

PARTICIPANTS

- California Department of Fish and Wildlife (CDFW)
- California Department of Water Resources (DWR)
- National Marine Fisheries Service (NMFS)
- State Water Resources Control Board (SWRCB)
- U.S. Bureau of Reclamation (USBR)
- U.S. Fish and Wildlife Service (USFWS)
- Kearns & West (KW)

ACTION ITEMS

- None

MEETING SUMMARY

PART 1: Updates on Water Operations and Biological Updates

Relevant Actions & Triggers

USBR reported on Old and Middle River (OMR) management measures. The Turbidity Bridge Avoidance action was off-ramped due to the detection of a ripe female Delta Smelt (DS) by Spring Kodiak Trawl (SKT) 3 on March 17th and the End of OMR Management action is now in effect. Under the End of OMR Management action, OMR criteria may control operations until June 30th or until the daily mean water temperature at Clifton Court Forebay (CCF) reaches 77° F for three consecutive days. CDFW reported on the Incidental Take Permit (ITP) Conditions of Approval (COA) that are in effect including 8.5.1 Turbidity Bridge Avoidance, 8.5.2 Larval and Juvenile DS Protection, and 8.4.2 Larval and Juvenile Longfin Smelt Entrainment Protection. COA 8.12 (Barker Slough Pumping Plant Longfin and Delta Smelt Protection) was triggered on March 23rd by the detection of two larval DS at station 716 by 20 mm Survey 1. COA 8.4.2 was triggered on March 29th by Smelt Larva Survey (SLS) 6 and 20 mm Survey 1.

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 3-day average of daily flows at Freeport >25,000 cfs; and (2) Running 3-day average of daily turbidity at Freeport ≥50 Nephelometric Turbidity Units (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 (DS) has been collected in monitoring surveys.	Triggered 12/18/21; last day of action was 1/2/22
OMR Management	Manage to a more positive OMR than -5,000 cfs	From the onset of OMR management to the end		In effect
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.	Triggered on 1/3/22; Off-ramped by SKT 3 on 3/17/22
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	In effect

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

OMR Management Measures	Requirement	Time Frame	Trigger	Triggered?
End of OMR Management	OMR criteria may control operations until June 30 (for Delta Smelt and Chinook salmon), until June 15 (for steelhead/rainbow trout), or when the species-specific off ramps have occurred, whichever is earlier.	During OMR management to June 30, or when the DS temperature off ramp has been reached.	DS: when the daily mean water temperature at Clifton Court Forebay reaches 77°F for 3 consecutive days	In effect

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		Triggered
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	3-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.	Triggered 12/18/21; last day of action was 1/2/22

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
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 Fall Midwater Trawl (FMWT) Index divided by 10, or Smelt Monitoring Team (SMT) determines that there is a high risk of entrainment.	Dec 1 through Feb 28 th	Salvage threshold for WY 2022 is one.	Off-ramped due to trigger of 8.3.1
8.4.1 (OMR Management for Adult Longfin Smelt)	The SMT shall conduct weekly risk assessments and decide whether to recommend an OMR flow requirement to minimize entrainment of adult LFS. The SMT may provide advice to restrict south Delta exports for seven consecutive days to achieve a seven-day average OMR index within three risk categories: Low risk: OMR between -4,000 cfs to -5,000 cfs Medium risk: OMR between -2,500 cfs to -4,000 cfs High risk: OMR between -1,250 cfs to -2,500 cfs	Onset of OMR management through Feb 28 th	SMT recommendation based on weekly risk assessment	Off-ramped by larval detections in SLS 12
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 OMR flow limit between -1,250 and -5,000 cfs.	January 1st through June 30th 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 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	Triggered 1/20/22, 1/31/22, 2/28/22, 3/11/22, and 3/29/22

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
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.	Active, Not Triggered
8.5.1 Turbidity Bridge Avoidance	Maintain daily average turbidity at 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	In effect as of 1/3/22

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
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 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.	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 2021 FMWT index for Delta Smelt was zero.	Active, not triggered
8.8 (End of OMR Management)	If triggered, OMR Management would be off-ramped for Longfin and Delta Smelt.	From the onset of OMR management through June 30 th	Daily mean water temperature at Clifton Court Forebay is >25° C for three consecutive days.	Not active
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	Active, Triggered for LFS 2/14/22, 3/11/22, and DS on 3/23/22

Current Operations & Outlook

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

- USBR Central Valley Office (CVO) reported on general conditions noting that a precipitation event concluded yesterday with few lingering showers along the spine of the Sierra Nevada Mountains. The overall trend will return to dry conditions and mild temperatures for the remainder of the week.
- Releases from Whiskeytown Dam on Clear Creek are currently 200 cfs. No modifications expected.
- Releases on the Sacramento River from Keswick Dam are currently 3,250 cfs. No modifications expected.
- Operators will look for opportunities to reduce flows on the American and Stanislaus Rivers in April as the regulatory environment changes.
- American River releases from Nimbus Dam are 1,200 cfs today. Flows could be reduced by 200 to 300 cfs in April.
- Releases from Goodwin Dam on the Stanislaus River are currently 300 cfs.
- Reclamation increased exports in response to the precipitation event; the CVP was exporting 1,800 cfs as of midnight March 29th, with a further increase to 2,700 cfs at noon. Minimum pumping operations are anticipated to return to 800 to 900 cfs April 1st.
- Delta Cross-channel (DCC) gates are currently closed. No modifications expected.
- DWR reported that Feather River releases are 3,500 cfs with no changes planned.
- Freeport flows were around 9,400 cfs on March 28th.
- State facility exports increased to 2,500 cfs on March 29th and will decrease to 600 cfs on April 1st.
- Vernalis flows are between 800 to 900 cfs.
- Delta outflows on March 28th was 8,100 cfs.
- QWEST has been around 1,700 cfs and will turn slightly negative with the next three days of higher exports before returning positive around April 3rd.
- The OMR Index trended more negative reaching -4,400 cfs as of today, and will likely turn more positive to -1,500 cfs by April 1st due to reduced exports.
- Today Rio Vista flows are around 8,000 cfs with the rain effect in place.
- X2 is upstream of confluence and is expected to move further downstream, but tidal effects may complicate X2 movement.
- CDFW inquired when the decision was made to increase exports to 2,700 cfs (CVP) and 2,500 cfs (SWP) in response to the precipitation from the most recent storm event. DWR noted the decisions were made later in the day on March 28th and the morning of the 29th.
- Survey table was updated to reflect that SLS and the Larval Entrainment Pilot Study (LEPS) are no longer active.

Review of Environmental Conditions and Survey Updates

CDFW delivered catch updates on relevant surveys to the SMT.

- SLS 6 was on the water from March 21st to the 24th and 20 mm Survey 1 ran concurrently.
 - SLS 6 processing is ongoing with preliminary results below:
 - Station 815: One DS larvae
 - LFS remain present throughout the system and the latest detections were sufficient to trigger COA 8.4.2.
 - 20 mm processing is ongoing with preliminary results below:
 - DS
 - Station 711: Three DS larvae
 - Station 716: Two DS larvae
 - Station 718: One DS larva
 - Station 719: Two DS larvae

- LFS
 - Station 809: 29 LFS larvae
 - Station 812: 10 LFS larvae
 - Station 815: 25 LFS larvae
- Wakasagi
 - Station 719: Six (11 to 13 mm)
 - Station 718: One (14 mm)
 - Station 716: Three (13 mm)
- CDFW clarified that there is no genetic analysis conducted with 20 mm surveys, as fish are preserved in formalin, but the detections go through a rigorous evaluation system. All osmerid samples are archived so genetic testing could be possible in the future if additional verification is warranted. Should anyone on the SMT like to see the DS detections, CDFW would be happy to share photographs and notes on the fish.

USFWS provided catch updates on the Enhanced Delta Smelt Monitoring Program (EDSM).

- Last week EDSM sampled 33 of 36 sites, but could not sample the lower Sacramento River stratum due to high winds. Results include:
 - Suisun Bay
 - LFS: Four
 - Suisun Marsh
 - LFS: 20
 - DS: One (marked)
 - Cache Slough:
 - DS: One (marked)
 - Sacramento Deep Water Shipping Channel (SDWSC)
 - DS: Six (marked)
- Next EDSM sampling is scheduled for Monday March 28th to the 31st.
- The EDSM abundance estimate for the week of March 21st was 11,721 based off the eight marked DS.
- Chipps Island Trawl operated March 20th to the 26th completing all 50 tows and detecting 17 LFS.
- USFWS noted that all Chipps Island LFS detections were adult and sub-adult fish with the smallest fish measuring 77 mm.

CDFW provided a salvage and qualitative larval sampling update (March 21st to March 27th).

- There were no DS salvaged at either facility.
- LFS over 20 mm were salvaged.
 - State Facility: 176
 - Federal Facility: 160
- Qualitative larval sampling detected LFS at the CVP every day of the reporting period (i.e., March 21st to 27th) except March 23rd.
- CDFW noted an upward trend in LFS salvage this week.

USBR shared environmental data updates as of March 27th.

- Three-station daily average water temperature: 17.46° C.
- The temperatures in Antioch will range from 48 to 78° F with western winds averaging 12 mph. Conditions will be sunny to mostly sunny with no precipitation forecasted.

- The temperatures in Stockton will range from 48 to 81° F with west northwest winds averaging 12 mph. Conditions will be sunny to mostly sunny with no precipitation forecasted.

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

USBR and CDFW expressed the need to discuss the DS detection in the south Delta, but agreed that such a conversation is better suited for the risk assessment evaluation questions during Part 3 of the meeting.

CDFW noted that LFS densities and risk are likely increasing as evidenced by ongoing detections via SLS 6, 20 mm Survey 1, and growing salvage numbers at both the state and federal facilities.

USFWS inquired if it would be possible to utilize trends within SLS detections to help forecast salvage at the facilities (i.e., relative to SLS 5, does SLS 6 indicate an increase in LFS larvae in the central and south Delta consistent with the recent increases in salvage). CDFW noted that with processing ongoing, there is insufficient data right now to attempt such a correlation. However, preliminary results suggest there is a fairly wide distribution of LFS.

The SMT discussed the Particle Tracking Model (PTM) run requested during the March 22nd meeting. In contrast to recent PTM runs, the most recent storm system intensified producing more precipitation than anticipated. Because the storm was more intense than expected the assumptions made for the model were not as accurate as hoped. Given the conditions, two scenarios were run with an injection date of March 22nd and injection points at stations 812, 815, and 902:

1. Base OMR case: This is a representation of the most negative plausible OMR Index, and consists of four days (March 29th to April 1st) of OMR in the -4,000 to -5,000 cfs range while the projects export the extra outflow from the precipitation that fell on Sunday and Monday. Exports would decrease starting April 2nd, which would lead to a less negative OMR Index of -1,200 cfs.
2. A -1,250 cfs OMR case: The -1,250 cfs recommendation would be implemented on March 30th.

DWR noted that the base case includes an extra day with a more negative (i.e., -4,000 to -5,000 cfs) OMR Index due to overlooking a change in regulations that will go into effect on April 1st. In actuality, the OMR Index will be more negative today, Wednesday, and Thursday before becoming less negative on Friday when exports are reduced.

The results show that most of the entrainment occurs in week 2 and more particles are entrained by the projects and in the OMR corridor in the base case. The model projects a modest difference in the number of particles passing Chipps Island which may not be the case given the assumed extra day of more negative OMR Index.

CDFW noted that the particles entrained at the projects appears to be significantly higher under the base case, which could warrant a recommendation. However, any recommendation would not take effect for three days which would likely be too late to be protective. CDFW expressed frustration that certain fish populations and life stages would be vulnerable without an opportunity to provide protection in a timely manner.

USFWS observed that peak salvage season is approaching (historically April and May). CDFW pointed out that significant salvage has already occurred this season and initial data from SLS 6 indicates higher densities of LFS in the central and south Delta, which corresponds to increased risk.

CDFW referenced language from COA 8.4.1 that categorizes ranges of OMR levels by risk for adults LFS (Low risk: -5,000 to -4,000 cfs; Medium risk: -4,000 to -2,500 cfs; Low risk: -2,500 to -1,250 cfs). CDFW pointed out that larval and juvenile LFS are more prone to entrainment than adults, and in previous meetings the SMT has already agreed that larval and juvenile LFS in the OMR corridor are at high risk. Therefore, a -1,250 cfs

recommendation is warranted. Protecting larval and juvenile fish now will give them time to grow large enough to potentially swim out of the zone of influence of the pumps. USFWS and CDFW agreed. USFWS also noted the importance of providing protection for DS.

DWR acknowledged the importance of being consistent with previous recommendations and suggested a recommendation this week include language acknowledging the SMT understands that it may not take effect soon enough to produce a meaningful difference for the fish.

DWR also pointed out that there is no COA which allows the SMT to make recommendations for the protection of larval and juvenile DS in addition to LFS given that 8.5.2 (Larval and Juvenile Delta Smelt Protection) is not triggered. CDFW noted that although 8.5.2 can only be triggered by salvage, there may be language in the ITP that allows the SMT to make a recommendation in the absence of a hard trigger if DS are present in areas at high risk of entrainment. USFWS asked if the 2019 BiOp had a mechanism to make a recommendation in the absence of a surrogate trigger. USBR found language in the BiOp that allows for a recommendation by the SMT, DWR and USBR agreed that a recommendation for DS was warranted.

The SMT agreed to make a recommendation for both LFS and DS to operate to a seven-day average OMR Index no more negative than -1,250 cfs for both facilities.

PART 3: Live-edit Assessments

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

USBR reviewed proposed changes to the PA Assessment, which include the latest dates, detections, and data as well as:

- Added larval to the DS life stages section.
- Updated the abundance estimate.
- Biological conditions updated to remove lower Sacramento River and note that larvae are in the lower San Joaquin and north Delta.
- Evaluation questions 4 and 5 were updated to note that turbidity is expected to remain stable over the upcoming week.
- Evaluation question 7 was revised to reflect anticipated variations in QWEST and reference the detection of and risk to larval DS based on the PTM run results.
- Evaluation questions 8 and 9 note the presence of DS in the lower San Joaquin and references the SMT's recommendation for DS protection.
- The executive summary was updated to include the recent detection of DS in the lower San Joaquin River and describe the SMT recommendation of a seven-day OMR Index no more negative than -1,250 cfs for the protection of larval and juvenile DS.

ITP Longfin Smelt Risk Assessment

The SMT reviewed and discussed updates to the ITP Risk Assessment for LFS, which include the latest dates, detections, and data as well as:

Section 1-B: Risk of entrainment into the export facilities for DS and LFS in the central Delta

- Exposure Risk
 - DS:
 - Adult and subadult risk remains low.

- Medium risk for larvae in the lower San Joaquin River
 - LFS:
 - Remains low for adults and subadults.
 - Medium risk for LFS larvae and juveniles in lower San Joaquin River.
 - Risk remains high for LFS in the OMR Corridor.
- Change in exposure from last week
 - DS: increased risk due to detection of larval DS in the lower San Joaquin River.
 - LFS: increased risk due to higher densities of LFS detected and increased salvage.
 - The PTM results were cited to support the increase in risk for both species, with a caveat that entrainment may have been overestimated due to one extra day of increased exports in the PTM scenarios.

The executive summary captured that COA 8.12 was triggered on March 23rd by 20 mm Survey 1 with two DS larvae detected at station 716. Additional information was included with references to increased LFS larval density, the triggering of COA 8.4.2., and expected increased imports resulting in higher risk of entrainment.

CDFW reiterated frustration that the SMT did not have an opportunity to provide a recommendation with sufficient time for it to take effect. The SMT added language to the LFS summary reflecting:

- The SMT acknowledges they made their recommendation with the understanding that it may not have time to be implemented or may not be implemented for long.
- The SMT is concerned about the entrainment and salvage trajectory for LFS larvae and juveniles.
- The recommendation was made to avoid minimize entrainment and future entrainment of larval and juvenile LFS.
- The recommendation remains consistent with past recommendations and reflects the SMT's concern for larval LFS in the central and south Delta.

Part 4: Additional Considerations/Discussion

Agencies reported no items for elevation to WOMT other than a recommendation of both export facilities managing the seven-day average OMR Index to be no more negative than -1,250 cfs for the protection of larval and juvenile LFS and DS.