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*EDMUND G. BROWN JR., Governor*  
*CHARLTON H. BONHAM, Director*



July 17, 2013

Dr. Peter Goodwin  
Lead Scientist  
Delta Science Program  
980 Ninth Street, Suite 1500  
Sacramento, CA 95814

Dear Dr. Goodwin,

RE: First Draft Delta Science Plan

The California Department of Fish and Wildlife appreciates the opportunity to review the First Draft Delta Science Plan. We congratulate you on your efforts to build a plan to integrate science efforts in the Delta and map out the necessary governance and infrastructure. CDFW looks forward to working with the Delta Science Program and others to develop strategies for implementing the recommendations in the Plan.

We have attached a list of comments on general and specific aspects of the Plan.

Please feel free to contact Dr. David S. Zezulak ([Dave.Zezulak@wildlife.ca.gov](mailto:Dave.Zezulak@wildlife.ca.gov)) if you have any questions.

Sincerely,

A handwritten signature in cursive script that reads "Scott Cantrell".

Scott Cantrell  
Chief, Water Branch

Enclosure(s): Attachment 1, Comments

cc: Carl Wilcox, Special Advisor to the Director  
David S. Zezulak, Ph.D., Ecosystem Restoration Program



## Attachment 1

### CDFW Comments on the First Draft Delta Science Plan

#### General Comments

1. The Delta Science Program is considered a “bridging organization”<sup>1</sup> between various levels of governance and between competing organizations. The Delta Science Plan should call out the need for bridging organizations and describe how the Delta Science Program serves as such.
2. In order to be effective, a strategy to integrate various planning, regulating and implementation efforts should include both a “push and pull” and a “top-down and bottom-up” approach. For push and pull, the science plan should incorporate a strategy that not only offers the Program’s resources to help facilitate integration (the push), but also requires organizations that are seeking support by the Program to make progress towards integration (the pull). For the top-down and bottom up approach, the Plan should recognize that organizations and individuals that form organizations react differently to initiatives. This draft of the Science Plan focuses mostly on the role of organizations in its strategy for integration. It should also discuss how to facilitate integration by looking at the constraints and drivers for individual scientists and provide a strategy that would address these.
3. The Delta Science plan should include a discussion of adaptive governance<sup>1</sup> and adaptive co-management.<sup>2</sup> The concept of adaptive governance applies readily to the Delta since it is governed by multiple levels of government and a considerable group of stakeholders.
4. A major highlight of the Bay Delta Conservation Plan is the fact that it is an NCCP/HCP. As such, it addresses many of the concerns outlined in the Delta Science Plan: it allows for the integration of multiple project objectives related to multiple species and multiple jurisdictions into a landscape/system-wide level restoration plan. An explanation of the purpose and benefits of NCCPs and HCPs as they relate to the Delta system should be included in this document.

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<sup>1</sup> Folke, C., Hahn, T., Olsson, P., Norberg, J., 2005. Adaptive governance of social–ecological systems. *Annual Review of Environment and Resources* 30, 441–473.

<sup>2</sup> Armitage D. R., R. Plummer, F. Berkes, R. I. Arthur, A. T. Charles, I. J. Davidson-Hunt, A. P. Diduck, N. Doubleday, D. S. Johnson, Marschke, P. McConney, E. Pinkerton, and E. Wollenberg. 2009. Adaptive co-management for social–ecological complexity. *Frontiers in Ecology and the Environment* 6:95–102.

## Specific comments

**Page 5, line 14-16.** Is insufficient communication and integration the problem, or is it due to policy conflicts and competing goals, much like the issues being faced globally with addressing climate change?

**Page 6, line 19.** The Delta Science Plan should also be on a 4 year cycle, potentially with minor and major revision steps - minor revisions after 4 years and major revisions after 8 years. This would allow integration into the cycles for the Action Agenda and State of the Science.

**Page 6, line 31.** For consistency, use either "Action Agenda" or "SAA" as an abbreviation for "Science Action Agenda", not both.

**Page 6, line 37-38.** Key scientific uncertainties: It would be helpful to discuss the process of defining key uncertainties and prioritizing among them. Who would be responsible for that process?

**Page 9, line 11, Efforts to Build On: text box. Fifth bullet.** Suggest incorporating the "Ecosystem Restoration Program" so it reads: "Delta Science Program and Ecosystem Restoration Program Proposal Solicitation Package processes for identifying research priorities."

**Page 11, line 19, Efforts to Build On: text box. Second bullet.** Suggest revising to read: "2012 DSP-coordinated invited Science Expert Panels to synthesize the state of knowledge for State Water Resources Control Board members and staff for Phase 2 of the Bay-Delta Plan Phase-4 Update."

**Page 12, Line 19.** Part of this objective should be aimed at knowledge building by both decision makers and their staff/advisors.

**Page 12, line 33.** This paragraph is a repeat of the sentences above.

**Page 12, line 36.** Should acknowledge that decision makers for various organizations rely on their own staff of advisers and experts. Part of this objective should be to transfer knowledge to the organizations' staff in addition to the decision makers themselves.

**Page 13, Actions; 2.1.** Recommend that the Policy-Science Team should also include the lead of the newly established Adaptive Management Unit within the Delta Science Program.

**Page 15. Box 2-3.** The three Driscoll citations included in this text box are not included in the References section.

**Page 18, Box 3-2.** Walters 1986 is cited, but is not included in the References section.

**Page 18, Box 3-2, 2<sup>nd</sup> paragraph.** Insert “(DRERIP)” after “Delta Regional Ecosystem Restoration Implementation Plan”.

**Page 18, Box 3-2, 2<sup>nd</sup> paragraph, last sentence.** Suggest revising to read “The Delta Science Program, in collaboration with others, will expand the utility of this tool...” Suggest including text describing how the DRERIP conceptual models and assessment tools have been used for their intended purpose for proposed BDCP conservation measures and FRPA restoration projects, and referencing Box 3-3.

**Page 20, Box 3-3, 1<sup>st</sup> paragraph, last sentence.** Suggest revising to read: “Obtaining clarity on project objectives, understanding landscape potential, managing property, acquiring permits, and making scientific observations are among the challenges the agencies and other involved parties face.”

**Page 20, Box 3-3, Second paragraph.** Suggest revising to read: “Anticipating future restorations, the Ecosystem Restoration Program commissioned ~~several~~ a suite of conceptual models about Delta ecosystem processes, habitats, stressors and life history of key fishes species, and created a scientific evaluation process for restoration projects. The purpose of the DRERIP scientific evaluation process was to evaluate restoration project designs based on the best available scientific understanding on a variety of issues, utilizing the DRERIP conceptual models”

**Page 20, second paragraph, last sentence.** Suggest revising to read: “The up-to-date scientific information was is then vetted with managers that considered it in formulating their implementation design. This scientific evaluation process was conducted recently for the Prospect Island restoration project as part of the Fisheries Restoration Program Agreement (FRPA).”

**Page 21, lines 10-12.** Suggest revising to read: “The Delta Science Program, in collaboration with others, will expand the utility of the DRERIP Action Evaluation Procedure...”

**Page 23, Figure 4-1 (Conceptual relationships of the major elements of science infrastructure).** Suggest extending arrows from the Peer Review box to the Monitoring Programs and Research Projects boxes. Independent scientific review of monitoring and research designs is a critical component of the science infrastructure.

**Page 25. Efforts to Build on, box.** Include Fisheries Restoration Program Agreement (FRPA), California Estuary Monitoring Workgroup.

**Page 25, box, line 28.** CA WQMC 2010 is cited, but is not included in the References section.

**Page 26, line 13.** Suggest revising to read: “Develop and maintain a comprehensive inventory of monitoring...” A critical component will be the commitment on the part of the Delta Science Program and/or other involved parties to maintain and update the information in the inventory on a regular basis in order to ensure its utility, accuracy, etc.

**Page 26, lines 14-15.** Suggest incorporating a more clear linkage to the Central Valley Monitoring Directory, which is currently alluded to by “(e.g., compiled monitoring efforts by the Regional Water Quality Control Board, Region 5; State Water Quality Control Board, and others)”.

**Page 27, lines 14 and 15.** Suggest revising to read: “Expand the development of standards for data compatibility and comparability among Delta monitoring programs, as well as relevant programs in upstream watersheds and the San Francisco Bay, as appropriate.”

**Page 27, line 16.** Suggest revising to read: “Create and maintain a web-based information system describing all monitoring activities in the Delta,…” In addition, suggest incorporating a stronger linkage to existing efforts upon which this action could build. An evaluation is warranted to determine whether it would be more cost effective and efficient to refine/further develop an existing system (e.g., Central Valley Monitoring Directory) or create an entirely new system.

**Page 27, line 14 - 27.** Many of these actions are being addressed by the California Estuary Monitoring Workgroup.

**Page 27, line 23.** Verify Cloern reference. Should it be Cloern et al 2011, which is in reference section (rather than Cloern 2012)?

**Page 27, lines 29-30.** Suggest revising to read: “Development of a collaborative and comprehensive monitoring framework based on management relevant questions and clear conceptual models.”

**Page 28, line 8, Efforts to Build On, box.** Suggest (1) specifically identifying the Data Management Workgroup in the bullet associated with the California Water Quality Monitoring Council, and (2) adding a bullet for the California Environmental Data Exchange Network (CEDEN) and Water Quality Exchange (WQX), as these are two on-going efforts that are working to address several of the issues identified in this section (4.3).

**Page 29, lines 5-22.:** The tasks articulated in this list of bullets contain significant overlap with the legislative mandate (SB 1070, Kehoe, 2006) of the California Water Quality Monitoring Council (CWQMC), the recommendations advanced in its *Comprehensive Monitoring Program Strategy for California* (CWQMC 2010), and the efforts of its theme-based workgroups (notably the California Estuary Monitoring Workgroup and Data Management Workgroup). Suggest incorporating additional discussion regarding the vision for integrating the efforts proposed in the Draft Delta Science Plan with those of the CWQMC and its workgroups.

**Page 30, line 17. Text Box.** Silvert 2001 is cited, but is not included in the References section.

**Page 30, line 21-22.** Suggestion: Briefly define what "community models" are. Does this refer to the collaborative development of models by the scientific community of the Delta or models addressing the biological communities of the Delta? If it's the former, suggest revising to read: "Established community models, i.e., models that are accessible, transparent, sustained by multiple sources and encapsulate the current knowledge of the Delta system."

**Page 30, lines 31-32.** "The Delta Science Program will be the primary repository for these conceptual models". Add the following "...in coordination with the Ecosystem Restoration Program." Suggest acknowledging ERP's role as the current repository of the DRERIP Conceptual models, and their support for publication of a number of them on SFEWS.

**Page 31, line 33.** Suggest inserting "(2012)" after "National Research Council", so it reads "...recent National Research Council (2012) study,..."

**Page 32, Efforts to build on, box.** Suggest adding a bullet for "Ecosystem Restoration Program Workshops".

**Page 32, lines 16-17.** Suggest revising to read: "Establish mechanisms and protocols for conducting ongoing syntheses through shared processes (e.g., among Delta Science Program and BDCP, Ecosystem Restoration Program, SWRCB, and/or OCAP)."

**Page 33, line 25, Efforts to Build On, box.** Suggest modifying the second bullet to read: "Delta Science Program and Ecosystem Restoration Program Proposal Solicitation Package review process."

**Page 34, Figure 4.6-1 (Structure of reviews conducted under the Delta Science Plan).** Top box should be "Delta Independent Science Board". Suggest revising the UC Davis box to read: "ERP Project Review Office – UC Davis".

**Page 34, lines 12-13.** Text currently reads "Reviews may be conducted in-house organized by Delta Science Program staff or by other agencies or institutions with Delta Science Program tracking and guidance." Suggest revising to read "...or by other agencies or institutions in a manner consistent with the Delta Science Program's Policy and Procedures for Independent Scientific Review and other relevant review requirements tracking and guidance."

**Page 36, line 14, Efforts to Build On box.** Suggest adding bullets to include the IEP Annual Workshop and *State of the San Francisco Bay 2011*. The San Francisco Estuary Partnership and California Estuary Monitoring Workgroup envision expanding the *State of the San Francisco Bay* report to include the Delta and changing the title to *State of the San Francisco Estuary* to reflect this broader scope. The *State of the San Francisco Estuary* report is anticipated to be released in 2015, with the intent to make the content available online through the *My Water Quality's* Estuary Portal. Also, there is a new URL for *My Water Quality* ([mywaterquality.ca.gov](http://mywaterquality.ca.gov)).

**Page A-3. Point 5.** Suggest revising to read: “Design and Implement Monitoring Plan”.