

CALFED Drinking Water Quality Program
ROD Commitments & Related Actions
Draft: 4-8-03

This document is intended to provide basic information on current Drinking Water Quality Program (DWQP) activities required by the ROD and also activities being conducted by DWQP implementing agencies and other CALFED program elements that have drinking water quality benefits. It is a collection of project descriptions, status documents and plans provided by the organizations conducting the individual projects. This document has not been formally reviewed. It is being provided as an information base leading to the Year 4 CALFED DWQ Program Plan.

Because of the short timeframe in which this document was prepared, there are some information gaps as well as out-dated information for some projects. We have tried to clearly identify those sections.

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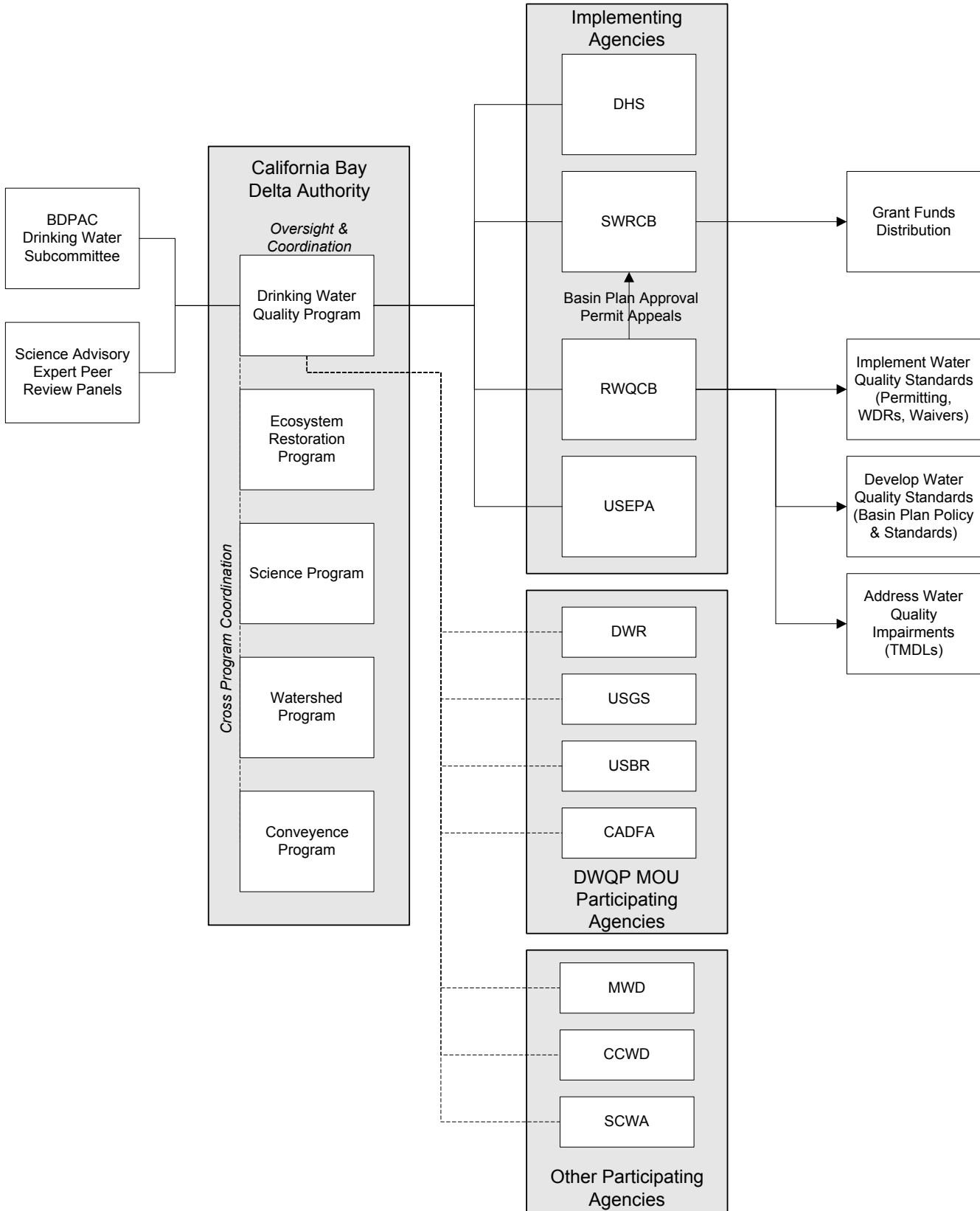
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CALFED Drinking Water Quality Program Organizational Chart



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ROD Commitments

1. **San Joaquin Valley Agricultural Drainage:** Develop a Basin Plan amendment including numeric standards and an implementation plan for salt and boron in the San Joaquin River from Vernalis to Mendota Pool to protect all applicable beneficial uses.

Progress (Years 1-3): A draft proposed Basin Plan amendment was prepared and circulated for public review. Due to a number of policy issues and technical complexity of the project, and due to diversion of staff to other, higher priority work related to agriculture wastewater, there has been no further progress on the project. The current proposed budget for FY 2003-04 eliminates the Agricultural Regulatory funding which has been used for this work. No alternate funding source available for this work has been identified. No further work is planned at this time.

Multi-year Plan (Years 4-7): No work is anticipated.

Year 4 Tasks: No work is anticipated.

Delays / Potential Issues: See discussion above.

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2. **Source Control**

- 2a. **Monitoring and assessment of Delta drinking water quality**

2a(1). CALFED Monitoring and Assessment Program (MAP): CALFED staff has been working with all implementing and participating agencies to assemble a package of monitoring programs, studies, and data management that will meet all DWQP needs. The program is designed to answer critical questions about drinking water contaminant trends, sources, and fates. This program will also provide the information and tools necessary to evaluate and predict the effects of program actions on drinking water quality at Delta export locations. Information about the program is available on the CALFED DWQP web site.

Progress (Years 1-3): Efforts to date have focused on identifying existing monitoring programs, making data available, funding studies to investigate sources and fates of contaminants, developing performance indicators and a program plan. The DWQP has funded 15 monitoring and assessment projects for a total of nearly \$8 million. A general program plan will be presented to the CALFED Agency Coordination Team (Management Group) in April 2003. Information about monitoring programs and links to data available online are now available on the DWQP web site.

Multi-year Plan (Years 4-7): There are three primary goals for the MAP. 1) Develop a trends monitoring program that will indicate if drinking water quality is changing over time and identify where changes are taking place. This will be one of the primary sources of information for

program performance indicators. 2) Develop a program of studies, conceptual models, numerical models, workshops, and reports that will answer questions about sources, fate, transport, and management of contaminants of concern. 3) Improve access to information related to drinking water quality in the CALFED solution area. The overall program schedule is as follows:

Year 4: Complete conceptual models for the primary contaminants of concern, white papers on selected contaminants, and selection of analytical tools (computer models).

Year 5: Complete data collection and monitoring to supply information needed by the selected model or models and conduct initial model runs.

Year 6: Complete the basic network of trends monitoring stations.

Years 6 and 7: Apply the selected models and report results.

Year 7: Evaluate source controls and program progress using information from the MAP.

Year 4 Tasks: Complete the DWR system of continuous flow and water quality monitoring stations. Consider adding another continuous monitoring station at Prisoner's Point or nearby central Delta location. Provide data management, monitoring, and assessment support for Delta Drinking Water Policy Development. Establish a DWQP expert panel to evaluate progress towards achieving program objectives. Provide current online information on the status of all DWQP projects. Update monitoring program information and improve online access to data. Develop additional program performance indicators.

Delays/Potential Issues: Delays in development of the MAP are primarily due to contracting problems and inadequate staff and budget resources. The biggest challenge to the MAP is the reduction in funding, especially for State agencies. Funding for monitoring has never been adequate and now has been cut further. Coordination of monitoring between agencies and programs is always challenging but is even more difficult with the rapid changes now taking place because of budget cuts. Coordination and data sharing are needed to make best use of available resources. As conceptual models, computer models, and performance indicators are developed, demand for good quality monitoring data will increase. The data provided by current monitoring programs will not be enough to support these efforts.

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2a(2). Sacramento River Watershed Program: For the last eight years, US EPA has provided funding to the Sacramento River Watershed Program. This project focuses on four areas: 1) monitoring the watershed for toxicity, mercury, and drinking water constituents; 2) development of a mercury strategy that dovetails with the CALFED mercury strategy; 3) development of a diazanon management strategy; and 4) development of strategy for unknown toxicity. The area of monitoring is the Sacramento and Feather rivers and their tributaries. In 2003, US EPA will be providing an additional \$270,000 in federal funds.

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2b. Drinking water policy for the Delta and upstream tributaries: Central Valley Drinking Water Policy

Description: CVRWQCB, with support from the CALFED Agencies and DHS, will establish a comprehensive State drinking water policy for the Delta and upstream tributaries.

Progress (Years 1-3): In years 1-3 a working group was formed (Central Valley Drinking Water Policy Working Group), consisting of stakeholders and state agency representatives. The working group developed a comprehensive work plan to accomplish the ROD commitment. The working group identified funds for executing the work plan, including CALFED funds and funds from stakeholders. The working group solicited proposals from consultants for completion of the first tasks of the work plan.

Multi-year Plan (Years 4-7): Years 4-7 will be devoted to implementation of the work plan. The work plan provides a “roadmap” to be followed for the next 4 to 6 years. The final product of the working group will be a comprehensive policy proposal that will be provided to the Regional Board for their regulatory adoption (possibly in the form of a Basin Plan Amendment).

Year 4 Tasks: During year 4, conceptual models and a regional database will be developed. Data needs will be identified and a monitoring program will be developed. Monitoring for essential “missing” elements will begin. Water quality goals will be identified.

Delays / Potential Issues: Insufficient funding and/or staffing are the greatest concerns to the working group at this time. The work plan is well developed and so long as funding and resources are available the project should be able to move forward.

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2c. Determine if Additional Protective Measures Are Needed – 2004: Future activity.

2d. Begin Implementation of Source Control Measures – 2006: Future activity.

3. Drinking Water Subcommittee

3a. Subcommittee Activities: Successor to the Delta Drinking Water Council. Subcommittee provides stakeholder input regarding the activities of the CALFED Drinking Water Quality Program.

Progress: The DWS was formed in January 2002 and has met on a regular basis since then. To date, the DWS has accomplished the following:

1. Developed a conceptual approach for achieving “equivalent level of public health protection” (ELPHP or ELPH) and an outline for an ELPH strategic plan.
2. Presented recommendations to BDPAC on three subjects:
 - a. The SWRCB and RWQCBs should incorporate drinking water parameters within the agricultural waiver policies.
 - b. CALFED should put a priority on funding advanced treatment technology research and demonstration projects.
 - c. Proposition 50 project selection and funding should be open, transparent and consolidated into a single process.
3. Drafted a policy framework for assessing CALFED project impacts on drinking water quality. The draft policy incorporates a series of steps to determine a project’s impacts on drinking water quality; mitigate negative impacts, or bundle the project with others that have positive impacts so that there is overall improvement in drinking water quality.

Multi-year Plan (Years 4-7): The Subcommittee plans to focus on three areas:

1. A draft Policy Framework on water quality
2. Development of a Strategic Plan for the Drinking Water Quality Program
3. Resources to carry out the CALFED Drinking Water Quality Program

Year 4 Tasks:

1. Complete ELPH strategic plan.
2. Support, and provide input to, the development of the Central Valley drinking water source protection policy.

Potential Issues: Need to find alternative administrative support for DWS meetings. CALFED technical staff is currently providing this service. Two options have been identified:

1. CALFED will use an existing contract vehicle (task order) for a consultant to provide the needed support.
2. DWS member organizations may be willing to provide the support on a rotating basis.

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3b. Initial Assessment of Progress (Independent Panel) – 2003: Future activity.

3c. Final Assessment (Independent Panel) – 2007: Future activity.

4. Treatment Technology

4a. Ultraviolet Disinfection

4a(1) MWD Project: Integrating UV light to achieve multiple treatment objectives, including integration with treatment oxidants such as chlorine, ozone and chlorine dioxide. Measure disinfection performance and disinfection by-products formation. (\$610,000)

Progress: The project was initiated in mid-2002 and the necessary equipment was installed by the end of 2002. The project is proceeding on schedule, with demonstration-scale testing projected to begin by the second half of 2003.

Multi-year Plan (Years 4-7): The project duration is 24-months, so it should be completed by mid to late 2004.

Year 4 Tasks: During year 4 the researchers will optimize oxidation processes, integrate coagulation processes, and finally integrate UV light. Upon completion of the project (near the end of Year 4), a final report will be prepared.

Potential Problems: None anticipated at this point. If CALFED funding were to be withdrawn completion of the project could be delayed.

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4a(2) CCWD Project: Advanced Treatment of Delta Water to Meet Future Regulations.

The primary objective of this project is to aid utilities using Delta water in developing compliance strategies through modification of existing facilities, and installation of new treatment processes. Studies will be conducted on advanced drinking water treatment technologies that will provide investment and operational guidance to CALFED and to utilities utilizing Delta water as a primary source. The project results will provide policymakers and regulators with cost and feasibility information, inclusive of energy consumption information, regarding newer, promising treatment technologies that use ozone, chlorine dioxide, chloramines, chlorine, and ultraviolet (UV) disinfection or a combination of these disinfectants. Work will specifically focus on the Delta water as a source and meeting new regulations and challenges.

Research will be performed at the bench scale and demonstration scale, at minimum with the appropriate disinfectants and will establish chemical and UV dosage requirements and other operating criteria for the range of water qualities experienced in the Delta.

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4b. Regional Desalination: Full-Scale Demonstration of Agricultural Drainage-Water Recycling Process Using Membrane Technology.

This project was approved for partial funding under the 2002 ERP Proposal Solicitation Process. The partial funding approved for this project was jointly provided by the CALFED Ecosystem Restoration Program and CALFED Drinking Water Quality Program. The Drinking Water Quality will provide \$158,195 from Proposition 13 funds.

Description: The purpose of this project, located in the Panoche Drainage District (PDD) in the West San Joaquin Basin EMZ, is to demonstrate within a 3-year period the sustained, full-scale

operation of an on-farm, tile-water recycling process that completely eliminates off-farm drainage disposal. This recycling process represents the most technically, economically and environmentally viable possibility for achieving the selenium water quality objectives for the San Joaquin River that take effect in beginning in 2005. If this prototype full-scale demonstration project is successful, PDD plans to build nine similar membrane RO plants and cut its selenium discharge load by 80%. This reduction would reduce selenium inflows to the Bay-Delta by 25%. The proposed recycling process involves the innovative use of membrane technology.

The potential for membrane technology to provide a recycling solution to agricultural drainage problems is recognized in the Final Report - Evaluation of the 1990 Drainage Management Plan for the Westside San Joaquin Valley, California (January 2000) and the underlying Technical Committee Drainage Water Treatment Final Report (February 1999). However, to date, the application of membrane technology specifically reverse osmosis (RO) for treating agricultural drainage has been plagued by fouling problems caused by the extreme hardness (up to 2,000 mg/L) of typical tile-drain in the WEST SAN JOAQUIN BASIN EMZ.

This hardness problem (caused by high levels of calcium and magnesium) is so severe that a full-scale RO plant that was built and placed in service in PDD in November 2000 fouled immediately and is now inoperative. This 250-gpm RO plant (equivalent to 1.0 AF/day) is believed to be the only full-scale agricultural drainage-water treatment facility in existence anywhere in the San Joaquin Valley.

Progress (Years 1-3): Project has not started.

Multi-year Plan (Years 4-7): Project will begin in Year 4 and will be completed by Year 7.

Year 4 Tasks: Completion of Phase I

- 1.1 Perform Site Testing
- 1.2 Investigate Brine Options
- 1.3 Finalize System Design
- 1.4 Prepare Interim Report

Delays / Potential Issues: Recipient should have contract in place within 3-4 months.

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- 4c. **Desalination Research and Innovation Partnership (DRIP):** The Desalination Research and Innovation Partnership (DRIP) is a planned eight-year program to develop and demonstrate innovative desalination technologies to cost-effectively treat Colorado River water, brackish groundwater, municipal wastewater, and agricultural drainage water. Year 2003 marks the sixth year of the DRIP program. Funding for this work was provided by various federal (e.g., USBR and US EPA), state (e.g., California Energy Commission and DWR), and private agencies (e.g., American Water Works Association Research Foundation and Southern California Edison). In addition, individual DRIP partners have also made significant financial and in-kind contributions

to support the DRIP program. DRIP-related research topics are diverse and have resulted in the development of 17-inch diameter by 60-inch long polyamide reverse osmosis membranes, as well as aided in the design of the Orange County Water District's 70 MGD Groundwater Replenishment System. Continued work will focus on brine minimization and treatment strategies. And emerging contaminants that may limit future water treatment projects.

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2d. Other Technologies

2d(1). Ion Exchange Carbon Removal Study

Project Description: This project is to conduct an engineering evaluation of an ion exchange resin dissolved organic carbon adsorption process as a pre-treatment technique for raw water from the North Bay Aqueduct. It will involve a preliminary bench scale study to compare the performance of several ion exchange resins, a one year pilot study and an engineering evaluation of the process including estimates of costs. The total CALFED grant amount \$495,000. The local cost share is \$100,000 for a total of \$595,000.

Years 1-3: The grant was awarded on August 27, 2002. The grant will be completed by May 30, 2004. Activities in Year 3 are finalization of bench testing procedures and peer review of bench testing program. So far approximately 10% of grant funds have been expended.

ROD: The ROD (on page 68) discusses "Invest in Treatment Technology Demonstration"

Years 4-7: Bench scale testing will be done in Year 4 and pilot testing done in Year 5. Completion of project report will be in Year 5. Estimated grant fund expenditures in Year 4 is \$100,000. Estimated grant funded expenditures Year 5 is \$365,000. After completion of the project report, assuming that the treatment process proves to be cost effective, we will be seeking additional CALFED funding for implementation of the treatment method. Cities will be involved in decisions on treatment process modifications for local water treatment plants.

Year 4: Bench testing will be completed and pilot testing will commence. A site for the bench testing will be selected. Estimated grant expenditures in Year 4 is \$100,000.

Delays: Grant deadline of May 30, 2004 may need to be delayed to December 31, 2004 in order to complete one year of pilot testing to ensure treatment process works for all water conditions.

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4d(2). Bromate Control with CO₂ Addition: Bromate control with CO₂ addition. Evaluate the design and operational issues associated with the use of CO₂ for reducing bromate formation during ozonation of SWP water (\$120,000). The project began in August 2002 and is proceeding on schedule, with completion expected by mid-2003.

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5. Control Runoff Into Conveyances

- Implement appropriate physical modifications and watershed programs to prevent contamination from storm water runoff and agricultural drainage.
- Initiate comprehensive evaluation of necessary physical modifications (e.g., modifications to berms, bypasses, and storm drains to divert storm water away from and prevent its discharge into the Aqueduct and other similar conveyance channels) by the end of 2001.
- Develop and implement watershed programs adjacent to appropriate conveyance channels by the beginning of 2004.
- Identify and begin implementation of necessary physical improvements by the end of 2005.

5a. 2001 California State Water Project Watershed Sanitary Survey Update

Progress (Years 1-3): Completion of the California State Water Project Watershed Sanitary Survey. This report details the watershed activities and their potential threat to the water quality of the State Water Project. The report covers the source waters of the Delta, and the watersheds that surround the various aqueducts and destination reservoirs of the State Water System. The report identifies those land uses and watersheds where additional investigation and potential watershed protection efforts are needed. Report: 100% SWP funded.

Multi-year Plan (Years 4-7): The report has identified areas of additional monitoring as well as watershed protection needs for various watersheds of the State Water Project. Ongoing efforts, such as the Arroyo Passajero project and assessment of runoff into conveyances are detailed and discussed. Additional investigations and actions are suggested through the recommendation section. These will be used to guide future studies and protection efforts. Future work includes an update report for 2006, as well as the development of modeling tools to track sources and loads of contaminants in the project. Current efforts for the watershed projects are 100% SWP funded (exception: Arroyo Passajero)

Year 4 Tasks: Implementation of monitoring and assessment activities prioritized in the report. Examples include:

- An investigation of urban loading into the Delta currently being conducted.
- Studying the quality and quantity of carbon discharged through ag drainage into the Delta
- Modeling of the bromide and carbon transport through the Delta.

Delays / Potential Issues: None.

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5b. State Aqueduct Inflow Monitoring and Assessment

Progress (Years 1-3): Control of Runoff into the California Aqueduct and South Bay Aqueduct. DWR O&M has continued to conduct event based water quality sampling of runoff into the SWP. All activities have been funded through the State Water Project operating fund.

Multi-year Plan (Years 4-7): DWR will continue to evaluate the threat to water quality from runoff into the SWP. In the case where remedial action is possible to mitigate contamination, these actions will be explored.

Year 4 Tasks: Continue monitoring of event-based runoff into the aqueduct.

Delays / Potential Issues: All funding is currently provided by the SWP contractors. Additional staff and funding would be needed through CALFED to further explore watershed impacts and remedial actions. Additionally, CALFED programs that might use exchange programs utilizing the SWP to move the water should include an element of water quality impact evaluation.

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5c. Arroyo Passajero

Description: Arroyo Pasajero (AP) is an ephemeral stream that drains a 530 square mile watershed west of the California Aqueduct (San Luis Canal (SLC)). The USBR designed the SLC to capture and convey floodwaters originating from the AP, and other similar watersheds, including Salt Creek, Cantua Creek, Tumey Gulch, in the aqueduct back in the 1960s. There is concern about floodwaters endangering the structural integrity of the SLC because the hydrology was underestimated while facilities were being designed. DWR has studied many solutions to the AP over the past 30 years and has come up with a plan to restore the holding capacity for floodwaters in the detention basin adjacent to the SLC (Westside Detention Basin). With some additional improvements at WSDB (installing rubber dams at Gale Ave, improving the gated aqueduct inlet structure, constructing an overflow weir at Gale Ave) the plan would eliminate uncontrolled releases of floodwater outside the WSDB. The plan was approved by the State Water Contractors. DWR's Division of Engineering is now preparing plans and specs to implement the design.

Progress (Years 1-3): Implement appropriate physical modifications and watershed programs to prevent contamination from storm water runoff and agricultural drainage. Initiate comprehensive evaluation of necessary physical modifications (e.g., modifications to berms, bypasses, and storm drains to divert storm water away from and prevent its discharge into the Aqueduct and other similar conveyance channels) by the end of 2001 State Water Project funds have been used for

55%. The remaining 45% is recaptured through billings to the USBR under the Joint Use Facilities Agreement.

Multi-year Plan (Years 4-7): Develop and implement watershed programs adjacent to appropriate conveyance channels by the beginning of 2004. Identify and begin implementation of necessary physical improvements by the end of 2005. Tulare Lakebed flood control reservoir: \$40 million (not including land acquisition costs). Completion by Dec 2007, if approved. Decision to be made in June 2003. Funding: SWP funds 55%; USBR 45%.

Year 4 Tasks: Westside Detention Basin restoration: \$13 million; completion by Dec 2004.

Delays / Potential Issues: None known

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6. North Bay Aqueduct

6a. Barker Slough Watershed Management Project

Project Description: This project is to identify areas and activities in the North Bay Aqueduct (NBA) watershed that have the greatest impact on raw water quality and to implement and evaluate the BMPs that could potentially improve the quality of runoff water into the NBA pumping plant at Barker Slough. The Prop. 204 grant is for \$580,000. We estimate that matching funds amount to \$320,000 for a total of \$900,000.

Years 1-3: This project has been completed. The grant was awarded on December 1, 1999 and the grant ends on April 30, 2003. All funds have been expended. The grant included extensive monitoring the first two years of the grant. The last two years was spent implementing pilot BMPs in the watershed and evaluating their effectiveness including water quality monitoring. Although it is expected that monitoring will continue for several years to further analyze the impacts of the pilot BMPs, we have enough information to decide to proceed with the main recommended BMP, livestock fencing within the watershed. The Water Agency will continue monitoring the pilot BMPs at our own expense.

ROD: The ROD states (on page 68) "The North Bay Aqueduct suffers from high total organic carbon and turbidity from local watershed runoff. Ongoing studies are investigating land-use "best management practices" (BMPs).

- Provide funding to implement BMPs to improve watershed runoff water quality by the end of 2002.
- By the end of 2003, study feasibility of relocating North Bay Aqueduct intake.

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6b. North Bay Aqueduct Watershed Best Management Practices

Project Description: This project is to implement the recommendations included in the prior Prop 204 grant that tested pilot BMPs in the North Bay Aqueduct (NBA) watershed. This project is to measurably improve the water quality at the NBA by installing fencing to keep livestock out of the main channel in the watershed and to allow re-vegetation on eroded parts of the channel. The fencing will be done on a watershed wide basis. The project includes providing alternate water supplies for livestock who had previously been using the local channels as a drinking water source. The Proposition 13 grant is \$399,608 with a local match of \$65,425 for a total project cost of \$465,033.

Years 1-3: No work done in years 1-3 since the grant has not been contracted.

ROD: The ROD states (on page 68) “The North Bay Aqueduct suffers from high total organic carbon and turbidity from local watershed runoff. Ongoing studies are investigating land-use “best management practices” (BMPs).

-Provide funding to implement BMPs to improve watershed runoff water quality by the end of 2002.

-By the end of 2003, study feasibility of relocating North Bay Aqueduct intake.

Years 4-7: This grant has been awarded and we have recently received the paperwork to start the contracting process. It is unknown when we will get the authorization to start expenditures. This project can be completed within one year of authorization to proceed. The Water Agency is committed to ongoing monitoring, at the Water Agency’s cost after completion of the grant.

Year 4: Landowner agreements will be executed, construction bids solicited and completion of construction. Water quality monitoring pre-project will continue and post project monitoring will start and continue for several years at a local costs. Entire grant funds are expected to be expended in Year 4.

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6c. North Bay Aqueduct Alternate Intake Study

Project Description: This project is to conduct an engineering, cost and environmental analysis of an alternate intake for the North Bay Aqueduct (NBA). The NBA has been identified as having the worst water quality in the whole State Water Project. The NBA suffers from high turbidity and high total organic carbon due to winter runoff from the local watershed. Total project cost is \$188,560. All grant funding goes to a consultant to perform the study. There are some minor in-kind costs for administering the contract and meeting with consultant but these have not been quantified.

Years 1-3: The grant was awarded on August 27, 2002. The consultant is approximately 85% complete in developing the report. Two briefing sessions have been held with NBA water users. We expect a final report by June 2003. Work will be done by the end of Year 3. Preliminary data

from the consultant shows that an alternate intake will provide significant water quality improvements, endangered species protection (Delta Smelt) and is in the range of costs that are affordable assuming some future CALFED contribution to offset some of the capital costs.

ROD: The ROD states (on page 68) “The North Bay Aqueduct suffers from high total organic carbon and turbidity from local watershed runoff. Ongoing studies are investigating land-use “best management practices” (BMPs).

-Provide funding to implement BMPs to improve watershed runoff water quality by the end of 2002.

-By the end of 2003, study feasibility of relocating North Bay Aqueduct intake.

Year 4: By the end of calendar year 2003, we will present the results to the California Department of Health Services, Department of Water Resources and CALFED to determine the next steps. At these future next steps we will include additional public involvement and potentially the start of the CEQA process. These activities are done at local expense.

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7. Operational Improvements/Recirculation: Study recirculation of export water to reduce salinity and improve dissolved oxygen¹ in the San Joaquin River.

Description: (from ROD) Exporting water from the Delta through the CVP and SWP at volumes greater than what is needed can establish additional flows in the San Joaquin River that could be used for salinity reduction and improving dissolved oxygen¹ in the river.

- Develop a workplan by October 2000.
- Initiate the feasibility study of recirculation of water exported from the Delta through State and Federal water projects by the end of 2000.
- Provide a recommendation to the CALFED governing body on the use of recirculation to meet CALFED objectives by the end of 2002. The recommendation will include analysis of impacts and benefits, and recommendations on infrastructure improvements necessary to implement recirculation should it be appropriate.

Note: ¹ The USBR will not be studying dissolved oxygen in this project. We are working with the SWRCB to complete this project within approximately two years under our D-1641 requirement. Discussions with the SWRCB and with John Andrew of CALFED have clarified that the USBR will analyze only salinity for the water quality analysis

Progress (Years 1-3): USBR funds spent: \$200,000 to July 2003. Source: Unclaimed carryover funds.

Progress to July 2003: The water supply (CALSIM II) and water quality (DSM2) modeling and documentation is complete. The CALSIM II modeling was completed by the USBR. The DSM2 modeling was completed by DWR. The modeling reports are currently under internal review by USBR and DWR management. The reports will then be forwarded to the fisheries agencies (CDFG, NMFS and USFWS) for a preliminary fish and wildlife evaluation. A milestone review

decision will then be made whether to continue to the second year of the study. The decision date is scheduled for May 2003.

Multi-year Plan (Years 4-7): USBR funding source: Not determined. DWR does not have an anticipated role in Years 4-7

Year 4 Tasks: Sediment Sampling, Economic Analysis, Legal Analysis, Additional Fisheries Study, Public Involvement, Final Documentation. All tasks are to be performed by the USBR.

Potential Issues: The project was originally scoped to last roughly two years. The project did not begin until January 2002 and is now concluding the first year modeling tasks. The milestone review decision in May 2003 will determine if the second year of the study takes place. Funding has not been identified for the second year.

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Complementary Actions

- 8. Bay Area Water Quality and Supply Reliability Program.** This program is evaluating cooperative projects among Bay Area water districts to meet their water supply reliability and drinking water quality objectives.

Progress (Years 1-3): Phase 1 was funded through \$100,000 in early implementation funds. Phase 1 evaluated overall Bay Area water quality, developed a list of potential projects and provided a qualitative evaluation of the ability of existing infrastructure to provide sufficient high quality water to meet the drinking water objectives in the ROD. Phase 1 determined that it was highly unlikely that existing water sources and infrastructure could provide sufficient high quality blending water to mix with water from Delta sources to meet the drinking water objectives. Phase 2, the pre-feasibility phase, is now underway. Tasks included in Phase 2 include identification of objectives and performance measures, development of an analytical framework and a list of alternatives to be evaluated, analysis of the alternatives and completion of their evaluation. In Year 3, the following tasks in Phase 2 are scheduled for completion: identification of objectives and performance measures, development of an analytical framework and a list of alternatives to be evaluated. The analysis of alternatives is expected to be underway but will not be completed till fall of Year 4. Phase 2 has a budget of \$1.5 million from SB 23 through the ABAG contract. Approximately \$350,000 of this contract will be expended in Year 3.

Multi-year Plan (Years 4-7): In Year 4, Phase 2 will be completed with the remaining funds from SB 23 through the ABAG contract unless these funds are not extended. In that case, funds from Prop 50 will need to be substituted. Tasks for Year 4 include completion of the analysis and evaluation of those results to identify alternatives or portfolios that group a variety of alternatives

together that meet the objectives of the various Bay Area agencies. This evaluation is scheduled to be completed by February 2004.

As Phase 2 nears completion, the Bay Area water districts involved in the project will need to work closely with other Bay Area stakeholders and CALFED agencies to determine how to proceed with Phase 3, environmental review, feasibility, and design. This will depend on which agencies are interested in continuing with the process and which portfolios of alternatives they believe meet their goals. This will also depend on identification of a source of funding for Phase 3. Currently, funds are not in the budget for this Phase. Bay Area agencies could seek funding through competitive grants such as the Integrated Regional Water Management Program being developed by DWR and the SWRCB. Preliminary estimates are that Phase 3 could take 1 to 2 years and so could be completed between February 2005 and February 2006. This is significantly behind the ROD targets to have environmental review, documentation and preliminary design on a selected alternative completed by the end of 2003.

Year 4 Tasks: In Year 4, Phase 2 will be completed with the remaining funds from SB 23 through the ABAG contract unless these funds are not extended. In that case, funds from Prop 50 will need to be substituted. Tasks for Year 4 include completion of the analysis and evaluation of those results to identify alternatives or portfolios that group a variety of alternatives together that meet the objectives of the various Bay Area agencies. This evaluation is scheduled to be completed by February 2004. Following the completion of Phase 2, Bay Area water districts will need to determine how they want to proceed with Phase 3. This will require close coordination with CALFED agencies. And this decision-making won't be easy.

Delays / Potential Issues: Contracting delays have held this project back significantly. Identification of a source of funding for Phase 3 as well as decision-making by the Bay Area water districts relative to Phase 3 could add further delays.

Issues encountered include whether to include a water use efficiency alternative, how to integrate this program with other Bay Area water supply and water quality planning efforts, and how to integrate with other water management actions in the two drainages that provide water for EBMUD and SFPUC.

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9. San Joaquin Valley/Southern California Water Quality Exchange Partnerships

Description and Budget: These Partnerships are exploring water management opportunities help resolve water supply and water quality management problems. To date, Metropolitan has entered into two partnerships with both the Friant Water Users Authority (Friant) and The Kings River Water Association (Kings). These Partnerships benefit Metropolitan by securing a net improvement to the quality of water supplies Metropolitan receives via the California Aqueduct. San Joaquin Valley interests would benefit from the Partnerships by achieving infrastructure improvements to better manage water supplies. Partnership activities are funded through a \$20 million Proposition 13 Grant provided to Metropolitan.

Progress to Date (Years 1-3): Following are the milestones identified in CALFED's ROD for Partnership activities:

- 12/00 - Initiate Studies of Infrastructure Capabilities & Improvements
- 06/03 - Complete Feasibility Studies & Identify Projects
- 12/04 - Complete Environmental Review
- 12/04 - Begin Implementation of Long-Term Program

To date, approximately \$1,129,000 has been spent on Partnership activities including, but are not limited to: water quality sampling, reconnaissance and feasibility analyses, and environmental documentation. The first CALFED ROD milestone was met, however, we were unable to reach the second milestone by June 2001. We have, however, identified specific pilot projects under the Kings Partnership, for which we are completing environmental documentation. Discussions are ongoing with member of the Friant Partnership to identify specific projects.

Multi-Year Workplan (Years 4-7): Both the Friant and Kings Partnerships are moving towards investigating specific projects that will facilitate water quality exchanges. In December 2003, Friant and Metropolitan approved a Phase 2 Workplan that has a budget of \$3 million. Soon, we will be amending our existing Kings Workplan to address funding specific projects. The specific work plans for both Partnerships are attached.

Specific Activities Planned for Current Year (Year 4): As stated above, Partnership activities planned for the current year include exploring the feasibility of implementing specific projects. These activities are identified in the attached work plans.

Delays / Potential Issues: One of the factors delaying implementation of specific projects under these partnerships is the need to develop a strategy to address State Water Resources Control Board "place of use" issues. Both Friant and Kings need to be assured that exchanging water with MWD will not jeopardize their water rights. In addition, Friant's members have been pre-occupied with reaching consensus with environmental interests for a plan to re-establish environmental values to the San Joaquin River.

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- 10. Plan to meet Delta water quality standards:** Develop and implement within two years a plan to meet all existing water quality standards and objectives for which the State and Federal water projects have responsibility.

The following actions constitute the comprehensive CALFED approach for meeting the water quality requirements in the south Delta.

- 10a. CVRWQCB TMDL Program:** Same as Project #1: San Joaquin Valley Agricultural Drainage.

10b. South Delta Improvements Program (SDIP): The South Delta Improvements Program (SDIP) is part of the overall plan to meet water quality objectives. All SDIP operations are modeled using full D-1641 assumptions. Additionally, as part of the mitigation for SDIP, it has been said that the SDIP will include funding for a water quality improvement project in the Veale-Byron Tract area. SDIP is also participating in the Stockton Deep Water Ship Channel Low DO corrective efforts.

Progress (Years 1-3): In 2002, the South Delta Improvements Program (SDIP) project was truncated to installation of barriers called out in the ROD and the increase in diversion capability into Clifton Court Forebay (CCF) to 8500 cfs. A New Clifton Court intake with fish screens and increasing the CCF diversion capability to 10,300 cfs was delayed until more results are known from studies such as the Tracy fish test facility. The SDIP held public scoping meetings in October 2002 and has met with stakeholders regarding the proposed operations of 8500 cfs. Stakeholders have also given input on the operations of the proposed permanent operable barriers.

In 2003 the draft EIR/EIS and the Action Specific Implementation Plan will be prepared. A preferred alternative is to be named in December of 2003. The alternative will specify operations of 8500 cfs, the barriers, environmental mitigation and enhancement.

SDIP Costs
 (in Million Dollars)

Budget Year	Planning	DOE	Construction	Dredging	Explanation
00-01	3.5				Pre-Planning/CALFED
01-02	5.2				Pre-Planning
02-03	12.0				Planning/EIR/EIS

Multi-year Plan (Years 4-7): In years 4-7, the SDIP will transition from environmental documentation to final design and finally construction of the proposed barriers. Environmental mitigation and enhancement will be functions of construction and permitting.

SDIP Costs
 (in Million Dollars)

Budget Year	Planning	DOE	Construction	Dredging	Explanation
03-04	12.0				Planning/EIR/EIS
04-05	1.1	1.3			Transition from Planning to Final Design
05-06		1.4	26.6		
06-07	1.1*	0.5	34.2	4.4	* Ag Diversion Modification
07-08	1.2*	0.6	11.0	4.6	* Ag Diversion Modification

Year 4 Tasks: In 2004 a final EIR/EIS is sought with a final biological opinions and NCCP determination. A Section 10 permit is sought for the increase in diversions to Clifton Court Forebay and Section 404 permits will be sought for dredging and placement of barriers.

Delays / Potential Issues: The SDIP has been delayed by its inability to get consensus on the proposed operations of 8500 cfs. Additionally, there are issues regarding links and impacts with other programs such as EWA.

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- 10c. San Joaquin Recirculation Study:** Same project as #7 under ROD Commitments “Operational Improvements/Recirculation”.
- 10d. Real Time Monitoring and Management of Salinity:** *(from an October 2000 document, need updated status)* The Regional Board, DWR, and Lawrence Berkeley National Laboratory in cooperation with the USGS and local water districts, have implemented a real-time monitoring program for salinity in the San Joaquin River. This program is not directed at the reduction of salt loads. It is directed at the seasonal redistribution of salt loads to times with higher flows. This effort helps in the achievement of water quality objectives, and at the same time allows for the continued discharge of salts from the basin. Additional resources from CALFED will be needed to expand this monitoring program and to develop temporary storage and rapid discharge facilities to take advantage of high flow events.
- 10e. Grassland Bypass Project:** *(from an October 2000 document, need updated status)* In May 1996, the Regional Board adopted a Basin Plan Amendment for the control of subsurface agricultural drainage. The BPA included a prohibition of discharge of tile drainage to wetland supply channels in the Grassland Watershed. The Grassland Bypass Project was implemented to comply with this prohibition of discharge. Discharge from the Bypass Project is now regulated through WDRs issued by the Regional Board that have established monthly and annual selenium load limits. Load limits have been reduced by five percent per year for the last four years. Loads will be reduced significantly more (up to 80 percent) when WDRs are updated using load allocations calculated in the San Joaquin River Selenium TMDL. There will likely be a reduction in salt loads along with the reduction in selenium loads.

Other Actions with Drinking Water Quality Benefits

- 11. Public Health Effect Studies:** Action required via the CALFED Implementation MOU.
- 11a. General Public Health Effect Studies:** Health effect studies related to disinfection by-products from treated Delta water. Studies are to be funded through CALFED/DHS Interagency Agreement (IA), which has not been executed as of March 2003. Once IA is executed, DHS will issue an RFP for health effect studies, review proposals and execute contracts with successful applicants. Studies will be conducted and results reported back to CALFED.

Potential Problems: The DHS/CALFED Interagency Agreement is not yet executed. The funds are from SB 23 (2001) and run out in June 2004. It may be difficult to complete the task because of long administrative timeframes.

- 11b. NDMA Study:** N-nitrosodimethylamine (NDMA) is a byproduct of drinking water treatment. It is classified as a probably human carcinogen. In November 1999, DHS began a study with several water systems that volunteered to participate to determine the occurrence of NDMA, especially as a disinfection byproduct. Nineteen water agencies, primarily in the San Francisco

Bay and Los Angeles areas, participated. NDMA was found to be a disinfection byproduct and to be present in the effluent at high levels from an ion exchange treatment facility. During disinfection, NDMA appears to be formed by several different reactions, depending on the water matrix and chemicals used. From these studies, DHS concludes that certain disinfection processes or ion exchange resins may lead to the formation of NDMA at levels greater than DHS' action level (currently is 0.01 µg/L).

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12. Panel of Independent Experts

CALFED DWQP staff and the CALFED Science Program are working together to establish a panel of experts, frame the charge of the panel, provide information to the panel, and hold a panel workshop in 2003.

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13. Total Organic Carbon Studies (USGS/CALFED ERP): Five projects have been funded by CALFED's Ecosystem Restoration Program. USGS is conducting all of the projects.

- "Assessment of Organic Matter in the Habitat and its Relationship to the Food Chain" (ERP-97-B06)
- "Dissolved Organic Carbon Release from Wetlands, Part 1" (ERP-99-B17)
- "Dissolved Organic Carbon Release from Wetlands, Part 2" (ERP-00-G01)
- "Investigating in-situ Low Intensity Chemical Dosing to decrease Delta waters DOC concentrations and DBP Precursors while accelerating wetland peat accretion rates and reducing flood risks" (ERP-02-P41)
- "Transport, Transformation and Effects of Selenium and Carbon in the Delta: Implications for ERP" (ERP-01-N20)

14. Delta Cross Channel Re-Operation: Evaluate and implement improved operational procedures for the Delta Cross Channel to address fishery and water quality concerns.

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15. Through-Delta Facility – Planning: Simultaneous to the Delta Cross Channel Re-Operation efforts, evaluate a screened through-Delta facility on the Sacramento River of up to 4000 cfs.

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