

WORKING GROUP SUMMARY

Designing a Dynamic, Balanced Management System for the San Francisco Bay Delta

Eric Abelson¹, Marilyn Cornelius², George Philip LeBourdais³,
Andrew Smith⁴, Nicolás Ulibarri⁵, Phillip Wolfram⁶

¹Biology, eabelson@stanford.edu

²Emmett Interdisciplinary Program in Environment and Resources, mcorne1@stanford.edu

³Art and Art History, glebourd@stanford.edu

⁴Civil and Environmental Engineering, andrewsm@stanford.edu

⁵Emmett Interdisciplinary Program in Environment and Resources, ulibarri@stanford.edu

⁶Civil and Environmental Engineering, pwolfram@stanford.edu

ABSTRACT (250-300 words)

Our objective was to design a dynamically balanced system for managing the San Francisco Bay Delta. In the management system, we integrate real-time data on economic and environmental quality, species diversity, human health, climate, and weather in an indicator of “well-being”: a model that simulates and predicts the overall health of the system. Where problem areas are identified, we select methods and tools from an interdisciplinary toolkit that are specific to the problem, design relevant interventions, and implement our solutions. We reassess system well-being during and after each intervention. A feedback loop between interventions and real-time metrics allows for continual identification of problem areas and of beneficial trends in well-being.

The system is intended to be managed by an elected company or federal entity, which will be evaluated and compensated based on the overall well-being metric. Regular public dialogue and evaluation will allow for continual reassessment of the system.

Important questions are how we make decisions to define “well-being” or “sustainability” and how we reconcile competing value systems. How do we weight economic vs. environmental vs. aesthetic impact and value? Who participates in the debate (elected officials, all relevant stakeholders, human vs. nonhuman representatives)? Do we seek consensus or a democratic vote? While addressing these questions is essential to design a truly sustainable system, they are beyond the scope of our working group.