

## DRAFT OUTLINE

### Study Plan for Water Quality Evaluations of Delta Cross Channel Operations and a Screened Through-Delta Facility on the Sacramento River

Introduction: As outlined in the CALFED Framework for Action, CALFED plans to initiate evaluations of improved operations procedures for the Delta Cross Channel (DCC) and operation of a screened through-Delta facility on the Sacramento River of up to 4,000 cfs by October 2000, and complete these studies and make recommendations by the end of 2003. These studies will include evaluation of the water quality effects of these facilities under various assumptions, as compared to baseline water quality conditions. The following outline presents the major elements of the water quality study plan.

This study plan should be considered part of a larger, more comprehensive analysis that will attempt to evaluate the water quality implications (both direct and indirect) of other CALFED elements in Stage I, such as the EWA, South Delta improvements (barriers, new pumping regimes, etc.), real-time DCC operations group, north of Delta water purchases to the extent they affect outflow, in-Delta storage and other CALFED actions that may affect water quality. The DCC and screened through-Delta facility evaluations will need to be fully integrated with efforts to evaluate the water quality effects of other CALFED actions, and with efforts to evaluate the progress of the CALFED Water Quality Program in achieving water quality improvement goals. The CALFED Drinking Water Operations Workgroup and the Drinking Water Constituents Workgroup will be involved in carrying out and/or overseeing elements of this study plan.

#### 1) Delta Cross Channel Operations Studies

Can the DCC be operated differently to improve water quality in the Delta and at O'Neill Forebay/San Luis Reservoir?

a) Evaluate and determine DCC operations to improve water quality conditions by evaluating the water quality effects of present and experimental operating criteria (to be defined). Experimental operating criteria will include bookend evaluations of operating criteria to maximize water quality benefits.

i) How can the DCC be operated to maximize water quality benefits?

ii) What is the worst case scenario for fish with this configuration?

iii) What is the most likely operational regime?

(1) Establish a set of operating rules, agree on flow regimes, and carry out assessments for the DCC.

#### 2) Studies to evaluate the combination of the DCC and a Screened Through-Delta Facility on the Sacramento River of up to 4,000 cfs

Can the DCC and a screened through-Delta facility be operated together to improve water quality in the Delta and at O'Neill Forebay/San Luis Reservoir?

a) Evaluate the water quality effects of operating the DCC and a screened through-Delta facility of various sizes up to 4,000 cfs together, including evaluation of criteria to maximize water quality benefits.

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- i) How can the DCC and a screened through-Delta facility be operated together for maximum water quality benefits?
- ii) What is the worst case scenario for fish with this configuration?
- iii) What is the most likely operational regime?

(1) Establish a set of operating rules, agree on flow regimes, and carry out assessments.

- 3) Studies to evaluate a Screened Through-Delta Facility on the Sacramento River of up to 4,000 cfs operated alone

Can a screened through-Delta facility on the Sacramento River be operated alone to improve water quality in the Delta and at O'Neill Forebay/San Luis Reservoir?

- a) Evaluate the water quality effects of a screened through-Delta facility of various sizes up to 4,000 cfs operated alone.

- i) How can the screened through-Delta facility be operated alone for maximum water quality benefits?
- ii) What is the worst case scenario for fish with this configuration?
- iii) What is the most likely operational regime?

(1) Establish a set of operating rules, agree on flow regimes, and carry out assessments for a screened through-Delta facility.

(2) Preliminary study design would include:

- (a) Baseline with D1641 DCC operations
- (b) Same as (a), but add 4,000 cfs screened through-Delta facility operating all year every day (this would bookend the water quality benefits)
- (c) Same as (a), but only operate the screened through-Delta facility as needed (could change the fish impacts but would not necessarily affect water quality)

- 4) Integration of the DCC and screened through-Delta facility evaluations with a more comprehensive analysis of the water quality effects of other CALFED Stage 1 actions.

Is water quality improved in the Delta and at O'Neill Forebay/San Luis Reservoir as a result of a combination of CALFED Stage 1 operations, storage, conveyance and other actions (including DCC operations, a screened through-Delta facility, EWA, South Delta improvements (barriers, new pumping regimes, etc.), north of Delta water purchases to the extent they affect outflow, in-Delta storage, etc.)?

- a) The work of the DCCHM Project team will be fully integrated with efforts to evaluate these broader questions on water quality effects of CALFED Program elements.

- 5) Evaluation of CALFED Water Quality Program Progress

The work of the DCCHM Project Team will be integrated with efforts to evaluate the progress of the CALFED Water Quality Program in achieving water quality improvement goals. The evaluation of the Water Quality Program will include the following elements:

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- a) Establish drinking water quality performance measures for Stage I.
- b) Identify and implement initial CALFED Water Quality Program actions to improve the quality of Delta drinking water supplies.
  - i) The Drinking Water Constituents Workgroup has identified priority projects for early Stage I, and will start to develop a Water Quality Program implementation plan at a meeting scheduled for 7/28/00.
- c) Define Baseline Water Quality Conditions
  - i) Comprehensive evaluation of existing water quality data for drinking water constituents of concern
    - (1) On-going study focusing on Delta water quality initiated in June 2000 by Rick Woodard under contract to CALFED
    - (2) CALFED Assessment of Sources and Loads of Drinking Water Constituents of Concern project, to be initiated in summer/fall 2000 with FY 2000 funds. This project includes: assessment of historic water quality data for the Sacramento and San Joaquin Rivers; installation of real-time TOC/DOC monitoring at Hood, Banks Pumping Plant and Vernalis(?); installation of flow monitoring equipment at Hood; and water quality database management.
  - ii) Water quality modeling evaluation of existing water quality data to interpret data under different Delta operating assumptions including current Delta operating conditions.
    - (1) Ongoing DSM2 model verification study by DWR focusing on a multi-year simulation of organic and mineral water quality constituents. Study results will be used to establish confidence intervals for baseline water quality simulation.
    - (2) Define specific baseline hydrology and facility operations in the Delta and upstream of the Delta (possibly define bookend assumptions).
    - (3) Translate findings from Task 5.c.i into specific baseline Delta water quality boundary conditions.
    - (4) Conduct baseline water supply and hydrodynamic/water quality simulations.
  - iii) Continue and enhance current water quality monitoring programs for the Sacramento River, Delta and drinking water intakes in the Delta.
    - (1) Specific water quality monitoring enhancements need to be defined
- d) Define the decision process for evaluation of progress toward CALFED water quality goals and making a determination of whether the through-Delta screen facility is needed to achieve CALFED water quality goals.
- e) Evaluate CALFED water quality actions, individually and cumulatively, to assess progress toward improving Delta water quality and achieving CALFED water quality improvement goals. Because by the 2003 decision point few Water Quality Program actions will have been implemented (early years focus on feasibility studies and

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pilot/demonstration projects), the evaluation of water quality benefits expected from initial Water Quality Program actions will be based primarily on modeling studies.