

## Charge for the California Water Fix Aquatic Science Peer Review – Phase 2A

### **Background**

The California Department of Water Resources (DWR) and the Bureau of Reclamation (Reclamation) coordinate the operation of the Central Valley Project (CVP) and the State Water Project (SWP). As a part of California Water Fix (CWF), DWR proposes to construct and operate new water conveyance facilities in the Sacramento-San Joaquin River Delta, including three intakes, two tunnels, associated facilities, and a permanent head of Old River gate; as well as operate existing south Delta facilities in coordination with these new facilities.

DWR intends to obtain California Endangered Species Act (CESA) authorization under Fish and Game Code Section 2081(b) for incidental take related to the construction and operation of the CWF and modified operations of the SWP. DWR submitted an Incidental Take Permit (ITP) application to California Department of Fish and Wildlife (CDFW) on October 5, 2016. This application includes analyses of the effects of the proposed action on CESA listed species. CDFW is reviewing the analyses of perceived impacts on state-listed species and may issue a permit if conditions in Fish and Game Code sections 2081(b) and (c) are met.

The construction and operation of the new dual conveyance facilities will need to comply with Section 7(a)(2) of the Endangered Species Act (ESA). As a part of the CWF ESA consultation, Reclamation and DWR have written a Biological Assessment (BA) that summarizes the effects of the action on ESA-listed species and their designated critical habitats. A Draft of the BA analyses and the draft analytical approach to the Biological Opinion were reviewed in Phase 1 of this review.

The analyses of CWF impacts of take for winter run Chinook, spring run Chinook, and Delta smelt in the 2081(b) application may be similar to what is expected as part of the Biological Opinions to be reviewed during Phase 2B. We expect that the Biological Opinions effects analyses for these species will be an additional, potentially more detailed source of analysis, supporting what is in the 2081(b) application.

Current CVP/SWP operations require scientific research and monitoring to support real-time operations, decision making, and to fill in gaps in the understanding of the relationship between the CVP/ SWP operations and ESA and CESA listed fish species. Moving forward, adaptive management will be utilized to integrate real-time operations, ongoing scientific research, monitoring, and long term operations of CWF within the SWP and CVP.

The purpose of this independent scientific peer review is to obtain the views of experts not involved in the CWF ESA consultation and 2081(b) permit on the use of best available scientific information as it pertains to analyses of effects on aquatic CESA-listed species in the CWF ITP application and the Adaptive Management Framework proposed to integrate future scientific research, monitoring, and decision making during construction and operations of CWF.

## Panel charge

The panel will review 1) the draft adaptive management framework for CWF and Current Biological Opinions on coordinated operations of the CVP and SWP and 2) the 2081(b) application analyses of the CWF impacts of take for Winter-run Chinook, Spring-run Chinook, Delta Smelt, and Longfin Smelt. Since these items will provide the basis of the 2081(b) permit, the reviewers should evaluate whether the items are sufficiently robust and at a level of scientific quality to serve their intended purposes. The Panel members will have at least 30 days to familiarize themselves with the materials. The Panel will also be given relevant background information to consider and will receive presentations from the relevant agencies at the public meeting.

### **Specific questions for review of the CWF Adaptive Management Framework (Framework) and analyses of Winter- and Spring- run Chinook, Delta Smelt, and Longfin Smelt presented in the 2081(b) permit application:**

1. *Are the compliance monitoring, collaborative science, and adaptive management approaches outlined in the Adaptive Management Framework appropriate for addressing the uncertainties associated with the implementation of CWF, specifically related to CWF operations in conjunction with the SWP and CVP facilities? In answering this question, consider the following:*
  - Does the Framework adequately reflect comments and issues raised in Phase 1 of this review?
  - Is the Framework sufficient to address the uncertainties associated with the current analyses and provide a timely mechanism for addressing future changes in operations based on new understanding of listed species distribution and abundance?
  - How well does the Framework build off and incorporate existing adaptive management or related efforts? Does the Framework adequately address areas or gaps not currently covered by existing efforts?
  - How thoroughly do the steps and decision making processes outlined in the Framework support its intent and objectives?
  - Do the commitments to new research, monitoring, and modeling appropriately support the management component of the Framework?
  - Will the approaches to scientific research and monitoring allow robust and adequate documentation of effectiveness in reducing uncertainty associated with CWF and existing measures to minimize and mitigate impacts to species?
  - Will the approaches to scientific research, monitoring, and associated decision making allow for tracking the effects of CWF on populations of the four listed species over time and the effectiveness of management actions?

2. *To what extent are the analyses used for the CDFW 2081(b) permit application scientifically sound and their conclusions scientifically supported? In answering this question, consider the following:*

### **General**

- Do analyses of CWF operations and impacts to species through 2060 resolve panel comments raised in Phase 1 of this review? Is climate change adequately incorporated into the cumulative analysis?
- The 2081(b) application currently utilizes long-term averages to analyze near and far field effects of CWF operations on habitat conditions. Does this approach adequately describe year-to-year effects of CWF on covered fish species' population dynamics? Are there alternative analytical approaches available that are more appropriate?
- Is the approach used to characterize take and associated impacts to covered fish species populations scientifically valid given current understanding and the recognized limitations of available analytical tools? Are there improvements to the current methods that could be implemented, or are there available alternative analytical approaches that are more appropriate for analyzing the extent of take and associated impacts to the species?
- Do the conclusions of the effects analyses for covered species adequately acknowledge and incorporate uncertainty as recommended in Phase 1 of this review?

### **Longfin Smelt**

- Is the proposed approach to achieve the March through May spring outflow targets for Longfin Smelt likely to result in spring outflow equivalent to existing conditions?
- The relationship between outflow and Longfin Smelt abundance uses a six-month (January through June) averaging window (Kimmerer 2009). How well does the 2081 (b) application justify using a three month (March through May) averaging window to provide outflow targets and operational criteria during that period?

### **Delta Smelt**

- In the analysis of CWF construction and operational effects, how appropriate are beach seine surveys from the Delta Juvenile Fish Monitoring Program and Freeport diversion monitoring data (ICF 2015), in which Delta Smelt have been observed as by-catch, to characterize the proportion of the total Delta Smelt population in the vicinity of the north Delta diversions? Could these datasets be analyzed differently to better support the effects analysis?

## Winter- and Spring-run Chinook Salmon

- How well does the effects analysis evaluate new adverse effects on salmonid species due to north Delta operations and changes in south Delta operations?
- Are the analyses of take by life stage and water year type scientifically sound? How useful are these analyses for determining annual population impacts?

## Materials for Independent Science Panel Review

### Review materials

1. California Water Fix Adaptive Management Framework
2. Selected sections from the 2081(b) application:
  - Chapters 4 and 5
  - Appendices 2.A, 4.A, 4.D, and 6.A

### Supplemental materials

1. Relevant publications
  - Mount, J., W. Fleenor, B. Gray, B. Herbold, W. Kimmerer (2013) Panel review of the draft Bay Delta Conservation Plan. Prepared for The Nature Conservancy and American Rivers. Saracino and Mount, LLC, Sacramento, California, pp 66-69.
  - Kimmerer, W.J., E.S. Gross and M. MacWilliams (2009) Is the response of estuarine nekton to freshwater flow in the San Francisco Estuary explained by variation in habitat volume? *Estuaries and Coasts* 32: 375-389.
  - DFG (2009) Report to the Fish and Game Commission: A status review of the longfin smelt (*Spirinchus thaleichthys*) in California. Department of Fish and Game (DFG), Sacramento, CA.
  - 77 FR 19756 (2012) Endangered and threatened wildlife and plants; 12-month finding on a petition to list the San Francisco Bay-Delta population of the longfin smelt as endangered or threatened, Federal register 77:19756.
2. California Water Fix Biological Assessment Appendices 5A, B, C, D
3. California Water Fix Biological Assessment Chapter 5