

SMELT WORKING GROUP

Monday, January 5, 2015

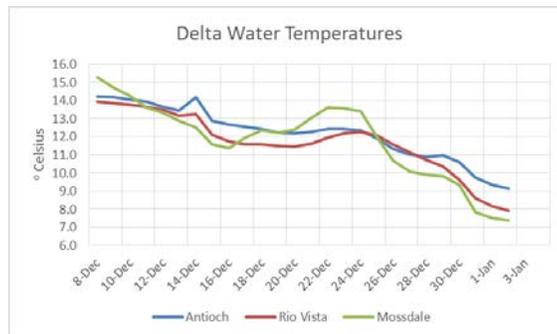
Meeting Summary:

The SWG agreed that as long as current Delta conditions remain (specifically interior Delta turbidities above 10NTU and OMRs of -5000cfs) salvage is expected to continue. Updated turbidity forecast modeling runs have not been produced since last week and it is therefore difficult to anticipate when the currently higher interior Delta turbidities will dissipate. If these current conditions continue, based on salvage data from the last four days, the Projects will likely exceed the WY 2015 ITL before the end of the week. During WY 2013 it was observed that salvage rates decreased coincident with reduced exports. This suggests that an immediate reduction in export pumping with a correspondingly less negative OMR flow is warranted.

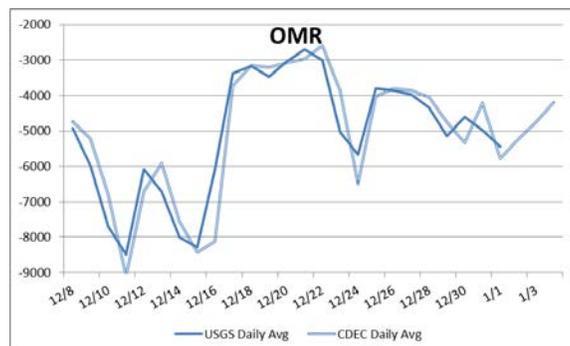
The Working Group will continue to monitor Delta Smelt survey and salvage data and Delta conditions and will meet again Monday, January 12, 2015.

Reported Data:

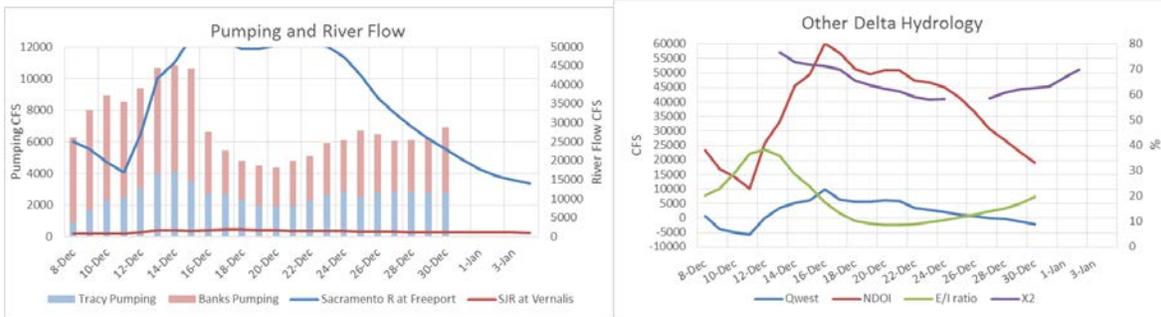
1. **Current environmental data:**
 - Water Temperatures are as follows:



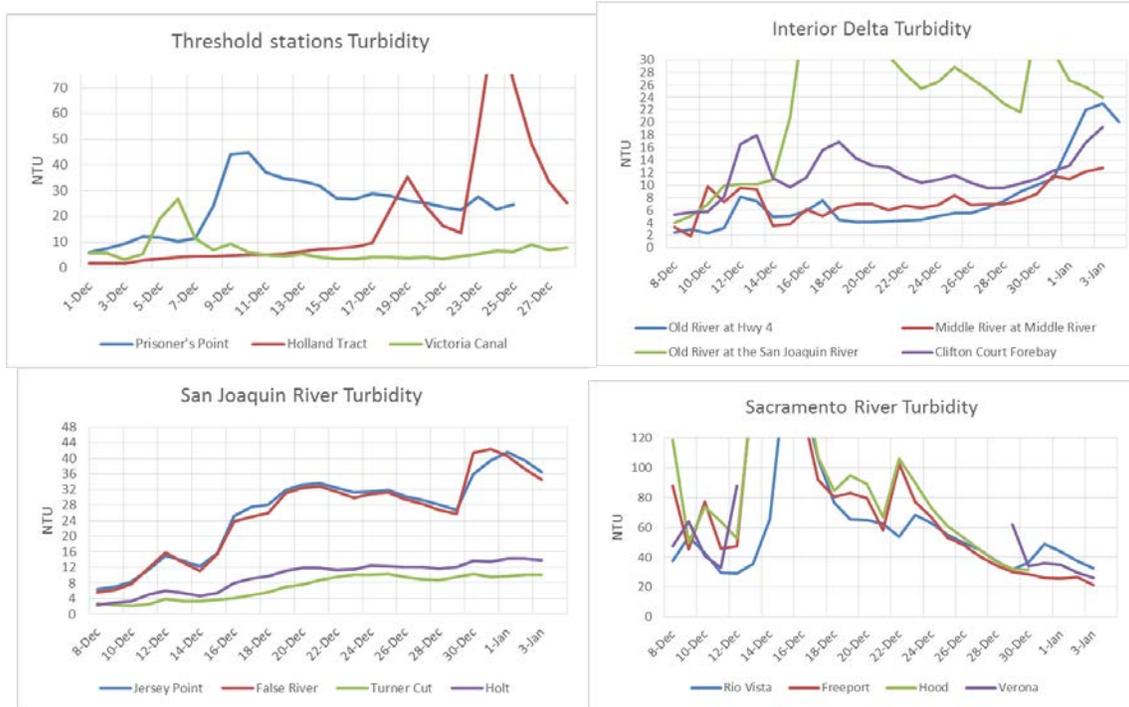
- OMR Flow: USGS tidally-averaged daily, 7 day average, and 14 day average OMR as of January 1 is -5450, -4906, and -4223 cfs. CDEC daily, 7 day average, and 14 day average OMR flow as of January 4 is -4190, -4839, and -4501 cfs



- River Flows: Sacramento River inflow is 14,106 cfs and San Joaquin River is 1069 cfs. X2 calculation from CDEC has not been reported for the previous two days, but is assumed to be downstream of Chipps Island. The graphs below show the most recent trends in Delta hydrology and water quality that were evaluated by the Working Group



- Turbidity:



2. Delta Fish Monitoring:

The December Fall Midwater Trawl has completed sampling and data is now available for Delta Smelt. The FMWT Annual Index for fall 2014 is 9. This is the lowest fall index, and approximately one half of the previous lowest indices of 17 (2009) and 18 (2013).

Smelt Larva Survey begins this week. Spring Kodiak Trawl #1 is in the field the week of January 12.

The Service's Early Warning Study reported Delta Smelt catches at Jersey Point and Prisoner's Point.

Delta Smelt catch data from the Early Warning Study is as follows (tows were 15 for all days):

1/1/2015 Prisoner's Point=10 Delta Smelt

1/2 Jersey Point=7 Delta Smelt

1/3 Prisoner's Point=0 Delta Smelt

1/4 Jersey Point=15 Delta Smelt

3. Salvage:

Delta Smelt were salvaged on January 2 and 4, with daily expanded totals of 12 and 24 fish, respectively. The estimated cumulative seasonal total for adult Delta Smelt salvage is now 36. No Longfin Smelt have been observed in salvage counts during WY2015. Salvage counts have been reduced to 10 minutes per 2 hours as of 12/23 (normal protocol is 30 minute counts every two hours), due to high debris loads coming into the federal fish facility.

4. Expected Project Operations:

Combined SWP/CVP exports today are 5750 cfs today and anticipated to remain steady this week. Qwest is anticipated to become more negative as the week moves forward. Operators indicated that the Index OMR value was anticipated to be -5000 cfs in compliance with NMFS RPA Action IV.2.3.

5. Delta Conditions Team:

The Delta Conditions Team (DCT) did not meet on Friday, 1/2. The DCT charge has not been finalized.

6. Assessment of Risk:

Background:

RPA Component 1: "Beginning in December of each year, the Service shall review data on flow, turbidity, salvage, and other parameters that have historically predicted the timing of Delta Smelt migration into the Delta. On an ongoing basis, and consistent with the parameters outlined... [in the BO]...the SWG shall recommend to the Service OMR flows that are expected to minimize entrainment of adult Delta Smelt" (page 280).

RPA Component 1, Action 1, Part B: "High-entrainment risk period: Delta Smelt have historically been entrained when first flush conditions occur in late December. In order to prevent or minimize such entrainment, Action 1 shall be initiated on or after December 20 if the 3 day average turbidity at Prisoner's Point, Holland Cut, and Victoria Canal exceeds 12 NTU, or if there are three days of Delta Smelt salvage at either facility or if the cumulative daily salvage count is above the risk threshold based upon the 'daily salvage index' approach described in Attachment B. Action 1 shall require the Projects to maintain OMR flows no more negative than -2,000 cfs (14-day running average) with a simultaneous 5-day running average flow no more negative than -2,500 cfs to protect adult Delta Smelt for 14 days. However, the SWG can recommend a delayed start or interruption based on other conditions such as delta inflow that may affect vulnerability to entrainment." (page 281).

RPA Component 1, Action 2: "An action implemented using an adaptive process to tailor protection to

changing environmental conditions after Action 1. As in Action 1, the intent is to protect pre-spawning adults from entrainment and, to the extent possible, from adverse hydrodynamic conditions.”

“The range of net daily OMR flows will be no more negative than -1,250 to -5,000 cfs. Depending on extant conditions (and the general guidelines below) specific OMR flows within this range are recommended by the Working Group from the onset of Action 2 through its termination...” (page 352).

Discussion:

The Working Group reviewed and discussed all relevant data from Delta monitoring, salvage, field surveys, and planned Project operations.

The WY2015 adult Delta Smelt ITL is 78 with a concern level of 58. These ITL values reflect the February 2013 revision of the ITL calculation.

Turbidity remains elevated throughout the central and southern Delta. Members are greatly concerned about these elevated levels, as Delta Smelt presence is more likely in areas of elevated turbidity. The Working Group noted that fish were detected in salvage as soon as the southern Delta stations went above 10NTU last week. Members agreed that Delta Smelt likely are now distributed throughout the south Delta and at continued high risk of entrainment. The Working Group agreed that as long as south Delta turbidity remains at or above 10NTU, we expect continued movement of Delta Smelt into the south Delta and additional salvage.

Members questioned when turbidity might be expected to clear up in the south Delta, assuming that clearing water would lead to reduced Delta Smelt densities and subsequently reduced entrainment risk. No new turbidity forecasting runs have been produced since the wind event last week, so modeling runs that could have been made available for discussion last week are no longer valid. At the time of the call, it was unknown how long it might take for turbidity to drop below 10NTU at south Delta stations. Members encouraged the distribution of turbidity modeling results for future discussion.

The Working Group agreed that if hydrology and pumping remain at current levels, the adult Incidental Take Limit for this year very likely will be exceeded, possibly before the end of the week. The Working Group indicated that when exports decrease, there is historical data that salvage decreases as well. The Working Group indicated an immediate need to decrease pumping to the lowest levels possible in order to avoid in the near-term exceeding the adult Delta Smelt take limit for 2015. Some members indicated that even if minimum pumping is achieved, the ITL will likely be exceeded at some point later this season.

The Working Group indicated an urgent need to provide adequate hydrologic conditions such that fish in the mainstem San Joaquin River do not move further upstream, closer to the export facilities. If a large number of fish spawn in the south Delta, the group was concerned it will result in an elevated risk of entrainment of the 2015 juvenile Delta Smelt for the remainder of this season. The Working Group indicated Delta Smelt are particularly vulnerable this season due to a variety of factors, including the drought.

The early warning Special Survey was discussed. Members agreed that survey results have enhanced the

ability to predict when Delta Smelt are moving into the sphere of influence of the export facilities. However, within the Working Group there is agreement that daily sampling has become less useful now that the first flush event has passed, there is consistent presence of Delta Smelt at both sampling locations, and salvage is on-going. The Working Group recommends reduced sampling intensity to minimize subsequent take. Given the very low FMWT Annual Index members want to avoid any unnecessary take of the species. Since any level of take could have a greater impact on the species than in previous years, all take should be examined very closely and avoided whenever possible. The Working Group would like to see this sampling suspended or reduced to weekly trawls.

High debris loads have negatively impacted salvage efficiency. The reduced durations for salvage counts at the CVP reduce the already low probability of detecting Delta Smelt in salvage operations. The Working Group is concerned that entrainment rates may be higher than that suggested by estimated salvage levels. The Working Group believes that if export pumping were decreased to the minimum levels, salvage counts could return to 30 minutes per 2 hours at the federal facility, thus providing more accurate and less biased (low) salvage estimates. The Working Group also believes that reducing exports would result in a corresponding reduction in entrainment and allow the south Delta stations' turbidity levels to decrease before the ITL is reached. Once south Delta turbidity drops below 10NTU, the Working Group believes that salvage may drop dramatically or cease.

The Working Group will continue to monitor conditions and smelt distribution and will meet again on Monday, January 12, 2015.

WEEKLY ADVICE FOR THE DEPARTMENT OF FISH AND WILDLIFE FOR LONGFIN SMELT

Advice for week of January 5, 2015:

The Smelt Working Group does not have any Longfin Smelt-related advice based on recent information.

Barker Slough operations advice was not provided by the Smelt Work Group, because the meeting occurred prior to the concern period, which begins January 15 (see #5 below).

Basis for advice:

The 2009 State Water Project 2081 for Longfin Smelt states that advice to WOMT and the DFW Director shall be based on:

1. Adult Salvage – total adult (≥ 80 mm) Longfin Smelt salvage (SWP+CVP) for December through February > 5 times the Fall Midwater Trawl Longfin Smelt annual abundance index.
2. Adult abundance, distribution or other information indicates that OMR flow advice is warranted.
3. Larva distribution in the Smelt Larva Survey or the 20mm Survey finds Longfin Smelt larvae present at 8 of 12 central and south Delta sampling stations in 1 survey (809, 812, 815, 901, 902, 906, 910, 912, 914, 915, 918, 919; see Figure 1).

4. Larva catch per tow exceeds 15 Longfin Smelt larvae or juveniles in 4 or more of the 12 survey stations listed.
5. During the period January 15 through March 31 of a dry or critically dry water year only, advice for Barker Slough pumping plant operations may be warranted if larval Longfin Smelt are detected at station 716 and other information indicates risk of entrainment.

Discussion of Criteria

1. As of January 4, 2015, no Longfin Smelt have been salvaged for the water year. The interim Longfin Smelt adult salvage threshold for advice is > 80 (see criterion in #1 above), which is based on a combined September through December Fall Midwater Trawl Longfin Smelt index of 16. No advice is warranted based on this criterion.

2. December Fall Midwater Trawl sampled the Bay-Delta region during the first half of the month and the supplemental Spring Kodiak Trawl survey during last week, and neither detected any Longfin Smelt in the central or south Delta. Late December catches by the Chipps Island trawl suggested that spawning movement into the western Delta is currently ongoing. Mention was made during the call that "Early Warning Sampling" at Prisoner's Point caught 2 ripe Longfin Smelt adults this past week. Distribution information does not indicate advice is warranted based on this criterion.

3 & 4. No larval distribution information is available yet. The first Smelt Larva Survey (SLS) of 2015 will be conducted beginning January 5th. Hatching for the season should be just beginning in early January and unlikely to be sufficient to reach concern levels of density or distribution.

5. The criterion does not take effect until January 15, and the water year classification as of January 1 2015 will be a determining factor.

Current conditions: Sacramento River flow decreased below 29,000 cfs at Freeport on December 28 and to about 14,000 on January 4. X2 declined to about 58 km and has started back upstream, reaching about 61 km on December 28 and somewhere in the low 70s on January 4. Combined State and federal exports have been steady at 5,750 cfs, and are scheduled to remain stable. Qwest has been negative recently at about -2,600 cfs; it is expected to go slightly more negative this week as river flows decline during the spring tide.

Summary of Risk:

Risk of entrainment is low, but this could change at any time with an influx of adult Longfin Smelt into the central and south Delta or with substantial hatching in the region. The risk of entrainment is low when X2 remains low (< 70 km), which has been the case until early January.

The absence of adult Longfin Smelt in salvage samples, and few in the San Joaquin River or central Delta fish surveys (FMWT sampling; SKT trawls) to date suggests few fish have moved into the central or south Delta for spawning. Recent past conditions, particularly OMR of about -5,000 cfs and a modestly negative Qwest, don't add much risk for fish that do move into the central Delta. Recent exports have been sufficient to draw turbidity > 10 NTU into the south Delta and connect with the export facilities. It's not clear whether this will correspond with

some Longfin Smelt salvage. The overall risk remains low because the recent past and current location of X2 still downstream of 75 km, which likely reduced the number of Longfin Smelt migrating into and spawning within the central Delta.