



Water Water Resources

ClientUS Bureau Of Reclamation

LocationBay-Delta area, California, USA

CALFED is a cooperative effort among 16 federal and state agencies to develop a long-term comprehensive plan to restore the Bay-Delta System's watershed. CH2M HILL is the overall programme manager and leads the engineering, construction supervision and scientific teams providing technical and decision-making tools, and preparing an integrated resource plan encompassing the concerns and interests of many stakeholders.

CALFED Bay Delta Programme

Project Description

The Bay-Delta area, 298,700 hectares encompassing the San Francisco Bay and the Sacramento-San Joaquin Delta, is home to two-thirds of California's 34 million residents. The area's farms produce 45 percent of the United State's produce, and Bay-Delta water serves critical industrial users as well. In addition, diverse wildlife—including 53 species of fish, of which five are endangered—thrives in the Bay-Delta system.

By the early 1990s it was evident that the Bay-Delta system would soon fall short of providing adequate supplies of high-quality water, and its levees faced an unacceptably high risk of breaching. In response, the State of California and the Federal government created the CALFED Bay-Delta programme to stabilize, protect, restore, and enhance water quality and quantity in the watershed.

In 1995, CH2M HILL became lead consultant and programme manager for CALFED, preparing an integrated resource plan to manage the natural resources found in the Bay-Delta estuary. This effort, entails overseeing 70 subconsultants developing and implementing long-term solutions to problems in the Bay-Delta estuary related to water supply reliability, water quality, fish and wildlife, and vulnerability of Delta levees and channels to natural disasters. The intent was to develop a comprehensive and balanced plan addressing all resource issues, including groundwater management.

Phase I

In Phase I of the programme we identified three fundamental alternative approaches to solving the Bay-Delta's long-term water and natural resource problems. In Phase II, the alternatives were evaluated in detail using modeling studies, impact analyses, common program development, prefeasibility studies, early project implementation, and decision-analysis, which culminated in the selection of a preferred alternative and environmental impact assessment preparation. We used workshops, advisory committees, and public forums to respond to stakeholder concerns and address sensitive issues involving federal, state, and local agencies and public interest groups with diverse objectives and political agenda. The alternative development process narrowed and refined 100 single-focus alternatives into three multi-objective alternatives.

Phase II

Upon completion of Phase II, the CH2M HILL team had developed 17 specific, selected approaches to restoring the ecosystem and improving water quality, water supply reliability, and levee system integrity. From this list, the team selected a short list of alternatives to carry through the National Environmental Policy Act (EPA) and the California Environmental Quality Act (CEQA) regulatory processes. The evaluations included modeling studies, impact analyses, common program development, pre-feasibility studies, regulatory assessments, early project implementation, decision-analysis,

Environmental Impact Statement (EIS)/ Exposure Information Report (EIR) preparation, and Record of Decision.

Public participation and input from stakeholders (urban and agricultural water users, fishing interests, environmental organizations, and businesses) was essential. Multiple newsletters, workshops, advisory committees, public hearings, and public forums were used to collect and respond to input to achieve balance, fairness, and inclusiveness.

The CALFED analysis included significant components related to stream restoration, including water quality, reducing toxins in point and non-point source discharges; reducing fish entrainment conditions at diversions; restoring wetlands; and reconfiguring channels. The team also evaluated water supplies, sustainable habitat and habitat restoration, agricultural and municipal water supply economics, recreation and economics, cultural resources, fishery resources, and vegetation and wildlife resources.

Phase III

The CALFED Programme is now in Phase III: implementing the preferred alternative. Site-specific, detailed environmental reviews will occur during this phase prior to implementing each proposed action. Full implementation is expected to take 30 years.

Other CALFED Programme Support CH2M HILL has conducted a number of regional implementation projects related to the CALFED restoration, including:

- Butte Creek watershed restoration, which consolidated multiple agricultural diversions into a siphon to restore flow in the creek.
- Designed and constructed multiple fish screens on the Sacramento River and tributaries to restore native fisheries.
- Developed a long-term regional water management and implementation plan for the U.S. Department of Interior for flows dedicated to fish and wildlife restoration in California's Central Valley.
- Developed design and construction costs and estimates of ecological benefits for more than 100 construction activities (fish passage, habitat restoration, etc.) intended to restore ecological function to 22 tributaries to the Sacramento and San Joaquin rivers.

Significant Project Features

A comprehensive water resources programme, CALFED Bay-Delta includes over 100 projects and tasks directly linked to water resources, some of the tasks include:

- Fish and wildlife resource evaluations
- Fish and wildlife mitigation and habitat restoration planning
- Hydrology, hydraulics, hydrogeomorphology, and water projects operations

- Modeling
- Public outreach and involvement
- Anadromous fish habitat restoration
- Investigation of anadromous fish flow needs
- Addresses constraints in anadromous fish production
- California central valley water studies and management
- California water management issues
- Quality deliverable
- Schedule adherence
- Cost projections
- Central Valley Project Improvement Act (CVPIA), CALFED, and Anadromous Fish Restoration Programme