

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 92-46

AUTHORIZATION FOR THE EXECUTIVE DIRECTOR TO NEGOTIATE
AND EXECUTE AN INTERAGENCY AGREEMENT WITH TEALE DATA CENTER FOR THE
BAY PROTECTION AND TOXIC CLEANUP PROGRAM
CONSOLIDATED DATABASE

WHEREAS:

1. The Bay Protection and Toxic Cleanup Program (BPTCP) was established by the State Water Resources Control Board (State Water Board) to implement the requirements of Section 13390 et seq. of the Water Code which includes the development of a consolidated database for bays and estuaries of the State.
2. The Regional Water Quality Control Boards have assembled the bay and estuary water quality data on known and potential toxic hot spots. These data will be consolidated into a single statewide BPTCP database for more efficient administration and management of the statewide program.
3. Teale Data Center (TDC) has prepared a needs assessment and draft Feasibility Study Report (FSR) for the required BPTCP consolidated database. The system has been designed with the Geographic Information System (GIS) capabilities which are required for the identification, location, ranking, and remedial (cleanup) response to bay and estuary toxic hot spots.
4. The TDC has the capability of providing two-year technical services to assist with the implementation of the consolidated database.
5. The technical contract will be for \$185,000 in FY 1992-93, and \$80,000 in FY 1993-94. Funding for both fiscal years will come from the Bay Protection and Toxic Cleanup Fund.

THEREFORE BE IT RESOLVED:

1. That the State Water Board authorizes the Executive Director, or his designee, to negotiate and execute a contract with a two-year duration with the TDC to perform technical services to support the BPTCP consolidated database.
2. That the contract should be for two years (FYs 1992-93 and 1993-94) for a total of \$265,000 subject to the availability of funds from BPTCP annual fees.
3. That the contract will not exceed \$185,000 in FY 1992-93, and \$80,000 in FY 1993-94.

CERTIFICATION

The undersigned, Administrative Assistant to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Resources Control Board held on June 18, 1992.


Maureen Marché
Administrative Assistant to the Board

STAFF REPORT
BY THE
DIVISION OF WATER QUALITY
STATE WATER RESOURCES CONTROL BOARD

TECHNICAL SERVICES INTERAGENCY AGREEMENT WITH TEALE DATA CENTER
TO SUPPORT THE BAY PROTECTION AND
TOXIC CLEANUP PROGRAM CONSOLIDATED DATABASE

INTRODUCTION

The Bay Protection and Toxic Cleanup Program (BPTCP) was initiated by the State Water Resources Control Board (State Water Board) in response to amendments to the California Water Code (Div. 7, Chapter 5.6, amendments of 1989). As part of the statutory requirements, the BPTCP is required to develop consolidated enclosed bays and estuaries water quality databases at the State and Regional Water Quality Control Boards (Regional Water Boards). Staff has completed a needs analysis and Feasibility Study Report (FSR) for the database system.

This staff report consists of three parts: 1) a summary of BPTCP statutory mandates and program needs; 2) a discussion of considerations for and characteristics of a suitable database system; and 3) a description of the preferred option for database design and management.

The BPTCP has completed the preliminary identification of the information that would support designating known and potential toxic hot spots in bays and estuaries. BPTCP is currently developing sediment quality objectives, and reviewing proposed regional monitoring programs. To further develop and provide support for these major program tasks, technical services are required to assist with the installation and implementation of the BPTCP statewide consolidated database.

BACKGROUND

Legislation enacted in 1989 added Chapter 5.6, Bay Protection and Toxic Cleanup, to Division 7 of the California Water Code (Section 13390 et seq.). Requirements of Chapter 5.6 include directing the State and Regional Water Boards to develop consolidated databases for the enclosed bays and estuaries of California (Section 13392.5). The consolidated databases are needed to identify and describe toxic hot spots and provide this information to the public. A number of other uses of the databases are implied by the statutes; such as providing a water quality information basis to support Regional monitoring plans, supporting the development of sediment quality objectives, contributing to the ranking of toxic hot spots, and supporting the development of prevention and remediation strategies.

The results of ongoing water quality monitoring need to be stored in the consolidated database for efficient program coordination, and reporting of program progress. Also, the consolidated database needs to include Geographic Information System (GIS) capabilities for analysis of areas under consideration for designation as toxic hot spots. GIS capabilities will provide necessary spatial evaluation of the extent of pollution.

The State Water Board is also required to develop sediment quality objectives for inclusion into existing water quality control plans. The analytical results of laboratory studies required to produce these objectives need to be stored, analyzed, and depicted spatially in order to clarify and define the relationship between sediment toxicant levels and biological effects in selected test species. A fully implemented BPTCP consolidated database is required to perform these support functions.

PROGRAMMATIC REQUIREMENTS

The coastal Regional Water Boards and the Central Valley Regional Water Board are required by the Water Code to develop a consolidated database for enclosed bays and estuaries. Each Region has assembled all available BPTCP-related reports and other bay and estuary data sources for inclusion in the statewide consolidated BPTCP database. The consolidated database is to be implemented by BPTCP staff with assistance from Teale Data Center (TDC).

All data records in the BPTCP consolidated database must include standardized quality assurance/quality control verification data. This is necessary for the BPTCP to ensure only data meeting strict accuracy criteria will be used in critical planning or toxic hot spot evaluation analyses. 'Historic' bay and estuary water quality data with less stringent quality control requirements is also to be included in the consolidated database to provide general background information.

In addition, all BPTCP database records must be complete and organized in a standard format. This last requirement is being partially met by a laboratory reporting protocol (for bioassay results) developed in cooperation with the Marine Bioassay Project. Less complex protocols are under development for storing the analytical results of water column, tissue, and sediment chemistry investigations. Data will be reported to the consolidated database (housed at TDC) in these standard formats by California Department of Fish and Game's (DFG) Marine Pollution Studies Laboratory. The DFG has been selected by the BPTCP as the master contractor for the BPTCP's analytical and bioassay work (State Board Resolution No. 91-114; Contract 1-165-250-0).

To ensure a coordinated approach, the BPTCP consolidated database needs to be developed, implemented, and managed in very close association with the other major tasks assigned to the BPTCP. The database will both support and connect the many efforts underway in the BPTCP. These major BPTCP program areas include identification and characterization of toxic hot spots, ranking of toxic hot spots, development of sediment standards, development and implementation of Regional Monitoring Plans, development of toxic hot spot remediation plans, and fulfillment of BPTCP reporting requirements to the California legislature.

CONSOLIDATED DATABASE FUNCTIONS

The proposed BPTCP consolidated database will have many functions, such as:

- o The identification and location of potential toxic hot spots could be automated, that is, all data in the database could be reviewed periodically to produce a list of 'flagged' sites as potential or known toxic hot spots based on analytical results, bioassay work, and/or biological community investigations. GIS maps could be produced to show all areas of elevated toxic levels, impacted marine communities and impaired organisms, health warning (such as beach closures), and other toxicity indicators.
- o Hot spot ranking criteria will be included in the system, allowing draft ranked lists of toxic hot spots to be generated by the system. BPTCP staff responsible for producing a final draft list of ranked hot spots will have use of all BPTCP system analytical data, and the use of GIS analysis in making these decisions. State and Regional Water Board reviewers of the ranked hot spot list will benefit from BPTCP data system reports summarizing the characteristics of each identified hot spot, as well as GIS illustrations of the respective site location, areal extent, and toxicity problems.
- o The consolidated system will provide qualitative and quantitative analysis of data including statistical analysis of chemical, biological, and ecological data.
- o The system will provide support for custom reports. These reports will contribute to the development of sediment quality objectives, Regional monitoring plans, and prevention and remediation strategies.
- o The consolidated database will provide summary reports detailing the analytical results of both 'historic' and more recent monitoring efforts. These reports will provide critical and timely information for public review, and for use in program progress reports.
- o The system's GIS capabilities will be used for diagnostic and cleanup planning purposes. BPTCP staff will use GIS capabilities to help identify the most likely sources of discharge. GIS will be used to evaluate the implications of geographical and hydrographic relationships and the possibility of suspected sources contributing to toxic hot spots. Successful remediation plans will be dependent on the accurate identification of the problem source(s).
- o Formal BPTCP reports will be illustrated with BPTCP system-derived GIS maps. These maps will detail the location, areal extent, and toxicity problems of various toxic hot spots. Additional tabular or graphical data summarizing important attributes of toxic hot spots will also be provided.
- o The system will have broad capabilities to interface with data management and information needs of other State and Regional programs.
- o The system will also be used to support development of wasteload allocations. GIS analysis and mapping of loading will be useful in depicting relative contributions from multiple sources, and any geographic areas requiring regulatory emphasis. These analysis will be supported by geographic and hydrographic reviews of the areas surrounding the bays and estuaries in question.

ANALYSIS OF ALTERNATIVES

State Water Board staff have completed the BPTCP consolidated database Feasibility Study Report (FSR) in consultation with the TDC. The FSR reviewed the program's data, quality assurance, and GIS needs and outlined several possible system designs which would adequately support the BPTCP program. Among the alternatives reviewed in the FSR for possible coverage of the BPTCP consolidated database and program support needs were the following:

- o Independent Regional and State Water Board stand-alone (PC) database systems: This option involves data concurrence and quality assurance control problems. Eventually, this option would result in higher total cost as Regional Water Boards would have to purchase many separate software packages and the GIS data sets to achieve desired BPTC program functional levels.
- o Using the STORET mainframe database: Limitations here included limited data access, limited record structure for quality assurance, and no GIS capabilities.
- o Two options for using a centralized database server with remote clients:
 1. Database server at the State Water Board, clients at the Regional Water Boards; and
 2. Database server at Teale Data Center, clients at the State and Regional Water Boards.

Both centralized database server with remote client structures would fulfill the requirements and needs of the BPTCP program. Option 2 was found to be significantly less expensive.

The preferred alternative, Option 2 of the centralized database server systems described above, includes workstations at the State Water Board and San Francisco Bay Regional Water Board, and personal computers (PCs) equipped with modems at the other Regional Water Boards. GIS capability will be provided through a network connection to Teale Data Center, along with a subscription to the TDC GIS library, and purchase of ARC/INFO GIS software. The network connections include a dedicated line from TDC to the State Water Board BPTCP, and modem connections to the Regional Water Boards and DFG's Marine Pollution Studies Laboratory. Most of the BPTCP-generated analytical results will be sent by modem from the DFG Granite Bay Laboratory.

With this architecture, the State and Regional Water Board offices in the BPTCP will have full access to all data in the system, including use of efficient and customized query and analytical tools. State and San Francisco Bay Regional Water Board staffs will have full GIS capability, and other Regional Water Boards will be able to view and analyze geographic and hydrographic data on screen. All offices would be able to view and analyze monitoring data in a hydrographic context.

SERVICES TO BE PROVIDED BY TEALE DATA CENTER

The following tasks will be performed by TDC in the proposed BPTCP/TDC technical services contract:

- A. TDC will provide expert design review and practical evaluation of the proposed data structure and design for the consolidated database. This proposed design will be developed by State Water Board and San Francisco Bay Regional Water Board staffs and contractor(s). TDC staff's greater familiarity with Oracle software (TDC's Relational Database Management System) will allow TDC to provide an oversight role in the BPTCP consolidated database planning stages.
- B. TDC will procure the necessary hardware and software to implement the statewide BPTCP system. TDC's greater experience in purchasing workstations and related equipment, as well as software, will be helpful to the BPTCP. Also, the potential advantages of participating in group equipment purchases with other state agencies is expected to benefit the BPTCP.
- C. TDC will assist in getting the initial BPTCP data records in standard format and situated at Teale Data Center: these activities will most likely include data conversion, data entry, recommending data editing or data revision protocols, and finalizing protocols for accomplishing data updates to the consolidated database.
- D. TDC will be responsible for bringing the statewide BPTCP network on line. After procuring needed equipment and software, TDC will install the dedicated line to the Bonderson Building, and install Unix workstations at both the State and the San Francisco Bay Regional Water Board BPTCP offices. Workstation installation will include providing ARC/INFO (GIS software) and Oracle Tools (Relational Database Management System) software at the State and the San Francisco Bay Regional Water Boards. The other Regional Water Board offices with BPTCP will be provided with PC copies of Oracle Tools (user numbers) and PC ARCVIEW (GIS software suitable for viewing geographic data).
- E. TDC will oversee implementation of BPTCP GIS use: TDC will be available as local technical support staff to assist State and the San Francisco Bay Regional Water Board staffs with any problems encountered in using ARC/INFO. TDC will provide State Water Board staff with back-up assistance for any Regional Water Board request for PC ARCVIEW assistance.
- F. TDC will assist in developing user interfaces and custom routines to standardize and simplify State and Regional Water Board use of the GIS and Relational Database Management System (RDBMS) capabilities of the BPTCP consolidated database system. These user interfaces will include developing standard data entry screens for use by Regional Water Board staff, and menu driven GIS routines for the most frequently requested maps, plots, and related data queries.

- G. TDC will provide GIS and RDBMS training for State and the San Francisco Bay Regional Water Board staffs. TDC will provide training schedules and cost estimates for Unix, Oracle and ARC/INFO classes. Later, State Water Board staff will provide BPTCP program-related in-house training to staff from the other Regional Water Boards.
- H. TDC will provide cost estimates for equipment and software upgrades preferred by some BPTCP Regional staff for GIS and/or RDBMS use. This equipment includes, but is not limited to, higher speed modems, dedicated lines, X-Terminals, and desk-top pen plotters. The software includes, but is not limited to, PC ARC/INFO.
- I. TDC will manage the BPTCP data files resident at TDC. File management tasks include performing data updates, keeping back-up copies of the data files, and providing BPTCP attribute data (such as monitoring data) and GIS data sets on demand over the dedicated line to the State Water Board.
- J. TDC will provide ongoing consulting services and general oversight assistance for the overall implementation and management of the statewide BPTCP system.
- K. TDC will provide the BPTCP staff with written quarterly summary reports of progress on the sequential contract tasks, as well as response to specific State and/or Regional Water Board staff requests. This quarterly reporting will provide ongoing documentation of the expenses incurred and progress achieved in the development of the BPTCP consolidated database.
- L. By December 30, 1992, TDC will provide State Water Board staff with the outline of a BPTCP Consolidated Database Operations Manual. This manual will provide a detailed explanation of the operation and use of the entire BPTCP system, and will also explain the functional roles of TDC staff, State and Regional Water Board staffs, and DFG staff.

PROJECT FUNDING

The proposed technical contract with TDC will extend for a period of two years (FY 1992-93 and FY 1993-94) for a total of \$265,000 (\$185,000 in FY 1992-93 and \$80,000 in FY 1993-94) from the Bay Protection and Toxic Cleanup Fund. The project budget details are attached.

ATTACHMENT

Budget for the Proposed Interagency Service Contract
with Teale Data Center for the Management of the
BPTCP Consolidated Database

May 8, 1992

<u>Contract Category</u>	<u>TDC Budget FY 1992-93</u>	<u>TDC Budget FY 1993-94</u>
Hardware Purchase (includes installation)	\$69,000	\$ -0-
Hardware Maintenance	2,000	3,500
Software Purchase (includes installation)	55,000	-0-
Software Maintenance	2,000	4,500
TDC RDBMS - Oracle Use	20,000	20,000
Network (56K Line)	7,500	10,000
TDC Consulting	15,500	30,000
GIS Library Subs.	8,000	8,000
Staff Training	6,000	4,000
<u>TOTAL ANNUAL TDC COSTS</u>	<u>\$185,000</u>	<u>\$80,000</u>