission that the state's air regulators – the California Air Resources Board – were more effective, transparent and respected than the water boards, and the water boards should do more to emulate the Air Resources Board. In his testimony to the Commission, US Navy Rear Admiral Len R. Hering, Sr. suggested regulations proposed by the state's Air Resources Board and local air pollution control districts were more credible because of the air board's ability to conduct research showing that regulations were practical and effective.

"California's air program is known for a strict adherence to a science-based approach, including a state-operated research facility that leads the world in air pollution science and technology,'' he said. "Air regulators in this state uses science in all aspects, and include economic analysis as a key aspect of decision-making. Water quality regulations, on the other hand, do not have the same scientific basis."

The air and water boards are not easily comparable, but there are interesting differences in the two regulatory systems that could be instructive to efforts to improve the water boards.

The California Air Resources Board (CARB) and 35 local air districts regulate emissions in the state. The CARB is responsible for regulating emissions from mobile sources, such as vehicles, fuels and consumer products, while the local air districts regulate emissions from stationary sources in their districts, such as factories or oil refineries. The CARB consists of 11 members, each appointed by the governor, with the chairperson working full-time and the other members, who represent geographical areas in the state, specific professional backgrounds or the public, serving part-time. Local air districts have varying rules as to board membership, with most including local elected officials and only some members who are appointed by the governor.

Unlike the state water board, CARB rarely issues permits, and instead adopts quasi-legislative actions. Local air districts issue permits. There is less interaction between CARB and local air districts, as they are not a single, unified agency and CARB does not hear appeals of local air district decisions. CARB is charged with setting ambient air quality standards for air basins that local air districts must work to attain through their permitting and policies, however. Air regulators regulate fewer contaminants than do water regulators, and are charged with only addressing contaminants that affect human health. CARB has formally identified 22 toxic air contaminants requiring regulation, while the water boards deal with far more contaminants.

Resources also vary dramatically between the two regulatory sectors. The state Air Resources Board has about 1,200 employees – not including the state's 35 local air districts. The water boards – both the state boards and the nine regional boards – employ a total of about 1,600 people. Locally, the Central Valley Regional Water Quality Control Board has about 275 employees covering a region that includes more than 30 counties. In contrast, the San Joaquin Air District covers eight counties and has about 500 employees. One of CARB's key funding sources is the motor vehicle account, which includes a fee charged to every car owner in the state. The water boards lack a similar funding stream.

CARB has a far more extensive scientific research arm than do the water boards. State statutes require CARB to administer and coordinate all air pollution research funded by the state, conduct studies every three years on the feasibility of air quality models and other analytical tools used to determine air quality, and appoint a screening committee to provide the board with advice on needed research and review research projects. While the water boards also have statutes requiring the state water board to determine state needs for water quality research and administer research, the statutes are less specific. CARB also is required to prepare an assessment of the cost effectiveness of available and proposed controls on emissions and develop a list that ranks the possible controls from least cost-effective to most cost-effective. Water law requires the water boards to consider economics when developing water quality objectives, but the statute is not specific as to how that should be done. Thus, CARB typically conducts an extensive cost-benefit analysis of proposed regulations and has eight economists on staff, while the water boards rarely conduct a full cost-benefit analysis.

Sources: Len R. Hering Sr., Rear Admiral, United States Navy. April 28, 2008. Testimony to the Commission. Sacramento, CA. Robert Jenne, Office of Legal Affairs, California Air Resources Board. February 9, 2006. "Key Air Agencies in California." Presentation to joint meeting of California Air Resources Board and State Watrer Resources Control Board. Sacramento, CA. Pamela Creeden, executive officer, Central Valley Regional Water Quality Control Board. September 17, 2008. Personal communication with Commission. Health and Safety Code Division 26 Air Resources Part 2 Air Resources Board Chapter 4 Research, 39701, 39703, 39705. Health and Safety Code Division 26 Air Resources Part 2 Air Resources Board Chapter 3 General Powers and Duties, 39606, 39607, 39609. Water Code Division 7 Water Quality, 13161, 13162, 13241.

All of these ideas have merit.

The Commission believes the state can best improve its integration of science into the boards' regulatory programs by creating a science advisory board.

A science advisory board, appointed by the state water board, could help the state and regional boards determine where scientific research was needed, help the state board in acting as a clearinghouse for current scientific research, help the boards better incorporate research findings into regulatory proceedings and advise the state board on continuing education options for staff scientists. The board, a five-member board of scientists and engineers paid a per diem for attending monthly public meetings, would help institutionalize the role of science in water board processes while also remaining independent of the boards themselves. The board could act as a liaison with outside scientists and regularly develop short- and long-term plans for scientific study.

Regional Science Institutes a Key to Better Science at Boards

Regional science institutes such as the Southern California Coastal Water Resources Program (SCCWRP) and the San Francisco Estuary Institute (SFEI) are invaluable to their respective regions. Both bring regulators, scientists and stakeholders together to propose and conduct relevant research:

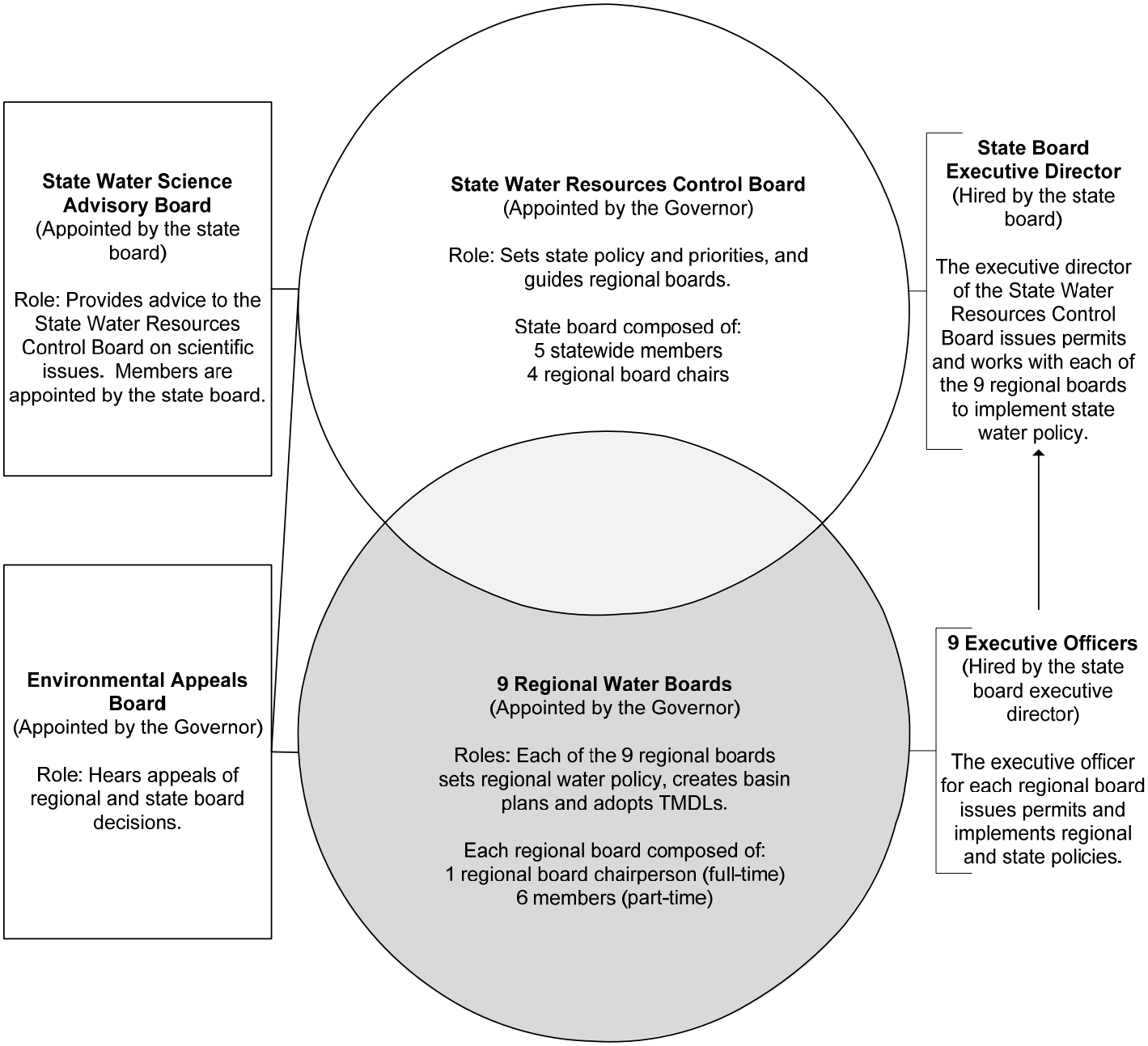
- SCCWRP is a joint powers agency with 14 member agencies, including US EPA, the state water board and the Los Angeles, Santa Ana and San Diego regional boards, as well as several local government agencies. Each agency contributes funding, and a commission comprised of representatives from each agency meets quarterly to oversee impartial research that can be used in regulatory processes. SCCWRP's achievements and ongoing activities include regional monitoring, including a report issued every five years on the health of the Southern California shoreline; important research into the effects of aerial deposition on coastal waters; and research that led to the state water board's adoption of sediment quality objectives in 2008.
- SFEI also is a joint powers authority involving regulators, regulated entities, scientists and other stakeholders, including environmental groups. A board of directors guides research, including regional monitoring of San Francisco Bay; a wetlands science program; and studies on invasive species in San Francisco Bay.

The Commission believes every regional board in the state should be affiliated with a body similar to SCCWRP or SFEI. The advantages are numerous: Collaborations among regulators and the regulated over science can build consensus around the underlying scientific issues of regulations and therefore lessen conflict and build relationships and trust among regulators, water users and other clean water constituencies. Also, a semi-independent agency can conduct and contract for research in a faster timeframe than state government. While it is important for the water boards to have competent scientists on staff, board personnel are often overworked and these outside agencies can do more thorough work that may be more credible with all sides.

Regions such as Lahontan and the Colorado River could combine to help create an institute that might include partners in the southern part of the Central Valley board's jurisdiction. In the Central Valley, the board could work with the new Delta governance structure to develop a science institute for work there. The North Coast could create its own organization, which is suggested by the Ocean Science Trust report, or join the San Francisco Estuary Institute.

Sources: Steve Weisberg, executive director, Southern California Coastal Water Research Project. July 14, 2008. Personal communication with Commission. Also, San Francisco Estuary Institute. "Region-wide Science for Ecosystem Management" brochure. Accessed at http://www.sfei.org/about. Also, T.C. Hoffman and Associates, LLC. March 2008. "Linking the Academic Community and Water Quality Regulators." Prepared for the California Ocean Science Trust.

Proposed Water Board Governance Structure



The board would not conduct research on its own, but act as a science oversight body for the boards. This is not a call for a new bureaucracy – the board could use staff from the state board.

As the Commission was preparing this report, Governor Arnold Schwarzenegger's Delta Vision Blue Ribbon Task Force was preparing a strategic plan for the Sacramento-San Joaquin River Delta and a proposal for a new Delta governance structure. As part of the process, there was discussion about the role of science in helping guide research in the Delta. Two separate proposals – one by Jeffrey Mount and Judy Meyer of the CalFED Independent Science Board and another by a science advisor for the task force – both called for an oversight board to conduct annual reviews of all science aspects of Delta water and ecosystem management.[132]

The rationale for a science oversight board in the Delta in both proposals applies equally to the need for a similar board as an arm of the state water board. The Commission urges the state to consider creating one scientific board that could oversee both the Delta and other state water issues.

Organizing, Leveraging Data

Hundreds of entities across the state – state agencies, local governments and private agencies – collect water quality data. Yet one of the biggest complaints among board officials, staff and stakeholders is the water boards' inability to cohesively gather, publish and analyze data to help inform the public, determine if regulatory efforts are effective and to drive decision-making.

The Legislature has sought to address this problem in several ways:

- AB 1404, approved in 2007, requires the state water board to provide a report by January 2009 on the feasibility of creating an integrated data system focusing on water supply and involving the water board's Division of Water Rights, the Department of Water Resources and the Department of Public Health.
- SB 1070, approved in 2006, created the California Water Quality Monitoring Council to help develop a "cost-effective, coordinated, integrated, and comprehensive statewide network for collecting and disseminating water quality information and ongoing assessments of the health of the state's waters and effectiveness of programs to protect and improve the quality of those waters."

- AB 1747 and SB 1049, approved in 2003, required any group receiving funding from Proposition 50 for water quality improvements to also monitor affected waters to determine a project's effectiveness. The legislation required that the monitoring data be compliant with the state's Surface Water Ambient Monitoring Program so that the data could be integrated and compared.

These efforts point toward the need for a statewide system that can coordinate water data from multiple sources and provide the public, policy-makers, regulators and others with useful information.

The state needs a water data library.

In its strategic plan, the state water board advocates for the creation of a statewide water data institute: "To improve transparency and accountability by ensuring that Water Board goals and actions are clear and accessible, by demonstrating and explaining results achieved with respect to the goals and resources available, by enhancing and improving accessibility of data and information, and by encouraging the creation of organizations or cooperative agreements that advance this goal, such as establishment of a statewide water data institute."[133]

This is an idea that should be pursued. The data institute could use new technology allowing for a federated system, linking data through a data exchange network. Each data provider would be responsible for maintaining its data, but the data could be accessed through a common portal. Some in the water community and board officials including Gary Wolff, vice chairman of the state water board, suggest the data institute should be managed by a non-state entity to encourage buy-in from the numerous data providers. An institute could be housed in an existing entity, such as the Southern California Coastal Water Research Project or the San Francisco Estuary Institute, or controlled by the California Water Quality Monitoring Council created by SB 1070.

This is a big task, as it would require hundreds of data gatherers to agree to standardized monitoring protocols and quality assurance, and allow their information to be used by others. It also would require a stable funding stream. But a coherent, easily-accessible library of data on water quality – and water use – would be a powerful tool for a state that faces profound water challenges in the future.

Updating Basin Plans

Nothing undermines the water boards' credibility and adds uncertainty to the regulatory process as much as outdated basin plans. While the boards do make minor changes to the basin plans every three years, and add TMDLS to them as they are adopted, the last major update, in the mid 1990s, preceded the increase in non-point source regulation. Many controversies and conflicts at the regional board level stem from regional boards' efforts to implement non-point source regulations using a basin plan that does not truly address the specificities of non-point source water pollution, which is different than point source water pollution. Regulated entities have a legitimate argument that regulation should be tailored for stormwater, irrigated agriculture and other non-point sources.

With the core regulatory document silent on some of the biggest water quality issues in the state, the regional boards are regulating in the dark.

The Commission heard compelling testimony from officials with the Santa Ana Regional Water Quality Board, regarding a multi-year, multi-stakeholder effort to revise that region's basin plan.

Concerns in 1995 that water quality objectives related to nitrate-nitrogen and salts would require dischargers to spend billions of dollars and might also discourage water recycling, the Santa Ana board created a task force to review the objectives to assure their technical and scientific validity. Twenty-two water supply and wastewater agencies participated, eventually contributing $3.5 million to a process that involved significant research. Regional board staff, including the executive officer, participated in nearly 100 meetings as the task force prepared a major overhaul of several aspects of the regional board's basin plan.[134]

According to written testimony supplied to the Commission by Santa Ana Regional Water Quality Control Board chairwoman Carole Beswick, keys to the task force's success included extensive discussions in the beginning of the process regarding the science needed, and the buy-in from all task force members that they would abide by regulations imposed by scientific findings. In other words, stakeholders agreed to go where the science took them.[135]

In 2004, the regional board approved significant changes to its basin plan based on the task force's work, including revised boundaries for ground water subbasins and new water quality objectives for nitrate-

nitrogen and salts in those ground water boundaries; new water quality objectives for other contaminants, such as chloride and sulfate; and new wasteload allocations for discharges of nitrogen and salts to the Santa Ana River. In all, 10 major aspects of the basin plan were updated.[136]

Gerard Thibeault, executive officer of the Santa Ana regional board, described the task force process to the Commission, and noted that when the basin plan updates were enacted, there was no dissenting testimony. Thibeault emphasized the importance of the task force's meetings, where regional board staff and stakeholders were able to hash out differences in lengthy conversations. During public hearings before the board, speakers often are limited to a few minutes.

"It is difficult to try and argue very complex technical issues in front of the board when all of the stakeholders have polarized positions," he said. "The task force allowed those arguments to be worked out."[137]

The Santa Ana region has unique characteristics that may have allowed it to gain unanimous support for basin plan changes that might be more difficult in other regions. It is the state's smallest region geographically. And a joint powers agency, the Santa Ana Watershed Project Authority, has effectively promoted collaboration among stakeholders in the region.

Nonetheless, other regions should emulate the Santa Ana region to update their basin plans. The state board should promote the idea and help facilitate regional board basin plan update task forces. Given the state's budget deficit, it seems unlikely that the state will be able to pay for the work needed to update basin plans. Thus, water users and others with a stake in clean water will need to contribute. While it is an upfront cost, stakeholders will benefit in the long run by avoiding lengthy disputes over permits and other conflicts that result from outdated basin plans.

Developing current basin plans is the most critical task facing the water boards.

Solving Problems

The state and regional water boards face an expanding set of threats to water quality at the same time that the state is grappling with water supply issues fueled by climate change, population growth and

a continuing dispute about the best ways to deliver water from north to south.

Throughout its study, the Commission found the boards too often focused on processes instead of results. The boards must reposition themselves from regulatory agencies to problem-solving agencies focused on clean-water outcomes. This will require three important steps: working more collaboratively with stakeholders and other federal, state and local agencies; focusing on watershed health; and incorporating cost-effectiveness tests into their analysis to help determine the best ways to approach water quality problems.

A collaborative approach. While the boards do follow state law and have public participation processes for virtually all of their proceedings, many stakeholders complained that the boards do not work in a collaborative manner. This is despite examples of collaboration that have been productive:

- ***Brake Pad Partnership.*** Since the 1980s, studies showed high levels of copper in the southern portion of San Francisco Bay. Copper contamination continued in the Bay even as nearby wastewater treatment plants reduced copper discharges 10-fold. Continued monitoring and studies showed that area stormwater had unusually high levels of copper, and research was able to pinpoint a source for that copper: automobile brake pads. Every time cars brake, bits of copper in brake pads land on streets. That copper is washed away during storms. Faced with the near-impossible task of regulating automobile brake pads, which have design specifications mandated by the federal government, the San Francisco Bay Regional Water Quality Control Board and Bay Area stormwater managers decided to approach the brake pad industry to work on voluntary changes. A coalition of stormwater managers, environmental groups, board staff and some brake pad manufacturers was formed, with each contributing funding to further study the issue. The Brake Pad Partnership generated new research on copper in the Bay, including studies that allowed the Regional Board to relax limits on the amount of copper in the Bay while still upholding beneficial uses. The group is now preparing legislation that could impose new state restrictions on the use of copper in brake pads that will have some industry support.[138]
- ***Santa Ana Stormwater Quality Standards Task Force.*** Attempts to create water quality objectives for bacteria in water used for recreation created controversy in the Santa Ana region, so the

board agreed to create a stakeholder task force to look at the issue. Five entities are funding the task force, with no money coming from the regional board. A total of 54 agencies and organizations, including environmental groups, are participating. The task force began with three principles: new objectives and beneficial uses would be science-based, within current law, and all task force members agreed to support the new science-based objectives and standards even if it meant they would be more stringent. The task force has met monthly and took a creative approach to determining the beneficial uses of some water bodies: They set up video cameras at 12 locations to determine whether people were using them for recreation or not. Changes may allow some water bodies that are not used for recreation to have less stringent standards, in exchange for tougher standards where those water bodies meet receiving waters that are used for recreation. This will allow regulated entities to spend more time and money on waters with higher-priority uses. Basin plan amendments are expected to be completed in 2009.[139]

- ***Water Plan Update Steering Committee.*** In the past, the Department of Water Resources took sole responsibility for creating the Water Plan, which is the state's master plan for water. For its 2009 update of the Water Plan, however, DWR has created a Steering Committee of 19 state agencies, including the water boards, to better integrate water supply, water use efficiency, water quality, flood management planning and environmental stewardship into the plan. The Steering Committee is working together on nine Water Plan items, including recommendations on how to adapt to climate change and updating and expanding regional reports. DWR officials believe the committee will improve the Water Plan by including more attention to non-DWR issues, but also build inter-agency relationships to better address future water issues.[140]

Within the water boards, the boards must do a better job of working with stakeholders and the public to solve problems. The traditional method of issuing permits and requiring dischargers to monitor themselves is not as effective in dealing with non-point water pollution problems that have diffuse, hard-to-regulate origins. For example, because stormwater pollution is caused in part by individual actions, public education may play a key role in addressing the problem. In addition, stormwater permit processes that require stormwater agencies to develop best management practices to address stormwater pollution often do not include

enough interaction between the boards and agencies to determine program effectiveness during the five-year life of a typical permit.

In an address delivered to the California Stormwater Quality Association in 2006, consultant Armand Ruby proposed annual meetings between regulators and stormwater agencies in which the two parties could consider monitoring data, determine the contaminants they were most concerned about and develop strategies to address those concerns.[141] This does not often happen.

"More time and attention should be paid to getting the public and the regulated community and the regulators into a room to talk, rather then just having three minutes of testimony from each side at a hearing," noted Linda Sheehan, executive director of California Coastkeeper, at one of the Commission's public hearings.

In 2008, the state water board's effort to develop a statewide water recycling policy may have helped create a new model for policy development. With near unanimous dissent among stakeholders regarding a recycling policy proposal created by state water board staff, stakeholders agreed to work together and develop a policy that they would then propose to the board. After several months, the stakeholder group – which consisted of environmental groups, municipal wastewater treatment groups and the Association of California Water Agencies – created a 13-page proposal that all sides agreed on. The proposal suggested new goals for the use of recycled water in the state, called for state- and stakeholder-funded basin plan updates dealing with salt and nutrient issues, a streamlined permitting process to encourage recycled water projects, and the creation of an expert panel to advise the state on how to handle emerging contaminant issues that might affect wastewater and efforts to clean and recycle wastewater.

Boards should use this model to develop future policies.

Other sources of pollution will require more cooperation and collaboration among the water boards and other government agencies.

The state has taken a small step toward addressing air pollution that contaminates water. In February 2006, the state water board and the Air Resources Board met in a joint hearing to discuss aerial deposition and water pollution. The board heard presentations on research suggesting, among other things, that wood burning stoves contribute to Lake Tahoe pollution and emissions from cement kilns contribute mercury to the San Francisco Bay.[142]

While more studies are needed, existing research is clear: Air pollution does impact water.

While the initial meeting between the two state boards was positive, no subsequent meetings have been scheduled. The boards should meet again, and perhaps annually, to begin determining how best to address this difficult situation. Should the water boards begin regulating power plants, automobiles and other sources? Should the air boards expand their scope, from regulating 22 toxic air contaminants the directly impact human health, to other contaminants that impact water? How should regional boards and local air districts work together to address localized issues?

In its report on the boards' use of science, the California Ocean Trust noted several scientific questions regarding air pollution's effects on water quality that needed addressing:

- Developing studies and determining the impacts of atmospheric deposition pollutants on water quality and how to address this in TMDLs.
- Developing conceptual frameworks and models to determine how these systems interact and effect water quality.
- Determining pollutant loads in water from air- and land-based sources.[143]

These questions and issued need to be addressed, and state environmental officials should be working on solutions.

California needs a broad discussion of the impact of land development on water quality that is potentially beyond the scope of the water boards. As California's economy grows and changes, agricultural land is lost and urbanization increases, these issues will increase in importance.

Low Impact Development a Key Response to Stormwater

As the water boards have attempted to improve regulation surrounding urban stormwater, they have begun to focus more on low impact development (LID) as both a key to reducing stormwater discharges and as a potential source of recycled water. The state, as a whole, should continue discussing ways to encourage and improve LID.

The goal of LID is to maintain the hydrology of a development site even as development occurs. LID attempts to hold water on site through water storage and infiltration with the ground. Examples of LID include rooftop gardens on public buildings, rain barrels that catch rain water for reuse, permeable pavement and other methods that decrease the imperviousness of an area that often occurs when it is developed into an urban use.

LID marks a profound change in urban development. Past practices focused on moving water from rain storms quickly away from development to prevent flooding. In Los Angeles, for example, engineers designed concrete channels to convey large volumes of water from occasional but fierce rain storms.

The water boards and other state agencies have made efforts to promote – and require – LID:

- ***Central Coast LID Center.*** Using $2.25 million from the state board, the Central Coast Regional Water Quality Control Board helped develop the Central Coast LID Center, which opened in 2008. The non-profit, affiliated with an already-existing LID center in Maryland, opened in San Luis Obispo in 2008, and will develop technical expertise for the state on LID, provide education and outreach on the topic and serve as a library for research on the issues.
- ***LID Education Project.*** Developed by the water boards, the Coastal Commission and several other groups, including the California Stormwater Quality Association, the project is intended to hold workshops and promote LID throughout the state to local government officials, state officials, developers and others. The project, which was just launched 2008, is seeking to raise more than $2 million to pay for the workshops and other efforts.
- ***LID Regulations.*** Both the state water board and some regional boards have begun to require LID in permits. The San Francisco Bay Regional Water Quality Control Board, for example, is requiring in stormwater permits that new development maintain pre-development erosion levels, while the San Diego Regional Water Quality Control Board in its stormwater permits is requiring all new development and redevelopment projects to implement LID where feasible. Other boards are beginning to place numeric limits on development sites, limiting the amount of impervious surfaces in new development.

The construction industry and municipalities have objected to some of the boards' more aggressive efforts to require LID, arguing that it can increase design and construction costs. In addition, local governments may need to review decades-old ordinances: The city of Lompoc, for example, found that ordinances required impervious concrete in parking lots, which conflicted with Central Coast Regional Water Quality Control Board's requirements to dramatically decrease imperviousness.

Despite these conflicts, most stakeholders agree that LID is an essential tool to addressing stormwater pollution. In addition, LID may help local communities retain and eventually reuse water by recharging ground water basins. A 2005 report by the Los Angeles and San Gabriel Rivers Watershed Council noted that 500,000 acre-feet of stormwater runoff flow from the Los Angeles County basin to the ocean each year. The report noted that if the region could instead capture that water and reuse it, Southern California would be less dependent on water imports from Northern California.

Sources: Water Education Foundation. 2007. "Stormwater Management: Turning Runoff into a Resource." Eric Berntsen, State Water Resources Control Board. January 28, 2008. "Incorporation of LID into State Water Board Programs." Roger Briggs, Executive Officer, Central Coast Regional Water Quality Control Board, and Al Wanger, Deputy Director, California Coastal Commission. October 27, 2008. "Statewide Low Impact Development Education Project." Presented to the Water Quality Coordinating Committee. Central Coast Regional Water Quality Control Board. June 10, 2008. "Staff report, Proposed Re-Direction of Low Impact Development Project Funds to Support the Central Coast Low Impact Development Center."

There are already statutes in place that could be used to increase state government collaboration:

Environmental Policy Council. Section 71017 of the Public Resources Code creates the California Environmental Policy Council, which is comprised of the secretary of Cal/EPA and the heads of the other agencies within EPA, including the chairperson of the State Water Resources Control Board. The council was created to provide guidance for entities seeking a consolidated permit from multiple environmental regulators. It met in 1999 to help resolve issues relating to oxygenate methyl tertiary-butyl ether (MTBE), which was added to gasoline to mitigate air quality problems from gas but was later found to harm water quality.

The council could be used to help address cross-media pollution issues affecting water quality.

Environmental Goals and Policies Report. Enacted by Governor Ronald Reagan in 1970, the Environmental Goals and Policies Report is intended to outline the state's goals as they relate to land use, population growth and distribution, development and conservation of natural resources, including air and water quality. The report is supposed to be produced by the Governor's Office of Planning and Research, reviewed by the Legislature and approved by the governor every four years. It has only been issued twice in 38 years: once in 1978 and again in 2003. The 2003 report, however, was published the same month that Governor Gray Davis was recalled and failed to generate comment or reaction from the Legislature or Governor Arnold Schwarzenegger.

The 2003 report detailed expected population and economic trends, and how those trends could impact everything from air and water quality to agricultural land and open spaces to human health and energy resources. The report also included 58 broad and specific goals for improving sustainable development in the state, including promoting infill development in cities, preserving water quality through watershed protection efforts and encouraging development that supports public transportation possibilities.

Governors of both parties simply have ignored the statute calling for this report. And while some of the issues that could be raised in this report are addressed in other ways – Governor Arnold Schwarzenegger has convened the Climate Action Team, consisting of multiple state agencies, to work on achieving greenhouse gas reductions, for example – an updated version of this report could help the state frame water quality priorities for the future, particularly as

they concern urban stormwater and other non-point pollution sources.

Focusing on watershed health. The state board's new strategic plan emphasizes the boards' need to focus on watersheds as a critical way to improve water quality. "A watershed approach is hydrologically-focused, recognizes the degree to which ground water and surface water bodies are connected physically, recognizes the linkages between water quantity and water quality, and requires a comprehensive watershed protection approach," reads the preamble to the strategic plan.[144] A key action item in the plan requires the state board to identify priority watersheds and focus resources on impairments in those watersheds.[145]

National efforts underway to promote watershed-based planning and regulation can be used as examples. The National Research Council's report on stormwater, issued in October 2008, recommends that the EPA scrap its current stormwater permitting program in favor of regulating on a watershed basis. The report proposes moving from a site-by-site and stormwater permitting process to a permitting process that focuses on broad goals within a watershed and would include point source dischargers and non-point source dischargers.[146]

The National Research Council suggests integrating all discharge permitting under a municipal authority, which would be the lead permittee, and then identifying broad goals and objectives for the watershed and specific solutions for restoration and protection. The report notes that federal funding would be required to help implement such a major change, which includes folding the TMDL program be folded into the new permitting system as well.

Some states, notably Oregon, already have experimented with watershed permitting. Oregon's use of the watershed permitting concept led to a creative solution to addressing water impairment due to temperature, which affects the state's salmon. A discharger emitting heated water into the Tualatin River was allowed to plant trees that created shade and cooled water along the river. The alternative would have required building an expensive system to cool the discharges that would have contributed to climate change.[147]

Watershed-based Permitting

According to the National Research Council, components of watershed-based permitting would include:

- Centralizing responsibility and authority for implementation with a municipal lead permittee working in partnership with other municipalities in the watershed as co-permittees.
- Adopting a minimum goal in every watershed to avoid any further loss or degradation of designated beneficial uses within the watershed's component water bodies.
- Assessing water bodies that are not providing designated beneficial uses in order to set goals aimed at recovering these uses.
- Defining careful, complete, and clear specific objectives to be achieved through management and permitting.
- Comprehensive impact source analysis as a foundation for targeting solutions.
- Determining the most effective ways to isolate, to the extent possible, receiving water bodies from exposure to those impact sources.
- Developing and appropriately allocating funding sources to enable the lead permittee and partners to implement effectively.
- Developing a monitoring program composed of direct measures to assess compliance and progress toward achieving objectives and diagnosing reasons for the ability or failure to meet objectives, in support of active adaptive management.
- Developing a market system of trading credits as a tool available to municipal co-permittees to achieve watershed objectives, even if solutions cannot be uniformly applied.

Source: National Research Council. October 15, 2008. "Urban Stormwater Management in the United States. Page 391. Washington, D.C.

US EPA commissioned the stormwater study, and may attempt to implement a watershed approach in coming years. With this new federal focus in mind, the state and regional boards should emphasize watershed health by creating a new focus on how regulations affect watersheds. The Central Coast Regional Water Quality Control Board has begin this process by creating a new performance measurement structure focused on healthy watersheds.

Strategies the boards could implement include redeploying staff to place more emphasis on watershed health, increasing the use of regional monitoring to get a better sense of the overall state of watersheds, and working more closely with local watershed coalitions or convening watershed stakeholder groups. State law allows regional water boards to direct public agencies to conduct studies of issues affecting water quality, and in a presentation to state and regional board members in October 2008, Richard McMurtry of the Santa Clara County Creeks Coalition suggested using that authority to require all dischargers into a watershed to pool resources, study the watershed and develop priorities and strategies for addressing watershed-wide issues. This could be a step toward watershed permitting.

Legislation supported by the Building Industry Authority in 2008 authorized counties or cities to convene water quality committees to "develop and facilitate cooperation in achieving local water quality solutions" and develop watershed water quality management plans. The legislation would have required regional boards to consider the plans as amendments to their basin plans. The legislation, AB 938 by Assemblyman Charles Calderon, was approved by the Assembly but failed to pass in the Senate.

This is an arena where the board can and should exercise leadership on their own and convene watershed quality committees to provide input to the boards and, working with the EPA, begin considering pilot projects to implement watershed permitting.

Focusing on watershed health should help the boards focus more on solving water quality problems and on outcomes.

Central Coast Board Shifts Focus Toward Outcomes

Concerned that too much emphasis was placed on processes instead of outcomes, the Central Coast Regional Water Quality Control Board has developed a new performance measurement strategy to emphasize clean water outcomes and measure progress toward those outcomes. Through public meetings and internal staff meetings, the board created an overall vision statement for the agency and three specific, measurable goals. Four teams are working on achieving the goals, with staff from each program area involved in each team to ensure that changes happen system-wide. Staff is allowed to spend about 10 percent of their time on the project. Three of the teams are working on one of the specific goals, while the fourth team is charged with assessing the overall effectiveness of the new strategy.

The project has already led the board's agricultural program to begin comparing growers' monitoring reports, water quality data for nitrate and toxicity in streams, pesticide use information and inspection information to determine overall water quality. It is the first time the board has used Geographic Information System tools to link area land use and water quality data.

The board's vision is "Healthy Functioning Watersheds," and the three goals, along with some ways the board will measurement achievement of the goals, are:

- ***By 2025, 80 percent of our aquatic habitat is healthy and the remaining 20 percent exhibits positive trends in key parameters.*** The board seeks to ensure all agriculture lands have riparian buffers, ensure open space preservation in all important groundwater recharge areas and ensure that all new developments and redevelopment projects are designed to minimize runoff and maximize groundwater recharge. The board will likely develop a basin plan amendment to protect riparian and wetland habitat.
- ***By 2025, 80 percent of lands within any watershed will be managed to maintain healthy watershed functions, and the remaining 20 percent will exhibit positive trends in key parameters.*** The board will measure the percent of impervious surfaces in the region and seek ways to reduce those surfaces, and measure toxicity in runoff and seek to reduce toxicity. Long term, the board will study trends in water quality based on land development and incentivize groundwater recharge and water recycling projects.
- ***By 2025, 80 percent of our groundwater will be clean, and the remaining 20 percent will exhibit positive trends in key parameters.*** The board will measure groundwater nitrate concentrations and salt to determine effectiveness, work on basin plan amendments for groundwater recharge area protections and work with dischargers to groundwater on development of site-specific salt management plans.

Sources: Roger Briggs, executive officer, Central Coast Regional Water Quality Control Board. July 23, 2008. Personal communication with the Commission. And Central Coast Regional Water Quality Control Board. June 4, 2008. "Staff Report for Regular Meeting of June 4, 2008. Status Report on Regional Board Vision and Measureable Goals." San Luis Obispo, CA.

Considering Economics. Porter-Cologne requires the water boards to consider the economic consequences of regulations when they set water quality objectives, and states that "waters of the state shall be regulated to attain the highest water quality which is reasonable, considering all demands being made and to be made on those waters and the total values involved, beneficial and detrimental, economic and social, tangible and intangible."[148]

The statute, however, provides scant guidance on how the boards should specifically consider economic or other factors as they determine appropriate regulations. In addition, a state appeals court, in *City of Arcadia v. State Water Resources Control Board*, gave the boards significant leeway in determining how they consider the costs of a regulation.[149]

The state board has provided some guidance to regional boards as to how to consider the economics of water quality objectives through the board's administrative manual, but the Commission's questioning of regional board officials at its April 2008 hearing illustrated that the boards do not have a thorough or consistent process to determine the costs of new rules, nor do they attempt to determine the most cost-effective ways to solve water quality problems.

One former regional board member, Terese Ghio, told the Commission that she felt like the board gave very little thought to cost.

"Cost-benefit analysis was never really vetted," said Ghio, who was a member of the San Diego Regional Water Quality Control Board for four years. "It's talked about, the box is checked, but it's never really done."[150]

This approach contrasts to the federal government, where US EPA has a lengthy history of using cost-benefit analysis in decision-making. Both Presidents Reagan and Clinton issued executive orders requiring cost-benefit analysis in EPA regulations, indicating bi-partisan support for the concept.[151] The EPA's manual, "Guidelines for Preparing Economic Analyses," is a lengthy document detailing the agency's process for establishing the costs and benefits of regulations.

A formal cost-benefit analysis can be time-consuming and expensive. At the very least, the state and regional boards should use cost-effectiveness tests as they analyze their regulatory actions – such as water quality objectives and TMDLs. Ranking options by cost-effectiveness can help set priorities and find strategies that provide

the most benefit in terms of protecting and improving water quality. Porter-Cologne's requirement that regulations be reasonable suggests that the board should have a standardized procedure to analyze the potential costs of regulations, as well as some indication of the value of the potential benefits the regulations would produce.

In a 2006 paper entitled, "A Guide to Consideration of Economics Under the California Porter-Cologne Act," economists David Sunding and David Zilberman of University of California at Berkeley present their proposal for a economic evaluation process that can be used by the boards. Their proposal does not call for a full-scale cost-benefit analysis; instead it provides a method for the boards to gather information and provide a clear statement for the boards' rationale in setting regulations.

Adopting this process would improve transparency in the boards' decision-making process, allow the boards more information as they adopt regulations and instill more confidence among stakeholders in board decisions. Cost-effectiveness analysis could also help set priorities.

The Clean Water Act prohibits using excessive cost as a reason for not implementing a water quality standard or a TMDL, and the Commission is not advocating for the elimination of regulations simply because they are expensive. But adopting a formal process to analyze the costs of a regulation will provide the board with more information; boards are free to consider other issues in adopting regulations.

In its report, the Ocean Science Trust noted: "Cost-benefit analysis of present regulatory, management, and remediation measures

Proposed Economic Analysis for Water Boards

In a 2006 paper, University of California professors David Sunding and David Zilberman proposed that the state and regional water boards conduct, at minimum, a relatively quick economic analysis before imposing new regulations. The professors presented an eight-step process:

- A listing of the affected parties, including private industry and government agencies, together with a qualitative description of the impacts.
- Solicitation of data from the public regarding potential compliance and related costs for the proposed policy.
- The public's reported cost of compliance in relation to the revenue, cost, and profit margin of affected firms, and relative to the total budget of affected public entities.
- A statement of what the board staff thinks the costs are likely to be that specifically considers the data solicited from the public and the reasons for the board's estimate.
- A statement of potential factors that could affect the estimate, such as technological uncertainties, monitoring limitations, etc.
- A description of competitive conditions in the affected sectors, and an assessment of whether water quality regulations are likely to place California firms at a significant competitive disadvantage.
- A statement of the average time needed to obtain permits from the various boards, and a qualitative assessment of the impacts of delay.
- A statement of the goals to be achieved by the proposed regulation and an explicit consideration of these goals given the costs (i.e, at least a statement that "the board believes that $XX million represents a reasonable expenditure to achieve YY.") This description would include the types and numbers of beneficiaries, and an identification of other investments beyond those resulting from the regulation that are needed to produce the beneficial uses.

Source: David Sunding and David Zilberman, College of Natural Resources, UC Berkeley. April 6, 2006. "A Guide to the Consideration of Economics Under the California Porter-Cologne Act." Pages 53-54. Berkeley, CA.

could assist the water boards in choosing the most effective use of limited resources to improve water quality."[152]

Summary

With California facing inevitable population growth, the climate change threat and the collapse of the Sacramento-San Joaquin River Delta, the need for clean water has never been greater.

Created nearly 40 years ago, the current governance structure to ensure clean water is outdated and in need of reform. The governor, Legislature and water quality regulators must act now to restore consistency, transparency and accountability to the state and regional water boards. A more unified board system that can identify statewide priorities and implement them at the regional level is essential. This new system, with up-to-date basin plans, a commitment to the use of science and data, and willingness to seek creative solutions to solve modern water quality problems, can be a key player in the state's future.

A failure to act endangers both the environment and the economy.

Recommendation 1: To move toward a more consistent, transparent and accountable governance structure that allows for both statewide policy and regional flexibility, reform the State Water Resources Control Board and the Regional Water Quality Control Boards by strengthening ties between the boards, refocusing the boards on broad policy-making and restoring confidence in the appeals process. Specifically, the state should:

- Restructure the State Water Resources Control Board as a full-time, 9-member board charged with creating state policy, setting priorities and overseeing regional board activities. Members of the board should be appointed by the governor and confirmed by the state Senate. Five members of the state board would serve solely as state board members, including one person who would be chairperson of the state board, as named by the governor. These members should have the following backgrounds: One in engineering, one in water rights law, one in water quality, one in water-related science or resource economics, and another would represent the public. The position of regional chairperson would become full-time. Four regional chairpersons would serve on the state board for staggered, two-year terms, with membership rotating among all nine regional board chairpersons.

- Reconstitute the nine Regional Water Quality Control Boards as seven-member boards with six part-time members and a full-time chairperson, all appointed by the governor. The chairperson would be charged with monitoring statewide policies that are implemented at the regional level. Boards would continue to be stakeholder-boards, with six part-time members with the following backgrounds: experience in water supply, conservation or production; irrigated agriculture; industrial water use; local government; water science or engineering; and experience with a nongovernmental organization associated with recreation, fish or wildlife. Regional boards would focus on updating basin plans, adopting total maximum daily loads and other quasi-legislative functions.
- Empower the executive officers of each Regional Water Quality Control Board and the executive director of the State Water Resources Control Board to issue permits, allowing the boards to focus on updating basin plans, setting broad policy and focusing on upcoming water quality challenges. Executive officers would become Career Executive Assignment positions and report to the executive director of the State Water Resources Control Board. Regional boards would conduct an annual evaluation of the executive officer that would be taken under advisement by the executive director.
- Exempt state and regional board members, regional board executive officers and the state board executive director from ex parte rules within the state Administrative Procedure Act that prohibit interaction with regulated entities. Instead, require board members and permit-issuing executives to disclose their contacts with regulated entities at public meetings, as is currently done by other boards such as the Integrated Waste Management Board.
- Create a new appeals board that would address appeals of quasi-adjudicative functions such as permits and enforcement actions. Removing the appeals process from state board jurisdiction would restore confidence in the process and allow the state board to take a more proactive approach in regional board issues. The members should have backgrounds in water issues and would be appointed by the governor to hear appeals. The board would follow Administrative Procedure Act policies in conducting hearings.

Recommendation 2: The state must improve and increase its use of data, scientific research and planning to better inform the public, respond to current and future water quality problems and focus more on accountability. Specifically, the state should:

- Create a Water Science Advisory Board for the State Water Resources Control Board. Members, appointed by the state board, should have backgrounds in environmental science and engineering. The board would help both the state and regional water boards and other state water agencies coordinate research, propose needed research, advise the boards on how to incorporate research into regulatory processes and increase the effectiveness of scientific peer review.
- Create an independent Water Data Institute that would act as a state library for water quality and supply data. The institute would pool information from various state agencies and other water monitoring groups to provide accessible information to the public, regulators and researchers.
- Develop report cards. Report cards for each major water body should allow the public easy access to information they can use and could act as a way to hold regional boards accountable for their effectiveness. The report cards should be developed and published by regional science institutes or an independent entity, such as the University of California.
- Launch a statewide effort to ensure that all regions have up-to-date basin plans. Regional boards should propose stakeholder-financed efforts similar to the one conducted by the Santa Ana Regional Water Quality Control Board.

Recommendation 3: The state must increase focus on clean-water outcomes and emphasize collaboration, creativity and problem-solving to address current water quality problems. Specifically, the state should:

- Collaborate with other government agencies. Because land use, automobile emissions and other factors outside the traditional purview of the water boards are major contributors to non-point source pollution of water, the water boards must work with other government agencies on solutions. The state water and air boards should routinely meet to develop regulatory strategies to address air pollution's effects on water. The state should revive the Environmental Protection Council, which already exists in statute and consists of the heads of each of the boards and departments within Cal/EPA.

- Emphasize a watershed approach. To increase focus on outcomes and solving complex problems, the water boards should develop more processes aimed at watershed health.
- Use stakeholder task forces. As the Santa Ana Regional Water Quality Control Board has done, other regional boards should increase the use of stakeholder task forces to work through difficult regulatory issues.

Recommendation 4: The water boards must develop standardized economic analysis procedures to help set priorities and determine the most effective and efficient means to improve water quality.

- To fully implement Porter-Cologne's demand that water quality regulations be reasonable, given other economic and social factors, the boards must institute the use of economic analysis into decision-making. Cost-effectiveness analysis also would increase transparency of board decision-making and help the boards set priorities.

Conclusion

California's state and regional water boards have a profound impact on the environment and the economy. The boards issue more than 50,000 discharge permits, regulating the state's biggest metropolises as well as its smallest wastewater treatment plants. Theirs is an enormous and challenging task: implementing ambitious and complicated federal and state laws, incorporating the still-evolving scientific understanding of pollution's causes and solutions and working with limited resources.

This job, however, is critical to the state's future. Demand for water grows with population growth. Water supply is threatened by climate change and the potential for earthquakes to destroy the state's levee system. Pressures are mounting on the state to improve the health of the Sacramento-San Joaquin River Delta, protect threatened fish species and restore waters around the state to ensure they are swimmable, fishable and drinkable.

Change is needed to help the boards meet their mission.

Regional decision-making – an idea first conceived for California water quality regulation nearly 60 years ago – remains a sound approach, as conditions in different water bodies merit different approaches and standards. But California needs a better way to set overarching state water quality policy, as well as a better way to implement policies that are important to the overall health of the state's water bodies.

This is nowhere more important than in the area of non-point source pollution. The current system is based on the outdated model of combating source pollution, where emitters could be easily identified and their actions modified though the permit process.

The Commission found a critical need for a more unified regulatory agency that has clear priorities and procedures that can be implemented throughout the state. While current statutes give the State Water Resources Control Board ample authority to direct the nine Regional Water Quality Control Boards, in practice the regional boards are too independent, with differing policies and processes on even some of the most important statewide issues.

The current structure has not produced a clear ranking of its water quality priorities, the first step in matching resources and action to the state's biggest water quality threats. The process for setting policy offers little transparency and little emphasis on accountability or outcomes.

Given the tools that exist, it is unacceptable that the public and policy-makers do not have easy-to-understand information to answer the most basic questions for water quality policy: What is the state of the state's waters, and which water board programs are effective at improving water quality and which are not?

Until the boards, starting with the state board, shift their focus from process to outcomes, the answers to these questions will remain elusive.

Other problems also limit the boards' effectiveness: Regional board members face too many technically difficult decisions, preventing them from focusing on broader policy issues. The boards have struggled to collect and use data, and there is no state-led clearinghouse of scientific research or analysis indicating the best ways to tackle modern water quality problems.

Structural solutions to these problems lie in strengthening the relationship between the state and regional boards, re-focusing gubernatorial appointees on big-picture problems and solutions, reforming the appeals process, creating more avenues for the boards to use science and economic analysis in rule-making, and developing a statewide water data institute to coordinate water quality data gathered throughout the state.

These changes should re-focus the boards on setting priorities with the goal of protecting and improving California's waters. Ultimately, the boards' effectiveness should be measureable by whether its actions improve water quality.

Environmental regulation will always cause conflict, as regulators push for tougher standards, more protections, and, inevitably, more costs. Conflict at the water boards is not inherently a problem. But the Commission found too much conflict about process and not enough confidence that the boards' structure, policies and processes would lead to reasonable, effective solutions. The boards must evolve to rebuild that confidence. Change will be required too to begin showing more clean water success stories.

As the Commission conducted its study in 2008 of the water boards' governance structure, a task force appointed by Governor Arnold Schwarzenegger simultaneously was reviewing governance, water supply

and environmental issues in the Sacramento-San Joaquin River Delta. The Commission's recommendations for a stronger, more proactive State Water Resources Control Board should not be in conflict with its earlier calls for a stronger governance structure for the state's management of the Delta. A strong state water board is essential to developing and implementing the policies that will help restore the Delta ecosystem and maintain water quality for not only the Delta, but the water transferred through it to the farms and cities of Central and Southern California.

The Commission's Study Process

The Commission initiated this study in early 2008 to review the governance structure regarding water quality regulation in the state and the relationship between the State Water Resources Control Board and the nine Regional Water Quality Control Boards. The Commission's goal was to assess the roles of the state and regional boards and the challenges facing the boards in their efforts to appropriately respond to the state's pressing water quality needs. As part of its study, the Commission investigated how to best balance the need for consistent statewide policy and the need for flexibility to handle regional issues. The Commission also explored the state's water quality goals and whether the state and regional boards have policies in place to reach those goals.

As part of the study, the Commission convened two public hearings. At the first public hearing, held in March 2008, the Commission heard from water quality regulators, including the chairwoman of the State Water Resources Control Board, two representatives of regional water quality control boards and the head of the United States Environmental Protection Agency's Region 9 water division. In addition, the Commission was briefed on the history of water quality regulation and the current roles of various state agencies in overseeing state water policy. At the second hearing, in April 2008, the Commission received input from representatives of regulated entities and environmental groups. Hearing witnesses are listed in Appendix A.

The Commission also convened two advisory group meetings during the course of this study. Both meetings included water quality regulators, representatives of regulated entities and environmental groups, legislative staff, and academics interested in water quality regulation. The first meeting, on May 21, 2008, focused on state water quality priorities and the advantages and disadvantages of the regional water quality control board system. The second meeting, on June 25, 2008, included discussion on the Water Quality Improvement Initiative and other possible changes to water quality governance in the state.

A subcommittee meeting, held on August 28, 2008, allowed the Commission to vet some ideas for reform through a group of water quality regulators and representatives of regulated entities and environmental groups.

A list of people who participated in the advisory group and subcommittee meetings is included in Appendix B.

Commission staff received valuable feedback from numerous stakeholders and other water quality experts, attended several State Water Resources Control Board meetings, one regional water quality control board meeting and the October 2008 meeting of the Water Quality Coordinating Council.

All written testimony submitted electronically for each of the hearings, and this report is available online at the Commission Web site, www.lhc.ca.gov.

Appendices & Notes

- ✓ ***Public Hearing Witnesses***
- ✓ ***Little Hoover Commission Public Meetings***
- ✓ ***Selected Acronyms***
- ✓ ***Notes***

Appendix A

Little Hoover Commission Public Hearing Witnesses

Witnesses Appearing at Little Hoover Commission Public Hearing on California's Water Boards, March 27, 2008

Carole Beswick, Chairwoman, Santa Ana Regional Water Quality Control Board

Lisa Beutler, Associate Director, Center for Collaborative Policy

Tam Doduc, Chairwoman, State Water Resources Control Board

Karl Longley, Chairman, Central Valley Regional Water Quality Control Board

Alexis Strauss, Director, Water Division, United States Environmental Protection Agency, Region 9

Witnesses Appearing at Little Hoover Commission Public Hearing on California's Water Boards, April 24, 2008

Chris Crompton, Manager, Environmental Resources Section, Orange County Public Works Department

Laurel Firestone, Co-Executive Director, Community Water Center

Terese Ghio, Vice President of Governmental Relations, Arena Pharmaceuticals

Rear Admiral Leendert "Len" R. Hering, Sr., Commander, Navy Region Southwest

Mick Pattinson, President, Barratt American Homes

Linda Sheehan, Executive Director, California Coastkeeper Alliance

Craig Wilson, Counsel, Community Alliance for Environmental Stewardship

Appendix B

Little Hoover Commission Public Meetings

California's Water Boards Advisory Committee Meeting – May 21, 2008

Desi Alvarez, Deputy City Manager, City of Downey

Arthur Baggett, Board Member, State Water Resources Control Board

Carole Beswick, Chairwoman, Santa Ana Regional Water Quality Control Board

Alf Brandt, Principal Consultant, Assembly Committee on Water, Parks and Wildlife

Kevin Buchan, Senior Coordinator, Bay Area Region and State Water Issues, Western States Petroleum Association

Tony Francois, Attorney/Lobbyist, KP Public Affairs

Craig Johns, Principal, California Resource Strategies, Inc.

Roberta Larson, Attorney, California Association of Sanitation Agencies

Phil Nails, Policy Consultant, Assembly Republican Caucus

John Robertus, Executive Officer, San Diego Regional Water Quality Control Board

Linda Sheehan, Executive Director, California Coastkeeper Alliance

Brian White, Vice President for Legislative Affairs, California Forestry Association

Craig Wilson, Counsel, Community Alliance for Environmental Stewardship

Gary Wolff, Vice Chairman, State Water Resources Control Board

California's Water Boards Advisory Committee Meeting – June 25, 2008

Nate Beason, Supervisor, Nevada County Board of Supervisors

David Beckman, Director, Coastal Water Quality Project, Natural Resources Defense Council

David Bolland, Senior Regulatory Advocate, Association of California Water Agencies

Alf Brandt, Principal Consultant, Assembly Committee on Water, Parks and Wildlife

Geoff Brosseau, Executive Director, California Stormwater Quality Association

Kevin Buchan, Senior Coordinator, Bay Area Region and State Water Issues, Western States Petroleum Association

Ken Farfsing, City Manager, City of Signal Hill

Randal Friedman, California Government Affairs, United States Navy Region Southwest

Mark Grey, Director of Environmental Affairs, Building Industry Association of Southern California

John Herrick, Counsel and Manager, South Delta Water Agency

Craig Johns, Principal, California Resource Strategies, Inc.

Roberta Larson, Attorney, California Association of Sanitation Agencies

Karl Longley, Chairman, Central Valley Regional Water Quality Control Board

Mark Newton, Director, Resources & Environmental Protection, Legislative Analyst's Office

Mick Pattinson, President, Barratt American

Dorothy Rice, Executive Director, State Water Resources Control Board

Brian White, Vice President for Legislative Affairs, California Forestry Association

Craig Wilson, Counsel, Community Alliance for Environmental Stewardship

California's Water Boards Subcommittee Meeting – August 28, 2008

Geoff Brosseau, Executive Director, California Stormwater Quality Association

Catherine Freeman, Senior Fiscal and Policy Analyst, Legislative Analyst's Office

Mark Grey, Director of Environmental Affairs, Building Industry Association of Southern California

Karl Longley, Chairman, Central Valley Regional Water Quality Control Board

Mark Lubell, Associate Professor, Department of Environmental Science and Policy, University of California, Davis

John Robertus, Executive Officer, San Diego Regional Water Quality Control Board

Linda Sheehan, Executive Director, California Coastkeeper Alliance

Gary Wolff, Vice Chairman, State Water Resources Control Board

Appendix C

Selected Acronyms

CARB: California Air Resources Board

Cal/EPA: California Environmental Protection Agency

Caltrans: California Department of Transportation

CEDEN: California Environmental Data Exchange Network

CIWQS: California Integrated Water Quality System

CPR: California Performance Review

CWA: Clean Water Act

DOIT: Department of Information Technology

DWR: Department of Water Resources

EPA: United States Environmental Protection Agency

GAMA: Groundwater Ambient Monitoring and Assessment

IRWMP: Integrated Regional Water Management Plans

LAO: Legislative Analyst's Office

LID: Low Impact Development

MMP: Maximum Minimum Penalty

MS4: Municipal Separate Storm Sewer Systems

MTBE: Methyl Tertiary-butyl Ether

NPDES: National Pollutant Elimination Discharge System

PCBs: Polychlorinated Biphenyl

RWQCBs: Regional Water Quality Control Boards

SCCWRP: Southern California Coastal Water Resources Program

SEP: Supplemental Environmental Project

SFEI: San Francisco Estuary Institute

SWAMP: Surface Water Ambient Monitoring Program

TMDL: Total Maximum Daily Load

WDR: Water Discharge Requirement

WQCC: Water Quality Coordinating Committee

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16. Claudia Copeland, Congressional Research Service. March 17, 2008. "Clean Water Act: A Summary of the Law." Page 5.
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