

**Testimony of Michael Chotkowski
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United States Bureau of Reclamation**

**State Water Resources Control Board
Hearing Regarding Emergency Drought Conditions
February 17, 2009**

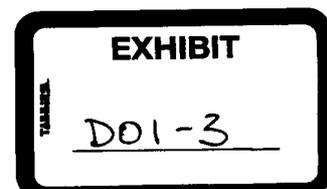
My name is Michael Chotkowski. I am the Acting Regional Environmental Officer for the Mid-Pacific Region of the Bureau of Reclamation (Reclamation).

I have a PhD in Biology from UCLA and nine years experience with Reclamation managing Reclamation's participation in the Interagency Ecological Program (IEP), the IEP Pelagic Organism Decline Investigation, and other scientific support and environmental compliance activities involving resident and anadromous fishes of the San Francisco Estuary and its tributary rivers and streams. I currently manage Reclamation's Environmental Affairs Division, which includes, among others, the Region's applied science unit and principal environmental compliance unit. My staff and I participated in the drafting of the last two Biological Assessments regarding the long-term operations of the Central Valley Project and State Water Project (2004 and 2008). I have personally been a member of the Fish and Wildlife Service's Smelt Work Group, which provides weekly advice to the Service on the ongoing effects of water project operations on delta smelt, for several years. I am also the chair of the Fish and Wildlife Service's Delta Native Fishes Recovery Team. In my present testimony I speak from personal expertise with delta smelt, and am relying on the advice of my staff in weighing the potential effects of the proposed action on the anadromous species.

My testimony will address one issue that the State Water Resources Control Board (State Board) identified in its notice for this hearing:

5. Would the proposed modifications unreasonably affect fish, wildlife, or other instream beneficial uses?

My testimony will deal primarily with the potential for the proposed modification to affect Federally listed delta smelt, and secondarily with Federally listed salmonids and green sturgeon.



1. Proposed Changes

Three changes were requested in the petition (pp. 4-5):

1. During February, Reclamation and DWR will satisfy the Delta Outflow (X2) requirement on Table 3 by maintaining a minimum daily net Delta outflow of 7,100 cfs, calculated as a 3-day running average, at Collinsville, instead of meeting a minimum number of X2 days at Chipps Island described on Table 4 of D-1641. However, if sufficient precipitation occurs such that the Sacramento River inflow as measured at Freeport exceeds 20,000 cfs for at least 3 days in February, then Reclamation and DWR would meet X2 compliance at Chipps Island for the remainder of February or for the number of days called for in Table 4, whichever is less.
2. Waive the requirement (known as the "starting gate provision") that the daily average or 14-day running average EC at station C2 shall be less than or equal to 2.64 mmhos/cm for at least one day between February 1 and February 14 for this year.
3. Waive the higher objective for the San Joaquin River flow requirement at Airport Bridge, Vernalis as noted in Table 3 for February 2009.

It is my understanding that #3, a waiver of the higher flow objective for Vernalis, has been withdrawn. I will therefore not comment on it. I will also not comment in detail on #2, the "starting gate" provision, since the relevant range of dates has past. The reasoning applied to analyze element #1 below is generally applicable to the "starting gate" provision. While I haven't examined the historical data showing how water operations have been adjusted to meet the "starting gate" provision, I suspect that the failure to achieve it did not substantially affect delta smelt in this case.

The remaining element, #1, calls for maintenance of delta outflow at 7100 cfs at Collinsville as a three-day prior moving average for the remainder of the month of February. This outflow rate is, as I understand it, equivalent to a steady-state X2 at Collinsville. I have interpreted the petition to convey that there are no alternative ways to achieve compliance during the remainder of February if the petition is granted.

2. Potential Effects of Relaxing Outflow to 7,100 cfs in February on Delta Smelt

Delta smelt are usually an annual species. Most of them rear to adulthood in the general area of X2 during the Summer and Fall, and then migrate to the interior Delta to spawn during the

winter. After a period of larval development in the late Winter and Spring, juveniles migrate downstream toward X2 to continue rearing.

In February, therefore, delta smelt are usually present only as adults, and most of the adults have migrated away from X2 and into freshwater areas of the north and central Delta. In 2009, early indications are that a large majority of the fish migrated up the Sacramento River side of the Delta. The first Spring Kodiak Trawl conducted by DFG in January revealed a mid-migration distribution of fish extending from Suisun Bay to the Sacramento Deepwater Ship Channel north of Cache Slough. Most of the fish at that time were already upstream of Collinsville.

Because most of the fish are upstream, and often far upstream, of the confluence in February, and early trawl monitoring has revealed that most are well into the freshwater portions of the Delta this year, it is unlikely that shifting X2 or the equivalent Delta outflow standard from Chipps Island to Collinsville will alter the salinity or other qualities of delta smelt habitat in areas where a large majority of the fish will be spawning. Consequently, it is unlikely that this change will meaningfully affect the delta smelt population.

Caveat: This analysis assumes that water project operations will continue to conform to the requirements of the Reasonable and Prudent Alternative in the 2008 U.S. Fish and Wildlife Service (FWS) long-term operations Biological Opinion. Because delta smelt have been very favorably distributed this winter and turbidity and water temperatures have remained low, none of the RPA actions that impose Old and Middle River (OMR) flow restrictions has been triggered to date. However, if an action is triggered and the entrainment vulnerability picture changes, then FWS may consider imposing a limitation on negative OMR flow in accordance with the Biological Opinion.

Because the February 1st 50% exceedence forecast indicates that 2009 will be a critically dry water year, Reclamation has requested reinitiation of consultation with FWS under the consecutive critically dry year trigger described on page 296 of the Biological Opinion. Reinitiation of consultation will afford FWS and Reclamation an opportunity to evaluate in detail the consequences the current prolonged drought conditions might have on delta smelt, including the effects of spring outflow relaxation. The Service has provisionally concluded that maintenance of 7,100 cfs outflow for the remainder of February is unlikely to substantially affect delta smelt, provided the adaptive review process described on page 280 of the Biological Opinion continues to be employed.

3. Potential Effects of Relaxing Outflow to 7,100 cfs in February on Anadromous Fishes

Reduced Delta outflow may affect the anadromous species by reducing the amplitude of cues that trigger their migration. For upstream-migrating adult winter-run chinook, spring-run chinook, and green sturgeon that may be passing through the Delta in February, the reduction from 11,400 cfs to 7,100 cfs outflow may delay the date these fish pass the Red Bluff Diversion Dam (RBDD) and reach spawning areas upstream in the Sacramento River and its tributary streams. Likewise, the lower outflow may delay the departure of outmigrating juvenile winter-run and steelhead that are now entering the Delta. There is a reasonable likelihood that the proposed reduction will have the effect of delaying the migration of all of these. However, it is not clear how much they will be delayed, or whether the delay will meaningfully change the proportion of fish that eventually reach spawning areas and successfully reproduce.

There is a potential benefit of the proposed action to all the Sacramento River anadromous species and ESUs that must be weighed against the concern above. According to Ron Milligan's testimony, the relaxed February outflow standard could allow a large quantity of water (as much as nearly 200,000 AF) to be retained in storage for later release. In the present very dry conditions, having a larger cold water pool in reservoirs, especially Shasta Reservoir, improves the probability that the CVP will be able to maintain some degree of cold water control during July and August. The maintenance of water over spawning reaches in the upper Sacramento River at temperatures below 56°F through the summer is required for successful winter-run chinook salmon spawning. If the CVP does not have the ability to release cold water through the Summer, an entire year-class of winter-run salmon could be lost.

Caveats: I am not equipped to estimate the likely increase to Shasta storage the proposed relaxation might yield, and have relied on Ron Milligan's testimony. I am also unable to project how much the current rainy weather will benefit Shasta and Folsom storage. I have assumed that it will not be enough to alter the conclusion that substantial extra Shasta storage will improve the likelihood that cold water releases can be maintained through the Summer. Salmon biologists on my staff believe that the increased cold water storage benefits that are identified in this proposal offset the potential migratory delays.

4. Overall Conclusions

In my opinion it is unlikely that the relaxation of Delta outflow to 7,100 cfs in February will meaningfully affect delta smelt. It seems likely that any slowing of the upstream migration of adult green sturgeon and spring run chinook salmon will be offset by an increase in the likelihood that there will be enough extra cold water in Shasta Reservoir to maintain some

degree of temperature control through July and August. Overall, therefore, the proposed outflow relaxation does not appear to represent a threat to either delta smelt or the protected anadromous species discussed above.