

Charge to the Delta Science Program Independent Review Panel for the 2015 Long-term Operations Biological Opinions Annual Science Review

Orientation and Focus

The intent of the annual review is to inform National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) as to the efficacy of the prior year's water operations and regulatory actions prescribed by their respective Reasonable and Prudent Alternatives (RPAs), with the goal of developing lessons learned, incorporating new science, and making appropriate, scientifically justified adjustments to the implementation of the RPAs to support future water year's real-time decision making. The Independent Review Panel's findings and recommendations provide objective feedback to agency staff for consideration in real-time decision making.

This annual review will focus on the implementation of the Long-term Operations Biological Opinions (BiOps) RPAs for operations and fisheries for water year 2015 (October 1, 2014 through September 30, 2015) and will include:

- Progress on Shasta Reservoir and Sacramento River temperature monitoring, modeling, and management.
- A report on the River Assessment for Forecasting Temperature (RAFT) decision support tool (model).
- A report on the enhanced particle tracking modeling.
- A USFWS report on past, present, and future approaches to incidental take of Delta Smelt.

Materials to be Reviewed

Independent review panelists will review the following documents prior to attending the two-day public workshop. These documents will be provided in electronic format.

1. USFWS report - "Past, Present and Future Approaches to Incidental Take"
2. Sacramento River Temperature Task Group (SRTTG) Annual Report of Activities
3. Clear Creek Technical Team (CCTT) Annual Report of Activities
4. American River Group (ARG) Annual Report of Activities
5. Stanislaus Operations Group (SOG) Annual Report of Activities
6. Delta Operations for Salmonids and Sturgeon Group (DOSS) Annual Report of Activities
7. RAFT decision support tool report
8. Enhanced particle tracking model report
9. Shasta Operations to 2015-08-21 (NMFS)

10. Reclamation requesting NMFS concurrence on Contingency Plan and Sacramento temperature Plan for July – November 2015, 2015-06-25
11. NMFS determinations on TUC petition and Sacramento River Temperature Plan, 2015-07-01
12. Reclamation requesting NMFS concurrence on modified Shasta Temperature Plan, 2015-09-08
13. NMFS determination on revised Shasta Temperature Plan, 2015-09-28
14. Chronology of the Development of the Sacramento River Temperature Management Plan (TMP) 2015-06-30

Supplemental Documents

- The Smelt Working Group (SWG) Annual Report of Activities
- RPA Summary Matrix of the NMFS and USFWS Long-term Operations BiOps RPAs
- Central Valley Project and State Water Project Drought Contingency Plan, January 15, 2015 – September 30, 2015

Scope of the Review

This annual review will address questions for the Long-term Operations BiOps RPAs for operations and fisheries for water year 2015 as follows:

- **Progress on Shasta Reservoir and Sacramento River temperature monitoring, modeling, and management**
 1. *What additional approaches, methods, or studies would you recommend to improve the accuracy and effectiveness of Sacramento River temperature management?*
 2. *How effectively has the temperature management process linked spatial-temporal-life-stage specific fish distributions with spatial-temporal temperature distributions?*
- **RAFT decision support tool**
 1. *What additional calibration and validation is recommended for the RAFT model?*
 2. *Coupling of the reservoir model with the river model requires modeling the intermediate 17km of the Keswick “river-reservoir”. Does the panel recommend extension of the RAFT model upstream or the CE-Qual-W2 model downstream?*
 3. *What addition information or capabilities should be added to the DST to improve its usefulness to management?*
- **Report on enhanced particle tracking modeling**

1. *Does the panel have any suggestions on if and how model calibration could be improved?*
 2. *How much does the spatial and temporal resolution of the model affect its application to physical and biological questions?*
 3. *How useful is the current model as a basis for real-time operations decisions for assessing effects on listed salmonids?*
 4. *Does the panel have any recommendations for additional work that will increase confidence in model output such as accounting for and reporting uncertainty?*
- **USFWS report on past, present, and future approaches to incidental take of Delta Smelt**
 1. *How could the revised interim approach that the Service expects to use for Water Year 2016 be improved?*
 2. *What suggestions does the panel have for improvement of the proportional entrainment approach?*
 - **Implementation of the RPA Actions under dry year conditions based on prior science reviews' questions about RPA implementation**
 1. *Were the scientific indicators, study designs, methods, and implementation procedures used appropriate for evaluating the effectiveness of the RPA actions under dry conditions? Are there other approaches that may be more appropriate under dry conditions?*
 2. *How can implementation of RPA actions be adjusted to more effectively meet their objectives under dry conditions?*

Products

The IRP will prepare the following products according to the schedule outlined in the Scope of Work:

- Preliminary assessments and impressions to be delivered at the Sacramento meeting
- Final Review Report

Review Panel Membership

- James Gore, Ph.D., University of Tampa (Panel Chair)

- Ron Kneib, Ph.D., RTK Consulting & University of Georgia (Emeritus) (Panel Lead Author)
- James Anderson, Ph.D., University of Washington
- Nancy Monsen, Ph.D., Civil/Environmental Engineering Consultant
- John Van Sickle, Ph.D., U.S. Environmental Protection Agency's Western Ecology Division (retired)
- Geoffrey Schladow, Director, Tahoe Environmental Research Center, University of California Davis

Meeting Format

The public meeting will be conducted over two days in Sacramento, CA. The first day of the meeting will involve presentations by key individuals from the CVP and SWP Operations staff, and NMFS and Reclamation staff. Review panel members may be asked to provide a brief biographical sketch as it relates to the review. Review panel members should also be prepared to discuss any questions regarding the review materials with the technical team presenters at the meeting. The Lead Scientist or his designee will facilitate discussions. The morning of the following day, the panel will meet in private to deliberate on the charge questions. That afternoon, the public meeting will reconvene at which time the panel will provide a presentation of their initial assessment and impressions, as well as ask clarifying questions from the presentations of the previous day.

Background Information

- 2014 Annual Science Review:
 - Report of the 2014 Independent Review Panel (IRP) on the Implementation of the Long-term Operations Opinions Reasonable and Prudent Alternative (RPA) Actions (December 11, 2014). <http://deltacouncil.ca.gov/sites/default/files/2014/12/2014-12-11-LOBO-2014-Report-Panel-Final.pdf>
 - Review Materials, Background Information and Presentations)
 - Federal Agencies' Response to the 2014 Independent Review Panel's Report
- 2013 Annual Science Review:
 - Report of the 2013 Independent Review Panel (IRP) on the Implementation of the Long-term Operations Opinions Reasonable and Prudent Alternative (RPA) Actions (December 7, 2013). <http://www.deltacouncil.ca.gov/event-detail/9954>
 - Review Materials, Background Information and Presentations)
 - Federal Agencies' Response to the 2013 Independent Review Panel's Report
- 2012 Annual Science Review:
 - Report of the 2012 Independent Review Panel (IRP) on the Implementation of the Long-term Operations Opinions Reasonable and Prudent Alternative (RPA) Actions (December 1, 2012). http://deltacouncil.ca.gov/sites/default/files/documents/files/Report_2012_DSPIR_P_LOOAR_120112_final.pdf

- Review Materials, Background Information and Presentations
<http://deltacouncil.ca.gov/2012-long-term-operations-opinions-annual-review-%E2%80%93-review-materials-background-information-and-prese>
- Federal Agencies' Response to the 2012 Independent Review Panel's Report (July 19, 2013).
http://deltacouncil.ca.gov/sites/default/files/documents/files/Federal_Agencies_Response_to_the_Panels_Report_July19_2013.pdf
- 2011 Annual Science Review:
 - Report of the 2011 Independent Review Panel (IRP) on the Implementation of Reasonable and Prudent Alternative (RPA) Action Affecting the Operations Criteria And Plan (OCAP) for State/Federal Water Operations (December 9, 2011).
http://deltacouncil.ca.gov/sites/default/files/documents/files/IRP_OCAP_RPA_2011_Final_Report_v2.pdf
 - Review Materials, Background Information and Presentations
<http://deltacouncil.ca.gov/science-program/2011-ocap-review-materials-background-information-and-presentations>
 - Federal Agencies' Detailed Response to the 2011 Independent Review Panel's Report (June 20, 2012)
- 2010 Annual Science Review:
 - Report of the 2010 Independent Review Panel (IRP) on the Reasonable and Prudent Alternative (RPA) Actions Affecting the Operations Criteria and Plan (OCAP) for the State/Federal Water Operations (December 9, 2010).
http://deltacouncil.ca.gov/sites/default/files/documents/files/workshop_OCAP_2010_IRP_RPA_Final_Report_121310_0.pdf
 - Review Materials and Presentations <http://deltacouncil.ca.gov/events/science-program-workshop/workshop-ocap-integrated-annual-review>
 - Joint Department of Commerce and Department of the Interior Response to the Independent Review Panel's (IRP) 2010 Report of the Reasonable and Prudent Alternative (RPA) Actions Affecting the Operations Criteria and Plan (OCAP) for the State/Federal Water Operations (March 9, 2011)
- NMFS 2009 RPA with 2011 amendments
http://www.westcoast.fisheries.noaa.gov/publications/Central_Valley/Water%20Operations/Operations,%20Criteria%20and%20Plan/040711_ocap_opinion_2011_amendments.pdf
- USFWS BiOp on the Long-Term Operational Criteria and Plan (OCAP) for coordination of the Central Valley Project and State Water Project (pages 279-282 and 329-356)
- National Academy of Science's March 19, 2010, report
- VAMP peer review report 2010 <http://www.sjrg.org/technicalreport/2009/2010-VAMP-Peer-Review-Panel-Report.pdf>
- State Water Board's 2010 Delta Flows Criteria Report
http://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/deltaflow/docs/final_rpt080310.pdf