



INFORMATION ITEM

Delta Independent Science Board (Delta ISB) Update

Summary

Delta ISB Chair Dr. Inge Werner and Delta ISB Past Chair Dr. Lisa Wainger will provide an update on the Delta ISB's current activities, including a report out on the findings of the decision-making under deep uncertainty review. To help inform Delta Stewardship Council (Council) efforts, the Delta ISB provides the Council with independent scientific advice on the Delta Plan and reports findings and recommendations from Delta ISB reviews on the scientific programs that support adaptive management in the Delta.

Background

As mandated by the Sacramento-San Joaquin Delta Reform Act of 2009, California Water Code sections 85000, et seq., (Delta Reform Act), the Delta Independent Science Board (Delta ISB) is responsible for providing oversight of the scientific research, monitoring, and assessment programs that support adaptive management in the Delta (Water Code Section 85280(a)(3)) and providing independent advice on the Delta Plan (Water Code Section 85308(a)). The findings and recommendations of the Delta ISB inform updates to and the implementation of the Delta Plan, the Science Action Agenda, the Delta Science Plan, and other Council and Delta Science Program efforts.

The Delta ISB reviews programs that support adaptive management by “thematic” or topical areas to meet its legislative mandate. To date, the Delta ISB has completed and presented the following thematic reviews to the Council: restoration (2013), fish and flows (2015), adaptive management (2016), levee hazards (2016), Delta as an evolving place (2017), water quality (2018), the Interagency Ecological Program (2019), non-native species (2021), the monitoring enterprise (2022), water supply reliability estimation (2022), and food-webs (2024). The Delta ISB also reviews specific science documents related to adaptive management or the Delta

Plan. These reviews can be either self-initiated or based on a specific request from an individual or entity. In addition, the Delta ISB may develop “call-to-action” memos and letters to specific agencies, including the Council, which are meant to share the Delta ISB’s emerging insights, key findings, or recommendations that require action.

Since the last update to the Council in October 2025, the Delta ISB: (1) completed its review of the Draft 2026 Delta Science Plan; (2) worked on current reviews, including submitting their peer-reviewed paper on decision-making under deep uncertainty to the San Francisco Estuary and Watershed Sciences Journal; and (3) started scoping out future reviews, including one on nature-based solutions. An overview of the Delta ISB’s work is summarized in the remainder of this staff report.

Completed Review – Draft 2026 Delta Science Plan

In March 2026, the Delta ISB reviewed the Delta Science Program’s Draft 2026 Delta Science Plan, a shared framework that provides vision, principles, and approaches for better coordinating science in the Delta. The Delta ISB noted that the Plan was well structured and presented a concise action plan. In its review, the Delta ISB stated that the Delta Science Plan is a cornerstone for future progress toward achieving the coequal goals for the Delta. The Delta ISB provided comprehensive feedback on how to improve the plan, including identifying the need to develop an approach to evaluate its performance. Since the review, the Delta Science Program has addressed the comments from the Delta ISB, and the Council endorsed the 2026 Delta Science Plan in May 2026. For the Delta ISB’s full review, please see Attachment 1.

Current Delta ISB Reviews

Decision-Making under Deep Uncertainty Review

To build an understanding of scientific tools and concepts that can increase the capacity to anticipate and adapt to the growing uncertainty of future conditions in the Delta, the Delta ISB began a review of decision-making under deep uncertainty (DMDU) in the spring of 2023. The review explored techniques that could be applied to the Delta to better characterize and prepare for uncertainty and improve

decision-making processes. Deep uncertainty is defined here as unpredictable events or system variability that cannot be well characterized with existing data, models, and understanding. Often, there is little or no agreement among interested parties on how systems are likely to behave or the probabilities of occurrence of such events, including the duration, sequence, and co-occurrence of events.

As part of this review effort, the Delta ISB hosted a five-part seminar series that introduced concepts from the decision sciences to the broader Delta community. The Delta ISB completed a synthesis of the seminar presentations on DMDU in October 2024 and is working on subsequent reports. This includes a recent article submitted to the San Francisco Estuary and Watershed Sciences on the findings of the review. The review showed that scenario planning, a method for preparing for an uncertain future by exploring several possible outcomes, is a common way to operationalize DMDU. Scenarios can be classified along a continuum of uncertainty and none of the scenarios used in the Delta explicitly addressed deeply uncertain futures. Additionally, scenario developers were not using scenarios with extreme or compounding effects, nor fully mitigating cognitive biases. By expanding the types of scenarios and approaches for understanding uncertainty, scenario users will be able to better prepare, adapt, and recover from future natural disasters and crises.

[Subsidence Review](#)

Subsidence, which is the loss of land elevation, is particularly pronounced in the Central Delta where approximately 50,000 acres of agricultural land lie several meters below sea level, protected by over 1,000 miles of levees. A broad cross-section of interested parties are developing approaches to mitigate subsidence. The purpose of this review is to support ongoing and future subsidence management efforts by summarizing, examining, and assessing the existing or planned programs, barriers and opportunities, state of scientific understanding, and the scientific gaps and deficiencies of interconnected areas of subsidence. The Delta ISB is in the process of completing the review and addressing public comments from the last public draft report. The goal is to finalize the report by the fall.

[Contaminant Monitoring Review](#)

Thousands of contaminants, often in quantities meaningful to ecosystem processes and human health, enter Delta waterways primarily via urban and agricultural

stormwater and irrigation runoff, industrial and municipal wastewater, and from the atmosphere. They include metals, pesticides, pharmaceuticals, industrial chemicals, tire-wear constituents, and microplastics. Many have been shown to pose ecological risks in aquatic and riparian environments. The sheer number of chemicals and the complexities of assessing and measuring their toxic effects in ecosystems present major challenges for monitoring, ecological risk assessment, and management of chemicals.

Due to these challenges, the Delta ISB is conducting a review to assess current contaminant monitoring programs in the Delta. The review will focus on how monitoring programs can effectively inform management and decision-making regarding contaminant sources and ecological risks to aquatic ecosystems. To help inform the review, the Delta ISB held a public meeting and tour of the Sacramento Area Sewer District's EchoWater Resource Recovery Facility and its Bufferlands, located near Elk Grove, California, in May 2026. Contaminants can enter the water system through sewage from toilets, showers, and laundry, which the facility treats, so it can be safely released back into the Sacramento River in the northern part of the Delta. The tour offered valuable context for understanding the region's wastewater treatment system.

Additionally, the Delta ISB has conducted 19 interviews with managers, dischargers, end-users, and other community members to inform the review, and has begun a qualitative analysis on the transcripts. Following the completion of interview analysis and literature review, the Delta ISB is planning a workshop with interested parties in early 2027.

Emerging Climate Science

As global climate change intensifies, human-altered and engineered landscapes around the world are beginning to face increasing stressors and shocks that threaten their stability and functionality. The Delta ISB seeks to stay informed on pressing and important topics affecting the Delta system. To help achieve this, the Delta ISB hosted a hybrid symposium in September 2025, as part of its public meeting, at UC Davis that brought together over 200 scientists, practitioners, and decision-makers to assess the latest climate science and its implications for the Sacramento–San Joaquin Delta.

The Delta ISB has synthesized key takeaways from the symposium, published a draft summary highlighting major insights, and are now addressing comments. In summary, the symposium highlighted how science has advanced, compared to a decade ago, in areas such as seasonal forecasting, understanding wildfire urgency, and recognizing the role of rare extreme events. However, the symposium also highlighted uncertainties and science gaps, particularly the need to better integrate emerging science into decision-making frameworks.

Future Reviews

In December 2025, the Delta ISB held a planning retreat at its public meeting and brainstormed future reviews. The Delta ISB identifies new thematic topics using Delta Plan chapter topics, panels, discussions, surveys with interested parties, and subject matter expertise and interests of Delta ISB members. Scoping new reviews can involve conducting interviews with subject matter experts, working with staff to organize informational presentations to the Delta ISB, literature reviews, and attending events of interest related to the subject matter. The topics that rose to the top for future reviews, included harmful algal blooms, structured decision making, and nature-based solutions. Several other topics were discussed, including a review on collaborative science and a follow-up to the Emerging Climate Science Symposium. Post-scoping, and if warranted, the Delta ISB may embark on a review, which involves preparing a prospectus that describes the scope of the review.

Nature-Based Solutions

Following the discussion at the planning retreat, the Delta ISB has begun to scope a review on nature-based solutions. Nature-based solutions are actions such as restoration, conservation, and land management that harness natural ecosystems to build climate resilience, protect communities, and remove carbon from the atmosphere. To appropriately scope this review, the Delta ISB will host a series of panels over the coming months to explore nature-based solutions including the associated challenges and needs, to help shape a potential review by the Delta ISB that is meaningful and useful for the Delta community. The first panel occurred at the Delta ISB's May 2026 meeting with a focus on perspectives from State agencies to understand what is occurring in California. Later in the year, the Delta ISB will

also host panels focused on work at the national level and within the Delta. The goal of the panel series is to inform a draft prospectus.

Recruitment of the next Delta Lead Scientist

The current Delta lead scientist's three-year term will end on November 30, 2026. The Delta Stewardship Council appoints the Delta lead scientist after consultation with the Delta ISB, pursuant to California Water Code section 85280(b). The Delta ISB expects to provide a recommendation to the Council regarding the Delta Lead Scientist appointment early this fall.

Fiscal Information

Not applicable

List of Attachments

Attachment 1: [Review of the 2026 Draft Delta Science Plan](https://deltacouncil.ca.gov/pdf/isb/products/2026-03-05-isb-final-delta-science-plan-review.pdf) (available here: <https://deltacouncil.ca.gov/pdf/isb/products/2026-03-05-isb-final-delta-science-plan-review.pdf>)

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A recording of the presentation will be available on the Delta Council's YouTube page at <https://www.youtube.com/@DeltaCouncil>.