

**DEPARTMENT OF WATER RESOURCES
COMMENTS TO
THE STATE WATER RESOURCES CONTROL BOARD
POTENTIAL REVISIONS OF
THE 1995 BAY-DELTA WATER QUALITY CONTROL PLAN
JUNE 3, 2005**

The Department of Water Resources (DWR) submits the following closing comments to the State Water Resources Control Board (State Water Board) on specific issues being considered for revising the 1995 Water Quality Control Plan (WQCP). The comments below address three of the workshop topics: Chloride objectives at PP#1, Southern Delta salinity objectives, and the Export limit formula for inflow. DWR and other agencies that participate in the Water Operations Management Group will send separate comments on Delta Outflow objective (X2). DWR refers the State Water Board to its prior comments regarding other topics discussed during the workshops.

CHLORIDE OBJECTIVES
COMPLIANCE LOCATION AT PUMPING PLANT # 1

DWR, the U.S. Bureau of Reclamation, and the Contra Costa Water District (CCWD) have discussed the proposal to address compliance of the chloride objectives at CCWD Pumping Plant Number 1 (PP#1) that protects municipal beneficial uses. These agencies have submitted substantive comments to the Board during the workshops on this topic, which we request the State Water Board to consider. The comments herein identify areas on which we generally agree and which could be the basis for noticing a later water rights hearing on modifying the implementation of the objective at PP#1.

In general, DWR, Reclamation, and CCWD agree that:

- The SWRCB should not change the 150 and 250 mg/L Chloride objective at PP#1 in the WQCP.
- An auxiliary monitoring location should be established on Old River near Holland Tract and identified in Table 4 of the WQCP. This location would be used to indicate when implementation of the objective would be shared among entities affecting water quality in Rock Slough.
- The SWRCB should modify the Program of Implementation (POI) in the 1995 WQCP to recognize that other entities besides DWR and Reclamation should share in implementation of the PP#1 objectives under certain specified conditions that would be determined during a water rights hearing. The factors that would be the basis for determining when sharing of implementation would occur would include the pumping rate at PP#1 and water quality in Old River. The POI should include other means of implementing the objectives through issuance of waste discharge permits,

and other programs, such as the CALFED Bay-Delta program to reduce agricultural drainage into sloughs in the area.

- The SWRCB should hold a water right hearing to consider modifying the current implementation of the PP#1 objective by DWR and Reclamation. The water right hearing would address issues related to determining the conditions when the objective is outside the control of DWR and Reclamation and to determine when sharing of responsibility for implementing the objective would be appropriate. Hearing issues could include how implementation by DWR and Reclamation could be partially achieved through use of an auxiliary monitoring location on Old River. Other entities might share in achieving the objective through other measures, such as adoption of waste discharge requirements to reduce discharges that contribute to elevated salinity. Before such waste discharge requirements are imposed, the SWRCB should review the effects of the CALFED Bay-Delta agricultural drainage projects within the Rock Slough and Contra Costa Canal area. The CALFED project to relocate drainage from Veale Tract is scheduled to be implemented in 2005 and the lining of Contra Costa Canal may occur in 2006. These projects will improve local water quality conditions in the area and will help to implement the objective at PP #1.

DISCUSSION

DWR and Reclamation believe that the above approach is reasonable as it recognizes that, under certain conditions outside the control of DWR and Reclamation, the CVP and SWP are unable to significantly affect water quality at PP#1 due to a combination of low pumping rates at the PP#1 and influence of local drainage into Rock Slough. Although DWR is not recommending a change in the water quality objective, a change in the POI to recognize shared implementation is consistent with the factors considered when adopting objectives for beneficial uses. In developing objectives, the Board is to consider "water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area" (Water Code Section 13241(c)). Changes to the POI will support the municipal objectives by indicating that all factors affecting water quality in the Rock Slough area will be coordinated to help implement the objective.

DWR and Reclamation recommended in their February 15 comments to the Board proposed language for the POI. The February comments provided specific values to determine when sharing of the implementation would trigger, based on PP#1 pumping rates and water quality at a monitoring location in Old River near Holland Tract. DWR and Reclamation proposed these values based on analysis of historic monitoring and pumping rates. However, because DWR and Reclamation have not reached agreement with CCWD as to the appropriateness of these specific values, we recommend that actual values be

determined during a water rights hearing where testimony of expert witnesses can be offered in support of appropriate values.

SOUTHERN DELTA SALINITY OBJECTIVES

The State Water Resources Control Board (State Water Board) has asked whether it should amend the 1995 Bay-Delta Water Quality Control Plan (WQCP) to change the southern Delta salinity objectives for agricultural beneficial uses. During the March 2005 workshop on this issue, several parties submitted extensive information regarding water quality needed for irrigation of crops in the southern Delta and the history behind the development of the southern Delta agricultural objectives. In review of water quality objectives, the State Water Board should be considering what, in its judgment, is required to “ensure the reasonable protection of beneficial uses. . .” (Water Code Section 13241). In addition, when reviewing information that would support a decision to develop a revised objective that is “reasonably protective” of the use, the State Water Board must consider information regarding:

- past, present and probable future beneficial uses of water;
 - environmental characteristics of the hydrographic unit under consideration, including the quality of water available thereto;
 - water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area; and
 - economic considerations.
- (Water Code Section 13241.)

The State Water Board received much information during the workshop on the southern Delta objectives, some of it having been developed for prior Board hearings and workshops and some of it newly developed. The Department of Water Resources (DWR) believes that the time is ripe for the Board to reassess the southern Delta objectives on Old River at Tracy Road Bridge, Old River near Middle River, and on the San Joaquin River at Brandt Bridge, to determine if the objectives could be better tailored to provide reasonable protection for southern Delta agriculture in light of new information regarding San Joaquin River hydrology, local discharges, and economic considerations. DWR recommends that the State Water Board commission a study, such as past studies from the Food and Agriculture Organization (FAO) prepared by Ayers and Westcot in 1985, to help determine an appropriate agricultural objective that can provide reasonable protection for agricultural water quality needs. Such a study should include obtaining information specific to the southern Delta, such as leaching capabilities, seasonal variations in crops, and San Joaquin River flows and salinity. If the State Water Board should decide to seek such a study, DWR could help provide funding.

DISCUSSION

Background

About thirty years ago, during hearings to develop the 1978 Water Quality Control Plan and Decision 1485, parties presented information on irrigation needs of agricultural lands in the southern Delta. The objectives then established were based on the University of California "Guidelines for the Interpretation of Water Quality for Agriculture" (U.C. Guidelines). (1978 WQCP at VI-19.) In the 1978 WQCP the State Water Board noted that "ongoing research by the U.C. Cooperative Extension in the southern Delta may produce information which will show a need for future revision of these water quality criteria." (Id.) Table VI-1 of the 1978 WQCP provided values for the southern Delta agricultural objectives of 0.7 mmhos/cm during April through August and 1.0 mmhos/cm from September through March, measured as a 30-day running average of mean daily electrical conductivity (EC). The Plan also indicated that the values were to become effective "only upon the completion of suitable circulation and water supply facilities." (1978 WQCP at VI-29.)

After litigation regarding D-1485, the State Water Board held workshops and hearings to prepare a new water quality control plan and water right decision. A Southern Delta Agriculture Work Group was formed to evaluate the irrigation water quality requirements for agriculture in the South Delta (See SDWA presentation at March 2005 Workshop, SDWA Exhibit No. 103 prepared for 1987 State Water Board water right hearings.). On January 4, 1982, the Committee submitted a final report, authored by Hoffman, Prichard and Meyer, to the State Water Board and interested parties. The report reviewed south Delta soil types, permeability of those soils, and water quality requirements for various crops grown in the area. The report provides data and graphs of water quality (in EC and mg/l of salt) applied to certain crops and the effects of leaching on crop yields. In general, the report shows that the greater the total amount of water that passes, or leaches, through the crop root zone (the leaching fraction), a higher salt concentration in the irrigation water can be applied and maintain yield. (Hoffman, Prichard, and Meyer, "Water Quality Considerations for the South Delta Water Agency," Jan. 4, 1982, Figures 1 and 2.) The Committee report noted that some crops may be more sensitive during emergence than during later stages of growth. (Id. at 4.) The Committee made no recommendation as to an appropriate water quality value for the South Delta. It concluded that the "biggest uncertainty in this information is the leaching fractions which can reasonably be achieved for the various combinations of soils, crops, and management options suitable for the South Delta." (Id. at 10.) The Committee recommended "that the concerned parties sponsor a more extensive field study of the leaching fractions being achieved in the South Delta." At the time, the cost of the study was estimated at \$15,000 and would require several months of work. (Id.)

After several years of workshops and hearings, the State Water Board adopted the 1991 WQCP. In the 1991 Plan, the State Water Board again adopted the same southern Delta agricultural objectives based on the U.C. Guidelines because the members of the Agricultural Workgroup did not reach consensus on a recommendation for objectives. The 1991 Plan required implementation by 1996 and also possible revision of the objectives after implementation of a contract by DWR, USBR, and SDWA.¹ (1991 WQCP at 5-12; 1991 WQCP Table 6-3 at 4.) In the 1995 WQCP, the Board did not revisit issues related to the southern Delta agricultural objectives and included the same values for the objectives but extended the deadline for the effective date for the objectives to December 31, 1997. (1995 WQCP at 2; 1995 WQCP Table 2 at 17.)

Factors to Consider in Revising Objectives

Therefore, despite recommendations made over the years to investigate the relationship of leaching, applied water quality, and crop production in the southern Delta, such an investigation has not been done. Instead, the State Water Board, DWR, Reclamation, and South Delta Water Agency (SDWA) have been relying on a physical solution to install barriers across certain channels in the southern Delta. The parties have studied this solution and agree that the operable barriers in the South Delta would improve circulation, water levels and water quality for agricultural uses. In essence, the barrier program has been the preferred solution and there has not been a need to assess other factors that could be considered for developing a revised reasonable objective for protecting agricultural uses. (See 1978 WQCP at VI-23 (noting most practical solution for long-term protection of southern Delta agriculture is construction of physical facilities for circulation); and 1995 SWRCB Environmental Report for the WQCP, p. VIII-61 (noting implementation of the southern Delta salinity objectives deferred until DWR, Reclamation, and Southern Delta Water Agency resolve responsibility among themselves).)

During the 2005 workshops on proposals for revising the 1995 WQCP, DWR presented information and modeling studies that demonstrate how the proposed south Delta permanent operable barriers would affect water quality in the southern Delta. The tidal pumping effect from raising and lowering the permanent barriers effectively circulates water in Old River, Middle River and Grant Line Canal, but has limited effect on circulation into the San Joaquin River.

¹ The 1991 WQCP and 1995 WQCP both provided for water quality objectives for south Delta agriculture values of 0.7 EC and 1.0 EC or “If a three-party contract has been implemented among the DWR, USBR, and SDWA, that contract will be reviewed prior to implementation of the above and, after also considering the needs of other beneficial uses, revision will be made to the objectives and compliance/monitoring locations noted, as appropriate.”

DWR will soon release its draft EIR/EIS on the proposed SDIP which will provide useful information on effect of the barriers on the southern Delta. The recent modeling studies of the permanent barriers and historical data of water quality effects of the temporary rock barriers is information that the State Water Board should consider as a factor in determining a reasonable objective for protecting agricultural uses.

Other factors that the State Water Board should consider in developing or revising water quality objectives for the southern Delta are environmental characteristics of the hydrographic unit under consideration, including the quality of water available to the area. In other words, factors affecting water quality on the San Joaquin River upstream of the compliance monitoring stations should be considered. During the workshop, the Department of Interior(DOI) and the San Joaquin River Group Authority (SJRG) indicated that hydrology on the San Joaquin River may be significantly different from what was presented to the Board during its last workshops and hearings on the 1995 WQCP and Decision 1641. (See DOI Exhibits 42 and 42; and SJRG Exhibit 07; presented to the State Water Board at the March 2005 Workshops.) This information has potential to factor into what a reasonable objective should be for the southern Delta. For example, based on recent flow, salinity, and waste discharge information affecting the San Joaquin River, the State Water Board could determine that a more reasonable objective on the San Joaquin River at Brandt Bridge may be 1.0 EC, while objectives on Old River and on the San Joaquin River at Vernalis may be appropriate at 0.7 EC.

Specific factors affecting water quality available to the area that the Board must consider in establishing southern Delta objectives is the influence of dischargers into the San Joaquin River between Vernalis and Brandt Bridge. For example, in 2004, the Central Valley Regional Quality Control Board issued a Waste Discharge Requirement to the City of Manteca requiring that the City not discharge greater than 1.0 EC to the San Joaquin River, at Highway 120 near Mossdale. (This location is upstream of the confluence of the San Joaquin River and Old River.) (CVRWQCB WDR Order R5-2004-0028.) Subsequent to issuing the WDR, the Regional Board issued a cease and desist order to meet a schedule of compliance and interim standards until the schedule is met. The interim standards, among other changes, relaxed the 1.0 EC requirement to allow a discharge 1.3 EC to the San Joaquin River. The result of this recent water quality decision emphasizes that despite salinity of 0.7 EC at Vernalis, water quality downstream at Brandt Bridge is degraded by higher salinity entering the River in areas not within the control of either DWR or Reclamation.

DWR provided information during the water right hearings for Decision-1641 that it could meet the objectives in the interior southern Delta at Old River and Middle River with permanent operable barriers. Based on this and other information, the Board conditioned DWR and Reclamation water rights to require that they help implement the southern Delta agricultural objectives by meeting

1.0 EC after the permanent operable barriers begin operating. However, during the interim until the permanent operable barriers are constructed, the permittees must meet a 0.7 EC at the three interior stations. The basis for the more stringent condition appears inconsistent with past State Water Board plans and decisions. In 1978 the State Water Board recognized that the water quality objectives should not be in effect until physical facilities were constructed to improve circulation and that would enable the objectives to be achieved. DWR believes that it is important to revise the 1995 WQCP to be consistent with these prior plans and recognize that a reasonable approach to protecting water quality in the southern Delta includes construction of the barriers. As the State Water Board knows, DWR and Reclamation are diligently working on environmental documentation to enable construction of the permanent operable barriers.

Revision to the 1995 WQCP

The DWR recommends that the State Water Board commission an investigation of factors that will help tailor reasonable water quality objectives for protection of southern Delta agricultural uses. Such an investigation has been suggested by agronomists who have studied the southern Delta irrigation water quality issues. Pending the investigation of factors affecting the southern Delta water quality objectives, the State Water Board should relax the implementation of the objectives as has been allowed in the past, since 1978, in recognition that DWR and Reclamation cannot effectively achieve the objectives until an operable barrier is constructed.

Therefore, DWR recommends that the SWRCB modify the WQCP Program of Implementation to recognize that implementation of water quality objectives in the southern Delta cannot be achieved at the three southern Delta stations (Old River at Tracy Road Bridge, Old River at Middle River, and San Joaquin River at Brandt Bridge) until permanent operable barriers are constructed. However, pending completion of the permanent operable barriers, DWR and Reclamation will continue to install the temporary rock barriers. In addition, the State Water Board should evaluate the salinity objectives for the southern Delta to determine a reasonable objective for protection of agricultural uses based on an investigation of leaching practices in the southern Delta, specific crop and soil types found in the southern Delta, and other factors related to hydrology and water quality available to the area. This analysis should address differences among conditions found in the interior Delta channels and on the San Joaquin River and differences in seasonal needs for agriculture.

CONCLUSION

Many factors have changed in the Delta since 1978 when the southern Delta agricultural objectives were first developed. For example, flow and salinity conditions on the San Joaquin River have changed. Under the Porter Cologne Act, the State Water Board must consider such factors when considering

revisions to water quality objectives. DWR believes the State Water Board should obtain additional information regarding the needs of southern Delta agriculture by commissioning an investigation that would better inform the Board of the specific needs of agriculture for water quality in the southern Delta. As noted above, DWR would help provide funding for such an investigation. Pending such an investigation, the Board should revise the 1995 WQCP to recognize the importance of the permanent operable barriers in providing circulation and improvement of water quality in the southern Delta.

EXPORT LIMIT AND FORMULA FOR INFLOW

At the January 18, 2005, Workshop on Export Limits, DWR and Reclamation sent comments to the State Water Board asking for a revision of the Program of Implementation to include the following language:

“Modify WQCP Footnote 23 of Table 3, as follows:

Percent of the Delta inflow diverted is defined on Page 25 of WQCP. For the calculation of maximum percent Delta inflow diverted, the export ratio is a 3-day running average and the Delta inflow is a 14-day running average. However, a 3-day running average Delta inflow will be applied when water enters the Delta from Shasta, Folsom, or Oroville Reservoirs after an increase in release from those reservoirs for export purposes. The 3-day running average will no longer apply 14 days after the upstream reservoir releases are no longer increasing (including the lag time to reach the Delta).”

DWR has begun an analysis of historical operations to determine if the above change in the inflow formula would result in changes in exports from the Delta. DWR has not yet completed the analysis. DWR intends to complete the analysis and have it available for the State Water Board if it decides to consider the change in a revised WQCP.