



# California Water Quality Monitoring Council



Jonathan Bishop & Joe Grindstaff, Co-Chairs

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[www.waterboards.ca.gov/water\\_issues/programs/monitoring\\_council](http://www.waterboards.ca.gov/water_issues/programs/monitoring_council)

Linda S. Adams  
Secretary for  
Environmental Protection

Mike Chrisman  
Secretary for  
Natural Resources

December 30, 2009

Ms. Linda S. Adams  
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Dear Agency Secretaries:

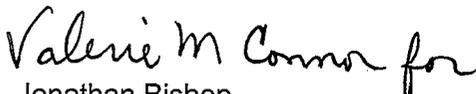
SUBJECT: 2009 ANNUAL PROGRESS REPORT OF THE  
WATER QUALITY MONITORING COUNCIL

On November 26, 2007, you signed the Memorandum of Understanding (MOU) establishing the California Water Quality Monitoring Council (Monitoring Council), as required by SB 1070 (Kehoe, 2006). On December 1, 2008, the Monitoring Council reported to you its recommendations for maximizing the efficiency and effectiveness of existing water quality data collection and dissemination, and for ensuring that collected data are maintained and available for use by decision makers and the public. That report included the following commitment:

On an annual basis, beginning in December 2009, the Monitoring Council will report back to the agency secretaries on progress made in implementing the Council's vision, and in a manner that supports Cal/EPA's conduct of a triennial audit of the effectiveness of the comprehensive monitoring program strategy, as called for in the legislation.

The enclosed report provides a summary of progress achieved since December 2008 in implementing the recommendations contained in our December 2008 report. A companion report, targeted for March 2010, will present the Monitoring Council's comprehensive monitoring program strategy. Within the next few weeks, we plan to personally brief each of you on both our progress to date and the direction of our upcoming comprehensive strategy.

Sincerely,

  
Valerie M Connor for  
Jonathan Bishop  
Co-Chair

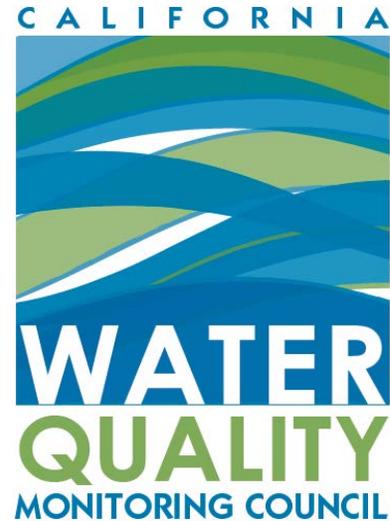
  
Joe Grindstaff  
Co-Chair

Enclosure

cc: Members of the California Water Quality Monitoring Council  
Senator Christine Kehoe, State Capitol  
Senator Elaine Alquist, State Capitol

*California Environmental Protection and Natural Resources Agencies*

# California Water Quality Monitoring Council Annual Progress Report December 2009



## Executive Summary

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The California Water Quality Monitoring Council has met key benchmarks in the legislation (Senate Bill 1070; Kehoe, 2006) by completing a memorandum of understanding between Cal/EPA and the California Natural Resources Agency in November of 2007 and by submitting a key recommendations report in December of 2008. In early 2010, the Monitoring Council will submit its comprehensive monitoring program strategy for meeting most of the legislation's goals over a ten-year timeframe. Specific accomplishments also include:

- Creating four theme-based workgroups that validated the broad applicability of the collaborative workgroup approach to coordination and web portal development
- Clearly identifying, through the workgroup process, gaps in data acquisition, monitoring coverage, and management responsibility
- Implementing a single point of access, through the Monitoring Council's *My Water Quality* web page, to organized monitoring data, assessment products, and useful background information
- Developing and releasing two theme-based web portals (Safe to Swim and Safe to Eat Fish and Shellfish), with two additional portals scheduled for early 2010, (Wetlands and Safe to Drink Groundwater). These are organized around a small set of core, high-priority questions that provide ready access to monitoring and assessment results
- Developing draft design guidance for future web portals, emphasizing a question-driven structure, map-based assessment products, and direct access to underlying data
- Conducting successful preliminary discussions with several additional monitoring efforts that will provide the focus for the next phase of web portal development
- Achieving tangible improvements in coordination among local, state, federal, and non-governmental agencies
- Making progress on developing and implementing coordinated and/or standardized monitoring designs for beach water quality sampling, seafood tissue contaminant assessment, and wetlands project tracking and overall assessment
- Demonstrating how the web portals, based on improved data acquisition and integration, can increase the efficiency of both routine and ad hoc reporting

The Monitoring Council's next steps include completing the comprehensive monitoring program strategy report; formalizing relationships with the next set of theme-based workgroups; and further developing a statewide data management strategy in cooperation with Cal/EPA, the Natural Resources Agency, and the Office of the Chief Information Officer. In addition, the Monitoring Council will continue to provide logistical and management support to existing workgroups as they address issues identified in 2009. This process will require that the Monitoring Council continue to develop and define its coordinating and advocacy role with respect to other agencies. Finally, the Monitoring Council will use the more detailed comprehensive strategy as a basis for funding requests needed to support the full implementation of the strategy called for in the legislation.

## Foreword

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This report is the first in a series of annual reports summarizing the California Water Quality Monitoring Council's progress toward implementing the requirements of Senate Bill 1070 (Kehoe, 2006). SB 1070 identified a number of goals and actions intended to improve the efficiency and effectiveness of water quality and associated aquatic ecosystem monitoring, and to provide broader access to monitoring data and assessment results. The legislation required that the California Environmental Protection Agency (Cal/EPA) and the California Natural Resources Agency enter into a Memorandum of Understanding establishing the California Water Quality Monitoring Council (Monitoring Council), to be administered by the State Water Resources Control Board. The MOU was signed November 26, 2007. SB 1070 also requires that "the monitoring council shall review existing water quality monitoring, assessment, and reporting efforts, and shall recommend specific actions and funding needs necessary to coordinate and enhance those efforts." The legislation goes on to say, "[t]he recommendations shall be prepared for the ultimate development of 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 the effectiveness of programs to protect and improve the quality of those waters." These recommendations were presented by the Monitoring Council in its December 1, 2008 to Cal/EPA and the Natural Resources Agency, which included the following commitment:

On an annual basis, beginning in December 2009, the Monitoring Council will report back to the agency secretaries on progress made in implementing the Council's vision, and in a manner that supports Cal/EPA's conduct of a triennial audit of the effectiveness of the comprehensive monitoring program strategy, as called for in the legislation.

This report provides a summary of progress achieved since December 2008 in implementing the recommendations contained in the December 2008 report; a companion report targeted for March 2010 will present the Monitoring Council's comprehensive monitoring program strategy.

## The Monitoring Council's Five-Part Solution

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SB 1070 described a set of fundamental issues that have prevented the State from making the most effective and efficient use of the extensive water quality monitoring conducted by permittees; local, state, and federal agencies; and others such as citizen monitoring groups. The Monitoring Council believes that a primary focus on technical tools, though important, would not directly address these issues because it would not be driven by end users' perspectives. The Monitoring Council's solution to the monitoring coordination and data access problems therefore is centered on delivering data to those people who need it in ways that directly address their key questions. The essential components of this concept include a template for web-driven, user-oriented data access portals that are developed and implemented by a series of issue-specific workgroups operating under the Monitoring Council's overall guidance and approval.

This process will promote efficiency by highlighting where (and only where) improved coordination of monitoring methods and data management approaches is necessary for meeting users' needs. Developing these coordinated methods and approaches will be the responsibility of the issue-specific workgroups, working within general guidelines set by the Monitoring Council. The five elements necessary for realizing this vision include:

- An organizational structure built on decentralized, issue-specific workgroups that operate within common policies and guidelines defined by the Monitoring Council
- A set of performance measures which each theme-based workgroup will use to evaluate, coordinate and enhance monitoring, assessment, and reporting efforts

- A single, web-based, global point of entry to water quality data, and a design template for the complete set of theme-based web portals
- Coordination of monitoring and assessment methods that achieves an appropriate balance between statewide consistency and regional flexibility
- Database and data management protocols necessary for more efficient data access and integration

## Progress to Date

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The following sections describe progress achieved during 2009 for each of the five elements of the Monitoring Council's strategy and demonstrates how these accomplishments provide a proof of concept of the strategy and lay the groundwork for further progress in the future.

### *Issue-specific workgroups*

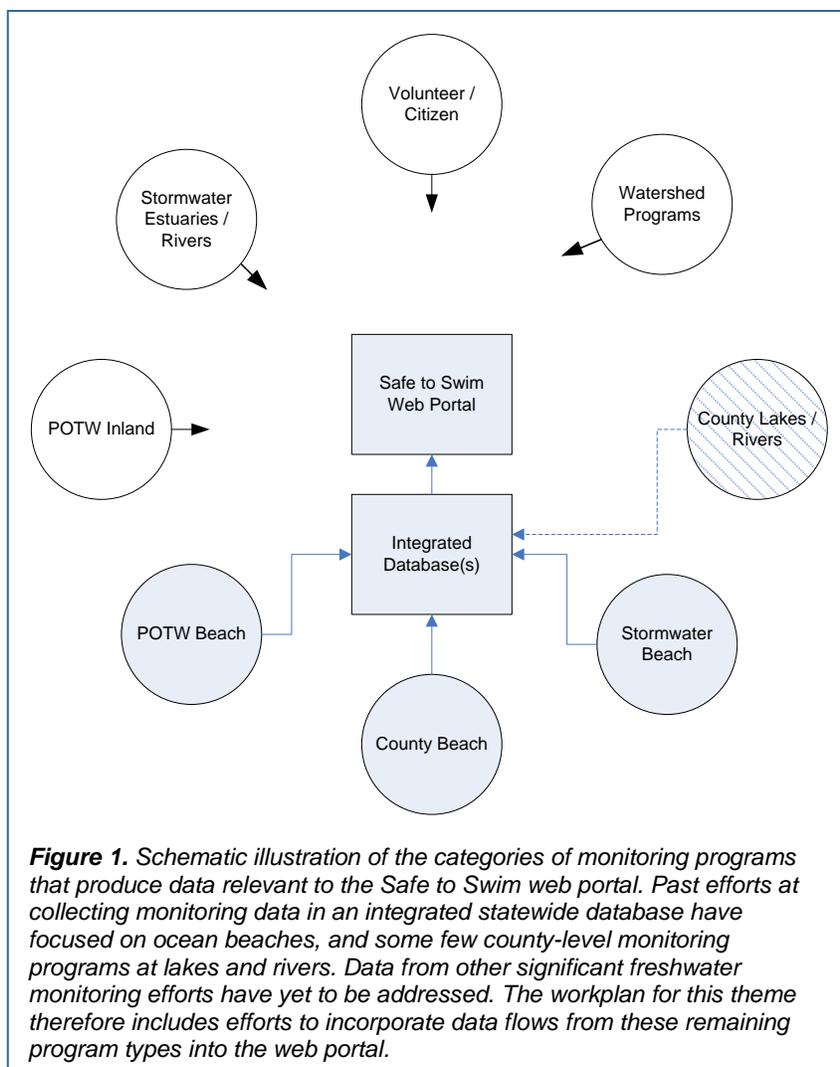
Collaborative theme-based workgroups are a core piece of the Monitoring Council's strategy and the vehicle through which much of the Monitoring Council's efforts to improve monitoring coordination and access to data will be accomplished. In 2009, the Monitoring Council, building on existing efforts, identified four prototype theme-based workgroups (Safe to Swim, Safe to Eat Fish and Shellfish, Wetlands, Safe to Drink Groundwater) that succeeded in validating the utility and broad applicability of the workgroup approach in a range of technical, regulatory, and institutional settings. This initial set of workgroups leveraged existing efforts at regional and statewide coordination, provided a mechanism for enlisting additional participants, and broadened working relationships among state and federal agencies, permittees, researchers, and others such as NGOs. As described in the following paragraphs, workgroups also identified key gaps in data acquisition, monitoring coverage, and management responsibility that helped to prioritize additional efforts planned for the future. The success of the four prototype workgroups has led to fruitful discussions with groups active in other areas that will shortly lead to the formal establishment of additional workgroups. The following paragraphs illustrate this progress with representative examples.

The Safe to Swim workgroup built on the existing Beach Water Quality Workgroup for southern California and the Central/Northern California Ocean and Bay Water Quality Monitoring Group, integrating them into a more cohesive statewide entity that has formally agreed to manage the continued development and maintenance of the web portal in conjunction with the State Water Board, U.S. EPA, the Southern California Coastal Water Research Project (SCCWRP), and Heal the Bay. The Safe to Swim workgroup accelerated coordination among permittees, county public health agencies, environmental groups, and the State Water Board. However, these efforts, and the data management, assessment, and reporting tools built to support them, have historically focused primarily on ocean beaches. The Monitoring Council's broader emphasis on a statewide perspective resulted in the identification of other monitoring efforts, particularly those focused on inland freshwater swimming locations, that must be included in the web portal in order to present a truly statewide picture of swimming conditions (Figure 1). Future efforts of the Safe to Swim workgroup will focus on filling these gaps in data acquisition and data integration. In addition, portal development caused the workgroup to recognize that the existing beach water quality and closure/posting data management structure was in need of an overhaul. As a result, a new Beach Watch database and data sharing protocols will be developed over the next year at SCCWRP to enhance the flow of data from county health agencies to the State, U.S. EPA, Heal the Bay, and the Safe to Swim portal. By enhancing the ability of data generators to manage their data more easily, the new system is expected to encourage more real-time data availability and streamline reporting efforts.

The Safe to Eat Fish and Shellfish workgroup built on the existing Bioaccumulation Oversight Group (BOG), which has become an integral part of statewide assessments of fish and shellfish tissue contamination, coordinated by the State Water Board's Surface Water Ambient Monitoring Program (SWAMP). These efforts include a 2007 – 2008 survey of 280 lakes and reservoirs, and an upcoming survey of coastal waters being coordinated with the Office of Environmental Health Hazard Assessment (OEHHA), the Department of Fish and Game, the San Francisco Estuary Institute (SFEI), and SCCWRP. SWAMP's success at bringing these parties together led to creation of the BOG, which has formally agreed to manage the continued development and maintenance of the Monitoring Council's Safe to Eat web portal. As an example of this improved coordination, the statewide lakes survey

produced data that OEHHA used in 2009 to help update existing fish consumption advisories. The workgroup also acted as a vehicle, with Monitoring Council involvement, for crafting a more comprehensive and integrated set of information products for managers, the public, and other users (see *Combining Multiple Agency Perspectives*, next page).

The Wetlands workgroup also built on an existing effort, the California Wetlands Monitoring Workgroup (CWMW) that includes over 20 state, federal, and local entities, both public and private. This workgroup has made substantial progress toward including the large number of agencies involved in wetland monitoring, restoration, and management and is the only venue where these entities come together to collaborate on such issues. The workgroup has achieved important agreements on defining standardized wetland definitions, monitoring approaches, and assessment and reporting methods (see *Coordination and Standardization*, below) that could provide the basis for a statewide wetlands assessment program. However, in defining these approaches, and in preparing a comprehensive report on the State of the State's Wetlands, the workgroup highlighted the lack of a coordinated statewide policy for monitoring and assessing the extent and condition of California's wetlands. Currently, responsibility for various functions is divided among a number of state, federal, and local agencies, with no overarching assessment and reporting framework. In response, the CWMW has assisted in proposing a coordinated management structure that allocates complementary monitoring and assessment functions to the State Water Board,



Department of Fish and Game, Regional Water Boards, and other agencies, including individual wetland project managers.

Creation of the Safe to Drink web portal has focused initially on groundwater, an area where the State Water Board, the Department of Public Health (DPH), the Department of Pesticide Regulation, the Department of Water Resources, the U.S. Geological Survey, and the Lawrence Livermore National Labs have long worked together. However, developing the web portal led them to begin thinking about common ways of accessing and presenting monitoring information, which required creation of an expanded collaborative relationship among the State Water Board's Office of Information Management and Analysis, its Ground Water Quality Branch, and its outside partners. The initial focus of this effort has been to adapt the existing GeoTracker GAMA website toward the Monitoring Council's question-driven user interface and to begin discussions about how to better assess connections between groundwater and drinking water quality. In addition, security concerns prevent displaying the precise location of public drinking water supply wells on the web portal maps. The agencies involved have worked to investigate ways of meeting these security concerns without obscuring other information on the maps and while still providing users with useful information. With this core set of relationships established, the workgroup may expand its membership to include other entities contributing monitoring data, such as the Department of Toxic Substances Control, as well as other users of the system.

### **Combining Multiple Agency Perspectives**

Development of the Safe to Eat Fish and Shellfish web portal, with its goal of providing a single point of access to data and information, highlighted different assessment and data presentation approaches used by the State Water Board and OEHHA. In the past, these differences were reflected in each agency's separate documents and information products, with little or no synthesis or explanation of how the agencies' different perspectives were related.

As the Safe to Eat Fish and Shellfish web portal was being developed, OEHHA staff expressed several significant concerns, especially about the way data and assessment results were portrayed and about the potential for confusion due to the inclusion of multiple perspectives in a single location. Subsequent discussions among the Monitoring Council, OEHHA, the State Water Board, and the BOG helped the Monitoring Council clarify its approach to presenting assessment findings. This resulted in a web portal that displays alternative views of the monitoring data and explains the different but complementary assessment approaches on which they are based.

As a result, managers, the public, and other interested parties can now find, for the first time and in one place, a consolidated set of data, assessment products, and background information related to fish and shellfish consumption. For example, local health agencies and non-governmental agencies now have more streamlined access to information useful in protecting the most vulnerable populations who often include local fish and shellfish in their diet.

However, these discussions about the web portal also highlighted the fact that SWAMP's statewide monitoring surveys, conducted to assess water quality (i.e., patterns of contamination), do not produce the more comprehensive and detailed data OEHHA needs for developing consumption advisories. From OEHHA's perspective, SWAMP's surveys are useful screening tools, but the absence of a mechanism for regularly acquiring this more detailed information is a data gap that limits agencies' ability to fully answer the web portal's core questions.

The initial four workgroups, intended as a proof of concept, have worked as planned to coordinate and expand existing efforts, recruit new participants, highlight data and management gaps, and catalyze solutions to a range of problems. They have also provided the Monitoring Council with opportunities to better define its role in facilitating problem-solving efforts, bringing higher-level management attention to bear where needed, creating policies and procedures to guide workgroup efforts, and engaging the collaboration of non-state entities such as SFEL, SCCWRP, and Heal the Bay. This will be instrumental to future progress as additional themes are targeted for development that do not necessarily have preexisting workgroup structure on which to build. In preparation for the next round of workgroup creation and web

portal development, the Monitoring Council has begun a formal outreach process to other state agencies and departments, and has also held preliminary discussions with a number of existing or nascent regional and statewide monitoring and assessment programs. These include marine rocky subtidal reefs, the Multi-Agency Rocky Intertidal Network (MARINe), harmful algal blooms, kelpbeds, the State Water Board's Sediment Quality Objectives program for enclosed bays and estuaries, SWAMP's Healthy Streams Initiative, and the Interagency Ecological Program (IEP) in the San Francisco Bay / Delta.

### **Performance measures**

The Monitoring Council understands the importance of explicit benchmarks for success, which can be used both to assess the status of themes as they are prioritized for workgroup formation and web portal development and to track progress toward achieving the legislation's goals. In its December 2008 recommendations report, the Monitoring Council identified a set of six performance measures related to:

- Program strategy, objectives, and design
- Indicators, methods, and QA/QC
- Data management
- Consistency of assessment endpoints
- Reporting and access
- Program sustainability

and described specific benchmarks for rating the degree to which each performance measure is being met by individual theme-based monitoring and assessment programs. These performance measures are based on the U.S. EPA's ten design elements for monitoring, assessment, and reporting programs and directly address the legislation's requirements in terms of indicators, quality control, data analysis and integration, data management and access, and reporting. They have provided the conceptual structure for evaluating each workgroup's progress and prioritizing areas where additional development is needed. The Monitoring Council is incorporating the performance measures into its ongoing evaluation of each workgroup's progress and is encouraging workgroups to use them in managing their own individual efforts.

The performance measures provide a standardized framework for evaluating monitoring, assessment, and reporting programs. While such design principles have long been recognized, the Monitoring Council is in a unique position to help ensure they are applied consistently and rigorously across the full range of water quality monitoring and assessment programs statewide.

### **Single point of entry**

A central design feature of the Monitoring Council's approach is that all theme-based web portals, and the water quality data and assessment products they provide, will be accessible through a single, global point of entry. This point of entry has been established as the *My Water Quality* website at <http://www.mywaterquality.ca.gov> (Figure 2) and two of its web portals have gone "live" and been released to the public: Safe to Swim on July 28 and Safe to Eat Fish and Shellfish on December 8. A Wetlands portal is due to be released in January 2010 and a fourth prototype portal, Safe to Drink Groundwater, is also scheduled to be released in early 2010. The Monitoring Council has been tracking detailed web portal use statistics since August 26. In that period, nearly 2,000 unique visitors created over 16,000 page views primarily on the Safe to Swim web portal, distributed across the separate assessment questions within that theme.

State of California  
ENVIRONMENTAL PROTECTION AGENCY  
RESOURCES AGENCY  
CALIFORNIA WATER QUALITY MONITORING COUNCIL

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My Water Quality - hosted by the Surface Water Ambient Monitoring Program (SWAMP) |

GOVERNOR SCHWARZENEGGER  
Visit his Website

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**Welcome to My Water Quality**

This web portal, supported by a wide variety of public and private organizations, presents California water quality monitoring data and assessment information from a variety of perspectives that may be viewed across space and time.

**IS OUR WATER SAFE TO DRINK?**  
 Safe drinking water depends on a variety of chemical and biological factors regulated by a number of local, state, and federal agencies. [More >>](#)

**IS IT SAFE TO SWIM IN OUR WATERS?**  
 Swimming safety of our waters is linked to the levels of pathogens that have the potential to cause disease. [More >>](#)

**IS IT SAFE TO EAT FISH AND SHELLFISH FROM OUR WATERS?**  
 Aquatic organisms are able to accumulate certain pollutants from the water in which they live, sometimes reaching levels that could harm consumers. [More>>](#)

**ARE OUR AQUATIC ECOSYSTEMS HEALTHY?**  
 The health of fish and other aquatic organisms and communities depends on the chemical, physical, and biological quality of the waters in which they live. [More>>](#)

**WHAT STRESSORS AND PROCESSES AFFECT OUR WATER QUALITY?**  
 Beneficial uses of our waters are affected by emerging contaminants, invasive species, trash, global warming, acidification, pollutant loads, and flow. [More>>](#)

**Figure 2.** The Monitoring Council's global point of entry to monitoring and assessment information for all theme-based web portals.

The Monitoring Council's *My Water Quality* website, and the individual theme-based portals accessible through this global point of entry, are structured around explicit assessment questions that reflect key information needs of managers, scientists, and the public. Where this requires links to databases and websites maintained by other entities, this is accomplished within the question-driven structure of the web portal. This approach enables users to more easily find answers to their concerns and solves the long-standing, fundamental data access problem described in the legislation, namely, that it can be confusing and time consuming to find data, assessment products, and background information relevant to a particular question or issue.

Based on experience with the four prototype web portals, the Monitoring Council is developing guidelines for workgroups to follow as they develop additional web portals and intends to formalize these guidelines early in 2010. The guidelines include structure and content (e.g., question driven, statewide scope, multiple perspectives permitted), format (e.g., map-based interfaces, data download links), and process (e.g., Monitoring Council review and approval). The Monitoring Council intends that these

guidelines promote a consistent look, feel, and functionality across all web portals in order to promote ease of use.

The process of organizing diverse data and information sources into one web portal is helping the Monitoring Council's workgroups to identify opportunities for improved coordination, integration (Figure 1), and streamlining of both monitoring designs and assessment protocols (see *Coordination and Standardization*, below), and to highlight where important data gaps remain. In addition, the availability of the web portals as a single point of entry to data access and reporting tools has begun, as intended, to catalyze improvements to these activities. As discussed under Issue-Specific Workgroups above, for example, the Safe to Swim workgroup, with support from the Monitoring Council, has defined a much more efficient data submission, data management, and reporting procedure. When implemented, this will dramatically improve the efficiency of day-to-day data transfer and integration functions as well as of the State's reporting to U.S. EPA and others on beach water quality. Similarly, full implementation of the Wetlands web portal, with its Wetland Tracker features, will substantially improve agencies' and project managers' ability to quickly summarize information on wetland extent and condition.

### ***Coordination and standardization***

One of SB 1070's key goals is to improve the overall effectiveness of water quality and aquatic ecosystem monitoring and assessment by addressing the widespread lack of coordination and standardization across separate programs. Past experience shows that improved coordination can increase the quality of assessments, along with their efficiency and reliability, along the entire data path from sampling through analysis and reporting. The Monitoring Council's theme-based approach, which is centered on workgroups and web portals, has demonstrated the validity of this strategy by identifying specific opportunities for improved coordination and providing a structure for taking advantage of these opportunities.

The Monitoring Council's decision to focus workgroup efforts and web portal development on explicit assessment questions has provided much needed focus to current coordination and standardization efforts at the statewide scale. This decision means that workgroups, Monitoring Council staff, and data managers need no longer struggle to coordinate and/or standardize all monitoring efforts and all monitoring data statewide. Instead, they can concentrate on those monitoring elements and data types that are essential to answering high-priority assessment questions, with a concomitant increase in overall efficiency, as illustrated in the following examples.

At the level of individual themes, the Wetlands workgroup has focused on developing a common assessment approach (California Rapid Assessment Method (CRAM)) to be used for all wetland projects and is working on common monitoring guidelines for use in state and federal management programs. With more than 20 members representing local, regional, state, and federal interests, the workgroup has also provided a vehicle for engaging high-level state and federal managers in key issues such as a definition of wetlands to be used by federal agencies such as the U.S. Army Corps of Engineers and state agencies such as Fish and Game and the State Water Board (see *Theme-Based Workgroups: Forums for Collaboration*, next page). When fully implemented, common wetland definitions, monitoring designs, and assessment approaches will provide important foundational elements for a statewide wetlands management program. The Wetlands workgroup is developing a detailed proposal for such a program, which will be submitted to Cal/EPA and the Natural Resources Agency in early 2010. An important feature of the workgroup process and the web portal's structure is the flexibility to include new wetland environments, such as alpine meadows, as needed. As another example of the benefits of standardization, the Wetland Tracker database, used to collect and organize information on wetland projects, is being slightly modified for use by a regional eelgrass monitoring program being developed for southern California with support from the National Marine Fisheries Service.

### Theme-Based Workgroups: Forums for Collaboration

Wetland definitions (what is or is not a wetland) and classifications (descriptions of different wetland types) are highly technical but fundamentally important to agencies' ability to coordinate monitoring and to create integrated maps of wetland extent and assessments of wetland condition. This is because, for example, different definitions or classifications can lead to dissimilar or conflicting boundaries, both for wetlands as a whole and for habitat types within wetlands. This can lead to incompatible results when calculating changes in wetland area or integrating assessments of habitat condition across multiple wetlands or studies.

The CWMW has, therefore, become a key forum in which agencies and other parties collaborate on a common definition and classification system for California. The Interagency Policy Development Team has tasked a Technical Advisory Team (TAT) with recommending a wetland definition that is consistent with that of the Corps of Engineers, but includes modifications to fit circumstances in California. The CWMW has involved senior Corps staff in this effort and CWMW scientists have been directly involved in preparing the draft definition and in obtaining input from other agencies such as U.S. EPA. Development of the associated classification systems is in process and should be completed in 2010.

The CWMW is thus acting as a clearinghouse for an interagency technical review overseen by an Interagency Coordinating Committee. This process is unavoidably complex and time consuming. However, it has achieved agreement by the federal agencies on the Interagency Coordination Committee, particularly the three Corps districts in California and their regional regulatory Branch Chiefs, with the wetland definition recommended to the State Water Board by the TAT.

As another example, the Safe to Swim workgroup is continuing to develop and implement standardized data management and data transfer protocols that will greatly improve the efficiency and reliability of data aggregation at the statewide level. This effort will increase coordination among monitoring programs managed by county public health agencies, permitted dischargers, the State and Regional Water Boards, and environmental groups and has resulted in broad support for a single access point for monitoring data statewide.

Finally, the Safe to Eat Fish and Shellfish workgroup is building on SWAMP's core statewide monitoring and assessment approach, in which probabilistic sampling networks provide a broad overview of status and trends, and help to identify locations where more intensive targeted sampling may be needed to

support the development of consumption advisories. The workgroup has enabled a new level of coordination between OEHHA and the State Water Board that resulted in statewide data products such as that illustrated in Figure 3 that could lead to more integrated assessment approaches.

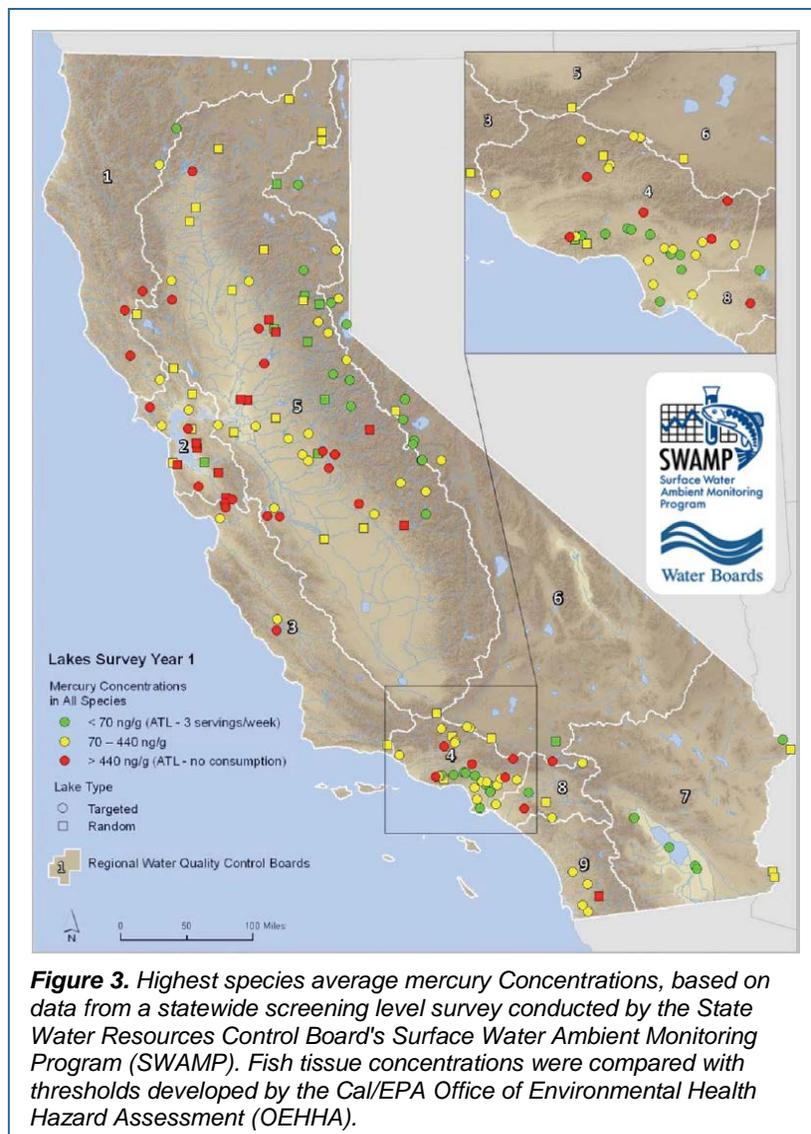
### Data management

Data management provides the technical underpinning for all other Monitoring Council and workgroup efforts. Coordination across programs, creation of statewide assessment perspectives, centralized access to data through the web portals, and automated report generation all depend on effective data management systems that collect, store, transfer, integrate, and provide ready access to validated and well documented monitoring data and assessment products. The Monitoring Council's strategy is to build on existing systems and data management capabilities wherever possible, building additional functionality only where needed. This strategy has the following essential elements:

- Identifying data types and data sources essential to answering each theme's core assessment questions
- Defining quality control and data formatting requirements where these do not yet exist
- Creating data integration procedures required for combining multiple data types into coordinated assessments

- Ensuring that all essential data have a home, either in existing data systems or at one or more of the regional data centers planned as pieces of the California Environmental Data Exchange Network (CEDEN)
- Building linkages among data sources to support statewide data integration and assessment
- Building and maintaining working relationships needed to successfully implement the elements of the data management strategy

The Monitoring Council has used its experience during the past year with the four prototype web portals to define its overall data management strategy, to begin establishing relationships with other data managers both inside and outside of state agencies, and to begin discussions with these managers about the role of a data management workgroup. Because the Monitoring Council believes that its data management strategy should correspond to the types of issues likely to arise during the workgroup and web portal development process, the development of the data management strategy has necessarily lagged to some degree the implementation of the initial four prototype portals. In addition, completion of the CEDEN network and its regional data centers is contingent on funding beyond what is currently available to the Monitoring Council and the State Water Board.



**Figure 3.** Highest species average mercury Concentrations, based on data from a statewide screening level survey conducted by the State Water Resources Control Board's Surface Water Ambient Monitoring Program (SWAMP). Fish tissue concentrations were compared with thresholds developed by the Cal/EPA Office of Environmental Health Hazard Assessment (OEHHA).

## Summary and Next Steps

By establishing four theme-based workgroups and creating prototype web portals for each, the Monitoring Council confirmed the utility of its strategic approach. Each workgroup achieved significant progress toward resolving the set of issues and problems identified in the legislation and meeting its overall goals of improving data access and the coordination of monitoring and assessment programs. This progress includes the creation of new statewide assessments; improved collaboration and coordination among multiple state, federal, and local programs; agreement on standardized monitoring and assessment approaches; increased efficiency of data acquisition and reporting; and simplification of data access through use of the web portals.

These accomplishments were achieved with existing funding and staffing, by building in part on existing efforts and targeting “low hanging fruit” for the initial set of prototypes. Maintaining what has been achieved, completing development of the four prototype web portals, expanding the Monitoring Council’s efforts to the full set of themes identified in the December 2008 recommendations, and establishing the programmatic and data management infrastructure needed to support these activities, will require additional effort, funding, and staffing beyond what has been available to date. These requirements are detailed in the Monitoring Council’s Comprehensive Monitoring Program Strategy, to be delivered in early 2010. In particular, the Monitoring Council has stressed the importance of outreach, relationship building, and coordination with other state, federal, and local agencies involved in monitoring and assessment. In addition, the Monitoring Council must develop measures to track its own performance against the goals of the legislation and the activities and benchmarks described in its upcoming Comprehensive Strategy.

## Appendix 1: SB 1070 requirements

The following table illustrates which aspects of the Monitoring Council’s efforts to date address each specific requirement of SB 1070.

SB 1070 requirement	Detail	Status
Public information program on water quality	CWC §13167. ... place and maintain on its Internet Web site a public information file on water quality monitoring, assessment, research, standards, regulation, enforcement, and other pertinent matters	Begun with creation of My Water Quality website and initial theme-based web portals; task of the State Water Board
Memorandum of Understanding	CWC §13181(a)(1) ... the California Environmental Protection Agency and the Resources Agency, on or before December 1, 2007, to enter into a memorandum of understanding for the purposes of establishing the California Water Quality Monitoring Council, which the state board would be required to administer.	MOU signed November 26, 2007 Monitoring Council held first meeting June 23, 2008
Monitoring Inventory	CWC §13181(c) The monitoring council shall undertake and complete, on or before April 1, 2008, a survey of its members to develop an inventory of their existing water quality monitoring and data collection efforts statewide and shall make that information available to the public.	Preliminary inventory completed June 28, 2008; updated as an appendix of the Recommendations Report of December 1, 2008
Recommendations report	CWC §13181(b) The monitoring council shall report, on or before December 1, 2008, to the California Environmental Protection Agency and the Resources Agency with regard to its recommendations for maximizing the efficiency and effectiveness of existing water quality data collection and dissemination, and for ensuring that collected data are maintained and available for use by decision makers and the public.	Report submitted December 1, 2008
Recommend improvements to monitoring	CWC §13181(a)(4) The monitoring council shall review existing water quality monitoring, assessment, and reporting efforts, and shall recommend specific actions and funding needs necessary to coordinate and enhance those efforts.  CWC §13181(a)(5)(A) The recommendations shall be prepared for the ultimate development of 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 the effectiveness of programs to protect and improve the quality of	First set of recommendations presented in December 1, 2008 report; more extensive recommendations to be submitted in Comprehensive Strategy report scheduled for early 2010

those waters.

CWC §13181(a)(5)(B) For purposes of developing recommendations pursuant to this section, the monitoring council shall initially focus on the water quality monitoring efforts of state agencies, including, but not limited to, the state board, the regional boards, the department, the Department of Fish and Game, the California Coastal Commission, the State Lands Commission, the Department of Parks and Recreation, the Department of Forestry and Fire Protection, the Department of Pesticide Regulation, the State Department of Health Services, and the Department of Toxic Substances Control.

CWC §13181(a)(5)(C) In developing the recommendations, the monitoring council shall seek to build upon existing programs rather than create new programs.

CWC §13181(a)(6) ... the monitoring council shall formulate recommendations to accomplish both of the following:

(A) Reduce redundancies, inefficiencies, and inadequacies in existing water quality monitoring and data management programs in order to improve the effective delivery of sound, comprehensive water quality information to the public and decision makers.

(B) Ensure that water quality improvement projects financed by the state provide specific information necessary to track project effectiveness with regard to achieving clean water and healthy ecosystems.

Develop a comprehensive monitoring program strategy

CWC §13181( e) ... the state board shall develop, in coordination with the monitoring council, all of the following:

(1) A comprehensive monitoring program strategy that utilizes and expands upon the State's existing statewide, regional, and other monitoring capabilities and describe how the State will develop an integrated monitoring program that will serve all of the State's water quality monitoring needs and address all of the State's waters over time.

The strategy shall include a timeline not to exceed 10 years to complete implementation.

The strategy shall identify specific technical, integration, and resource needs, and shall recommend solutions for those needs.

CWC §13181( f) ... identify the full costs of implementation of the

To be presented in the Comprehensive Strategy report scheduled for early 2010

Task of the State Water Board

	comprehensive monitoring program strategy developed pursuant to subdivision (e), and shall identify proposed sources of funding for the implementation of the strategy, including federal funds that may be expended for this purpose.	
Develop an agreement on Indicators	CWC §13181( e)(2) Agreement, including agreement on a schedule, with regard to the comprehensive monitoring of statewide water quality protection indicators that provide a basic minimum understanding of the health of the state's waters. Indicators already developed pursuant to environmental protection indicators for statewide initiatives shall be given high priority as core indicators for purpose of the statewide network.	Under development through the efforts of individual theme-based workgroups
Develop a Quality Assurance Management Plan	CWC §13181( e)(3) Quality management plans and quality assurance plans that ensure the validity and utility of the data collected.	Under development through the efforts of individual theme-based workgroups, complemented by the SWAMP and CEDEN quality assurance efforts
Develop a method for compiling, analyzing, and integrating readily available information	CWC §13181( e)(4) This is to include data from waste discharge reports; volunteer monitoring groups; local, state, and federal agencies; and state and federal grant recipients of water quality improvement projects.	Under development through the efforts of individual theme-based workgroups. This will be complemented by a planned data management and integration workgroup, which will identify data elements that must be more broadly integrated to address larger scale and more complex questions
Develop an accessible and user-friendly electronic Data Management System	CWC §13181( e)(5) To the maximum extent possible, include the geospatial information on the data sites.	Being implemented on the individual theme-based web portals
Develop a method for producing timely and complete water quality reports and lists	CWC §13181( e)(6) The reports and lists required are those required under Sections 303(d), 305(b), 314, and 319 of the Clean Water Act, and Section 406 of the BEACH Act.	Under development as part of the reporting features of individual theme-based web portals
Develop an update of the SWAMP needs assessment	CWC §13181( e)(7) The SWAMP program needs will change in light of the benefits of the increased coordination and integration of information from other agencies and information sources.	To be included as part of the Monitoring Council's Comprehensive Strategy to be delivered in early 2010