



DEPARTMENT OF FISH AND GAME

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November 8, 2006

Ms. Tam M. Doduc, Chair
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

Subject: Department of Fish and Game's Comments on the State Water Resources Control Board's Draft Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary.

The Department of Fish and Game has reviewed the 2006 Draft Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Draft 2006 WQCP) and appendices issued by the State Water Resources Control Board (the State Board). In addition, we reviewed Attachment 1 of your transmittal notice identifying three emerging issues which your staff believes warrant further investigation, consultation, and consideration. In accordance with our statutory authority and trustee responsibilities to protect California's fishery resources, we are providing comments on the Draft Plan, its recommendations, portions of the appended supporting information, and proposed future process. Our recommendations are divided into two areas: San Joaquin River flow objectives and the need to conduct a future workshop on emerging San Joaquin River issues; and, comments on specific sections of the Draft 2006 WQCP.

I. Recommendations Regarding San Joaquin River – Vernalis flow Objectives in the Spring Months

During your 2005 workshops, DFG presented written and oral evidence concerning the status and trends of Chinook salmon populations within the San Joaquin Basin (DFG exhibits 07, 08, 09, 10). We noted, and the Draft Plan acknowledges, that salmon populations in the basin are below State and Federal "population doubling objectives" and, rather than increasing, are in fact declining. Further, the "equivalent fishery protection" standard, assumed to be achieved by the VAMP Agreement and the State Water Board's adoption, remains unsatisfied. In your workshop, we and others presented substantial science-based evidence that these tributary salmon population long-term declines are directly related to magnitude, frequency, and duration of flow in the San Joaquin River during the spring. We also presented preliminary modeling of the salmon escapement based on spring Vernalis flow conditions. We concluded modification of the objective during the spring months, both in seasonal duration and in magnitude, is needed in order to: (i) remedy the salmon decline, and (ii) gather additional scientific information, particularly at the upper range of flow. We submitted for your record a San Joaquin River Chinook Salmon Population Escapement Model (Model) (DFG 08), and at the Board's request, appeared again to clarify the relationships between flow and salmon

escapement and explain the scientific basis for the flow-salmon escapement Model (DFG 10). We also asked for the Board's assistance in obtaining the range of VAMP study flows and durations necessary to obtain the data required to calibrate our population Model at the higher flow ranges.

We acknowledge that the Model presented at the Periodic Review workshops had not yet been subjected to scientific peer review. And while the Department is confident in the scientific validity of the Model and the conclusions we have drawn from it, we recognize the value of peer review. Therefore, we took two steps. First, we held a technical briefing on October 14, 2005 and provided the Model to the San Joaquin River Group and others. Then, we submitted the Model to a formal "blind" peer review process, facilitated through California Bay Delta Authority. We recently received the outcome of that review and are in the process of determining how to modify the Model, as appropriate, based on reviewers' feedback. We expect to complete these improvements and have a revised version of the Model and associated documentation available by mid-summer, 2007.

We believe that there are several evolving circumstances related to spring flow objectives for the San Joaquin River that the State Water Board will want to consider in the near term. The State Water Board has used the term "emerging issues" to describe three other topic areas (Pelagic Organism Decline (POD), Climate Change, Central Valley Salinity) for which it intends to regularly solicit information and take further actions as appropriate, including potentially amending the Bay-Delta Water Quality Control Plan. Workshops are scheduled or are planned in 2007. Because new information will be available, and the water management context on the San Joaquin River is changing, we strongly recommend that the State Water Board identify San Joaquin River flows, and related beneficial uses, as a fourth "emerging issue". By doing so, the State Water Board can provide a forum where new information on the following interrelated topics may be presented and the implications for the Bay-Delta Water Quality Control Plan can be discussed and considered publicly by the State Water Board, its staff, and others:

- DFG's peer reviewed salmon escapement/flow model
By the late summer 2007, DFG will be prepared to present this model at a workshop and share our view of its implications for the needs of San Joaquin basin salmon.
- VAMP status
The original intent of VAMP was to first evaluate conditions at the extremes of the experimental design. Yet, with only five years remaining, no salmon survival evaluations have been conducted at the upper range of the original design's flows (7,000 cfs) with a barrier at the head of Old River. Instead, salmon survival has

been evaluated at the low end of the flow range (3,200 cfs) for three years, and at 4,450 cfs and 5,700 cfs in one year each. The last two years were extremely wet and spring flows were greater than 10,000 cfs. Unless several evaluations are completed at 7,000 cfs and at each of the two export pumping rates, it seems certain that the VAMP study results will be inconclusive and, with over 40 million dollars spent, the VAMP will have failed to produce the information VAMP participants and the State Water Board sought to obtain.

- San Joaquin basin salmon smolt survival without a barrier at the head of Old River
The Head of Old River barrier is intended to help improve out-migrating juvenile salmon survival. However, adverse effects on delta smelt due to hydrodynamic conditions in south Delta channels may at times preclude spring operation of this barrier. In the absence of the barrier, more spring Vernalis flow will be necessary to achieve the same level of smolt survival protection as the with-barrier condition.
- Relevance of San Joaquin River inflows for Delta habitat and species
New information from the ongoing investigation into the causes of the Pelagic Organism Decline (POD) suggests several hypotheses linking flow from the San Joaquin River to critical environmental conditions and processes affecting biological productivity and fish survival in the Delta/Estuary.
- Federal Court Settlement Agreement in NRDC v. Rodgers
Implementation of the settlement will cause changes in the lower San Joaquin River and Delta. The presence of other anadromous fish species, (e.g., spring-run Chinook salmon) as well as new water management actions within the basin will need to be integrated into the spring flow planning and the VAMP study program in order to avoid confounding effects on experimental outcomes. Water released from Friant Dam will have to be incorporated into studies of Delta operations and assessment of effects on anadromous fishes targeted for restoration and the species included in the ongoing POD investigations.

We could welcome an opportunity to work with your staff and others collaboratively on emerging San Joaquin River issues including the development and use of the salmon escapement Model and other tools to aid the State Water Board in better understanding the need for, and impacts associated with, changes in the Vernalis water quality and flow objectives.

II. Comments Regarding Specific Sections of the Draft 2006 WQCP Program of Implementation

The Department respectfully submits comments on the following portions of the Program of Implementation found in Chapter IV of the Draft 2006 WQCP.

With regard to Section B., "Measures Requiring a Combination of State Water Board Authorities and Actions by Other Agencies," the Department fully supports the State Water Board's following proposed action:

5. Suisun Marsh: Narrative and Numeric objectives (Page 33)

In particular, we fully support the State Water Board using the results of the final PEIS/EIR and the resulting Suisun Marsh Plan currently being prepared by the Suisun Marsh Charter Group to determine whether and how to convert the narrative objective to a numeric objective for the Brackish Tidal Marshes and to determine the objectives at stations S-97 and S-35.

With regard to the measures listed under Section C, "Actions Recommended to Other Agencies," we concur that actions both within and outside the Estuary are needed on the part of the State Water Board and other agencies in order to recover anadromous fish populations to levels which meet the doubling objective and provide equivalent protection, pursuant to the VAMP agreement. In addition, we are providing the following specific comments, which correspond by number to actions listed under Section C. We consider these recommendations to pertain to programs or actions with a special relationship to the Department's mission, authorities, and expertise:

1. Review, and modify if necessary, existing commercial and sport fishing regulations (Page 34)

The regulations referred to in this recommendation are reviewed and modified on a regular basis by the entities with jurisdiction. We note that dramatic declines in anadromous fish populations have typically occurred following construction of dams and new water diversions and from habitat degradation related to water quality and other environmental stressors. We note that when specific salmon stocks have been heavily impacted by habitat stressors and their abundance dropped to very low levels, fishery managers have tightened harvest regulations to assist with recovery. Examples include changes in the fishing regulations in the 1990s to reduce the inland and ocean harvest of winter-run Chinook initially and later spring-run Chinook salmon. These regulations remain in place today. Most recently in spring 2006, additional regulation changes were promulgated in

response to depressed abundance of Klamath River salmon stocks caused by in-river habitat problems.

All of these stocks occur together in the ocean and all should experience some reduction in fishing mortality from the stricter regulations. Yet salmon returns to the San Joaquin River tributaries have not increased in recent years, despite these increasing restrictions on ocean harvest put in place to help threatened or endangered salmon stocks from other watersheds. Our analyses indicate this is because adult salmon escapement to the San Joaquin tributaries is being driven primarily by low juvenile salmon production resulting from inadequate magnitude, duration and frequency of spring flow and poor survival of out-migrating juvenile salmon.

The Department shares the responsibility with other agencies to manage fisheries in a responsible manner. We believe that this obligation is being carried out satisfactorily. We discourage the State Water Board from adopting a view progressively diminishing salmon fishing opportunities is the key to restoration where the real problem is degradation of aquatic habitat for spawning, rearing and migration that needs to be addressed through regulation of water quality and water use, among other factors.

4. Improve hatchery programs for species of concern (Page 35)

There is a significant body of literature on both sides of the debate over hatchery programs. Much of the literature critical of hatcheries pre-dates the institution of hatchery Genetics Management Plans presently required by the NOAA National Marine Fisheries Service (NMFS) for all anadromous hatchery facilities. These plans incorporate state-of-the-art knowledge and technology to minimize or eliminate effects of hatchery operation on native stock genetics.

From annualized salmon escapement data, it appears that hatchery production is a viable method to maintain individual tributary populations through drought conditions, even in the face of increased water diversions during the dry years. As such, the Department views hatcheries, when they are properly sited and their operations properly managed and regulated, as one important tool for fishery management and restoration.

7. Develop an experimental study program on the effects of pulse flows on fish eggs and larvae in the Delta (Page 36)

Free floating life stages (eggs for some fish species, newly hatched larvae of even more) move with the water and thus are completely vulnerable to the hydrodynamic effects of water management. These effects have been studied using Delta hydrodynamic/particle tracking models. Lower trophic level organisms (phytoplankton, zooplankton) may be similarly affected. Flow patterns also may influence the migration of swimming life stages, however, behavioral preferences come increasingly into play. Sampling eggs and small larvae in the field is challenging and detecting changes in their distribution over time with reasonable levels of effort is problematic. Models may represent our best method for increasing our understanding of how flow pulses may be useful for improving fish survival.

9. Suisun Marsh soil and channel water salinity objectives (Page 37)

The Department believes that the recommendation for a water and soil salinity study has been completed. A comprehensive review of Suisun Marsh monitoring data, including soil salinity, was completed in 2001 by DWR with support from the Suisun Resource Conservation District and technical review by the Department, University of California at Davis, and NMFS. Correlations between channel water salinity and soil salinity were difficult to determine due to the high variability in field conditions and obstacles to collecting samples in a consistent manner. The conclusion was that soil specific conductance (SC) did not appear to be directly tied to the monthly channel water SC values, but the SC of channel water during fall flood-up of the managed wetlands often did influence the soil SC through the rest of the year. Other factors, such as water management, have a more direct and immediate effect on soil SC.

10. San Joaquin River Spring Flow Objectives (Page 38)

This recommendation appears to put the burden of changing the Vernalis objective upon the State and Federal fish agencies by requesting that these agencies, in combination with interested parties, compile information and conduct studies to determine what changes should be made to protect SJR salmon and steelhead as well as POD organisms. In particular, the agencies are asked to conduct analyses to evaluate if it is appropriate to revise the methodologies used to determine when higher spring flow objectives should apply (to better reflect hydrological conditions in the SJR basin) and to determine the water costs of

various flow proposals. We agree we have a key role to play in this process. However, we also believe the State Water Board has ultimate responsibility for ensuring that the water quality objectives for fish and wildlife beneficial uses include sufficient San Joaquin River spring flows.

The Department has presented information that demonstrates the existing spring pulse flow objectives at Vernalis to protect SJR salmon and steelhead are inadequate. We provided to the State Water Board a preliminary spring pulse flow schedule intended to help address the adverse effects of water operations and to protect SJR salmon and steelhead. As stated above, we are now requesting the State Water Board include this as an "emerging issue" and schedule a public workshop focused on the San Joaquin River in order to hear new information, evaluate the science, and determine whether or not to revise the proposed spring Vernalis flow objectives. This approach would enable the VAMP study to be amended to include a revised Vernalis spring flow schedule that allows for i) substantively improved out-migration conditions for juvenile SJR salmon and steelhead; and ii) additional information to be collected regarding the influence of spring pulse flow magnitude, and duration, in combination with Delta exports levels, on juvenile salmon survival.

11. River Flows: San Joaquin River Flows at Airport Way, Vernalis (Page 39)

This recommendation urges DWR to establish procedures enabling installation of the Head of Old River barrier at flows in excess of 5,000 cfs during the pulse flow period. Presently, flow must be less than 5,000 cfs to safely construct the barrier, although once constructed it can function at higher flow. This flow-related barrier construction constraint has not been a factor so far, however it makes it less likely that the 7,000 cfs VAMP experiments will be accomplished with the barrier in place because a relatively specific and uncommon scenario must occur. Because the 7,000 cfs tests are critical to completing the VAMP program we concur with the intent of this recommendation. However, we must point out that installing/operating southern Delta barriers in the spring is becoming more complicated due to their effect on southern Delta hydrodynamics and adverse impacts on delta smelt. This circumstance raises the question of how suitable out-migration conditions will be provided for salmon when considerations for other species preclude having a barrier at the head of Old River.

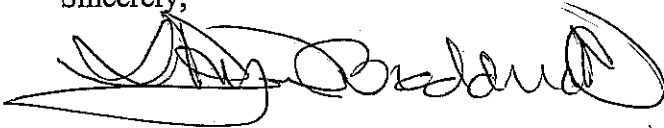
In closing we would like to highlight our interrelated roles: the State Water Board has statutory responsibility to protect Delta Estuary water quality for all beneficial uses, including fish and wildlife, and we have specific statutory responsibility for the fish and wildlife public trust resources that rely on adequate water quality and other features of the

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Delta and San Joaquin River Basin for their survival. As such, we view our role as one of assisting the State Water Board in obtaining the information needed to make effective and scientifically based resource management decisions. We look forward to working with you and your staff on developing the best available information on which to base water quality objectives and other critical resource decisions.

We appreciate this opportunity to provide comments on the Draft 2006 WQCP. If you have any questions, please contact Jim White, Water Branch, Resource Management and Policy Division, 1416 Ninth Street, Sacramento, CA 95814. Mr. White can be reached by phone at (916) 653-3540.

Sincerely,

A handwritten signature in black ink, appearing to read "L. Ryan Broddrick". The signature is fluid and cursive, with a large initial "L" and "R".

L. RYAN BRODDRICK
Director

cc: Bill Loudermilk -Fresno
Chuck Armor - Stockton
Tina Cannon - Legal