Public Workshop Comments
Issue #9 (VAMP)

Review of the 1995 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary

State Water Resources Control Board
January 24, 2005

Comments of the
California Department of Fish & Game

We appreciate the opportunity to provide our input to your Triennial Review Workshop. In particular we appreciate the Board's decision to allow the partnership of agencies and water interests to manage compliance with the Vernalis water quality objectives. This collaborative process and completion of an important scientific study will help define a more clear basis for standards, rather than conditioning water rights at the onset of establishing standards. Through this process, it has become evident that these various parties can in fact articulate, plan, and operate to meet lower San Joaquin River flow objectives with predictable stability. This is a major step in our ability to satisfy the water quality objectives and meet study protocols to minimize variability in study results due to fluctuating flows and water exports.

The Department has several comments specific to the VAMP study design and the reliability of the results as we approach the halfway point in this adaptive program. While we believe some important changes are warranted, we do recognize that the VAMP and San Joaquin River Agreement are designed to enable modifications and adaptations to be examined carefully and implemented. Notwithstanding that, we do need to be very clear that the salmon populations within the San Joaquin River system remain far below historical levels, and remain in low abundance and insecure condition. Their maintenance and recovery will be altogether dependent upon establishing stronger recovery programs within the tributaries, and ultimately upon having appropriate water quality standards established and met upstream and within the migratory pathways in the Delta. For that reason, we ask your serious consideration of the following comments on the adequacy of the VAMP in its first five years, and our recommendations for future actions to further improve both the protection of beneficial uses under the flow objectives and the scientific results under the VAMP.

Comments:

1. Peer Review of VAMP Study Design/Results to Date:

To date, VAMP's experimental results have proven inconclusive, for the reasons described below. With seven years remaining under the San Joaquin River Agreement, we believe it is timely for your Board to oversee a peer review of the VAMP study scope and design, with the intent of addressing the issues herein described. This suggested review would assure that the eventual VAMP test results will properly:
(i) evaluate the adequacy and efficacy of the water provided in protecting migrating salmon, (ii) properly differentiate the impacts of Delta inflow from Delta diversions in the presence of a temporary, and eventually a permanent, barrier operated at the head of Old River, and (iii) enable timely consideration of needed changes and the sources of available water which might be utilized to effect needed changes in the study design as effectively and efficiently as possible.

2. Test Flow Magnitudes:

The range of target pulsed flows within the VAMP experimental program is proving to be inadequate to properly differentiate between impacts of Delta inflow versus Delta diversions. Target flows above 7,000 cfs were specifically avoided in development of the VAMP study design, owing in part to limitations, at the time, in channel capacity at the Head of Old River Barrier, (the permanent barrier should not impose such on unnatural constraint during spring periods). This artificial flow ceiling has limited the ability of the studies to provide the above differentiation. We also believe that the

compressed range of target flows below 7,000 cfs has confounded results between target flows. It appears to us that statistically confident comparisons of attendant benefits or impacts among the factors important in revising objectives or setting standards will not be available at the end of the VAMP study period with the current design.

In practice, the drier-year conditions, during the first five formal VAMP years, have caused only the lower end of the flow range to be evaluated. To date, the 7,000 cfs flow, or higher target flows have not occurred. Several VAMP flow tests at, or above, this 7,000 cfs target level are needed to determine a more realistic and complete range in the correlation between South Delta inflow (at Vernalis), or Delta Exports, and out-migrant juvenile salmon survival or losses. We are doubtful that, by the end of the VAMP test period, the test results under the current design will adequately support the needed decisions with regard to water quality standards. Both higher magnitude and greater separation of target (test) flows are needed.

VAMP TARGET PULSE FLOW LEVELS AND IMPLEMENTATION

Existing Flow (cfs)	VAMP Target Flow (cfs)	Delta Export Target Rates (cfs)	Number of Years So far in VAMP Studies
0 to 1,999	2,000		0
2,000 to 3,199	3,200	1,500	3
3,200 to 4,449	4,450	1,500	1
4,500 to 5,699	5,700	2,250	1
5,700 to 7,000	7,000	1,500 or 3,000	0
> 7,000	Stabilize Flow	NA	0

3. Study Fish:

The continued limitation in the number of high quality study fish of San Joaquin basin origin exacerbates the problems of overlapping variability in target flow results. Test fish release group sizes and the intended repetitions in the VAMP design require more fish than are available from our current production at Merced River Hatchery.

4. Flow Stabilization at Vernalis Creates Destabilization Impacts in Tributaries.

Successful stabilization of flows at Vernalis to meet target flow objectives has occasionally caused serious fluctuations to occur within the upstream tributary salmon nursery habitats, as a result of the required manipulations in upstream water release patterns. For example, in April of 2000, the flows in the Tuolumne River were reduced by 1,000 cfs on a single day (April 18). Flows in the Stanislaus River were suddenly changed from 1,100 cfs to 800 cfs. Then both were returned to original levels just as suddenly, as the storm-induced flows subsided. These events have directly caused salmon juvenile mortality, which presumably works directly against the narrative WQCP goal of doubling salmon populations. This scope of impacts should be re-evaluated as a part of a peer review of the VAMP study design and implementation.

5. Setting of Water Quality Control Plan Flow Objectives:

It has been suggested by the San Joaquin River Group Authority that VAMP's Vernalis flow test flow targets should be adopted as the eventual WQCP standards. The San Joaquin River Group Agreement Management Committee is silent on this issue. We believe it is premature for the SWRCB to consider this proposal, due to the reasons mentioned above. The Department recommends that the SWRCB not consider changing the Vernalis Flow Objective at this time, but rather wait for the completion of the planned VAMP studies, as may be modified under that proposed peer review process, as we are recommending here.

Other Issues:

1. Narrative "Doubling" Objective:

The WQCP contains a narrative objective of doubling Central Valley salmon populations, which eventually will necessitate evaluating the adequacy of the April 16 to May 15 period. Contrary to the assertions of the SJRGA, in pre-workshop comments, we interpret these sections and the Plan's narrative objective to apply to salmon populations within each tributary basin, and not simply to address overall population numbers. Given the drought conditions, it may be too soon to draw definitive conclusions about VAMP's meeting of the doubling objective. However, it is evident at this point that VAMP in combination with all the physical habitat improvements in place thus far is not achieving the doubling objective in at least these dry-year types (see Table 1 below).

Table 1. San Joaquin River Basin Salmon Escapement Comparison

SJR Salmon Doubling Goal Attainment				
	Stanislaus	Tuolumne	Merced	SJR Basin
67-'91 25 Yr Avg	4735	8901	4764	18211
Double	9470	17802	9528	36421
Post-Vamp	5150	2950	3418	11518

2. Rainbow Trout (Steelhead):

The 1995 WQCP may not have considered beneficial use protections for steelhead adequately. As such, the VAMP (as the Plan's Implementation Strategy) may need to re-visit this issue. The Department, through its annual San Joaquin River Mossdale Trawl Survey, is aware that juvenile steelhead migrate downstream through the South Delta during at least the entire months of at least April and May. This may be accomplished in and through the suggested peer review process, as above.

3. VAMP Target Flow Duration Too Temporally Narrow:

San Joaquin River fall-run salmon smolt migrations typically occur between mid-March and mid-June. Under VAMP, the study flow period is entirely confined within the period between April 16 and March 15. As such, protection for beneficial use (salmon survival) during the 90 to 100-day migration of salmon is provided only during a 31-day period. This period is seasonally late for many of the fry salmon. The 31-day window was established based upon the period when most (66% on average) salmon smolts

appear to migrate downstream through the Delta. Unfortunately, this 31-day window neglects out-migration flows needed earlier in the year (February-March period) for salmon fry out-migration and survival. The reduced protection for early-migrating fry, over an extended period, serves to place additional selective pressures on the salmon gene pool, and long-term survivability and run timing.

The narrow 31-day window also protects a significant fraction of salmon smolts, but those migrating before or after the 31-day window are not afforded ample protection under VAMP target flows, thus placing additional selective pressures on this gene pool, long-term survivability and run timing. Indeed, there are many other factors influencing migration timing (e.g., day/night length, water clarity, Total Dissolved Solids changes, smolt size, smolt maturity, etc.). Our data suggests that when only 66 percent of smolts migrate during the VAMP period, those left behind are victim to reductions in water stage with associated elevated water temperatures and predation in late May and early June.

Summary Recommendations:

1. The Board should direct and oversee an analytical peer review of the VAMP study design, to evaluate whether or not the current studies are capable of properly distinguishing between Delta inflow and Delta Diversion impacts for the eventual purposes of setting flow standards. This should be done as an element of this Triennial Review and be concluded in time to implement any adopted changes in VAMP by the spring of 2006.

2. The Board should include in this effort the identification and strategies to establish a wider range of target test flows which more realistically reflects present day channel capacities (i.e., are not limited by the Interim Head of Old River Barrier capacity). We recommend test flows up to and including 10,500 cfs, with 7,000 cfs representing about the study midpoint, as soon as the permanent HORB is completed.

3. As a part of the above peer review, or a separate process, we recommend that the Board convene a workshop to evaluate current knowledge on the appropriateness of the 31-day pulsed flow period, with consideration to the narrative doubling objective. This will become critical when the Board again evaluates the Vernalis Flow objectives or the establishment of flow standards.

We encourage the Board to pursue and complete these recommendations within the VAMP completion time frame. Again, we do very much appreciate this opportunity to provide our comments and recommendations, and we look forward to working with the Board, our VAMP partners, and many others toward resolution of these issues and improved protection of San Joaquin Valley resources. Thank you very much.