

## Outline of Memo to the Delta Stewardship Council regarding the NRC report.

### Background

In 2009 Congress and the Department of Interior asked the National Research Council to review the scientific basis of actions that could be taken for California to achieve the co-equal goals of environmental sustainability of the Bay-Delta ecosystem and a reliable water supply. In March of this year, the NRC released its third and final report on this issue. Entitled *Sustainable Water and Environmental Management in the California Bay-Delta*<sup>1</sup>, the report is a wide-ranging examination of the causes of declines in native fish species, the likely impacts of climate change on Delta management, the difficulties inherent in meeting the co-equal goals for the Delta, and the weaknesses of current planning structures and scientific efforts.

As part of its charge to oversee the quality of science used in decisionmaking in the Delta, the Delta Independent Science Board reviewed the conclusions drawn by the National Research Council. This is a summary of our discussions.

### Key Findings

The report is comprehensive, covering many of the topics that are addressed in the draft Delta Plan and draft Bay Delta Conservation Plan documents, particularly regarding multiple stressors. The report identifies a number of weaknesses in our understanding of the ecology of the Delta, including how ecosystems are impacted by current water operations and infrastructure, and how new water management facilities might impact the Delta. In addition, the report expresses strong concerns over current approaches to the integration of science and management of the Delta and the failure to adequately define policy objectives.

On the whole, there are no major surprises in the NRC report. The report clearly indicates that there are no simple solutions, or silver bullets, that might resolve the current conflict between water management objectives and ecosystem management to improve native species populations. At the highest level, this review is consistent with the current thinking of agency biologists: the Delta is a transformed, invaded ecosystem that is under stress from multiple historic and on-going human activities as well as non-native species invasions. All of these stressors contribute to the decline of native fish populations at different time periods and in different locations. No one stressor has a dominant impact such that solving it will dramatically reduce problems or lead to recovery of the species. That is why they—like most agency and university scientists, including this board—are unable to describe a hierarchy of stressors that, in effect, “ranks” them in relative importance.

The report finds that planning for the Delta has failed to sufficiently incorporate change in future conditions. This includes changes in climate, changes in the

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<sup>1</sup> Citation here

landscape through levee failure, changes in flows, changes in ecosystems, and changes in water scarcity. There is no indication that serious consideration has been given to development of adaptive strategies for managing future change.

In addition, the report echoes many of the concerns expressed by previous reviews of California water management and the Delta (e.g., Little Hoover Commission Report, Hanak et al 2011). Despite recent improvement, management of water and ecosystems in the Delta is still fragmented, with multiple overlapping jurisdictions and conflicting mandates. Additionally, Delta management is disconnected from statewide efforts to manage water as an interconnected system. The NRC recommends an overhaul of current approaches to water management. They suggest a much more integrated, statewide approach guided by clearly-defined and transparent policies. In particular, they found the current “co-equal” goals lacking in sufficient precision and definition to be an effective policy guide. They note the inherent contradiction between seeking a reliable water supply while still pursuing adaptive ecosystem management. Achieving the objectives of the former may ultimately preclude the pursuit of the latter.

The report expresses significant concern over the state of science, including its organization, funding, lack of integrated models, and how it informs policy. The fragmented jurisdictions and competing mandates of the many agencies have reduced the effectiveness of science. They cite the Delta Science Program as one of the bright spots, but note that it is underfunded and lacks sufficient authority to be effective. In particular, the NRC notes an important science-policy disconnect in the Delta. Policymakers complain that there is insufficient science to help them make decisions. At the same time, the science community complains that policymakers are not providing clarity on what they actually need, much less sufficient resources. The NRC recommends that science be reorganized in a fashion that helps bridge this gap.

There are many additional observations in the report that address key questions in the Delta<sup>2</sup>. However, while critical of current management and policy efforts, the report, for whatever reason, stops short of making specific recommendations for what to actually do about most of these short-comings. Despite its lack of specificity, the DISB finds this report useful and credible, and recommends that the Council review its many findings.

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<sup>2</sup> For example, the NRC chose not to weigh in on the proposed isolated facility, arguing that there is insufficient information for them to evaluate whether it is an appropriate solution. Additionally, they stated clearly that the location of X2 is an important determinant of some fish populations and that entrainment at the export pumps is, at times, a significant source of fish mortality.