



INFORMATION ITEM

Independent Scientific Peer Review

Summary

Delta Science Program (DSP) staff will provide an overview of the independent scientific peer review and advice services provided by DSP, including the history, process, and purpose of peer review. Independent peer review serves a critical role in ensuring that credible and legitimate science is available for use by water and environmental decision-makers. Staff will summarize key takeaways from recent peer reviews facilitated by DSP at the request of the Department of Water Resources (DWR) and U.S. Bureau of Reclamation (USBR). Representatives from DWR and USBR will join the panel to share their perspectives on the value of independent scientific peer review services provided by DSP.

Background

The Delta Science Program (DSP) provides independent scientific peer review and advice services for the Sacramento-San Joaquin Delta (Delta). The DSP follows a documented¹, robust, and transparent peer review process to ensure credible and legitimate science is used to inform water and environmental decision-making in the Delta.

Since 2010, the DSP has coordinated 34 independent science review and advice efforts². Reviews employ independent experts to evaluate completed scientific and technical processes, programs, plans, and products (e.g., Independent Scientific Review of the State Water Project Delivery Capability Report³). Advisors, on the other hand, typically give input on earlier stage documents or on the development

¹ 2019 Delta Science Plan outlines the policies and procedures for both Independent Scientific Reviews (Appendix H) and Independent Science Advisors (Appendix I)

² Available here: <https://deltacouncil.ca.gov/delta-science-program/scientific-peer-review>

³ Available here: <https://deltacouncil.ca.gov/delta-science-program/delivery-capacity-report-independent-scientific-review>

of processes, programs, plans, or products (e.g., Bay-Delta Plan Biological Goals Scientific Advisory Panel⁴). Both review and advice panels respond to a set of questions (a “Charge”) and produce a written product that is posted on the DSP’s webpage⁵. Review scope and format are determined by DSP staff with input from the requesting party and recommendations from the Delta lead scientist. They may include a one-time consensus panel report with optional public meeting or individual letter(s), or be multi-step and/or multi-year/serial reviews (e.g. Long-term Operations of the Biological Opinions⁶).

Information about the Topic

In the past year, the Delta Science Program facilitated multiple reviews critical to water operations in the Delta. Facilitation roles include: coordinating with the panel members, requesting party, and Delta lead scientist; managing contracts with panel members; and conducting an editorial review of the written report, among others. All reviews occurred as part of interagency agreements between the DSP and the Department of Water Resources (DWR) or the U.S. Bureau of Reclamation (USBR), which allow for DSP to facilitate multiple reviews for the requesting agency on multiple topics over a three- to five-year timeframe.

Summer-Fall Habitat Action Monitoring and Science Plans and Structured Decision-Making Approach Peer Review

In March 2020, the California Department of Fish and Wildlife (CDFW) issued an Incidental Take Permit (ITP) to DWR for the continued operation of the State Water Project (SWP). A critical component of the adaptive management of the SWP is the Delta Smelt Summer-Fall Habitat Action (SFHA), designed to improve habitat conditions, including the overlap of key physical and biological attributes (e.g., salinity, turbidity, and food availability), to support the critically endangered Delta Smelt. The 2020 ITP required an independent review of the SFHA to assist the Delta Coordination Group and ITP Adaptive Management Team in improving the

⁴ Available here: <https://deltacouncil.ca.gov/delta-science-program/biological-goals-advisory-panel>

⁵ Available here: <https://deltacouncil.ca.gov/delta-science-program/scientific-peer-review>

⁶ Available here: <https://deltacouncil.ca.gov/delta-science-program/lobo-central-valley-project-state-water-project>

evaluation and adaptive management of the SFHA. At the request of DWR, DSP convened a panel to review the methodology for the Delta Smelt SFHA Monitoring and Science Plans, as well as the structured decision-making (SDM)⁷ approach for the SFHA, and to provide guidance on potential improvements to decision-making, monitoring, and adaptive management. In January 2024, four ecosystem and food web experts began reviewing the ecosystem and SDM components of the SFHA and submitted individually authored letters in May 2024.

Overall, the reviewers found the SFHA Monitoring and Science Plans to be well-designed and to provide a robust framework for adaptive management. However, the reviewers noted opportunities to improve the sensitivity of monitoring methods, integrate a broader understanding of the food web and potential future conditions, and consider an integrated adaptive management approach which emphasizes managing for multiple future scenarios. The SDM experts found that the SFHA team, generally, developed a strong framework for the SFHA decision and that the results were communicated effectively; however, the reviewers noted several potential improvements for the analysis, including those that would allow for a transition to a more responsive SDM framework that focuses more fully on adaptive management. Detailed key takeaways from the reviewers will be presented to the Council at the meeting and are described in the final letters posted on the review webpage⁸.

[Long-Term Operations for the Central Valley Project and State Water Project Fish and Aquatic Effects Analysis Review Panel](#)

USBR reinitiated Endangered Species Act (ESA) Section 7 consultation for the Long-Term Operations (LTO) of the Central Valley Project (CVP) and SWP based on anticipated modifications to the Proposed Action (i.e., continue the operation of the CVP and SWP) that may cause effects to ESA-listed species or designated critical habitats not analyzed in the 2019 U.S. Fish and Wildlife Service and National Marine Fisheries Service Biological Opinions. USBR is preparing an Environmental Impact

⁷ SDM is an approach to understanding and assessing a set of problems that links management actions (alternatives) to well-defined, quantifiable objectives through models. The SDM process adds transparency to decision-making in natural resource management (2019 Delta Science Plan).

⁸ <https://deltacouncil.ca.gov/delta-science-program/summer-fall-habitat-action-monitoring-and-science-plans-and-structured-decision-making-approach-peer-review>

Statement (EIS), a report mandated by the National Environmental Policy Act of 1969 (NEPA), to analyze potential modifications to the LTO of the CVP and SWP. The draft Fish and Aquatic Effects Analysis (Effects Analysis) included numerous technical appendices describing the literature, models, and tools from the draft EIS, and several ESA-listed species chapters from the draft Biological Assessment to evaluate the effects of different project alternatives on fish and the aquatic environment.

The peer review panel, consisting of five subject-matter experts, was convened to review the Effects Analysis and evaluate the analytical approaches used. Their charge was to assess 1) how the project alternatives affect the aquatic environment and the exposure, response, and risk to select ESA-listed species (individuals and populations), and 2) whether quantitative and qualitative methods and risk assessment tools are used appropriately.

The Panel began its review in November 2023 and its final co-authored report was completed this April. The panel determined that, in general, the analyses considered the major stressors on individuals, populations, and habitats; however, some exceptions were identified in the Appendix of the panel's report. The panel acknowledged USBR's impressive effort to date and determined that, with continued diligence, the incorporation of the panel's comments on their modeling analyses, and inclusion of a more targeted synthesis of data (i.e. assessing the biological effects across life stages to the population level and cross-species interpretation to understand trade-offs) the Effects Analysis could potentially provide a sound scientific basis for assessing project alternative impacts on the ESA-listed species. Detailed key takeaways from the panel are available in the final report⁹ and will be presented to the Council at the meeting.

Final Water Temperature Model Development Independent Panel

The USBR owns and operates the CVP, which reduces flood risk for the Central Valley, supplies water to major urban centers, provides water to restore and protect fish and wildlife and enhance water quality, produces electrical power, and offers

⁹ Available here: <https://deltacouncil.ca.gov/delta-science-program/long-term-operations-for-the-central-valley-project-and-state-water-project-fish-and-aquatic-effects-analysis-review-panel>

recreational opportunities. Temperature management for protection of species with specific cold-water needs is one of the most complex subjects related to CVP operation. USBR created a Water Temperature Modeling Platform (WTMP) to assist resource managers of major CVP reservoirs to balance water resources for downstream uses and temperature needs. An independent review panel of five expert hydrologists and environmental engineers reviewed the performance and validity of temperature models, model framework, and implementation of the WTMP project in two parts- a mid-term review, which met in a public meeting in July 2022, focused on a subset of rivers and reservoirs as case studies, and a final review, which met in a public meeting in September 2023, focused on the entire project effort. The panel authored both a mid-term and final report and found that their initial recommendations from the mid-term review were incorporated for the final review. They found that model development was done in an open and transparent manner with opportunities for fisheries managers and other interested parties to engage throughout the process. The panel also found that the modeling framework was appropriate for use and that uncertainties were rigorously examined. A more thorough explanation of the Panel's recommendations is provided in the panel's final report¹⁰.

Independent Scientific Review of the State Water Project Delivery Capability Report

The SWP's water supply depends on a host of variables including rainfall, snowpack, runoff, reservoir levels, pumping capacity, and regulatory mandates. To provide essential information about the current and projected future water supply, DWR issues a Delivery Capability Report (DCR) every two years. The DCR is used extensively by SWP contractors and others to plan their water uses. The 2023 DCR includes new data and methods to model conditions that have changed, and will continue to change, as a result of climate change. DWR requested an independent peer review of these new analytical approaches¹¹. In the summer of 2023, three subject-matter experts provided input via individual letters to DWR during a two-

¹⁰ Available here: <https://deltacouncil.ca.gov/delta-science-program/water-temperature-model-development-independent-advisory-panel>

¹¹ Available here: <https://deltacouncil.ca.gov/delta-science-program/delivery-capacity-report-independent-scientific-review>

part review. Part One, Climate Adjusted Historical Hydrology, focused on whether the historical hydrologic data used in the models should be adjusted to account for exponential changes in changing climate. The summarized charge to reviewers asked whether this new method is an improvement and what changes should be considered in future updates of the dataset. Part Two, Risk Informed Future Scenarios, focused on using risk-informed climate change scenarios to model future performance of the SWP system. The summarized charge to reviewers asked whether the new scenarios provide enhanced information for water users and what additional scenarios should be developed in future reports.

In their letters, the reviewers concluded that the new method is an improvement over the previous method but did suggest that the analyses be presented more clearly to make a stronger case for changing the methods from a well-established status quo. The reviewers also provided suggestions for further improvements to future issues of the DCR. For example, future updates should consider the influence of Pacific Ocean variability on multi-decadal timescales (Interdecadal Pacific Oscillation), use temperature and precipitation datasets that are homogenized, consider future scenarios using monthly temperature and precipitation changes, and more. Detailed findings and recommendations are provided in the review letters. DWR expressed their satisfaction with the peer review content and process and plan to use feedback from the review to make changes for the 2025 DCR report.

Fiscal Information

Not applicable.

List of Attachments

Attachment 1: Peer Review and Advice Services Information Sheet

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