

Toward an Integrated Monitoring and Assessment Framework

Summary: Monitoring and assessment are key elements in environmental decision-making. This briefing will discuss what coordinated monitoring and assessment efforts already exist, where there are gaps and barriers that inhibit an integrated monitoring and assessment framework, and what the Delta Science Program is doing to work with others to overcome the barriers and develop a common framework applicable to the needs of multiple agencies.

Background

Environmental monitoring information helps managers track the outcomes of management actions. The natural variability of stressors that influence water supply reliability and ecosystem health, however, often obscures the effects of management interventions. Therefore, monitoring needs to span a wide range of data types that can be aggregated into indicators of environmental condition that environmental managers can use to adjust and improve their decisions (aka *Adaptive Management*).

Most statutes that regulate public trust resources require permit holders to monitor and report on compliance with permit conditions. The Delta Reform Act is no exception and calls for both the development of measurable targets associated with achieving Delta Plan objectives (Section 85308(b)) and the means to determine progress toward meeting the quantified targets (Section 85308(c)). Similarly, other regulatory statutes also contain provisions for comparing environmental condition indicators against measurable targets, such as water quality standards, natural community conservation targets, and benchmarks spelled out in species recovery plans and Biological Opinions. The saying that “only what gets measured can get managed” has almost become a truism.

The Delta Science Plan contains recommendations to support and sustain a web-based information system for monitoring activities in the Delta and its watershed and integrate and improve monitoring programs based on a comprehensive Delta monitoring strategy (Actions 4.2.1 and 4.2.2). The Science Program has been working with the Delta science community to build on major milestones already achieved since the establishment of the California Water Quality Monitoring Council and identify how to best integrate existing and emerging efforts over time, such as the Interagency Ecological Program and the Delta Regional Monitoring Program.

Although requirements have been on the books for many decades to monitor administrative activities, intermediate results of those activities, and ultimate environmental outcomes, even monitoring activities that are closely coordinated (such as the Interagency Ecological Program that monitors fish and basic water quality parameters) are not yet sufficiently integrated with other monitoring efforts that track a limited range of stressors.

As a first step to remedy challenges identified with tracking and reporting comprehensively on water quality and aquatic ecosystem health, California Water Code Sections 13167 and 13168 established the California Water Quality Monitoring Council in 2006 and charged it with formulating recommendations to the Secretaries of the California Environmental Protection and Natural Resources Agencies to (a) reduce redundancies, inefficiencies, and inadequacies in existing water quality monitoring and data management programs and (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**. The intent is to achieve “...*development of a cost-effective, coordinated, integrated, and comprehensive statewide network for collecting and disseminating 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.*”

Since the Secretaries received and endorsed the first report from the Monitoring Council in 2008, a strong foundation has been laid for collecting and disseminating data related to key beneficial uses and stressors impacting aquatic ecosystems, drinking water, and fish and shellfish consumption, among others. The Monitoring Council has also made successful inroads into transforming data into relevant information and making it easily accessible through web services.

The Delta Stewardship Council, in its oversight role, might want to receive periodic progress updates about how well several policies and recommendations in the Delta Plan are being addressed. They are:

- G P1: Ecosystem restoration and water management covered actions must include adequate provisions, appropriate to the scope of the covered action, to assure continued implementation of adaptive management.
- G R1: Develop a Delta Science Plan that addresses an integrated approach for monitoring and incorporates existing and future monitoring efforts.
- WQ R9: Implement Delta Regional Monitoring Program.

The Governor’s Water Action Plan specifically calls for implementation of the Delta Science Plan, which contains several actions designed to be undertaken in collaboration with the Interagency Ecological Program and others conducting science in the Delta. Initial steps are currently underway by USEPA, the California Department of

Fish and Wildlife, the Delta and Coastal Conservancies, and the State Water Board, to develop and apply a common monitoring framework that combines tool sets and applies common performance standards that can be used at the project level as well as at larger landscape or watershed scales. To find out more about this common monitoring framework, attend the Bay-Delta Science Conference talk by Josh Collins, following the October 30 Council meeting at 2:55pm in Room 311.

The Current State of Monitoring in the Delta

The majority of monitoring efforts in the Delta are driven by permit conditions implemented under a variety of regulatory statutes and policies under the Clean Water Act, Porter Cologne, the federal and state Endangered Species Acts, and the Natural Communities Conservation Planning Act. All of these statutes contain provisions for monitoring and reporting on **compliance** with permit conditions by regulated entities. In addition, they contain provisions for monitoring and reporting intermediate and ultimate outcomes, or the effectiveness of management actions taken to reduce stressors on ecosystem health or to contribute to recovery of endangered species. These permit-driven monitoring requirements are complemented in the Delta by appropriations from Congress to federal agencies or through legislative mandates.

The Monitoring Council's statewide scope is daunting, and it does not always have the capacity to meet specific regional needs that could be effectively addressed by additional collaborators. The Interagency Ecological Program, which has been in existence since the 1970s to assess impacts of the water projects, is primarily focused on reporting on the efficacy of Water Rights Decision 1641 and the implementation of Reasonable and Prudent Alternatives under the Biological Opinions for listed fish species. The tracking of, and reporting on, other ecosystem stressors and the effectiveness of management actions has not yet been integrated into a comprehensive and integrated monitoring program. Now is the opportunity for the Delta Science Program to build additional capacity to design through its Adaptive Management Liaisons (Delta Science Plan Action 3.1) cost-effective monitoring efforts at the project scale that can ultimately be used to assess how well programmatic targets were achieved. In addition, the Delta Science Program is serving as a facilitator to bring additional data users to the table that are charged with integrating data from multiple sources to help environmental managers choose from a variety of management alternatives (Delta Science Plan Action 4.3).

Next Steps

Delta Science Program staff will dedicate new staff positions to lead Delta Science Plan implementation efforts (Actions 4.2.1; 4.2.2), participate in and help inform the design and integration of monitoring efforts conducted by a number of existing and emerging work groups to insure that project-specific effectiveness monitoring requirements meet landscape-scale adaptive management needs, and project performance can be compared against reference or ambient condition. The forthcoming recommendations from the Data Summit will contribute to data sharing guidelines, data integration,

visualization and display, all of which will contribute to the integration and gradual build-out of individual monitoring programs in support of the challenging decisions associated with managing water supplies and reducing multiple, interactive stressors on the Delta ecosystem.

Today's Presentation

To provide further information about the California Water Quality Monitoring Council, Dr. Jon Marshack, its Executive Director, will briefly highlight the accomplishments of the Monitoring Council to date and describe some of the remaining challenges in maintaining ongoing assessments of the health of the state's waters and the effectiveness of programs to protect and restore beneficial uses.

During the presentation or in follow up discussion, the Council may wish to consider these questions:

- Of the challenges the Monitoring Council has identified, which ones are high-priority and should be started in 2015?
- Which of these can staff of the Planning and Science Divisions of the Delta Stewardship Council help address?
- To what extent has the Monitoring Council evaluated the ability of various monitoring programs to inform adaptive management decisions?

List of Attachments

Attachment 1: PowerPoint Presentation - *Toward an Integrated Monitoring Framework*

Attachment 2: PowerPoint Presentation - *Increasing Efficiency & Effectiveness through Collaboration*

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