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July 29, 2010

Jeanine Townsend
Clerk to the Board
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

Subject: COMMENT LETTER – DRAFT DELTA FLOW CRITERIA REPORT

Dear Chair Hoppin and Members of the State Water Resources Control Board:

Contra Costa Water District ("CCWD") appreciates this opportunity to provide comments on the Draft Report on the Development of Flow Criteria for the Sacramento-San Joaquin Delta Ecosystem ("Draft Report"). CCWD supports efforts of the State Water Resources Control Board ("State Board") to collect the latest scientific research and develop flow criteria to protect public trust resources.

CCWD provides the attached comments to contribute to the accurate discussion of physical and biological processes within the Draft Report. The focus of these comments is the discussion on page 34 of the Draft Report that describes the ecological consequences of net reverse flow in Old and Middle Rivers (OMR).

In addition to these specific revisions, CCWD requests that the State Board provide additional information on how the Category B requirements for net OMR flow were determined. CCWD appreciates the delineation between Category A and Category B criteria, recognizing that "Category 'A' criteria have more robust scientific information to support specific numeric criteria than do Category 'B' criteria" (Draft Report, page 128). However, to support the proposal that Category A and Category B are "to be considered equally important" (Draft Report, pages 128-129), more information on the determination of the specific thresholds in Category B should be provided, especially since, as mentioned within the Draft Report, the scientific review by the National Academy of Sciences concluded that the current data do not support selection of a specific flow threshold.

Finally, implementation of these flow criteria would create significant impacts to other public trust resources and require extraordinary measures for municipal and agricultural water users. CCWD appreciates the State Board's "rough estimate" of the potential impacts of the flow criteria to the coldwater pool (for salmonid species) and water supply presented in Appendix B; however, we note that some of the modeling

assumptions used in developing the Draft Report may necessarily have been overly simplified with misleading results. CCWD looks forward to working with the State Board in a subsequent proceeding to ensure protection of all public trust resources and other public resources, such as water supply, economics, and human health and welfare.

If you have any questions, please call me at (925) 688-8100.

Sincerely,

Greg Gartrell
Assistant General Manager

Attachment 1: CCWD Comments on physical and biological mechanisms regarding net reverse flow in Old and Middle Rivers

CCWD Comments on Physical and Biological Mechanisms Regarding Net Reverse Flow in Old and Middle Rivers

CCWD provides the following comments to clarify the physical and biological mechanisms involved with ecological consequences of net reverse flow in Old and Middle Rivers (OMR). For each of these issues, CCWD has quoted the Draft Report (in italics) and then provided comments on each issue.

Draft Report, page 34, lines 5-7:

"First, net reverse OMR flows draw fish, especially the weaker swimming larval and juvenile forms, into the SWP and CVP export facilities".

CCWD clarification:

The implication that net OMR flows transport fish is potentially confusing, and must be treated carefully in this document. Fish and other aquatic species do not instantaneously experience the daily or tidally averaged instream flow, but rather are subject to the tidal velocities, which vary spatially by location within the channel and continuously throughout the day. While net channel flow (for example, daily Delta outflow or Old and Middle River average flow) has been used as a parameter for characterizing flow conditions, aquatic species in the water column do not experience the net flow or velocities related to the net flow.

Draft Report, page 34, lines 12-16:

"Second, net OMR reverse flows reduce spawning and rearing habitat for native species, like delta smelt. Any fish that enters the Central or Southern Delta has a high probability of being entrained and lost at the pumps. (Kimmerer and Nobriga, 2008.) This has restricted their habitat to the western Delta and Suisun and Grizzly bays."

CCWD clarification:

The cited paper does not evaluate fish survey data, but rather relies on particle tracking analysis; this is an important distinction, and should be presented clearly.

Kimmerer and Nobriga (2008) found that neutrally buoyant particles in the Central and Southern Delta have a high probability of entrainment at times with high export to inflow ratios, using a combination of inflows and exports that had been observed in historical data, which supports the statement in the Draft Report. However, they also presented results for conditions when exports are curtailed, such as they have been under the current Biological Opinions, and found that particles are less likely to be entrained. For instance, during June 2010, the export to inflow ratio varied between about 10% and 19% (net OMR flow was about -5,000 cfs), and according to Figure 7 in Kimmerer and Nobriga (2008), less than 20% of particles would be entrained from the Central Delta (at

the Franks Track East station).

With regard to the use of PTM results to draw conclusions about effects on fish, recall that the National Academy of Sciences (NAS) review committee recognized a number of potential issues with the particle tracking model (PTM) studies, concluding that "Although the DSM2 has been calibrated adequately for OMR flows, there is no clear evidence concerning the accuracy of the PTM's ability to simulate smelt entrainment in relation to how the models are used for jeopardy determination and RPA development."

Draft Report, page 34, lines 16-20:

"Third, net OMR reverse flows have led to a confusing environment for migrating juvenile salmon leaving the San Joaquin Basin. Through-Delta exports reduce salinity in the central and southern Delta and as a result juvenile salmon migrate from higher salinity in the San Joaquin River to lower salinity in the southern Delta, contrary to the natural historical conditions and their inherited migratory cues."

CCWD clarification:

The unnatural, reverse salinity gradient often present in the central and southern Delta is caused by the high salinity water entering the Delta from the San Joaquin River and, to some extent, local discharges of relatively high salinity in the southern Delta. Prior to upstream development in the San Joaquin Valley, the San Joaquin River supplied fresh water into the Delta; the high salinity water in the southern Delta is due to the low San Joaquin River inflows, composed primarily of agricultural drainage.

For example, even in the early 1900s, when the San Joaquin River was already partially appropriated by upstream agricultural users, the salinity in the southern Delta was much lower than it has been in recent years with similar upstream hydrology. Figure 1 (next page) shows salinity at Lathrop[1] (in the southern Delta on the San Joaquin River near the head of Old River) in 1908 compared to salinity at Vernalis[2] (the closest station with continuous salinity data to the Lathrop site) in 2001. Water years 1908 and 2001 are both classified as "dry" water years on the San Joaquin River[3], with similar unimpaired flows[4]. However, the data clearly show that salinity was much greater in 2001 than in 1908 for the majority of the year. In 2001, salinity at Lathrop is likely to have

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[1] Data from: Department of Public Works. 1931. Variation and Control of Salinity in Sacramento-San Joaquin Delta and Upper San Francisco Bay. Bulletin No. 27. State of California, Department of Public Works, Division of Engineering and Irrigation. See http://www.archive.org/details/variationcontrol27calirich

[2] Data from: Interagency Ecological Program (IEP). 2007. HEC-DSS Time-Series Databases. See http://www.iep.ca.gov/dss/all/

[3] Using the San Joaquin River 60-20-20 classification system as defined in Water Rights Decision 1641.

[4] Unimpaired flows in million acre-feet from http://cdec.water.ca.gov/cgi-progs/iodir/wsihist:
1908 - October through March: 0.98; April through June: 2.17; water year total: 3.32
2001 - October through March: 0.92; April through June: 2.22; water year total: 3.18

been even greater than the Vernalis salinity shown in Figure 1 due to local agricultural discharges between Vernalis and Lathrop.

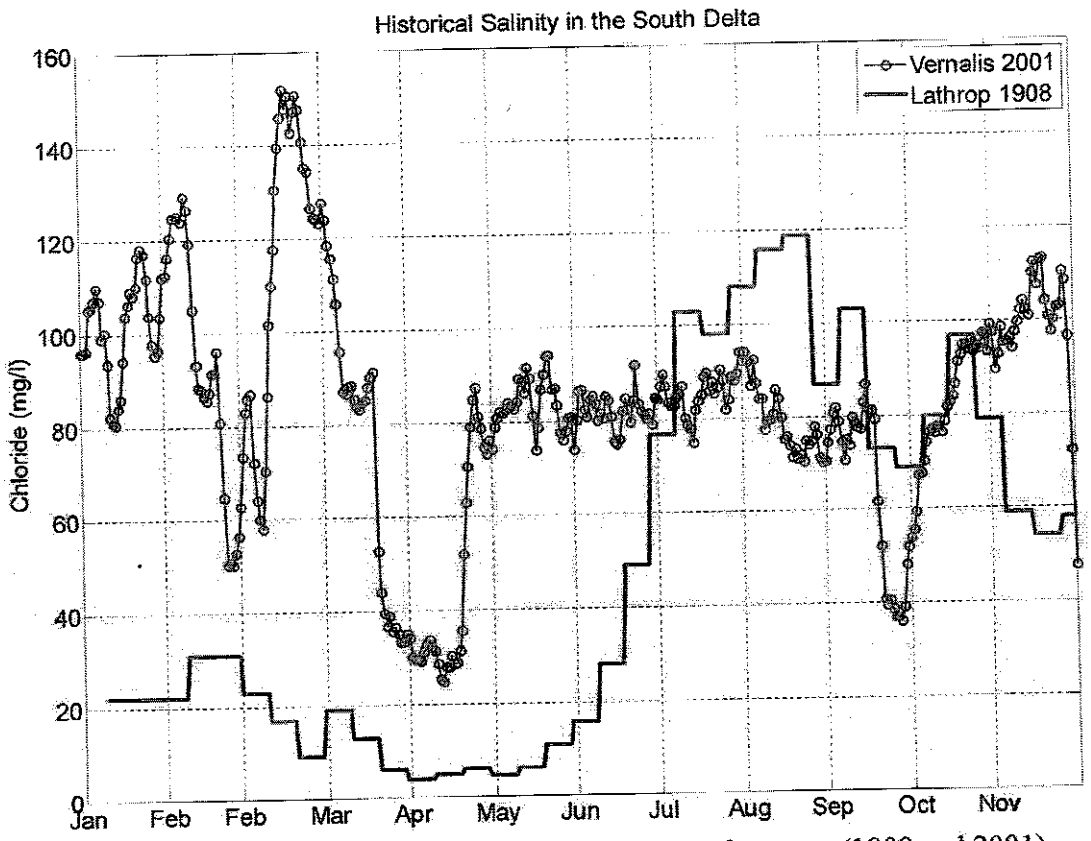

Figure 1: Historical salinity in the South Delta during two dry years (1908 and 2001)

Draft Report, page 34, lines 5-7:

"Finally, net OMR reverse flows reduce the natural variability in the Delta by drawing Sacramento River water across and into the Central Delta"

CCWD clarification:

Prior to European settlement, Sacramento River water was often available within the Central Delta. Since the Sacramento River watershed has the greatest annual precipitation of any of the watersheds that feed the Delta, it is likely that the Sacramento River was the dominant water source present within the Delta. Even before early settlers channelized the Delta, natural distributaries, such as Georgiana Slough and Three Mile Slough, carried Sacramento River water into the Central Delta.