



United States Department of the Interior

BUREAU OF RECLAMATION
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IN REPLY REFER TO:

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MAR 14 2014

MEMORANDUM

To: Field Supervisor, U.S. Fish and Wildlife Service
Attn: Michael A. Chotkowski

From: Susan M. Fry
Area Manager, Bay-Delta Office

Subject: Continuing Drought Response Measures Under the 2008 Coordinated Long-term Operation of the Central Valley Project (CVP) and State Water Project (SWP) Biological Opinion (2008 BiOp) to Address Reinitiation Statement Regarding Consecutive Dry Years

The Bureau of Reclamation is submitting this memorandum describing proposed drought response measures for the remainder of March 2014, consistent with the Reinitiation Statement for consecutive dry or critically dry years in the 2008 BiOp. Based on the attached analysis, we find that these additional drought response actions proposed by Reclamation and the California Department of Water Resources (DWR) will result in adverse effects on delta smelt but we believe them to be minimal based on the favorable distribution of the species, limited duration of the action and small magnitude of the changes as described below.

The water situation in California continues to be dire. As you are aware, California is facing unprecedented critically dry conditions in the current water year, following two previous dry years. As a result of this continued aridity, the CVP and the SWP reservoir levels are forecast to be significantly below historic conditions. In response to this water shortage crisis, Reclamation and DWR have, since January, been coordinating closely with your office, the National Marine Fisheries Service (NMFS), and the State Water Resources Control Board (State Board). This coordination has resulted in a Temporary Urgency Change (TUC) Order from the State Board dated January 29, 2014, with subsequent modifications on both February 7, 2014, and February 28, 2014. Additionally, this coordination resulted in correspondence between Reclamation and NMFS, and Reclamation and the U.S. Fish and Wildlife Service (Service), acknowledging compliance with the section 7 of the Endangered Species Act.

The TUC Order currently allows Reclamation and DWR to conserve additional water in CVP/SWP reservoirs for protection of aquatic species, water quality, and water deliveries by modifying Table 3 of D-1641 such that Delta Outflow may be no less than 3,000 cubic feet per second. In addition to the above modification to Table 3, Reclamation and DWR are requesting that the State Board further modify its TUC Order to also allow for the following:

For the remainder of March 2014, Table 3 of D-1641 will be further modified to allow for compliance with the Delta Outflow objective through a 7,100 cfs outflow on a 3-day average and/or X2 position at Collinsville. Project diversions from Old River for periods when Delta Outflow is at or above 7,100 cfs will continue to conform to existing Biological Opinions and the D-1641 Export to Inflow Ratio. The Delta Cross Channel (DCC) Gates will remain closed when outflow is at or above 7,100 cfs. For lower outflows, the current DCC opening protocol recommended by the fishery agencies will be followed.

In addition to the above changes in outflow, and in an attempt to capture additional natural flow in the Delta available because of recent storm events, Reclamation and DWR are proposing to adjust implementation of Reasonable and Prudent Action (RPA) Action 3 in the 2008 BiOp for up to 7 days at the middle of March. The action provides OMR flow limits of no more negative than -5,000 cubic feet per second (cfs) using a 14-day running average under current conditions. The action similarly provides that a 5-day running average flow shall be calculated and be no more than 25 percent more negative than the targeted requirement flow for the 14-day average flow. Reclamation and DWR propose to operate in a manner to capture additional natural flow available in the Delta that is anticipated to result in up to 7 days of OMR flows between -5,000 cfs, and -6,000 cfs. Reclamation and DWR would be operating to OMR flow more positive than -5,000 cfs for 10 days to the end of the month. The first and second stage salvage-based triggers prescribed by the NMFS 2009 BiOp RPA Action IV.2.3 remain in effect.

Similar to our January 31, 2014, and February 28, 2014, memos to the Service regarding drought response actions, the proposal to modify the D-1641 compliance point through March 31, 2014, should be considered as part of the amended project description for drought response actions. D-1641 is part of the project description that was analyzed in the 2008 BiOp, and the proposed drought response for the remainder of March represents a modification to the project description for the 2008 BiOp.

Reclamation and DWR have completed a biological review (attached) and believe the effects to delta smelt and their designated critical habitat from these proposed drought response actions are minimal. This conclusion is based on several factors, including: (i) current distribution of smelt as indicated in the increased survey data, which shows that the smelt are favorably distributed to minimize entrainment risk; (ii) the very limited duration of the action (no more than 7 days); (iii) no entrainment of smelt at the export facilities for this Water Year; (iv) the fact that no recommendations for protective measures have been made specific to RPA Action 3; and (v) the more positive OMR flows for the last part of March (anticipated to drop below -2,000 cfs). We are not seeking changes to the incidental take statement in the 2008 BiOp.

Because of the low level of risk to delta smelt from making this adjustment, and in light of the exigent drought circumstances, we believe this action is appropriate in order to take advantage of the rise in natural flow over the next several days. In the Order dated April 9, 2013, the District Court indicated that “any ‘modifications’ to the RPAs must be made consistent with procedures required by law.” (See *Consolidated Delta Smelt Cases* 1:09-cv-00407 LJO BAM). These adjustments and the process we have followed to document and analyze the adjustments are consistent with the court’s directive.

Reclamation and DWR will continue close coordination on current and projected operations on a weekly basis through existing meetings (Smelt Working Group, Delta Conditions Team, Water Operations Management Team, etc.). Additionally, DWR and Reclamation will continue to host the Real-Time Drought Operations Management Team as provided in the last order. The team will continue to meet at least weekly to ensure effective coordination among the pertinent agencies.

We look forward to working with you and your staff as we navigate through this extremely challenging water year and appreciate your willingness to work with us on this time-sensitive matter.

Attachments – 1

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Longfin Smelt

Longfin Smelt have been collected at the salvage facilities on several occasions this winter. However, the majority of larval Longfin Smelt appears to be distributed in the lower Sacramento and San Joaquin Rivers, the confluence, and Suisun Bay. Juvenile Longfin Smelt salvage at the CVP/SWP pumping facilities is generally higher when their distribution puts them at risk of entrainment (i.e., significant portion of the population in the South and Central Delta) and exports, as indexed by Old and Middle River flows, are high (Grimaldo et al., 2009). Under the proposed change in operations, for seven days DWR and Reclamation will be operating the projects at more negative than -5000 cfs at OMR on a 14-day average, which is in line with the drought contingency planning provisions of the Biological Opinions. These operations will be mitigated by operations at a more positive OMR during the remainder of the month. Operations modeling data for the proposed change (Table 1) suggest that the resulting daily OMR values would be more negative in mid-March under the proposed operations than under the base scenario, but would be fairly similar throughout the remainder of the month. Based on current Longfin Smelt distributions this may result in a somewhat increased level of entrainment during the first part of March. However, the difference between the two operational scenarios is not considered substantial to the Longfin Smelt population. There is a moderate level of uncertainty about this conclusion.

A related issue is that larval Longfin Smelt have been detected at the station 716 near the Barker Slough pumping plant, triggering pumping restrictions under the DFW Incidental Take Permit for Barker Slough operations. Hence, earlier in the year DFW provided formal advice to the Water Operations Management Team (WOMT) group to limit pumping to 50 cfs until Longfin Smelt are not detected at station 716. However, Barker Slough pumping plant operations would not be affected under the current proposal to change operations.

Although increased entrainment effects on Longfin Smelt are unlikely this year, reduced outflow is expected to have some effect on overall abundance. Longfin Smelt abundance shows a relatively strong relationship with winter-spring Delta outflow (Kimmerer 2002; Rosenfeld and Baxter 2007), so a reduction in March outflow under the proposed action may somewhat reduce juvenile production. There is a low to moderate level of uncertainty about this conclusion.

Delta and Longfin Smelt Supporting Information for Endangered Species Act Compliance Regarding Delta Water Quality

Date	Projected Without Proposed Action					Projected With Proposed Action				
	Combined pumping	NDOI	Old and Middle River Flow		QWEST	Combined pumping	NDOI	Old and Middle River Flow		QWEST
			Daily Index	14-d Average				Daily Index	14-d Average	
24-Feb-14	1494	6614	-1250	-3526	635	43188	6614	-1250	-3526	635
25-Feb-14	1494	6366	-1258	-3372	526	43189	6366	-1258	-3372	526
26-Feb-14	1498	5885	-1249	-3174	498	43194	5885	-1249	-3174	498
27-Feb-14	1498	6374	-1251	-2921	1855	43195	6374	-1251	-2921	1855
28-Feb-14	1518	7127	-1250	-2669	1965	43216	7127	-1250	-2669	1965
1-Mar-14	1505	10964	-1150	-2408	7386	43204	10964	-1150	-2408	7386
2-Mar-14	3954	15494	-3240	-2295	6179	45654	15494	-3240	-2295	6179
3-Mar-14	4283	21430	-3594	-2205	5994	45984	21430	-3594	-2205	5994
4-Mar-14	4642	24056	-3973	-2175	4769	46344	24056	-3973	-2175	4769
5-Mar-14	5663	24455	-4919	-2275	3896	47366	24455	-4919	-2275	3896
6-Mar-14	5805	21436	-5045	-2424	-5	47509	21436	-5045	-2424	-5
7-Mar-14	6785	20768	-5981	-2686	497	48490	20768	-5981	-2686	497
8-Mar-14	6788	21369	-6016	-2950	520	48494	21369	-6016	-2950	520
9-Mar-14	6546	22835	-5791	-3283	-413	48253	22835	-5791	-3283	-413
10-Mar-14	6822	21137	-6020	-3624	-1318	48530	21137	-6020	-3624	-1318
11-Mar-14	6772	17677	-5963	-3960	-2335	48481	17677	-5963	-3960	-2335
12-Mar-14	6300	14571	-5550	-4267	-2325	48010	14571	-5550	-4267	-2325
13-Mar-14	5800	13914	-5094	-4542	-1459	47511	13414	-6461	-4640	-2959
14-Mar-14	5200	15564	-4559	-4778	-683	46912	14397	-6381	-5006	-2683
15-Mar-14	3900	16940	-3375	-4937	91	45613	14773	-6108	-5360	-2939
16-Mar-14	3900	15900	-3386	-4948	-401	45614	13234	-6119	-5566	-3401
17-Mar-14	3900	13052	-3397	-4934	-745	45615	10052	-6130	-5747	-3745
18-Mar-14	3900	10470	-2395	-4821	-1011	45616	7804	-5219	-5836	-3011
19-Mar-14	3000	8623	-2407	-4641	-409	44717	6957	-2589	-5670	-409
20-Mar-14	2800	7573	-2407	-4453	-236	44518	6907	-2407	-5481	-236
21-Mar-14	2800	7107	-2418	-4198	-295	44519	7107	-2418	-5227	-295
22-Mar-14	2300	7107	-1974	-3910	146	44020	7107	-1974	-4938	146
23-Mar-14	2000	7140	-1701	-3618	419	43721	7140	-1701	-4646	419
24-Mar-14	2000	7173	-1712	-3310	360	43722	7173	-1712	-4338	360
25-Mar-14	1800	7123	-1530	-2993	534	43523	7123	-1530	-4021	534
26-Mar-14	1500	7057	-1268	-2687	775	43224	7057	-1268	-3715	775
27-Mar-14	1500	7007	-1268	-2414	748	43225	7007	-1268	-3345	748
28-Mar-14	1500	6873	-1279	-2180	689	43226	6873	-1279	-2980	689
29-Mar-14	1500	6657	-1279	-2030	662	43227	6657	-1279	-2635	662
30-Mar-14	1500	6440	-1279	-1880	636	43228	6440	-1279	-2290	636
31-Mar-14	1500	6223	-1291	-1729	577	43229	6223	-1291	-1944	577

Table 1: Observed (through March 11) and projected combined exports, Net Delta Outflow Index, Daily and 14-day Old and Middle River Old and Middle River flows, and QWEST. The NDOI is calculated as either a 7-day or 3-day running average.

Delta Smelt

No Delta Smelt have been salvaged this water year at the South Delta fish facilities. This absence is expected as adult Delta Smelt have not been detected in the South Delta by any IEP monitoring. However, supplemental U.S. Fish and Wildlife Service sampling in the lower San Joaquin River (Jersey Point) shows that Delta Smelt are maintaining a consistent presence in the region. Recent monitoring confirms that Delta Smelt have begun spawning with larvae detected in the Sacramento River system, suggesting that potential effects on larval smelt also need to be considered.

If the SKT surveys reasonably reflect the current distribution of Delta Smelt, entrainment of adults is unlikely to be a management issue this year unless there is a shift in current weather patterns that brings about increased turbidities and outflow. For example, published analyses of a 13-year dataset of salvage records at the CVP/SWP fish collection facilities indicate that increased salvage of Delta Smelt at the CVP/SWP occurs when turbidities increase in the South Delta and Old and Middle River flows are highly negative (Grimaldo et al., 2009). Given the present low turbidity conditions in the South Delta, there is no reason to expect the proposed operations to create conditions that would trigger migration of adults toward the CVP/SWP pumps. With respect to OMR flows, the proposed change in operations would result in somewhat more negative daily OMR levels in the middle of March, but more positive daily OMR levels for the remainder of the month (Table 1). The short-term operations of OMR are not expected to substantially increase entrainment risk for the population of adult Delta Smelt. Nonetheless, it is possible that some undetected Delta Smelt are located in the South Delta as a result of February storms that could be at higher risk of entrainment. There is a low level of uncertainty about this assessment for adult Delta Smelt.

The entrainment risk of larval Delta Smelt produced in the coming months is assumed to be related to the distribution of adults, which are not currently at high risk of entrainment. However, if undetected adults are present in the south Delta, offspring from fish may easily be entrained in the coming months. Entrainment risk of larval Delta Smelt produced in the lower San Joaquin River is expected to be moderated by maintenance of OMR flows at levels specified in the RPA as adapted by the proposed OMR flows. As described for adult Delta Smelt, the projected OMR levels under the proposed change are expected to be somewhat more negative than under base operations in the middle of March, but similar for the remainder of the month (Tables 1 and 2). There is a moderate level of uncertainty about these conclusions.

Although increased entrainment effects on Delta Smelt are unlikely this year, reduced outflow could potentially have some effect on overall abundance. Delta smelt production can be higher in wetter years, so a reduction in March outflow under the proposed action may potentially reduce juvenile production. There is moderate level of uncertainty about this conclusion.

In summary, the proposed short-term operations of OMR are not expected to substantially increase entrainment risk for the population of adult and juvenile Delta Smelt. Further, there is no expected additional take required for the proposed OMR flows.

References

- Grimaldo, L.F., T. Sommer, N. Van Ark, J.Gardner, E. Holland, P. Moyle, B. Herbold, and P. Smith. 2009. Factors Affecting Fish Entrainment into Massive Water Diversions in a Freshwater Tidal Estuary: Can fish losses be Managed? *North American Journal of Fisheries Management* 29:1253-1270.
- Kimmerer, W. J. 2002. Effects of Freshwater Flow on Abundance of Estuarine Organisms: Physical Effects or Trophic Linkages? *Marine Ecology Progress Series* 243:39–55.
- Rosenfield, J.A. & R.D. Baxter. 2007. Population Dynamics and Distribution Patterns of Longfin Smelt in the San Francisco Estuary. *Transactions of the American Fisheries Society*, 136:1577-1592.