DELTA SCIENCE PROGRAM INDEPENDENT SCIENCE REVIEW

Fall Low Salinity Habitat (FLaSH) Study Synthesis – Year One of the Delta Fall Outflow Adaptive Management Plan

SCOPE AND CHARGE TO REVIEWERS

BACKGROUND

The US Fish and Wildlife Service (Service) issued a Biological Opinion (BiOp) on Central Valley Project (CVP)/State Water Project (SWP) operations in 2008 that concluded that aspects of those operations jeopardize the continued existence of delta smelt and adversely modify delta smelt critical habitat. Among other requirements, the Reasonable and Prudent Alternative (RPA) that was issued with the BiOp calls for the use of adaptive management concerning fall Delta outflow (hereafter "Fall outflow") in certain water-year types. The Service determined that the Fall outflow element of the RPA is required to alleviate both jeopardy to delta smelt and adverse modification of delta smelt critical habitat. The Fall outflow action is expected to improve habitat suitability and contribute to higher average delta smelt abundances.

The RPA prescription is expressed in terms of X2, the distance in km of the 2 ppt isohaline from the mouth of the estuary at the Golden Gate (Jassby et al. 1995). The RPA calls for Delta outflow to be managed such that in September and October, X2 must average 74 km upstream from the Golden Gate when the water year containing the preceding spring was classified as "wet" or 81 km when it was "above normal." In all other water year types, the RPA is not implemented. There is an additional storage-related requirement to enhance outflow in November that does not have a specific X2 target. The RPA states that the performance of the action shall be investigated with a research and monitoring program containing a feedback loop allowing the action to be adjusted from learned information (i.e., adaptive management).

At the time the BiOp was issued, the Bureau of Reclamation (Reclamation) responded with a "provisional acceptance" letter. In 2009-10, a "Habitat Study Group" led by Reclamation and the Service developed and initiated a package of studies designed to increase understanding about Fall X2 dynamics and support future management decisions regarding the fall action.

2011 was the first wet year after the BiOp was issued and a more ambitious, integrated set of studies was initiated (Fall Low Salinity Habitat, or FLaSH studies) to provide better information regarding the nature and mode of action of changes in the position of Fall Low Salinity Habitat and subsequent effects to delta smelt health and abundance. A FLaSH study plan was contained in the 2011 Fall Outflow Adaptive Management Plan (AMP). A draft version of this AMP was reviewed by a panel of independent scientists convened by the Delta Science Program (DSP Panel) in June 2011 and revised in August 2011. The FLaSH study was initiated in September 2011. A court decision formally halted the BiOp fall X2 requirement on August 31, 2011, but because of the very wet conditions, fall outflow in September and October 2011 averaged 75 km and thus came very close to the BiOp prescription of 74 km. Results from the 2011 FLaSH study are described in a draft 2012 FLaSH study report that that will be available for review on June 30, 2012. Reclamation is also updating the 2011 AMP and a draft 2012 AMP will also be available for review on June 30, 2012 (Figure 1).

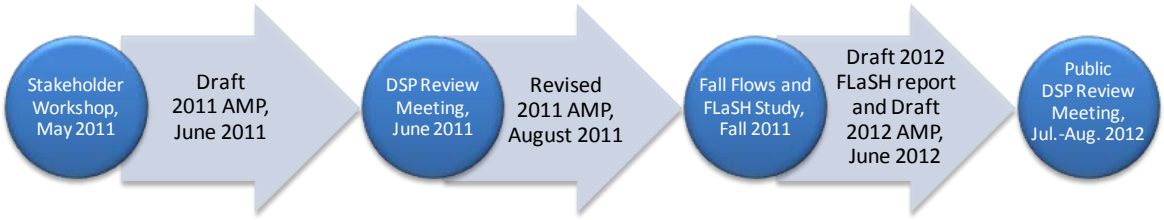

Figure 1: Important events (blue circles) and resulting products (arrows) identified in the draft 2012 Fall Outflow Adaptive Management Plan (AMP).

SCIENCE PANEL

To ensure that implementation of the adaptive management plan is sound, Reclamation desires ongoing independent expert review regarding inputs and modification. A panel of independent scientists (Panel) will be convened to review the draft FLaSH report as well as the draft 2012 AMP to ensure it is of sufficient robustness and scientific quality to serve intended purposes.

Based on discussions of the nature of this adaptive management challenge, Reclamation has agreed that a panel will be asked to reconvene annually to evaluate findings and progress as implementation of the fall outflow action moves forward. Reclamation expects that an effective monitoring and evaluation program will provide important new information that can be used to improve the effectiveness of the action, the efficiency of the action, to change the nature of the action if findings support such change or to consider other alternatives.

The panel will provide to Reclamation and the Service an annual report detailing their findings, recommendations, and answers to agency questions. This report, along with other available information, will be used to inform management decisions pertaining to the application of adaptive management for the fall outflow action.

ADAPTIVE MANAGEMENT PLAN GOALS

The goals of the AMP are (1) to manage Fall outflow for conservation benefits to delta smelt while minimizing water supply and water supply reliability impacts; (2) to evaluate the effectiveness of Fall outflow management for delta smelt conservation in order to adjust the action for better conservation effect or water efficiency.

AVAILABLE INFORMATION

The Panel will use available information for its review of the initial year's activities.

Review Materials

The Panel will review in detail the following two documents:

- Draft 2012 FLaSH study report
- Draft 2012 Plan for Adaptive Management of Fall Outflow for Delta Smelt Protection and Water Supply Reliability

Supporting Information

The following materials will also be available to the Panel to assist with its review:

- USGS Peer review Scope

- Delta Science Program – Review Panel Summary Report: Draft Plan for Adaptive Management of Fall Outflow for Delta Smelt Protection and Water Supply Reliability (July 2011)

- Reclamation's summary and other responses to the recommendations made by the 2011 DSP Review Panel (available June 30, 2012)

- DOI Technical Guide http://www.doi.gov/initiatives/AdaptiveManagement/TechGuide.pdf

- A 2-page description of new data analysis and synthesis effort conducted by the Interagency Ecological Program's new Management, Analysis, and Synthesis Team (MAST).

- IEP call for study concept proposals and study concept and proposal review guidelines released June 2012. http://www.water.ca.gov/iep/docs/2012_Study_Concept_Proposal_Review_Guidelines1.pdf

- Final 2010 POD Report http://www.water.ca.gov/iep/docs/FinalPOD2010Workplan12610.pdf

- Coordinated Operations Biological Opinion (USFWS 2008) RPA Component 3 and associated explanatory material in the RPA and BiOp. http://www.fws.gov/sacramento/es/documents/SWP-CVP_OPs_BO_12-15_final_OCR.pdf

- Independent Review of Two Sets of Proposed Actions for the Operations Criteria and Plan's Biological Opinion (PBS&J, 2008) http://www.fws.gov/sfbaydelta/documents/Peer%20review%20of%20proposed%20actions%2011-19-08.pdf

- NRC March 2010 Panel Report http://www.nap.edu/catalog.php?record_id=12881

- NRC March 2012 Panel Report http://www.nap.edu/catalog.php?record_id=13394

Additional materials may be provided to the Panel upon Panel request or as additional relevant materials become available. These materials may include written public comments on the materials for review or other relevant information. The Delta Science Program recommends that any comments submitted be clear and concise. The Delta Science Program, with the advice of the lead scientist will determine which materials will be posted to the website and which will be provided to the panel. The consideration of such material in their review is at the discretion of the Panel. Comments will be posted on the Delta Science Program web site

TIMELINE

July 2012

Panel initiates review of draft FLaSH report and Adaptive Management Plan

revisions to determine the strength of the rationale for the action and quality, rigor, and suitability of the proposed approach to use adaptive management.

July 31st and August 1, 2012

The Panel convenes in Sacramento to discuss the draft 2012 FLaSH report and the draft 2012 AMP and to make initial recommendations.

Early September 2012

The Panel provides its review report to the Delta Science Program for transmittal to Reclamation and the Service.

September 2012

Reclamation revises and prepares draft final plan, informed by Panel and Service reviews.
Service concurrence with revised plan.
Redirection or continuation of FLaSH-related IEP Workplan Elements.

September 2012 through future years

A Panel will continue to provide an annual scientific review and recommendations for interpreting findings and implementing and adjusting fall outflow action. Schedule to be determined.

Representatives and Contact Information

DSP Contract Manager
George Isaac
Delta Science Program,
980 Ninth St, Suite 1500, Sacramento CA 95814
(916) 445- 0533
George.Isaac@deltacouncil.ca.gov

Exhibit A, Attachment 1

Charge to the Delta Science Program Independent Review Panel for Fall Low Salinity Habitat (FLaSH) Study Synthesis – Year One of the Delta Fall Outflow Adaptive Management Plan

The Review Panel is charged with assessing the draft 2012 FLaSH report and the draft 2012 AMP with emphasis on the use of the AMP as an adaptive management tool. Specific attention will be applied to the following criteria:

FLaSH-related Learning:

- What are the major results associated with the data collection conducted during the first year of the plan implementation?
- Do the results support the scientific basis of the Fall outflow action?
- Have the recommendations from the 2011 Review Panel been appropriately addressed or incorporated into ongoing studies and their interpretation?

Adaptive Management Plan:

- Do the goals of the AMP remain consistent with the goals of the Reasonable and Prudent Alternative?
- How well will the AMP, as designed, meet its two major goals: (1) to manage Fall outflow for conservation benefits to delta smelt while minimizing water supply and water supply reliability impacts; (2) to increase the effectiveness of Fall outflow for smelt conservation in order to adjust the action for better effect and/or water efficiency?
- Are AMP updates justified and defensible?
- Is the plan internally consistent and scientifically valid given the first year of data collection?
- Will continued implementation of the plan adequately provide the information necessary for refining the goals and objectives, knowledge base and models, and approach of the plan over time?

Approach

- Is the use of hypotheses, conceptual models and quantitative models clear and helpful? If not, how might this be changed or refined?
- Will the ongoing monitoring and evaluation program result in adequate detection of signal to noise (inherent variability)?
- Will the likelihood of drier conditions in 2012 necessitate data collection or analysis revision?
- How could the ongoing monitoring and evaluation program be changed or refined to allow for a more rapid assessment of the goals of the RPA?
- Does the plan contain adequate provision for synthesis, evaluation, and reporting?
- Are there other recommendations or ideas that Reclamation should consider for the program?
- The tendency in an evolving process is to expand and enhance existing monitoring/analysis. To ensure the most efficient use of resources, are there any elements of the AMP that are redundant or of marginal value.

Feasibility

- Is the approach described in the plan feasible to implement?
- If not, what can be done to improve feasibility of the approach?