

PARTICIPANTS

- CDFW
- DWR
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- SWRCB
- USBR
- USFWS
- Kearns & West

ACTION ITEMS

- CDFW will look at Wang 2007, “Spawning, Early Life Stages, and Early Life Histories of the Osmerids Found in the Sacramento-San Joaquin Delta of California,” for additional information on temperature thresholds that may mark the end of LFS spawning.
- DWR will conduct a new PTM run with -3,500 and -5,000 cfs OMR scenarios and insertion points at 809, 812, and 901.

MEETING SUMMARY

PART 1: Updates on Water Operations and Biological Updates

SMT members shared that the Suisun Marsh Salinity Control Gates are not operational; starting yesterday, there were issues with the tidal flow sensors that make the automatic system inoperable. They hope to fix the issue within the next day or two, but if it is more complicated than currently believed, they will determine how to operate the salinity gates manually.

Larval sampling at the CVP Facility started yesterday (February 15), and sampling at the SWP Facility will start next week.

Relevant Actions & Triggers

USBR reported on the OMR management measures currently in effect and whether they have been triggered; CDFW reported on the ITP Conditions of Approval that are currently in effect and whether they have been triggered. Those measures with yellow background are those that are in effect but not triggered; in green are triggered measures; in grey are measures that are no longer relevant. The descriptions below are intended as summaries and do not provide all the details related to each action or trigger. For full descriptions, please see the OMR guidance document or ITP as relevant.

Proposed Action

OMR Management Measures	Requirement	Time Frame	Trigger	Triggered?
Integrated Early Winter Pulse Protection (“First Flush” Turbidity Event)	Reduce exports for 14 consecutive days so that the 14-day averaged OMR index for the period shall not be more negative than -2,000 cfs	Dec 1 to Jan 31	(1) Running three-day average of daily flows at Freeport >25,000 cfs; and (2) Running three-day average of daily turbidity at Freeport ≥50 NTU ¹ ; or (3) Real-time monitoring indicates a high risk of migration and dispersal into areas at high risk of future entrainment or a spent delta smelt has been collected in monitoring surveys.	No
OMR Management	Manage to a more positive OMR than -5,000 cfs	From the onset of OMR management to the end		Yes (initiated on 1/1/2021 for salmon)
Turbidity Bridge Avoidance (“South Delta Turbidity”)	If the daily average turbidity at Bacon Island cannot be maintained less than 12 NTU, manage exports to achieve an OMR no more negative than -2,000 cfs until the daily average turbidity at Bacon Island drops below 12 NTU.	After the first flush or Feb 1 (whichever comes first) and until a ripe or spent female is detected or April 1 (whichever is first)	Average daily turbidity in Old River at Bacon Island (OBI) at a level of more than 12 NTU.	No
Larval and Juvenile Delta Smelt	Run hydrodynamic models and forecasts of entrainment, informed by the EDSM or other relevant survey data to estimate the percentage of larval and juvenile delta smelt that could be entrained. If necessary, manage exports to limit entrainment to be protective based on the modeled recruitment levels.	On or after March 15 of each year until off-ramp criteria are met	If QWEST is negative AND larval or juvenile delta smelt are within the entrainment zone of the pumps based on real-time sampling of spawning adults or young of year life stages	No

¹ The current instrumentation measures turbidity in Formazin Nephelometric Units (FNU).

ITP Conditions of Approval

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
8.1.5.2 (Smelt Monitoring Team Risk Assessment)	Outlines contents for weekly risk assessments of Delta Smelt and Longfin Smelt required under 8.1.5 and 8.1.1	Nov 1 st through June 30 th or until off-ramped by 8.8		Yes
8.3.1 (Integrated Early Winter Pulse Protection)	Reduce south Delta exports for 14 consecutive days to maintain a 14-day average OMR index no more negative than -2,000 cfs, and convene the Smelt Monitoring Team within one day of triggering. After maintaining a 14-day average OMR index no more negative than -2,000 cfs for 14 days, Permittee shall maintain a 14-day average OMR index no more negative than -5,000 cfs, initiating the OMR Management season.	Dec 1 to Jan 31	Three day running average daily flows at Freeport greater than, or equal to, 25,000 cfs, AND Three day running average of daily turbidity at Freeport is greater than, or equal to, 50 FNU OR The Smelt Monitoring Team determines that real-time monitoring of abiotic and biotic factors indicates a high risk of DS migration and dispersal into areas at high risk of future entrainment.	No
8.3.3 (Adult Longfin Smelt Entrainment Protection)	After December 1, if an Integrated Early Winter Pulse Protection (Condition of Approval 8.3.1) has not yet initiated, Permittee shall reduce south Delta exports to maintain a 14-day average OMR index no more negative than -5,000 cfs and initiate OMR Management if: Cumulative expanded salvage, Dec 1 st through Feb 28 th , exceeds most recent FMWT Index divided by 10, or SMT determines that there is a high risk of entrainment.	Dec 1 through Feb 28 th	Salvage threshold is three Longfin Smelt for WY 2021.	No
8.4.1 (OMR Management for Adult Longfin Smelt)				Off-ramped due to detection of Longfin Smelt larvae on December 28 th
8.4.2 (Larval and Juvenile Longfin Smelt Entrainment Protection)	If triggered, it will restrict south Delta exports for seven consecutive days in order to maintain a seven-day average OMR index no more negative than -5,000 cfs and convene the SMT to recommend an	January 1 st through June 30 th or until the temperature offramp occurs	(1) Longfin Smelt larvae or juveniles are found in four or more of the 12 SLS or 20 mm stations in the central or south Delta, Or (2) Longfin Smelt catch per tow exceeds five larvae or	Triggered on 1/26 and 2/2; but not by the latest SLS 3

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
	OMR flow limit between -1,250 and -5,000 cfs.		juveniles in two or more of the 12 stations in the central or south Delta. The relevant stations are: 809, 812, 815, 901, 902, 906, 910, 912, 914, 915, 918 and 919	survey results
8.4.3 High flow offramp for Longfin Smelt	If triggered, Conditions of Approval 8.4.1 and 8.4.2 are not required or would cease if previously required.	Throughout OMR management	When river flows are (a) greater than 55,000 cfs in the Sacramento River at Rio Vista or (b) greater than 8,000 cfs in the San Joaquin River at Vernalis. If flows subsequently drop below 40,000 cfs in the Sacramento River at Rio Vista or below 5,000 cfs in the San Joaquin River at Vernalis, the OMR limit previously required as a part of Conditions of Approval 8.4.1 and 8.4.2 shall resume.	No
8.5.1 Turbidity Bridge Avoidance	maintain daily average turbidity in Old River at Bacon Island (OBI) at a level of less than 12 NTU. If the daily average turbidity at OBI is greater than 12 NTU, Permittee shall restrict south Delta exports to achieve an OMR flow that is no more negative than -2,000 cfs until the daily average turbidity at OBI is less than 12 NTU.	After the first flush or Feb 1 until end of OMR management or until CDFW is in agreement that the action may be ended or modified.	Turbidity at OBI > 12 FNU	No
8.5.2 (Larval and Juvenile Delta Smelt Protection)	If triggered, this Condition of Approval will restrict south Delta exports for seven consecutive days in order to maintain a seven-day average OMR index no more negative than -5,000 cfs and SMT members will meet to assess the risk of entrainment. The SMT may provide further advice to restrict exports in order to maintain an OMR index more positive than -5,000 cfs. In their assessment, SMT members will determine if risk of entrainment is low, medium, or high; subsequent OMR restrictions will be based on level of risk. Furthermore, if salvage of Delta Smelt exceeds 11 in three days, this	Nov 1 st through June 30 th or until off-ramped by 8.8	When the five-day salvage of juvenile Delta Smelt is greater than or equal to one plus the average prior three years' FMWT index (rounded down). The threshold for this year is one.	No

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
	Condition of Approval will restrict south Delta exports for seven consecutive days in order to maintain a seven-day average OMR index no more negative than -3,500 cfs.			
8.12 (Barker Slough Pumping Plant Longfin and Delta Smelt Protection)	Barker Slough Pumping Plant will reduce exports so the maximum 7-day average is <60 cfs.	From January 15 through March 31 in dry and critical water years for Longfin Smelt, and from March 1 st through June 30 th for Delta Smelt	Larval Smelt are detected at SLS Station 716 during the period identified for each species, and/or when recommended by the SMT	not triggered by the latest SLS 3 survey results; was triggered for Longfin Smelt 1/19/21, 2/2/21

Current Operations & Outlook

USBR and DWR shared operations updates from the Outlook. Their observations included:

- USBR CVO reported that the Delta is currently experiencing the descending limb of the flow pulse from last week's precipitation event. There is chance of another precipitation event occurring this week on Thursday and Friday, but it will be a much weaker system than earlier events.
- Releases from Whiskeytown Dam on Clear Creek are currently 200 cfs with no anticipated changes.
- Releases on the Sacramento River from Keswick Dam are currently at minimum winter flows of 3,250 cfs; USBR does not anticipate changes.
- American River releases from Nimbus Dam are at 950 cfs. There were discussions regarding a potential reduction to the minimum reservoir releases of 850 cfs, but current plans are to hold at 950 cfs.
- Releases from Goodwin Dam on the Stanislaus River are currently at 600 cfs due to salinity concerns at Vernalis. Potential for an instability flow (over two days, 200 to 950 cfs) is still under discussion.
- Jones Pumping Plant exports are currently at 2,580 cfs.
- The Delta Cross-channel Gates are currently closed and are expected to remain closed through mid-May per the PA and D-1641 requirements. Construction activities on the gates remain ongoing.
- DWR reported that Feather River releases are at 1,250 cfs with no anticipated changes.
- Yesterday Sacramento River flows at Freeport were around 12,750 cfs; San Joaquin flows at Vernalis were 1,350 cfs yesterday, and will increase to around 1,400 cfs for several days.
- Clifton Court inflows have been 2,400 cfs, targeting -3,500 cfs OMR, and have now increased to 3,400 cfs, operating to -5,000 cfs OMR. Once Delta outflows decrease below 7,100 cfs, the facilities will reduce exports. Outflows are anticipated to be 7,400 cfs tomorrow, so depending on how fast flows drop, the export facilities will operate the next three days in the -5,000 OMR range and then reduce.²
- Delta outflows are 10,170 cfs and were 11,000 cfs yesterday.
- X2 is now 80 km.

² Outflows ended up around 9,000 cfs as a result of higher Freeport flows (over 13,000 cfs) than anticipated.

- QWEST was 950 cfs yesterday and is expected to decrease over the next several days.

Review of Environmental Conditions and Survey Updates

CDFW shared survey updates.

- Smelt Larva Survey (SLS) 3 sampled February 8th to 10th. All stations were sampled, and 60 percent have been processed. There was wide distribution of larval LFS throughout the sample area.
 - All twelve central and south Delta stations have been processed; Longfin Smelt (LFS) were collected at two: 11 LFS at Station 809 and one at Station 812 (7 to 10 mm; one with a yolk sac).
 - No LFS were collected in Barker Slough station 716.
 - Two LFS were collected at Station 723 at the mouth of the Sacramento Deepwater Shipping Channel (5 and 6 mm, respectively; both with yolk sacs).
 - Eight of ten stations in the Sacramento River had LFS.
 - Station 801: 33 LFS.
 - Station 804: there were LFS with yolk sacs which are still being processed.
- SLS 4 will sample February 22 to 24.
- Spring Kodiak Trawl (SKT) will sample March 1 to 4.

USFWS reported on the Enhanced Delta Smelt Monitoring (EDSM) Program.

- Zero Delta Smelt were detected last week (February 8th to 12th), so there was no abundance estimate generated.
- Last week, 15 LFS were detected in Suisun Marsh (64 to 101mm); one LFS of 83mm was expressing eggs.
- Both last week and this week, EDSM crews are sampling in all four geographic regions, including the far western region.
- This week three crews will be on the water Tuesday to Friday (February 16th to 19th). Today they are sampling the western delta, lower San Joaquin, and Cache Slough strata. They stopped assisting with Fish Culture and Conservation Laboratory (FCCL) Broodstock Collection last Thursday; a USBR boat will continue to support the broodstock collection efforts.
- The Chipps Island Trawl detected 2 LFS (92-95 mm) on February 8 and 3 LFS (75-90 mm) on February 12. All fish were transferred to FCCL except for the 76 mm LFS.

CDFW provided a salvage update (February 9th to 15th).

- No salvage of Delta Smelt or Longfin Smelt.
- There were no power outages or stoppage in pumping or salvage counts during this period.

USBR shared water quality data [three-station average daily water temperature as of February 15th was 12.1°C; daily average turbidity at Old River at Bacon Island (OBI) was 3.47 FNU and is currently 3.20] and the seven-day weather forecast for Antioch (sunny and clear with NNW winds below 10 mph and a 30 percent chance of rain on Thursday totaling less than 1/10 inch). X2 is currently 80 km.

PART 2: Open Discussion on Species Status (Structured-Unstructured Time)

SMT members focused their discussion on the relevant ITP conditions of approval 8.12 (Barker Slough Pumping Plant Longfin and Delta Smelt Protection) and 8.4.2 (Larval and Juvenile Longfin Smelt Entrainment Protection).

For Condition of Approval 8.12 (Barker Slough Pumping Plant Longfin and Delta Smelt Protection), CDFW reported that operations have been relatively stable. With no SLS detection of LFS at Station 716, the hard trigger that caps DWR pumping at Barker Slough has not been met. CDFW considered pertinent information in the

surrounding area to determine whether they should be concerned about persistent LFS presence in Barker Slough despite the lack of detections: there were two LFS collected at Station 723 (the mouth of the Sacramento Deepwater Shipping Channel) with their yolk sacs attached, which suggests they hatched relatively close; however, SLS does not sample Station 719 and there were no LFS caught at the next closest station, Station 711 near Rio Vista, and turbidity has been in the double digits but is decreasing. Based on this information, CDFW concluded that the condition is no longer in effect, and the SMT does not need to make a recommendation. They will evaluate data from the next SLS survey to determine whether the pumping restriction should be reinstated.

For Condition of Approval 8.4.2 (Larval and Juvenile Longfin Smelt Entrainment Protection), CDFW suggested that the SMT use the prior week's assessment as a starting place from which to assess what conditions have changed since that time. In that assessment, the SMT did not make a formal recommendation but stated that risk at -2,500 OMR was low, up to -3,500 OMR was moderate, and above that was high based on catch data available at that time. CDFW clarified that SLS 3 did not trigger the density criteria in Condition of Approval 8.4.2, but the SMT still does a risk assessment and can provide advice if they think there is high risk of entrainment. Considerations for the risk assessment included the following:

For -3,500 OMR:

- CDFW recommended removing -2,500 cfs OMR as a scenario in that the projects are targeting -5,000 cfs OMR for the next three days and are then anticipated to be at -4,000 cfs OMR.
- CDFW noted that QWEST did drop to zero but has been greater than 500 cfs since February 12th; on the other hand, hydrology is drying out and exports are increasing.
- DWR noted that the distribution of smelt throughout the system was much better as compared to last year, when there was larvae detected throughout the OMR corridor the entire season. While the more negative OMR values mean risk has increased from a hydrologic perspective, in that fish are less likely to move out of the OMR corridor, the overall distribution presents a less worrisome trend. It is possible that this is a result of the recent positive QWEST conditions.
- CDFW stated that, even if the ripe female detected in the Lower San Joaquin on February 4th represented the last pulse of LFS spawning, there would be emergence for the next two to three weeks (i.e., potentially through February 25th).
- DWR asked when the literature suggests LFS spawning should stop based on season and environmental conditions. CDFW stated that spawning generally ends in February but could continue into March; there is no water temperature cutoff analogous to the 12°C threshold for Delta Smelt identified in the ITP effects analysis. However, there might be more information in Wang et al. (2007) in the Tracy Fish Facility Manual, which CDFW will investigate.³
- CDFW noted that the density of fish appears to have shifted downstream; now there are more LFS at Station 801 in Broad Slough. The hydrology was "favorable" earlier in the month when LFS were present at a higher density near the confluence.
- CDFW stated that moderate risk for -3,500 cfs OMR makes sense given the changes in LFS larval density over the South and Central regions; the hydrology seems to have moved larvae downstream and fewer fish are being observed in the South Delta or OMR corridor. However, it would be helpful to see a PTM run that encompasses a -5,000 cfs OMR scenario.
- USFWS stated that the distribution of fish indicates that they are still in the area where they could be impacted by the exports. Last week, USFWS recommended that -3,000 cfs OMR should be determined a

³ Wang 2007, "Spawning, Early Life Stages, and Early Life Histories of the Osmerids Found in the Sacramento-San Joaquin Delta of California," <https://www.usbr.gov/mp/TFFIP/docs/tracy-reports/tracy-rpt-vol-38-spawning-early-life-stages.pdf>.

moderate risk and anything more negative should be high risk; they maintain that recommendation. If QWEST remains non-negative, that will be beneficial; a new PTM run will be helpful for next week because it will account for factors outside of OMR.

- CDFW referred the group to their conceptual model in which QWEST has a mitigating effect: while the expectation was that QWEST was going to remain negative, that has not happened. While not positive enough to flush all the particles out of danger, recent QWEST is high enough to justify a moderate risk assessment at -3,500 cfs OMR. CDFW suggested that -3,500 cfs should be categorized as moderate risk because the actual hydrology has been more conducive to downstream transport (and thereby, less conducive to entrainment) than was modeled in the last PTM run and the sampled distribution is improved.

For -5,000 OMR:

- DWR suggested adding a -5,000 cfs OMR bin to reflect projected operations. CDFW noted that a -5,000 cfs OMR bin is outside the last PTM run from February 2nd and reminded the SMT that the farther out the forecast is, the more uncertainty is associated with it. For the -4,000 cfs OMR scenario at three weeks out, larvae were entrained into the OMR corridor at relatively low percentages.
- DWR modelers explained that the reason there was a more positive QWEST in reality compared to the PTM model was that the model does not always reflect reality early in the season when there is not as much runoff from precipitation because the ground is not yet saturated.
- DWR observed that there was only five percent entrainment into the OMR corridor or the projects from particles injected at Station 809, where larvae were detected, in the -4,000 cfs OMR scenario. This justifies a moderate risk at -5,000 cfs OMR, especially when paired with the fact that actual conditions were more favorable to downstream transport than what was modeled.
- One CDFW staff member agreed with that assessment given LFS detections at only two stations in the Central and South Delta. Other staff members countered that with OMR rising to -5,000 cfs OMR, there will still be larvae moved into and left in the South Delta region, especially as flows drop after the storms. Downgrading -3,500 cfs OMR to moderate risk based on the improved SLS distribution is justifiable. However, -5,000 cfs OMR is not comparable as such a negative OMR may compromise the improved SLS distribution afforded by the consistently less negative OMRI throughout the entrainment season so far. Uncertainty is also amplified given the lack of a PTM run with a -5,000 cfs scenario. CDFW is not comfortable extrapolating results above the upper boundary scenario (i.e., -4,000 cfs).
- USFWS also observed that increasing exports will reduce habitat quality, which the SMT is not asked to assess and depending on entrainment losses may be more important in a critical water year.
- DWR said they were on-the-fence between a moderate and high-risk assessment for -5,000 cfs OMR, so they are comfortable characterizing it as high risk.
- NMFS reminded the group that there will be three days of negative QWEST before it starts becoming more positive, which means overall upstream movement in the lower San Joaquin River. DWR added that without any significant precipitation, QWEST will not become positive – possibly less negative but not above zero.
- CDFW characterized the reasons for a high-risk categorization as follows: ongoing larval presence in the Central Delta region and potential hatching (as evidenced by a ripe female still in the system), drier hydrology manifested by a lower QWEST, increased OMR resulting in a larger zone of entrainment, the SMT determination not to extrapolate outside of the existing -4,000 cfs OMR PTM run, and impacts on habitat.

- The SMT agreed not to make a recommendation but to characterize -3,500 cfs OMR as moderate risk and -5,000 OMR high risk for the reasons outlined above. CDFW committed to summarizing their assessment for the Delta Monitoring Workgroup.
- USFWS asked whether there will be results from the facilities' LFS monitoring before the next meeting. If there is a detection, it would reinforce the idea that there is entrainment occurring. The PTM suggests there is risk. Larval surveys are less reliable than those of adults.
- CDFW noted that SLS 1 detected larval LFS in the OMR corridor, so there is the possibility that they are already entrained into the forebay. Once fish are in the OMR corridor, no management actions will help them, which is why the SMT focuses on conditions in the lower San Joaquin River.

The SMT discussed the parameters for the next PTM run:

- They agreed on -3,500 cfs OMR as the base condition scenario and -5,000 cfs as the higher OMR scenario.
- In recognition of the fact that DWR templates are set up for three injection nodes at present, they agreed on the following nodes:
 - 809 because there are still larvae being detected there.
 - 812 (rather than 815) because larvae were detected there, so they are moving the upstream insertion point downstream
 - 901 to inform the SMT on how many particles are entering from Franks Tract and what is happening to them in response to the area's unique hydrology.
- USFWS recommended that the SMT keep consistent insertion points as this is more informative to understand changes week-to-week across the season.

PART 3: Live-edit Assessments

ITP Longfin Smelt Risk Assessment

CDFW updated the ITP assessment based on the discussion documented in Part 2 above.

Proposed Action Weekly Evaluation of Delta Smelt, including Distribution, Abiotic Conditions, Risk Assessment Questions, and Executive Summary

USBR reviewed updates to the assessment, which largely focused on the latest detection data and anticipated changes in conditions (including turbidity, OMR Index, and QWEST values). Edits included:

- An acknowledgement of the updated precipitation information
- A statement in the historic conditions section that the three-station temperature exceeded 12°C, which initiates the period when conditions are conducive to Delta Smelt Spawning
- Updated current turbidity and OMR index values

The group reviewed the relevant assessment questions: (1) Between December 1 and January 31, has any first flush condition been exceeded? (2) Do Delta Smelt have a high risk of migration and dispersal into areas at high risk of future entrainment? (3) Has a spent female been collected? (4) If OMR of -2,000 cfs does not reduce daily average OBI turbidity below 12 NTU/FNU, what OMR target is deemed protective between -2,000 and -5,000 cfs? (5) If daily average OBI turbidity is greater than 12 NTU/FNU, what do other station locations show? (6) If daily average OBI is greater than 12 NTU/FNU, is a turbidity bridge avoidance action not warranted? What is the supporting information?

- There were no changes to the responses to questions one and two.
- The responses to questions three, four, five, and six were updated to reflect the latest dates and data.

USBR reviewed updates to the Executive Summary:

- WOMT had suggested edits to SMT's final sentence stating that the projected OMR Index limits are sufficiently protective, noting that more negative OMR Index values increase the likelihood of entrainment, and concluding that overall probability of Delta Smelt moving into the south Delta remains low. WOMT simplified the statement to say, "The more negative limits of the OMR Index increase the potential for entrainment of Delta Smelt in the Central Delta into the South Delta."
- At USFWS' suggestion, the SMT agreed to clarify the extent of the "Central Delta" by adding "in the Central Delta, which includes the Lower San Joaquin River..." to the sentence.
- DWR also noted that the pertinence of the SMT's comments on seasonal timing, as an indicator of increased entrainment risk, decrease as DS get into spawning season. Once temperatures are consistently above 12°C, the SMT may want to reword their remarks to reflect that the risk of adult entrainment will decrease and risk to larvae will increase.

USBR updated the bullet in the Outlook describing Delta Smelt conditions to reflect that temperature conditions are now conducive for Delta Smelt spawning to begin.

No non-consensus issues were identified.

Additional Considerations/Discussion

Agencies reported no items for elevation to WOMT.