

Bay/Delta and Tributaries Project

The Bay/Delta and Tributaries project has been designed as an infrastructure for combining data from multiple sources and providing access to various interested parties. It is an interactive data warehousing system that permits data sharing by agency, stakeholder, CALFED and other interested parties. The Bay/Delta and Tributaries project is a system that:

- Combines the best feature of a distributed and centralized data management system
- Provides storage and access to a wide range of monitoring data
- Includes historic data
- Standardizes data from various sources
- Provides a full data dictionary of attributes and terms
- Organizes data for integrity and ease of retrieval
- Is easily accessible and provides easy data retrieval
- Facilitates data retrieval for statistical analysis with programs such as SAS
- Implements spatial referencing and communicates with GIS programs
- Fulfills data requests in a timely manner

The diverse types of data already stored on the system includes physical/chemical data (e.g., water quality, hydrodynamics, meteorological, etc.), biological data used to gauge the health of the estuary. Beyond determining cause-and-effect relationships between the physical/chemical and biological data, technical staff can use these data to examine relationships in order to evaluate impacts of various alternatives. Monitoring key system attributes (or indicators), completing focused research to obtain better understanding, and phasing implementation based on information gained are all central to the adaptive management process. We provide the data for analysts to use in their studies. An information system that provides technical staff the ability to relate and query data from all these different data types simultaneously would facilitate analysis and reporting efficiency.

The Bay/Delta and Tributaries Project Utilizes:

- Two database products:
 - The Hydrologic Engineering Center's Data Storage System for time series data.
 - The informix (9.14 UC-4) Object Relational Database
- Sun (E450 and Sparc workstations) computers
- The Sun Solaris 2.6 operating system
- Java & Pearl programming languages
- The Internet to link the data together and provide access to end-users
- Spatial Database Engine to provide data to staff using GIS
- MS Access for local database development

Current and in progress data development are continuing for the Central Valley Project Improvement Act/Comprehensive Assessment Monitoring Program, Interagency Ecological Program, CALFED Bay/Delta Program, California Urban Water Association and the Sacramento River Watershed Program. These programs include participation from a large number of State, Federal, local governments and stakeholder and private sector companies.

The system is designed with a high level of modularity so additional data providers can be easily added. In addition to expanding, the program will continue to develop:

- An Informix time series data feature for the existing object relational database
- The ESRI SDE utility to facilitate using GIS with the Informix database

The HEC/DSS database, on the IEP server, was developed to store data for the Delta Simulation Model 2. These data are used to run and verify the model. The HEC/DSS was chosen to manage time series data because of its unique ability to store large volumes of data efficiently with the ability to query data quickly. The database can be downloaded for local use or queried from the IEP server via the Internet. HEC/DSS is not proprietary and can be used locally without a database licensee. Several interfaces have been developed to interact with the data.