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Agenda Item: 8-3C
Meeting Dates: April 7 and 8, 2004

INFORMATIONAL REPORT ON CALFED SCIENCE PROGRAM PRIORITIES AND ACTIVITIES

Summary: This report provides a summary of CALFED Science Program priorities and activities.

Recommended Action: Informational only. No action to be taken.

Background

The collaborative process that characterizes the CALFED Program requires transparency, open recognition of scientific uncertainties, and open discussion and publication of scientific findings. It is expected that the CALFED Science Program will develop and communicate the best scientific information possible to guide decisions regarding CALFED Program actions and to evaluate the results of the implemented actions. The Science Program has a broad range of ongoing activities, ranging from reviews of individual programs such as the Environmental Water Account (EWA), to public workshops on specific technical issues such as the series on water operations and biology held over the past three years (Attachment 1). The vast majority of ongoing activities have been focused on the three priority topics established in the 2003 Program Plan: water operations and biology, performance assessment, and cross-program integration in the Delta. This report summarizes recent and upcoming activities and outcomes.

Lead Scientist Search and CALFED Program Science Board: Science Program staff have organized and supported the nationwide search for the Lead Scientist and activities of the CALFED Program Independent Science Board, both of which are described in more detail in agenda items 8-3A and 8-3B.

Workshops: Workshops on specific technical topics are intended to provide a balanced perspective on the status of knowledge and uncertainty and help advance the public discussion of important and sometimes contentious management issues. Since July of last year, the Science Program has convened workshops on Delta smelt, water operations and biology, Suisun Marsh, contaminants as ecological stressors. All workshops include presentations of recent scientific findings, open discussion of management questions and technical uncertainties, and summary documents.

Information on past and planned workshops is regularly posted on the program web site at http://science.calwater.ca.gov/workshop/workshop.shtml

EWA Technical Reviews: The CALFED Science Program conducts an annual independent review of the technical basis of program activities undertaken by the EWA. This review begins with collaborative planning of new analyses by the EWA science advisors, program staff, EWA managers, and EWA technical staff in late winter, and culminates in a panel review each fall. The Science Program's charge to the independent panel is to provide advice and ideas about how to best achieve EWA policy goals, and to provide feedback on the quality of science used in the program, project, or issue area and suggestions for improving the scientific basis of existing activities. More detail on the results of the past three EWA program reviews, and plans for the upcoming November 2004 panel review are presented in Attachment 2.

Bay-Delta Science Consortium: A number of CALFED Program agencies and local research institutions have founded a new consortium, dedicated to supporting collaboration between agency and university researchers, encouraging multi-disciplinary science, and enhancing communication about management information needs and scientific findings. The Science Program has been providing staff and a small amount of fiscal support to this effort since 2000. In August 2003, the Authority signed on as a party to the Science Consortium Memorandum of Understanding (Resolution 03-08-04). Co-location of Interagency Ecological Program agency scientists in new facilities has been and continues to be a top priority (locations under consideration are presented in Attachment 3).

2004 CALFED Program Science Conference: The Science Program has sponsored a major conference every two years to foster the communication of new knowledge between people funded to work on CALFED Program projects, establish an expectation of regular public disclosure of results, and highlight key new findings to CALFED Program management. The 2002 conference drew 1,200 people. The next conference is scheduled for October 4-6 in Sacramento and a major theme is to discuss management implications of new knowledge derived from CALFED Program funded efforts (Attachment 4). Program information is regularly being posted to http://iep.water.ca.gov/calfed/sciconf/2004/.

New Studies to Fill Critical Information Gaps: The CALFED Science Program's proposal solicitation process (PSP) is a key element to providing CALFED Program agencies and stakeholder community with priority information needed in support of program-wide management. The process is designed to advance our understanding on three topics that are high priority for the program as a whole: water operations and biology, performance assessment, and cross-program integration (at two scales, the Delta region and the system-wide scale). These topics were defined in the 2003 Program Plan and continue as recommended priorities in the draft 2004 Program Plan. The goal of the PSP is to make maximum use of limited funds by soliciting proposals

relevant to these priority topics, then only selecting proposals that are both highly relevant and of high quality, with a good probability of success.

At present, Science Program staff are in the process of completing a draft implementation document, which will explain the links between the established program plan priorities, management information needs in each of the topic areas, "what we need to learn next" for those needs, and study topics tractable to the research community. Documentation explaining CALFED Program information needs to the research community is nearly complete.

Staff will be bringing the entire PSP package before the Authority this summer for its approval.

Fiscal Information

Not Applicable.

List of Attachments

Attachment 1 - Science Program List of Activities
Attachment 2 - Summary of the EWA Technical Reviews 2001 – 2003
Attachment 3 - Map of Science Consortium facilities
Attachment 4 - CALFED Science Conference 2004 Call for Abstracts

Contact

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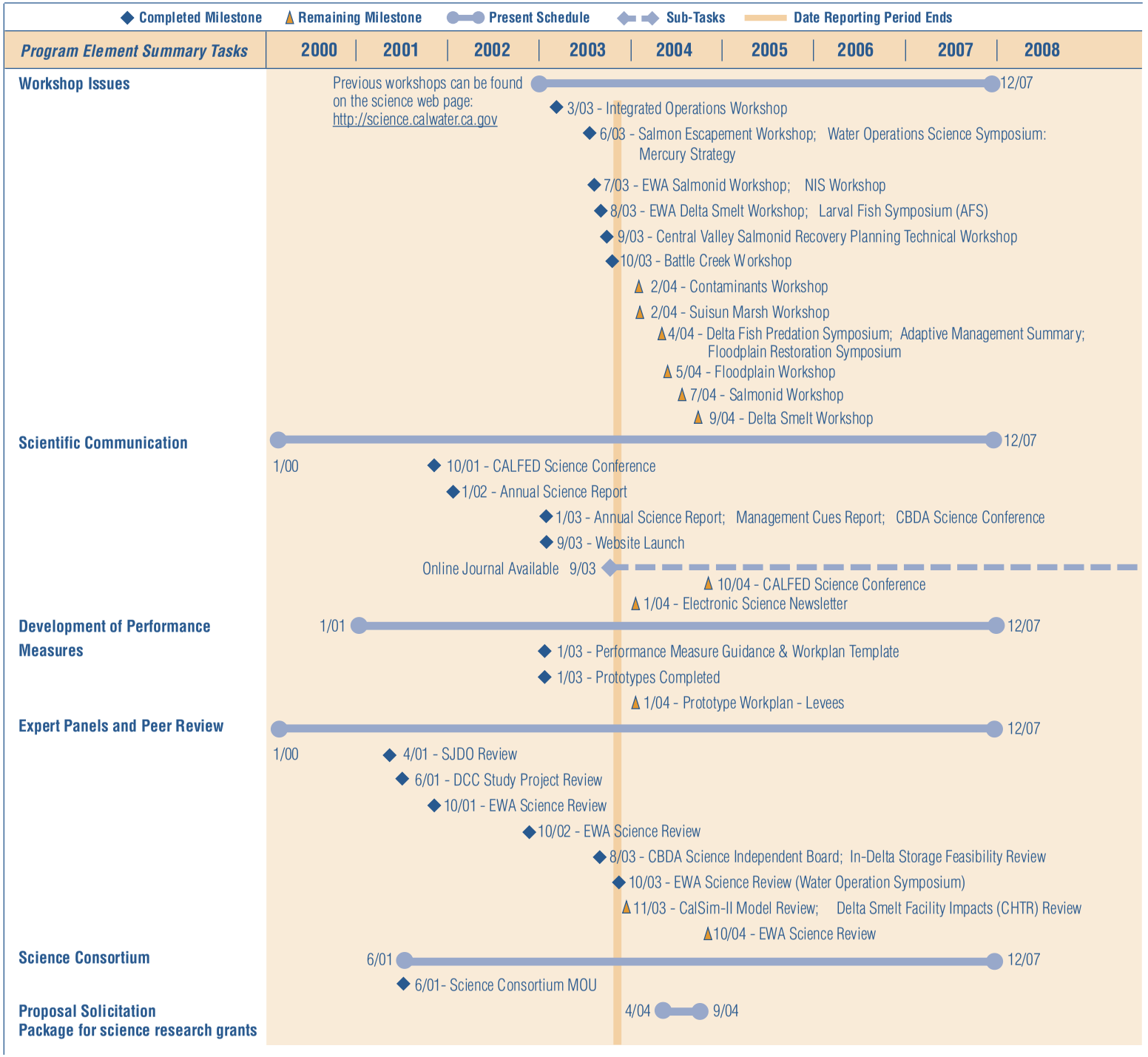
Completed Milestone
Remaining Milestone
Present Schedule
Sub-Tasks
Date Reporting Period Ends
Program Element Summary Tasks
2000
2001
2002
2003
2004
2005
2006
2007
2008
Workshop Issues
Previous workshops can be found on the science web page: http://science.calwater.ca.gov
12/07
3/03 - Integrated Operations Workshop
6/03 - Salmon Escapement Workshop; Water Operations Science Symposium: Mercury Strategy
7/03 - EWA Salmonid Workshop; NIS Workshop
8/03 - EWA Delta Smelt Workshop; Larval Fish Symposium (AFS)
9/03 - Central Valley Salmonid Recovery Planning Technical Workshop
10/03 - Battle Creek Workshop
2/04 - Contaminants Workshop
2/04 - Suisun Marsh Workshop
4/04 - Delta Fish Predation Symposium; Adaptive Management Summary; Floodplain Restoration Symposium
5/04 - Floodplain Workshop
7/04 - Salmonid Workshop
9/04 - Delta Smelt Workshop
Scientific Communication
12/07
1/00
10/01 - CALFED Science Conference
1/02 - Annual Science Report
1/03 - Annual Science Report; Management Cues Report; CBDA Science Conference
9/03 - Website Launch
Online Journal Available 9/03
10/04 - CALFED Science Conference
1/04 - Electronic Science Newsletter
Development of Performance Measures
1/01
12/07
1/03 - Performance Measure Guidance & Workplan Template
1/03 - Prototypes Completed
1/04 - Prototype Workplan - Levees
Expert Panels and Peer Review
12/07
1/00
4/01 - SJDO Review
6/01 - DCC Study Project Review
10/01 - EWA Science Review
10/02 - EWA Science Review
8/03 - CBDA Science Independent Board; In-Delta Storage Feasibility Review
10/03 - EWA Science Review (Water Operation Symposium)
11/03 - CalSim-II Model Review; Delta Smelt Facility Impacts (CHTR) Review
10/04 - EWA Science Review
Science Consortium
6/01
12/07
6/01- Science Consortium MOU
Proposal Solicitation Package for science research grants
4/04
9/04

Agenda Item: 8-3A, Attachment 2
Meeting Dates: April 7 and 8, 2004

Environmental Water Account Technical Reviews 2001 - 2003

The Environmental Water Account (EWA) is an annual program to provide water for the protection and recovery of fish beyond water available through existing regulatory actions related to project operations. The EWA is a cooperative management program whose purpose is to provide protection to the fish of the Bay-Delta estuary through environmentally beneficial changes in State Water Project and Central Valley Project operations at no uncompensated water cost to the projects' water users. The EWA provides additional protection to fish species of concern and provides support for a commitment not to reduce south of Delta project deliveries. The EWA provides for fishery protection actions that are supplemental to a baseline level of protection established by an existing set of regulatory programs. The EWA program description is taken from, CALFED Bay-Delta Program 2000 - Final Programmatic EIS/EIR.

During EWA establishment, all agencies agreed the program would undergo an annual independent review, and that this review would focus on technical issues related to program implementation during the previous water year. This document provides a brief summary of the findings and recommendations from the first three annual EWA reviews (2001-2003).

The CALFED Science Program convened a panel of independent external reviewers for the EWA and asked the panel to provide advice and ideas about how to best achieve EWA policy goals, and to provide feedback on the quality of science used in the program, project, or issue area and suggestions for improving the scientific basis of existing activities. The panel was specifically asked *not* asked to make policy judgments, such as whether EWA is or is not "successful", whether EWA is based on "sufficient" information, and whether EWA "acceptably" reduces risk. In keeping with that charge, the panel has made a number of constructive recommendations which are summarized below. Many of these recommendations focus on refining our knowledge of ecological benefits of different actions and are likely to be relevant for both the current EWA and any new EWA structure being discussed by the CALFED agencies and stakeholders.

The 2001 EWA technical review focused on a discussion of the purpose and goals for the EWA, as well as discussion of the processes and actions taken during the first year of program implementation. Major finding from the technical review included:

1) The CALFED agencies effectively established the EWA program and made a good start in securing water assets and making allocations within the time (and dollar/water) limits required.
2) Cooperation and collaboration among agency biologists and project operators was a highlight of the first year that has broad, positive implications for subsequent years. The EWA team produced a number of timely documents useful to the first year review. The interest and involvement of stakeholders in the process of managing water in California was also noted as an encouraging sign.

3) While the goals of EWA were clearly stated, the panel noted "large differences in how the goals are 'weighted' by scientists, resource managers, water managers, and stakeholders." This observation was particularly relevant to the goal for tier 3 assets.
4) Ensuring the scientific basis for EWA decisions and actions is statistically rigorous and based on sound science was the "foremost issues that emerged in the technical review." In the Panel's opinion, "there remain some critical gaps in knowledge needed to correctly forecast 'jeopardy' for endangered fish species (related to water management operations) and to evaluate the ecological consequences of EWA and other water management activities in the Delta."
5) The EWA is a "human-capital intensive activity." The review panel suggested strengthening the CALFED team working on the EWA needs to bolster the amount and kinds of expertise necessary to fill gaps in knowledge.
6) From its first year review, the Panel concluded, "it is important to maximize the EWA's management flexibility within the confines of overall policy goals and constraints, and to ensure that the EWA team effectively uses this flexibility to promote the EWA's goals."

The 2002 EWA review considered several technical aspects of program implementation in detail. Overall, the Panel commended the agencies and staff involved in the EWA experiment "for their diligence in attempting to realize the vision for EWA laid out in the CALFED Record of Decision." However, the Panel noted several significant challenges that would need to be overcome to maximize the EWA's potential, most notably:

1) The growing burden of expectations placed on EWA in the face of reduced funding and increases in what it is expected to do.
2) Better integration of EWA into other CALFED restoration activities.
3) Improving the scientific analysis and synthesis of available data to strengthen the scientific underpinning of EWA actions.
4) Increasing the focus on ecologically appropriate measures of biological performance, which would ultimately provide biological justification for the EWA.
5) Allocating sufficient resources to accomplish the stated goals of the EWA. This includes funds for water purchases, needed physical assets like storage capacity, and the people needed to carry out the observations, experiments, analyses, and modeling.

In addition, the EWA Technical Review Panel identified six critical science issues it recommended CALFED pursue with a sense of urgency, including:

1) Identification of the conditions that give rise to extreme delta smelt entrainment events at the pumps.
2) Estimation of the growth and mortality rates, habitat use, and movement patterns of juvenile Chinook salmon within the Delta.

3) Development of a quantitative synthesis of the life cycle of delta smelt and Chinook salmon.
4) Determine the magnitude of predation mortality in Clifton Court Forebay.
5) Determining how Delta Cross Channel operations might be optimized to reduce entrainment.
6) Determining if and how EWA water can be used to make reservoir releases that improve salmon spawning habitat at critical times.

The Panel also requested a formal, written response from the Lead Scientist describing the progress and obstacles in addressing the Panel's recommendations. The Lead Scientist's response is attached.

Much of the 2003 EWA review report focused on the potential transition of the EWA into a long-term program. In its report, the EWA technical Review Panel identified four main challenges the EWA is likely to face if it transitions into a long-term program.

1) <u>The need to manage long-term opportunities and risk</u>. The review panel identified several opportunities and risks associated with a long-term EWA. A long-term EWA will increase flexibility in the acquisition and use of water resources, could increase supply security and decrease costs, and could increase inter-year flexibility in debit management. Long-term risks include new "trade-offs between using available resources in current years and the desire to build up a reserve for future years." A long-term EWA also increases the planning timeframe and therefore the risk (i.e., uncertainty) associated with decisions to secure future water resources. The review panel also noted "a long-term EWA may also pose greater risks to third parties."

2) <u>Demands for increased accountability</u>. Rising expectations for the EWA to aid in the recovery of at-risk fish species and the ecosystem will increase the pressure for greater accountability. In it's review report, the EWA panel noted "[t]he focus of concern has appropriately shifted away from avoiding excessive "take" of endangered species toward ecosystem health. This latter goal is far more ambitious and amorphous and needs to be translated into clear benchmarks against which the accomplishments of the EWA can be measured." The panel concluded "[t]his new level of accountability makes it more important than ever that the EWA develop transparent goals and performance measures…" Establishing robust performance measures that can guide data collection and analyses is the first critical step to addressing the unavoidable demands for increased accountability. In its review, the EWA panel noted that "[s]pokespersons for user groups…stated without exception that they could live with decisions that went against their individual interests if and only if the decisions were based on good science."

3) <u>Establish viable mechanisms and actions to address the critical science needs of EWA</u>. The EWA technical review panel identified four main actions to address the critical science needs of the EWA: 1) continue the annual review;

2) produce peer-reviewed publications to “further elevate the credibility of the science supporting the EWA”; 3) summarize and formally review “the accomplishments and lessons learned from the current four-year experiment”; and 4) increase the human resources dedicated to further advancing the science underlying water management decisions. The panel also recommended a “program-wide review of EWA and EWA related activities occur every 4-5 years.” This program-wide review would provide “an opportunity for a comprehensive evaluation of the progress in meeting program-wide goals," as well as “an opportunity to foster integration and cooperation among programs with similar goals.” Marshalling the human resources to address the critical science needs of EWA remains one of the biggest challenges for agencies responsible for EWA implementation.

4) Increased pressure for EWA to more fully integrate with other programs and tools. In all three of its reviews, the EWA panel has stressed “the need for better integration of EWA with other CALFED programs.” This issue is closely related to the expectations for greater accountability and the growing interest in assessing performance within and among programs.

Attachment 3

3rd Biennial California Bay-Delta Program (CALFED) Science Conference

Getting Results: Integrating Science and Management to Achieve System-Level Responses

CALL FOR ABSTRACTS

ABSTRACT DEADLINE: Friday, June 4, 2004

October 4–6, 2004 ***Sacramento Convention Center*** ***Sacramento, California***

The Biennial **California Bay-Delta Program (CALFED) Science Conference** is a forum for presenting scientific information and ideas relevant to the Program's goals and objectives in the Bay-Delta, its watershed, and the adjacent coastal ocean. The organizers of this 3rd Science Conference are seeking presentations in all four of the Bay-Delta Program's areas: ***ecosystem restoration, levee system integrity, water quality, and water supply reliability.*** The goal of the conference is to provide new information (i.e., results, models, syntheses, analyses) to the broad community of scientists, engineers, managers, and stake-holders working on Bay-Delta Program-related issues.

The conference program will feature both oral and poster presentations that provide scientific information and ideas relevant to the broad themes of the Bay-Delta Program, listed below, as well as the overall conference theme, "Getting Results: Integrating Science and Management to Achieve System-Level Responses." We encourage individuals to submit abstracts on any appropriate topic, regardless of funding source of the projects being described.

In addition to contributed sessions based on the abstracts received, the conference will feature seven special oral sessions, listed below, on topics of particular importance to the Bay-Delta Program.

If you are interested in serving as chair of a contributed session, please contact the Conference Program Co-Chairs: Anke Mueller-Solger at amueller@water.ca.gov and David Schoellhamer at dschoell@usgs.gov. Chair assignments will be made when the final list of conference sessions has been determined.

2004 CALIFORNIA BAY-DELTA AUTHORITY

SCIENCE CONFERENCE

CALL FOR ABSTRACTS

Conference Themes

Fish Protection— Science to evaluate and improve management strategies to protect fish populations. Fish protection strategies include ecosystem restoration activities, fishery management, the use of fish barriers, fish screening technologies, fish passage facilities, and the Environmental Water Account.

Habitats and Ecosystems— Science providing new insights into the ecological and physical processes governing and interconnecting habitats in the Bay-Delta and its watershed, and resulting lessons for more effective ecosystem restoration and management of various habitat types including riparian habitat, river channels, floodplains, flooded and in-channel islands, levees, wetlands, and terrestrial habitats.

Human Consequences— Science that explores the potential social, economic, and public health effects of the Bay-Delta Program's actions and solution strategies. Specific topics include studies of environmental justice, water resource economics, citizen involvement, local partnerships, conflict resolution strategies, watershed groups, and environmental law in the Bay-Delta and its watersheds.

Integrated Science in the South Delta— Results of integrated studies of the effects of water project facilities and operations on Delta flows and fish that can help the Bay-Delta Program improve both fish protection and water supply reliability.

Integrating Science and Management— Science-based management strategies to achieve the Bay-Delta Program's goals in ecosystem restoration, water quality, water supply reliability, and levee system integrity. Specific strategies include science-based decision making and planning tools, collaborative approaches, the use of conceptual models, and adaptive management.

Levees— Science that helps improve levee system integrity and explores the role of levees in ecosystem restoration and in the protection of habitats, water quality, water supplies, agricultural lands, and infrastructure.

Physical Processes— Science to better understand how physical processes such as climate change, hydrodynamics, sediment transport, and geomorphology may affect achievement of the Bay-Delta Program's goals.

Species and Communities— Science that advances monitoring, understanding and management of key species and their ecological functions and requirements in the Bay-Delta and its watershed. Key species include species of special concern, nonnative invasive species, nuisance species, and key food web species.

Water and Sediment Quality— Science that advances monitoring, understanding and management of key environmental and drinking water quality constituents and associated biogeochemical processes and ecosystem and public health effects in the Bay-Delta and its watersheds. Key water and sediment quality constituents include inorganic contaminants, organic contaminants, organic matter, salinity, nutrients, and dissolved oxygen.

Watersheds— Science that improves the process of evaluating, planning, restoring, and organizing land and other resource use within a watershed to achieve the Bay-Delta Program goal of restoring ecological health and improving water management by working with the community at a watershed level.

Water Supplies— Science advancing water supply management strategies to achieve the Bay-Delta Program's goal of improving water supply reliability. Management strategies may involve operation of water conveyance facilities, water use efficiency, water demand predictions, water transfers, and water storage options.

Special Oral Sessions

Central Valley Salmonids— This session will present recent studies and analyses that advance our understanding of life history strategies and management practices that affect our ability to restore naturally spawning Chinook salmon and steelhead populations in the Central Valley.

Data and Advocacy—What is the Role for Environmental Justice?— This session examines how science can be used to bolster environmental justice advocacy and conversely how environmental justice issues and concerns can and should be integrated into the scientific process.

Indicators of Wetland Condition— This session presents new results on developing integrated indicators of wetland condition, with emphasis on discerning contaminant effects, which support the Bay-Delta Program in its efforts to examine contaminant effects in representative important species in the Bay-Delta system.

Managing and Restoring Big Rivers Below Big Dams— The session will examine the goals and results of completed restoration projects on a variety of Central Valley rivers, emphasizing lessons learned in managing, restoring, and monitoring large, complex river systems and the potential for mimicking pre-dam hydrogeomorphic processes to support restoration of key aquatic and riparian species and their habitats.

Native and Resident Fishes— The goal of this session is to facilitate the exchange of new research on

the biology and ecology of native and resident fishes, and how this new information can be applied to habitat restoration and species conservation in the estuary and its watershed.

Restoring and Managing California Native Grasslands— The objective of this session is to foster discussion about the future directions for grassland research and the implications of current findings for the restoration and management of California native grassland communities, based on coordinated research efforts in rangelands of the Willow Slough watershed in Yolo County.

What Restoration Ecologists Should Know about Mercury— This session is specifically intended to communicate to the restoration community, in a manner understandable to non-specialists, the current state of knowledge regarding mercury in the region. The interaction of restoration scientists and mercury scientists can lead to both reduced impacts of restoration projects on mercury accumulation and acceleration of the advancement of mercury science.

Abstract Requirements

All presenters (oral and poster) must submit an abstract using the on-line form accessible through the conference website address provided below. There is a 300-word limit on the abstract text. Please fill in all of the blanks on the form, including indication of the appropriate theme or special session, any special projection equipment needs, and your preference for an oral or poster presentation.

Depending on the number and content of abstracts submitted, program chairs may move some of the requested oral presentations into the poster session and vice versa, and incompletely or poorly written abstracts and those that are not relevant to Bay-Delta Program (CALFED) goals and objectives may not be accepted.

Abstract Content

A complete abstract should include the following four components:

- **Problem Statement:** What problem are you trying to solve?
- **Approach:** How did you go about solving or making progress on the problem?
- **Results:** What are your main findings?
- **Conclusions/ Relevance:** What are the scientific and management implications of your findings, including the relevance of your findings to Bay-Delta Program goals and objectives? *Authors are strongly encouraged to include this relevance statement in the abstract.*

Oral Presentations

The oral presentations are expected to advance our state of knowledge by focusing on new findings, models, and syntheses of past and ongoing studies that are relevant to Bay-Delta Program technical issues rather than on project or program descriptions and summaries. Because we anticipate that requests for oral presentations will exceed the available time-slots, the Program Committee will assign oral presentations on the basis of the technical merit of the abstracts, including relevance of the topic, soundness of the approach, and importance of the findings. For that reason, abstracts should provide a clear description of the contribution, i.e., results and their significance, *including their relevance to Bay-Delta Program (CALFED) goals and objectives,* as described above. Use of such phrases as "results will be discussed" is discouraged.

Poster Presentations

The poster session will be a very important part of the Science Conference. Posters will be displayed throughout the conference, and will be featured during social sessions on the afternoons of the 1st and 2nd days of the conference to encourage open discussion between the presenters and conference attendees. A major component of the poster session will be presentations of results from individual science and restoration projects funded by the California Bay-Delta Program. Posters may also include project/program summaries relevant to Bay-Delta Program issues. Presenters should indicate the theme most pertinent to the subject of the poster from the list on the abstract submittal form, as the posters will be arranged by theme. *Please note: inclusion of a statement in the text of the abstract and poster on the relevance of the study's findings to Bay-Delta Program goals and objectives is strongly encouraged.*

Student Presentations

Awards will be given for the best student oral and poster presentations during the conference. Please indicate student status on the abstract form. *To qualify for a student award, you must have carried out the presented work while you were a registered student, and you must make the presentation yourself.*

Questions?

Questions about the technical program or the abstract submittal process should be directed to the Program Co-Chairs, Anke Mueller-Solger at amueller@water.ca.gov and David Schoellhamer at dschoell@usgs.gov.

The form for on-line abstract submittal is located at the following website address:
http://iep.water.ca.gov/calfed/sciconf/2004/

Information on the California Bay-Delta Program is available at **http://calwater.ca.gov/**

ABSOLUTE ABSTRACT DEADLINE:
Friday, June 4, 2004