



# DELTA STEWARDSHIP COUNCIL

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August 22, 2011

John McCamman, Director  
c/o Chad Dibble  
Department of Fish and Game  
830 S Street  
Sacramento, CA 95811

Dear Mr. McCamman:

**Re: Draft Ecosystem Restoration Program Conservation Strategy for Restoration of the Sacramento-San Joaquin Delta Ecological Management Zone and the Sacramento and San Joaquin Valley Regions (ERP Conservation Strategy)**

In response to your request dated July 20, 2011, enclosed are our comments on the July 2011 draft ERP Conservation Strategy. As one of the coequal goals, protecting, restoring, and enhancing the Delta ecosystem is of primary importance to the Delta Stewardship Council. The draft ERP Conservation Strategy is especially important to the Council since the draft Delta Plan explicitly incorporates some parts of the draft strategy document.

We hope that these comments will help the Ecosystem Restoration Program in its pursuit of this shared goal. We look forward to working with you on continued implementation of the Ecosystem Restoration Program, the Conservation Strategy, and development and implementation of the Delta Plan.

If there are any questions about the enclosed comments, please contact Lauren Hastings, Deputy Executive Officer, Science, at (916) 445-5026.

Sincerely,

Joe Grindstaff  
Executive Officer

Enclosure

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**General Comments**

We applaud the Ecosystem Restoration Program (ERP) for developing a draft conservation strategy document that updates the CALFED Bay-Delta Program ERP planning documents associated with the signing of the CALFED Record of Decision in 2000. The ERP has evolved since its inception and staff has made a good effort at incorporating updated information and new understanding of how the Bay-Delta system works. Delta Science Program staff feels that this document will be an important guiding document moving forward as we work together to achieve the coequal goal of ecosystem restoration. The current staff draft of the Delta Plan (draft 5) explicitly incorporates the habitat elevation map with some modifications (Figure 4 on p. 38) and associated text, and recommends that the Department of Fish and Game and other appropriate agencies prioritize and implement the "Stage 2 Actions for Non-Native Invasive Species" shown in the text box on p. 57.

In these comments we include recommendations for how we believe the draft conservation strategy can better achieve what it claims to achieve in the introduction as described in the "Detailed suggested improvements" section below. The draft document incorporates pieces from several other ERP documents for which the purpose and function is not clearly stated, resulting in undue complexity and inconsistent level of detail, making the document difficult to follow and confusing in places. A more effective approach might be to transform this into a much shorter programmatic document (less than 50 pages) focused on conceptual models, strategies, and actions. Details about specific actions could be moved to regional conservation strategy documents referenced in the overarching programmatic document. The background information, sometimes very detailed, would be more appropriate in these separate regional documents.

The document is a mix of ERP performance and accomplishments, assessments of ecosystem status, scientific literature review, problem statements, strategies, actions, and hypotheses. The strategy needs to lay out a clear and consistent conceptual approach to ecosystem restoration at a level of detail appropriate for a programmatic level strategy document. This could include a high level discussion of what was learned during the first seven years of ERP implementation, the questions/uncertainties revealed and how this information will be used to adaptively manage continued implementation over the next 20 years. Conceptual models demonstrating interactions would be informative. The geographic organization of the document is also confusing at times. For example, the relationships among the terms "ERP Focus Area," "Ecological Management Zones," and "Ecological Management Units" as used in figure titles, legends and text may not be clear to readers not already familiar with those terms.

**ERP – Delta Stewardship Council Relationship**

The ERP – Delta Stewardship Council relationship is referred to at several points in the document. We do not necessarily agree with the cross program comparison of goals between the ERP and Delta Plan as presented in Table 1 on page 8. We request a meeting to discuss where the check marks in the Delta Plan column of the table should go. In addition, there are issues with the references for the two cited Council documents (see the specific comments for p. 229). In general, the document presents an idealized vision for how the ERP works with the Council and the Delta Science Program, which has not yet been realized. This is a good goal, and we should endeavor to make ERP - Council coordination more formal and better organized. Some coordination has taken place by way of Delta Plan development and through Delta Science Program participation in the IEP and some ERP activities. Council staff support working with DFG to develop an improved approach to ERP - Council and - Delta Science Program coordination.

Science in the Conservation Strategy

The Conservation Strategy should utilize the science and adaptive management framework and concepts in Chapter 2 of the most recent (5<sup>th</sup>) staff draft of the Delta Plan. Similar ideas are outlined in Section 4 of the Conservation Strategy. This would facilitate incorporation of elements of the Conservation Strategy into the Delta Plan. A common approach to adaptive management and use of terms would also facilitate reviews of consistency with the Delta Plan for covered actions stemming from the Conservation Strategy.

Detailed suggested improvements

As the title states, the document is a conservation strategy for three regions. It does a fair job of describing high level ecosystem restoration opportunities and rationale for each region. However, there should be more support of the added value it claims to provide in the introduction. Namely, the document should be stronger in its useful provision of “conceptual framework and process that will guide refinement, evaluation, prioritization, implementation, monitoring, and review of ERP actions.”

As an example, the document describes high-level conceptual benefits of habitat restoration for salmon based on evidence in the literature well. We assume these descriptions constitute the “conceptual framework” that is further reinforced by the Delta Regional Ecosystem Restoration Plan (DRERIP) conceptual models and Sacramento River Environmental Flows Tool (SacEFT). However, to greatly enhance usefulness to restoration planners and practitioners, we recommend thorough analysis and assessment that goes beyond stating that habitat restoration is a priority, how actions should or will be refined, how implementation should be emphasized, and about how monitoring should be rigorous.

The Strategy is consistent in its analysis that restored habitats should encourage native species and discourage non-natives. It should provide guidance, however, regarding what specific on-the-ground restoration components might be and the specific places and conditions that they could be applied to accomplish these goals. We acknowledge there is sensitivity about using maps for planning but we need to find ways to plan actions based on specific conceptual models about how native species would respond to restoration designs.

The Conservation Strategy would be greatly improved by specifically offering regional landscape conceptual models about how native species, communities, and food webs would respond to reconnecting land to water at relevant physical and life-history scales. This approach would necessarily consider that initial condition of the landscape—for example its land use history, elevation status, availability of remnant natural features, and neighboring land constraints. It would then consider how physical processes would operate on the restoration area and the adjacent estuary region including how currents, residence times, tidal ranges, and sediment transport would be affected. This is an essential baseline conceptual assessment of the expected state of physical processes and trajectory of morphological change that could happen if a restorative connection is made. This assessment further depends on options for restoration connection designs. For example, reconnection of subsided land in Suisun Marsh or floodplain habitat in Yolo Bypass could be made at one extreme by minimal levee breaching or the other extreme by extensively grading down levees to key elevations—say to local mean-higher-high-water. Other benchmark design options in-between should also be considered. The physical, chemical, and biological state, trajectory of change, and ultimate form and function outcomes, would be different for each design option. Each design strategy should describe how it would

“conceptually” improve or degrade conditions for important native and non-native species, communities, and guilds. The actual trajectory of outcomes is of course uncertain. The landscape conceptual modeling process would generate key hypotheses that should be investigated with science experiments that result in new knowledge and synthesis in peer reviewed literature.

Overall, the landscape conceptual modeling process would ask and attempt to answer basic questions: For any specific regional design strategy intended to meet species goals, how will restored physical, chemical and biological processes change the form and function of the landscape over time? And, how will species (native and non-native) and communities respond to the trajectory of form and functional change over time? We strongly encourage the ERP Conservation Strategy to begin this practical discussion. It does not yet do so.

In order to achieve the goal of the Conservation Strategy to provide a “rationale for restoration specific to the regions,” specific statements are needed (e.g. conceptual models) about what we believe will happen when we implement restoration designs. This would aid in developing common expectations about restoration progress, outcomes, uncertainty, and cost. Region-specific landscape conceptual models would also inform several key practical planning considerations. For example:

- 1) What are the needed regional restoration scales relevant to the life history of native species?
- 2) What are the likely adjacent land use issues (e.g., levee maintenance)?
- 3) Based on specific native species and process relevant designs, what are the expected cost breakdowns between acquisition, implementation, levee maintenance, land management, public access/education, and scientific assessment?
- 4) What areas provide the biggest ecological benefit for the least cost?
- 5) What are the practical considerations of acquiring private property from willing sellers at ecologically relevant scales?
- 6) What are the expected timescales of change that move degraded landscapes to native forms and functions base on initial landscape condition, design options, and expected abiotic and biotic process rates (e.g. to inform performance measure expectations)?
- 7) How will native and non-native species respond to landscape processes that are in the course of self repair but in the interim represent non-optimal conditions (e.g. extensive shallow sub tidal embayments)?
- 8) What interim functions can we expect on the way to restoring native floodplain and tidal wetland forms and functions?
- 9) What is the role of controllable and uncontrollable flows for encouraging native geomorphic landforms, and maximizing interim habitat for natives?
- 10) What are the likely disturbance mechanisms that could shift restoration regimes—both ecologically valuable and not (e.g. droughts, floods, seismic events, non-native species invasions)?
- 11) What are the optimal institutional arrangements that would most efficiently implement effective restoration and generate process understanding to inform policy relevant adaptive management?

We recognize that Suisun Marsh is left out of the ERP in deference to the Suisun Marsh Plan (SMP). However, the Delta Science Program has serious, previously stated concerns regarding the strength of it's the SMP's guidance for restoration of Suisun Marsh as a place and how native species might respond

to on-the-ground actions. The Delta Stewardship Council previously offered the four specific comments on the Suisun Marsh Plan during the EIR comment period. Here is a short summary of those comments:

1. Managed wetland land management practices cause ongoing land subsidence—the root cause of many Suisun Marsh problems. Provisions of the SMP offer enhancements to managed wetland operations that do little to solve the root subsidence problem that creates the need for enhancement. In addition, the subsidence related greenhouse gas inducing effects of the Plan are not identified.
2. The approach to tidal restoration lacks scientific foundation. There is little evidence of the Plan's claim to be a "science-based management plan." An adaptive management plan is not included.
3. The tidal marsh restoration plan calls for an arbitrary allocation of restoration land in four geographic regions of Suisun Marsh with little ecological justification.
4. Modeling analysis conducted for the Plan is inaccurately referenced for key conclusions of the Plan.

Finally, the Conservation Strategy is nearly silent about the need to study available reference landscapes. If we believe that recovering native species largely entails recovering native landforms and processes, then the available reference landscapes should be thoroughly studied. As the Strategy states, the BREACH studies funded by CALFED made some progress but there is much yet to learn. Furthermore, understanding reference landscapes creates a solid foundation for setting performance measures that are relevant in the context of climate change and sea-level rise.

### **Specific Comments**

p. ii, last ¶ - The Delta Reform Act doesn't just redefine how the Delta will be managed, the Act also allows the Council, through the Delta Plan, to recommend ecosystem restoration projects outside the Delta that will contribute to achievement of the coequal goals (85302 b). Other actions by the Council could have far reaching effects on water management in the State.

p. 7, 2<sup>nd</sup> ¶ - The single blueprint is a vehicle for facilitating coordination between agencies, it doesn't ensure coordination between all actions.

p. 9, 3<sup>rd</sup> ¶ - Delete everything in this paragraph after "...improved water supply reliability." There is a reference to "Delta Stewardship Council 2011b", however, the document is not identified in the references section and the link provided just goes to the Delta Stewardship Council main web page. Please replace the existing description with the wording/language from the legislation. The description should better reflect SBX7 1 such as:

The Delta Stewardship Council (Council), on or before January 1, 2012, is required to develop, adopt and commence implementation of a comprehensive resources management plan for the Delta (Delta Plan) to achieve the coequal goals. These goals are 1) providing a more reliable water supply; and 2) protecting, restoring and enhancing the Delta ecosystem. The Delta Plan is also to include performance measurements that will enable the Council to track progress in meeting the objectives of the Delta Plan. A state or local public agency that proposes to undertake certain proposed actions that will occur within the boundaries of the Delta or the Suisun Marsh is required to prepare and submit to the Council written certification

p. 10, first paragraph, last sentence and pg. 17, first paragraph, first sentence – rather than “reclaimed,” suggest saying “drained for agriculture.”

p. 11, last ¶ - change ~~loaded with~~ to picks up

p. 12, top of the page - “Mixing occurs further downstream where fresh water meets marine, developing a salinity gradient, which begins in the upper most boundary of the San Francisco Estuary.” This needs to be re-written. It’s an awkward circular reference. The upstream boundary of the salinity gradient is one way to define the upstream boundary of the estuary.

p.17, 2<sup>nd</sup> ¶ - Suggest explaining meaning of “balancing of predator-prey interactions.”

p. 18, 3<sup>rd</sup> ¶ - The section starting with this paragraph needs a header. It is primarily a discussion of the historical Delta rather than something to do directly with “Ecosystem Processes.”

p.20, 1<sup>st</sup> ¶ - see Gilson 2011. Freshwater Flow and Fisheries Production in Estuarine and Coastal Systems: Where a Drop of Rain Is Not Lost. *Reviews in Fisheries Science*, for a more recent discussion of flow and fisheries.

p. 20, 2<sup>nd</sup> ¶ - change “....most desirable freshwater ~~flow pattern~~....” to net flow direction

P. 21, 1<sup>st</sup> ¶ - The first sentence in this paragraph confuses the issue of net downstream flow with that of the timing of pulse flow events.

p. 24,1<sup>st</sup> ¶ - delete ~~flows recede~~

p. 27, 2<sup>nd</sup> ¶ - This paragraph illustrates an issue that occurs throughout the document. Recommended actions are identified in the text but are not called out in a box, listed in the summary at the end of the section, or in Appendix C. If they are important enough to discuss in the text suggest they also be listed in the action summaries.

p. 36, 3<sup>rd</sup> ¶ - The last statement in this paragraph is a little misleading and there hasn’t been any recent comprehensive study of DO depletion in the Stockton ship channel to support this assertion. The likely mechanism would be reduction in total ammonia discharge which would reduce the nitrogenous BOD load but flow could also be a major factor in the recent DO improvement.

p. 39 – The statements on this page about reduction in freshwater supply are important and controversial and need to be supported with appropriate citations.

p. 40 – These “actions” are best described as a mix of strategies, actions, and objectives. In Action 5, the term “large-scale riparian vegetation” needs to be defined or reworded.

p. 41, 2<sup>nd</sup> ¶ - This paragraph describes a strategy.

P. 41, 4<sup>th</sup> ¶ - In the definition for *floodplain*, should this be qualified by inserting “in the absence of levees”? This definition seems to assume natural channel morphology.

p. 43, 2<sup>nd</sup> ¶ - An example of “nonstructural flood management” would be helpful here.

p. 47, 2<sup>nd</sup> ¶ - The sentence citing Healey 1982 is a duplicate of one on the previous page.

p. 49, Action 3 – Is Liberty Island a good example of deep open water habitat. Isn't it mostly relatively shallow?

p. 51, 4<sup>th</sup> ¶ - Add "nutrient inputs" as an important attribute to manage.

p. 55, 3<sup>rd</sup> ¶ - Another far-field effect of water diversion is the increase in time that fish are in areas of high predation risk.

p. 66, ¶ - Somewhere in here, there needs to be mention of other nutrients as a water quality issue. Nitrate and phosphate could be contributing to eutrophication in the Delta and its watersheds.

p.73, 2<sup>nd</sup> ¶ - "the last ten years" doesn't tell the reader anything, be specific about which years. Also, which "life stage population models" are referred to in this paragraph?

p. 79, 2<sup>nd</sup> ¶ - Suggest listing or explaining "tools."

p. 79, last paragraph – heading should be the Delta Plan not the "Comprehensive" Delta Plan.

p. 87 – as demonstrated on this page, discussion of the south Sacramento HCP/NCCP, the ERPCS was not thoroughly updated. This incompleteness is sprinkled throughout the document.

p. 88, section VI – It would be more accurate to title this section "Sacramento-San Joaquin Delta EMZ Stage 2 Habitat Restoration Priorities

p. 89 – It is not clear what purpose this EMU map serves. The priority actions aren't, for the most part, identified or organized by EMU.

p. 90, 1<sup>st</sup> ¶ - This paragraph seems to be referring to Liberty Island as if it has not been restored yet.

p. 91, 4<sup>th</sup> ¶ -A general comment on the McCormack-Williamson Tract habitat restoration project. This project deserves more attention and focus in the ERP Strategy. It has the potential to include the major ingredients that we hypothesize will make for successful restoration for native fish. It has a good range of elevation going nearly from subtidal to upland and it is fed by a high quality water supply (low total ammonia and moderate nutrient loads, low incidence of toxicity) with good flow variability.

p.92, section VII – Science could be used more effectively in this section. There should be more discussion regarding how and who determined the Stage 2 Actions, how they are responsive to what was learned in Stage 1, how they further knowledge of the Bay-Delta system, respond to the POD, etc. Are the actions presented in any priority sequence?

p. 92, 3<sup>rd</sup> ¶ - The FPIP action does not seem to fit here. All other actions in this section involve physical habitat restoration projects.

p. 97, 3<sup>rd</sup> ¶ - This paragraph in particular and this section in general focuses on salmonids. There are a number of other native fish species that depend on Sacramento Valley habitats and need to be

considered when planning restoration actions. Some lower elevation streams were historically habitat for other native fish species such as hardhead, hitch, and tule perch. Their habitat requirements should not be ignored in the drive to increase salmonid populations.

p. 100, 3<sup>rd</sup> ¶ - This paragraph refers to IFIM analysis as the basis for setting stream flow requirements. More recent reviews of the science of setting instream flows such as Petts 2009, *Instream Flow Science for Sustainable River Management*, *Journal of the American Water Resources Association*, show that while useful, the science of setting flows has moved beyond the 30+ year old IFIM.

p.101, last ¶ - This paragraph proposes to modify stream temperature conditions to favor salmonids and hypothesizes that this may also benefit native riparian plants. Caution needs to be exercised when proposing such changes in stream reaches where this may not match the natural flow and temperature regime.

p. 113, Actions 1, 2, and 3 – This is an example where a programmatic level action might be more appropriate. Why is it necessary to list these three specific actions. Wouldn't Action 4 cover all of these?

p. 119 – The non-native invasive species section makes no mention of the potential for modification of fishing regulations as a tool for controlling non-native species.

p. 121-124 - With all of this discussion of temperature as an issue, why are there no temperature actions?

p. 129 – Are these the only potential issues for sturgeon? What about passage? Spawning habitat? Legal and illegal harvest?

p. 145, 2<sup>nd</sup> ¶ - Again, naturally occurring stream temperatures must be taken into consideration.

p. 150, 4<sup>th</sup> ¶ - The major sources of mercury and other metals, such as copper and zinc, are from legacy mining activities and should be identified as such. The statement that urban growth inevitably leads to larger discharges is misleading since new development is frequently better designed with respect to urban runoff, water use efficiency is increasing, and wastewater treatment plant technology is continually improving. Waste loads from many cities are actually decreasing. The statement that wastewater treatment plants are "experiencing difficulty" in meeting water quality standards is subjective, misleading, and for the most part incorrect.

p. 157, 2<sup>nd</sup> ¶ - change ~~rainfall~~ to precipitation. The San Joaquin Valley is primarily a snowmelt driven system.

p. 161, Figure 6 – Finally, a good conceptual model. This should go near the front in a much shorter programmatic level document.

p. 165, 3<sup>rd</sup> ¶ - This paragraph starts out talking about spawning requirements for fish in general then jumps right to spawning requirements for salmonids (Bjornn and Reiser 1991) without making this distinction. With respect to spawning, many species of fish are indifferent to fine sediment or even require it.

p. 211, 1<sup>st</sup> ¶ - This is the first mention of the ERPIAMs in this document. Who participates in the ERPIAM meetings? How does information about priorities, annual program plans, and solicitations get transmitted to the DSC and others?

p. 211, 4<sup>th</sup> ¶ - This paragraph misses the connection between the BDCP and the Delta Plan. If the BDCP meets certain requirements, it becomes a part of the Delta Plan (Water Code 85320 e).

p. 213, 4<sup>th</sup> ¶ - Application of the DRERIP models and the Sac EFT are barely mentioned prior to this in the document but they should be. A programmatic conservation strategy should start with well-developed conceptual models.

p. 229, DSC citations –DSC 2011a is referenced as DSC 2011 (“a” is missing) in the text on page 211, while DSC 2011b is first referenced much earlier on page 8. What specifically is DSC 2011b? The latest staff draft of the Delta Plan? A much more specific citation is needed.

Appendix C, “Summary of Stage 2 Restoration Priorities and Actions” is taken verbatim from the text in the main portion of the document. Being presented as an “appendix” implies more thorough information than what is presented in the main body of the document which is not the case. Additional information could include prioritization of actions, discussion of interactions among actions, specification of timetables, description of implementation strategies, etc. In addition, the wording of many of the actions could be revised to be less vague and more “actionable”.