

# USGS CALFED SCIENCE SUPPORT INITIATIVE

## Executive Summary

### **Purpose of this Initiative**

Congress appropriated \$85,000,000 for California Bay-Delta Ecosystem Restoration in Fiscal Year 1998. In the appropriation, Congress directed the Secretary of the Interior to approve plans assuring that "performance measures, indicators of ecosystem health and associated monitoring protocols, be established as part of the [CALFED] review process." Secretary Bruce Babbitt asked the U.S. Geological Survey (USGS), the science bureau of the Department of Interior, to provide him with a report by the end of December 1997, to recommend what might be done in Fiscal Year 1998 to help provide scientific support to CALFED as requested by Congress. This document is the USGS response to Secretary Babbitt's request.

### **Background and Justification**

The San Francisco Bay-Delta estuary and the Sacramento and San Joaquin River basins are important habitats for hundreds of fish and wildlife species, and the delta is the hub of California's water distribution system, which supplies drinking water to over 22 million people and irrigation water to over 4 million acres of farmland. People have profoundly altered the Bay-Delta ecosystem during the last 150 years, resulting in a precipitous decline in abundance of some fish and wildlife species during the last 2 decades.

CALFED is a multifaceted program created in 1994 by agreement among State and Federal Governments and stakeholders to develop long-term solutions to the problems of the delta. The program is funded by California Proposition 204 (\$995 M in bonds, with half devoted to ecosystem restoration) and a Federal authorization of \$143.3 M per year in FY 98, FY 99, and FY 2000 (of which \$85 M is appropriated in FY 98). Rehabilitation of the Bay-Delta ecosystem will involve many actions to create and restore wetlands, riparian habitat, fish populations, and key ecosystem components and processes. Reliable scientific knowledge about the ecosystem and the effects of rehabilitation actions (monitoring) is required for actions to succeed.

About \$20 M are currently spent annually on aquatic and biological monitoring by the Interagency Ecological Program, San Francisco Estuary Institute, Sacramento River Watershed Program, the Comprehensive Assessment and Monitoring Program of the Central Valley Project Improvement Act, USGS monitoring activities, and others. However, significant gaps in ecosystem monitoring and scientific understanding are recognized by CALFED, and these needs were highlighted by a recent independent scientific review by a panel of national experts.

## Recommended Approach

The USGS proposes this "USGS-CALFED Science Support Initiative" to strengthen the role of science in supporting CALFED Bay-Delta rehabilitation efforts. As a non-regulatory science agency with more than 3 decades of experience in hydrology, biology, geology, and mapping within this ecosystem, the USGS proposes to work with the Interagency Ecological Program, CALFED agencies, and other organizations to provide the necessary scientific decision support.

### Actions Proposed in Fiscal Year 1998

1. **Refine the Conceptual Framework for Monitoring and Focused Research.** Help refine and develop conceptual models, including those developed by the CALFED "Indicators Group" to support development of a CALFED monitoring and focused research program.
2. **Design a Monitoring Program.** Assist CALFED by working with the Interagency Ecological Program, the San Francisco Estuary Institute, and others in the design, coordination, and conduct of natural resource and ecosystem monitoring, including the development of performance measures and ecological indicators.
3. **Design a Data, Information, and Reporting Program.** Develop a strategy to incorporate scientific information in decision support. Establish an integrated database of USGS and other project data, including an architecture to support access to data and their effective application to project goals. Develop data evaluation and reporting procedures.
4. **Focus Research in Support of Monitoring.** Collaborate with the Interagency Ecological Program and others to develop a focused research and science support program to meet the needs of the CALFED program for evaluating the rehabilitation actions through adaptive management.

The above actions are proposed at two alternative levels of implementation to allow the Department of the Interior and CALFED to evaluate USGS capabilities in relation to science needs for the coming year. This provides flexibility to better tailor the science support to CALFED projects which were not fully developed at the time this initiative was drafted. Level One (\$2.5 M) provides the minimal FY 1998 effort USGS believes is necessary to develop a comprehensive ecosystem monitoring program. Level Two (\$5.9 M) encompasses the actions in Level One and also begins implementation in 1998 of focused studies that will ultimately be required in future years to verify performance measures, ecological indicators, and the conceptual models upon which monitoring is based.

To implement actions developed in FY 1998 under in this initiative, the USGS recommends that CALFED establish a high-level Science Support Team with broad representation to coordinate scientific support and provide the linkage between scientists and the CALFED Policy Team.

## Budgets, Activities, and Deliverables for Alternative Levels of Effort

| USGS Action   | Level One  | Level Two   |
|---|--|---|
| <b>Program Leader</b><br>\$K(New FTEs)<br>Activity<br><br>Deliverable(s)          | 185 (2)<br>Provide a Program Leader and establish an office to coordinate USGS activities internally and externally<br><br>None  | 185 (2)<br>Same as Level One<br><br>None  |
| <b>1. Conceptual Framework</b><br>\$K(New FTEs)<br>Activity<br><br>Deliverable(s) | 750 (2)<br>Review existing models, refine and complete separate models involving USGS and CALFED science participants, convene expert panels with national participation, draft white papers<br>Workplan 3/15/98<br>Final Report 9/30/98 | 1,000 (3)<br>Same as Level One, plus: integrate existing conceptual models and white papers for comprehensive, integrated ecosystem coverage, using an expert panel and symposium process<br>Workplan 3/15/98<br>White Papers 8/15/98<br>Final Report 9/30/98 |
| <b>2. Monitoring Design</b><br>\$K(New FTEs)<br>Activity<br><br>Deliverable(s)    | 780 (2)<br>Work with IEP to produce a complete Monitoring Strategy<br>Workplan 3/15/98<br>Draft Strategy 8/1/98<br>Final Strategy 9/30/98  | 780 (2)<br>Same as Level One<br><br>Same as Level One   |
| <b>3. Data/Information</b><br>\$K(New FTEs)<br>Activity<br><br>Deliverable(s)     | 400 (3)<br>Work with IEP, SFEI and others to design a strategy for data, information, and reporting of USGS and other agency data, except GIS<br>Workplan 3/15/98<br>Draft Strategy 8/1/98<br>Final Strategy 9/30/98                     | 525 (3 + USGS specialists)<br>Same as Level One, plus: develop and include a USGS geospatial/GIS initiative<br><br>Same as Level One + GIS coverages  |
| <b>4. Science Support</b><br>\$K(New FTEs)<br>Activity<br><br>Deliverable(s)      | 385 (1)<br>Develop a complete CALFED science support strategy and implement an annual reporting and symposium process<br>Strategy Workplan 3/15/98<br>Info. Needs List 7/1/98<br>Draft Strategy 8/1/98<br>Final Strategy 9/30/98         | 3,375 (2 + USGS scientists)<br>Same as Level One, plus: coordinate current USGS science and initiate new focused field research to support monitoring development<br>Same as Level One, plus:<br>Research workplan 3/15/98<br>Progress report 9/30/98         |
| <b>Total \$K (FTEs)</b>   | <b>2,500 (10)</b>  | <b>5,865 (12 + redirect USGS specialists)</b>   |