

**Agenda Item: Item 1**  
**Meeting Date: February 22, 2007**

## **Lead Scientist Report**

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### **Vision for the Science Program**

Providing a scientific vision for the Bay-Delta is a significant challenge. Since taking on the role of Lead Scientist, I have begun working with Science Program staff to develop this vision. At this stage we have identified 3 key elements of the vision: 1) The Science Program should be taking a broad synthetic view of the Delta and its science needs, including a landscape perspective of the Delta; 2) There should be an integration of science across agencies and across mandates; 3) The Science Program should emphasize the importance of good science, provide an ecosystem perspective, and guide adaptive management to help yield better decisions about the delta.

### **Science Program Priority Setting**

Initial evaluation of the activities of the Program revealed that the staff has taken on more tasks than they can effectively perform at a high scientific standard. There is, in effect, no limit to the number of important scientific issues in the Bay-Delta that could engage the Science Program. At the same time, a number of critical decisions about the future management of the Bay-Delta will be made over the next year to 18 months. It is imperative that we establish clear priorities for the Science Program to ensure that we can provide the best scientific advice to inform these decisions. Critical activities that will demand our attention in the short term include the End of Stage 1 decisions, Delta Risk Management Strategy (DRMS), Delta Vision, and Bay-Delta Conservation Plan (BDCP). We will also be preparing the *State of Science for the Bay-Delta System* (SOSBDS) report to inform those high priority tasks. I have begun working with Science Program managers to establish priorities for the program to ensure that the staff is fully engaged in the most important tasks.

### **State of Science for the Bay-Delta System (SOSBDS)**

The SOSBDS report (to be discussed in more detail in Agenda item 2) is our highest priority for the year ahead. This report will provide the scientific underpinning for End of Stage 1 decisions, Delta Vision and the BDCP.

### **Communications**

Communication is of the utmost importance to the Program. We have formed a Communications Team to take a proactive and vigorous approach to communicating science to the spectrum of CALFED audiences with specific targeted products. One of

the first tasks has been to re-evaluate a communications strategy that was developed for the Science Program in 2005. This document identifies target audiences and communication products used by the Science Program, and recommends strategies for improving communication of scientific information. The team is now working on how to best implement parts of the communication strategy. One of the first decisions of the team was to re-invigorate the monthly newsletter *Science News*. The team is also working on re-organization of the Science Program website.

#### *Independent Science Board*

Support for the ISB will of course continue. We want to work together to make your relationship with the Science Program highly productive.

#### *CALFED Science Fellows Program*

The Science Program provides funding to the CALFED Science Fellows Program, administered through the California Sea Grant College Program, to provide opportunities for doctoral students and post-doctoral researchers to address problems that have both academic and applied interest. The objectives are to mentor the next generation of applied scientists, build bridges between agencies and academia, get existing data analyzed and contribute information that is ultimately used by managers. This program is extremely important. I participated in the selection process for science fellows for 2006, through which we have funded 2 doctoral projects and 8 post-doctoral projects (additional documentation of projects were provided at the November 16-17, 2006 meeting). These projects, in my view, are excellent projects that will provide highly relevant information. I would like to see the fellows program strengthened and to have the Science Program compete for fellows to work out of program offices on problems that we are interested in.

#### *California Sea Grant State Fellows Program*

The CALFED Science Program is hosting a California Sea Grant State Fellow. This program provides a unique educational opportunity for recent MA and PhD graduates who are interested both in environmental resources and in the policy decisions affecting those resources. The program matches highly motivated and qualified candidates with "hosts" in the California State and Federal agencies for a 9-month paid fellowship.

The Science Program is excited to welcome Dorian Fougères to the program. Dorian completed his Ph.D. in U.C. Berkeley's Department of Environmental Science, Policy, and Management in 2005. Dorian plans to focus his fellowship research on how scientific information has been produced, communicated, and applied in CALFED's Ecosystem Restoration and Environmental Water Account Programs. Dorian is especially interested in climate change science, hence part of his work will explore how these two programs and the Delta Vision processes are planning for changes associated with global warming.

### Additional Activities

There are a large number of other activities (performance measures, Delta Regional Ecosystem Restoration Implementation Plan (DRERIP), Environmental Water Account (EWA), review panels for various activities, and others) that need to be put into the context of our vision and prioritized. Performance measures will be discussed on Wednesday, February 21 (Agenda item 3) and two others will be discussed Thursday, February 22: DRERIP (Agenda item 3) and the 2006 EWA Review Panel report (Agenda item 4).

### **Program Building**

#### Program Staff

The Science Program has an energetic and talented staff. We recently filled two State staff positions. Matt Nobriga is the newest addition to our technical staff. Matt will be working on issues surrounding water operations and fisheries management, including EWA. Robert Ullrey is our new research writer. He is responsible for development of Science Program communication products such as Science News and will serve as an SOSBDS editor. We have one vacancy remaining which we are planning to fill with someone with modeling/hydrology skills. My intention is to get staff more involved in actual scientific activities (data synthesis, science report preparation) as we clarify our objectives. To this end, we will be seeking additional administrative/clerical staff to take over more of the burden of contract management as well as additional technical staff to expand our scientific capability.

#### Finances

The Science Program budget is not very large, and we have no assured funding for the future. We need to start building the visibility and the support that we need to have the Program appear as a line item in budget and bond requests. We also need to lobby for more realistic funding. A bigger budget will allow us to have greater influence on the direction of Delta science and secure more scientific staff so that we can undertake more creative syntheses of the available scientific information.

In the past we have supported a broad range of science projects through the PSP process. One of the issues we have to address is whether to have a PSP this year. The actual amount of money we will have to disperse is small and I am not sure that a PSP is worth the effort this year. Our options are to use grants or more directed actions to support additional research, or to carry the funds over and have a larger amount for a PSP next year. We have also made a last minute plea for additional funds to augment the PSP budget. If we are successful at increasing our science budget then a PSP becomes more attractive.

#### Relations with other Programs and Agencies

To be effective, the Science Program needs to have close working relations with a number of other science units. Two obvious units are USGS and IEP. We have begun discussions with these units to determine how best to connect the Science Program

with what they do. The IEP, in particular, is in a transition period and seeking new scientific leadership. The Science Program has proposed that the scientific leader for IEP be a member of the Science Program, housed in the agencies that comprise IEP but responsible for linking IEP and the Science Program.

## **Staff Activities**

### **2006 Science Program Focused Proposal Solicitation Package**

Our 2006 solicitation is almost complete. The Technical Synthesis Panel recommendations for \$6 million in funding were presented to the California Bay-Delta Authority at their December 14, 2006 meeting (Attachment 1). The Authority recommended funding these projects to the Secretary of Resources, who recently approved those recommendations. Principal investigators have been notified and work has begun on grant agreements.

Highlighted Projects:

1. **Analysis of Archived Samples to Assess Patterns of Historic Bivalve Biomass, \$219,822.** Department of Water Resources and U.S. Geological Survey. This study will address changes in invasive bivalve populations, *Corbula amurensis* (estuarine) and *Corbicula fluminea* (riverine) over time by analyzing archived samples from monitoring conducted over a 30 year time period in the lower Sacramento River and in the lower San Joaquin River system. The biomass data obtained will be used to evaluate trends in the biomass of invasive bivalve species, as well as patterns of invasive bivalve biomass over spatial gradients in the upper San Francisco Estuary. Assessment of patterns of invasive bivalve biomass in the San Francisco Bay-Delta system will help inform projections of the extent and quality of Delta habitat for key species, especially with regard to the effects of invasive species, and how future scenarios will be affected by biotic drivers.
2. **Climate Change Impacts To San Francisco Bay-Delta Wetlands, \$646,848.** CSU San Francisco, UC Berkeley, U San Francisco, SF Bay National Estuarine Research Reserve. This study is a big picture, multidisciplinary, collaborative research effort of several university and non-profit organizations studying an increasingly important concern (climate change) on critical diverse habitat (Bay-Delta wetlands). Investigators will study plant diversity, primary production, decomposition, carbon production, sedimentation rates, and stable isotopes of fishes, invertebrates, and plants in a variety of wetlands to analyze the pelagic-wetland linkage and model the potential impact to tidal wetlands and fish populations under a variety of climate change scenarios (varying salinity, sea-level rise, sediment availability). The results will be used to predict future impacts of climate change to this critical habitat and to gain insight into potential management actions.
3. **Do Phytoplankton Growth Rates Signal the “Bad” Habitat Conditions in Suisun Bay Driving the Pelagic Organism Decline?, \$500,000.** This study tests the “Bad Suisun Bay” hypothesis, assessing the anomalous Suisun Bay

habitat in context of the Delta, upstream sites (Sacramento and San Joaquin Rivers), and downstream sites (a more oceanic condition in central San Francisco Bay) by measuring gradients of constituents and physiological rates (e.g. photosynthesis, nutrient acquisition, growth rate) that respond to changing conditions. Experimental mesocosms will be used to optimize growth conditions of natural phytoplankton, and to evaluate the relative physiological response of the phytoplankton to drivers. Food quality will be evaluated by identifying and enumerating phytoplankton species that occur in the sampling locations. A simple ecological model to predict the effect of reducing the “bad” condition on phytoplankton physiology and community structure in Suisun Bay will be developed to determine if management practices aimed at this trophic level are feasible for trying to alleviate the POD.

Additional information including executive summaries and proposals can be found at: [http://science.calwater.ca.gov/psp/psp\\_package\\_2006.shtml](http://science.calwater.ca.gov/psp/psp_package_2006.shtml)

### Individual Staff Activities

At each ISB meeting I'd like to highlight efforts of several Science Program staff members to help the ISB get to know the people behind the program.

*Dr. Steven Culberson* is the Science Program's staff liaison to the Interagency Ecological Program, focusing on the Pelagic Organism Decline effort. He serves as a member of the IEP POD Management Team. Steve will also be a contributing author to chapters 1 and 3 of the SOSBDS. Steven's interests and expertise include quantitative fisheries population simulation modeling, wetland soil carbon cycling and storage, and the use of systems approaches for management of large-scale ecosystem restoration projects.

*Ladd Lougee* coordinates and manages the Science Program's Proposal Solicitation Package effort to identify and fund important applied research critical to successful implementation of the CALFED Bay-Delta Program. Ladd works with Science Program and implementing agency staff, scientists and key stakeholders to identify priority topics, and manages the online Science Program proposal submission and review effort. In addition, Ladd is managing the independent technical review panel for the Delta Risk Management Strategy. Ladd's interests and expertise include zooplankton ecology and aquatic food web and fostering collaboration and the practice of interdisciplinary science in the San Francisco Bay-Delta region.

*Darcy Jones* is working on the scientific input phase of the Delta Regional Ecosystem Restoration Implementation Plan (DRERIP) with Ecosystem Restoration Program agency staff and other members of the DRERIP Adaptive Management Planning Team. Darcy is helping to coordinate development of species life history conceptual models and ecosystem conceptual models (e.g., habitats, processes, and stressors). This effort supports the Science Program's objective of synthesizing the latest scientific knowledge and making it available to technical staff, managers, stakeholders, legislators and the public. Darcy will also be coordinating with CALFED agencies on monitoring. Darcy's interests and expertise include water quality, specifically ecosystem water quality and human health effects.

Attachments

Attachment 1 – 2006 PSP Technical Synthesis Panel recommendations

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