

The California Water Quality Monitoring Council

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Government agencies, regulated dischargers, and others spend millions of dollars each year monitoring water quality and ecosystems in the San Francisco Bay-Delta. Lacking an agency with over-arching authority to monitor and protect California's water resources, differing organizational mandates resulted in inconsistent monitoring objectives and methods to collect and assess the data, making it impossible to integrate information from multiple studies. And there is no single user-friendly place to access the information. Pursuant to state legislation and an agreement between the California Environmental Protection and Natural Resources Agencies, the California Water Quality Monitoring Council was established to address these problems.

The Council published *A Comprehensive Monitoring Program Strategy for California* to coordinate the water quality and ecosystem monitoring, assessment, and reporting efforts of organizations within and outside state government. Goals are to improve collective efficiency and effectiveness and to ensure that resulting information is available to decision makers and the public via the Internet.

Rather than focus on technical details, such as methods consistency and standard data formats, the Council presented a new solution – provide a platform for intuitive, streamlined access to information that directly addresses users' questions. Under Monitoring Council guidance, collaborative theme-specific workgroups were formed, each developing an Internet portal focusing on one high-level question:

- Is our water safe to drink?
- Is it safe to swim in our waters?
- Is it safe to eat fish and shellfish from our waters?
- Are our aquatic ecosystems healthy?

These are accessed from the *My Water Quality* website (www.CaWaterQuality.net). A number of these efforts directly address Bay-Delta management, including the Estuary Monitoring Workgroup, with an initial focus on the Bay-Delta.

Portal development provides the context to effectively evaluate and resolve monitoring design, coordination, and data access problems— highlighting gaps and inconsistencies in monitoring and assessment methods and data management – within and between organizations.

Keywords: Monitoring Council; theme-specific workgroups; web portals; collaboration
Poster Cluster Title: The Monitoring Council, Its Workgroups, and Web Portals Improve Collaboration to Better Inform Bay-Delta Management 1

Using Web Portals to Present Meaningful Information

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The California Water Quality Monitoring Council is making water quality and associated ecosystem monitoring data more meaningful by improving access to assessment products that answer questions important to regulatory and resource managers and the public. The Council is addressing problems – stemming from inconsistent monitoring and assessment methods, fragmented data management systems, and the absence of global or unified points of access – through a system of theme-specific web portals linked from a single point of access, the *My Water Quality* website (www.CaWaterQuality.net).

Each portal focuses on a specific high-level question (e.g., Is it safe to swim in our waters? Is it safe to eat fish and shellfish from our waters? Are our wetland ecosystems healthy?) that provides access to assessment products that address more detailed questions (e.g., What are the long-term trends at my beach, lake, or stream?). Users can also follow links from these questions to monitoring data at different spatial scales (site, region, statewide), more detailed assessment reports, and legal and regulatory background information.

Portals have been developed addressing the Safe to Swim, Safe to Eat Fish and Shellfish, and Wetland Ecosystem Health questions. A Healthy Streams portal is about to be released. An Estuary Portal is planned to initially address California's largest estuary, the San Francisco Bay-Delta. Each portal integrates data, information, and assessment products from a variety of partners, including state agencies and other public and private partners. In addition to improving access to meaningful information, these portals highlight data gaps and inconsistencies in monitoring and assessment methods. This creates a structure for identifying and prioritizing efforts to address these shortcomings as well motivating the state and its partners to maintain a process of continual improvement. The transparency and efficiency of this approach has improved monitoring program credibility and prompted requests for participation from additional partners.

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Poster Cluster Title: The Monitoring Council, Its Workgroups, and Web Portals Improve Collaboration to Better Inform Bay-Delta Management 2

The Healthy Streams Portal

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The California Water Quality Monitoring Council (Monitoring Council) is unveiling its fourth My Water Quality internet portal to connect decision makers and the public with water quality and ecosystem health information. The theme of this new portal is “Are Our Stream and River Ecosystems Healthy?” View the new portal from California’s My Water Quality website (www.CaWaterQuality.net) under “Are Our Aquatic Ecosystems Healthy?”

The new California Streams and Rivers Portal includes interactive maps and monitoring data that focus on the location, extent and health of the state’s streams and rivers. Links on the portal’s main page point to short descriptions of key aquatic ecosystem attributes, such as substrate or riparian cover, as well as descriptions of land use impacts on aquatic ecosystem health. The portal address three main topics regarding California streams and rivers: 1) extent of perennial and non-perennial streams; 2) ecological condition, and 3) actions directed towards improvement. An interactive map showing the extent of the statewide stream network allows users to locate streams and rivers in a region or area of interest. The ecological condition section describes how monitoring programs are evaluating the health of California’s streams and rivers. Data from bioassessment, toxicity testing, and fish tissue monitoring programs are displayed via an interactive map. Additional links point to memos, reports and other documents related to data assessment. A third section of the portal addresses actions being taken by state agencies to protect and restore watersheds; such as regulatory programs to manage waste discharges, grant programs to implement restoration projects, and policy development efforts. For those seeking further involvement in restoring healthy watersheds, links to citizen monitoring groups and other volunteer efforts are also provided.

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Poster Cluster Title: The Monitoring Council, Its Workgroups, and Web Portals Improve Collaboration to Better Inform Bay-Delta Management 3

California Estuary Monitor Workgroup Website - A Tool for Integrating Monitoring, Assessment and Reporting

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The California Estuaries Monitoring Workgroup (CEMW) has formed under the guidance of the California Water Quality Monitoring Council (Monitoring Council). The group is focusing on the San Francisco Bay Delta Estuary, but will be expanded to other estuaries as statewide input is received. The goal of the CEMW is to evaluate existing estuarine resource monitoring, assessment and reporting efforts and work to enhance those efforts to improve the delivery of water quality and ecosystem health information to the user, in the form of the California Estuaries Portal (Portal). The CEMW will follow the Monitoring Council's guidance as it develops a Portal that delivers intuitive, streamlined access to estuary ecosystem health information that directly addresses users' questions. The CEMW will review technical and policy aspects of estuarine resource monitoring, tool development, implementation and use of data to improve estuarine resource management.

The San Francisco Bay Delta is the state's largest and most important estuary. Many state, federal and local agencies, universities, regulated dischargers, public water agencies, and water bond grant recipients spend millions of dollars each year monitoring, assessing and reporting on the conditions of the San Francisco Bay-Delta Estuary ecosystem. It is hoped that the CEP can assist with the integration of Bay Delta Monitoring and Science.

Although the public My Water Quality Portal has not been launched, the CEMW launched a separate site to encourage the communication, coordination and collaboration of CEMW participants. The site serves as a resource library and tool box. Information includes project management documents, subject wikis, project summaries, existing data sets, and data query and visualization tools that are under development.

Keywords: Monitoring Council, web portals, collaboration, ecosystem condition, monitoring, assessment, estuary, Delta

Poster Cluster Title: The Monitoring Council, Its Workgroups, and Web Portals Improve Collaboration to Better Inform Bay-Delta Management 4

Data Analysis and Visualization Tools for San Francisco Bay-Delta Ecosystem Management

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Managing the Bay-Delta ecosystem to meet objectives for water supply, water quality, habitat, recreation, flood protection, agriculture, and industry requires timely access to environmental data and information that is specifically formatted to support management decisions at site-specific and landscape scales.

The Wetland Monitoring and Estuary Workgroups of the Water Quality Monitoring Council are developing a set of monitoring and assessment tools to meet these data and information needs with regard to wetlands and related aquatic resources of the Bay-Delta and elsewhere throughout California. The tools – the EcoAtlas and OpenNRM – are being designed to help meet federal and state reporting requirements about wetland extent and condition, hydrologic conditions, and water quality conditions in the system.

This presentation will discuss how these tools are being used to support specific planning, reporting and management actions: compensatory mitigation planning at the landscape scale under ESA/CESA and CWA/Porter Cologne, climate change planning, 305(b) reporting, 1641 reporting and monitoring real time conditions. We will review collaborative efforts to bring Delta and Bay data into a seamless web-enabled environment using the concept of an EcoAtlas and the OpenNRM resource management software. The discussion will demonstrate how to easily access, analyze, synthesize, visualize and collaborate with these datasets in a spatial context.

Environmental information from a range of providers (IEP Bay-Delta Monitoring, DWR, CEDEN, DFG) includes both tabular and spatial data. Example are water quality data from USGS, DWR, and CEDEN, DFG trawls, hydrologic data (CDEC, NWIS), habitat and condition information (CRAM assessments of wetland condition, historical wetlands maps, permitted project information, and the California Aquatic Resources Inventory). The EcoAtlas and OpenNRM tools allow consideration of these data at the landscape scale to facilitate management of the Bay-Delta estuary and surrounding watersheds and to track the performance of the BDCP.

Keywords: Data, web, wetlands, GIS, flow, monitoring, water quality, landscape

Poster Cluster Title: The Monitoring Council, Its Workgroups, and Web Portals Improve Collaboration to Better Inform Bay-Delta Management 5