

# Smelt Monitoring Team – Tuesday, June 15, 2021

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## 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

- SMT to monitor water temperatures at Clifton Court Forebay (CCF) and notify members if the OMR management off-ramp trigger is met.
- KW to schedule post-season meeting and develop a draft agenda.
- USBR to share list of potential revisions to OMR guidance document.

## MEETING SUMMARY

### PART 1: Updates on Water Operations and Biological Updates

#### Relevant Actions & Triggers

USBR reported on the Old and Middle River (OMR) management measures currently in effect and whether they have been triggered; CDFW reported on the Incidental Take Permit (ITP) Conditions of Approval that are currently in effect and whether they have been triggered. 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	Active? 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 Nephelometric Turbidity Units (NTU <sup>1</sup> ); or (3) Real-time monitoring indicates a high risk of migration and dispersal into areas at high risk of future entrainment or a spent	Not active; Not triggered

<sup>1</sup> The current instrumentation measures turbidity in Formazin Nephelometric Units (FNU).

OMR Management Measures	Requirement	Time Frame	Trigger	Active? Triggered?
			Delta Smelt (DS) has been collected in monitoring surveys.	
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.	Off-ramped; not triggered
Larval and Juvenile DS	Run hydrodynamic models and forecasts of entrainment, informed by the Enhanced Delta Smelt Monitoring (EDSM) or other relevant survey data to estimate the percentage of larval and juvenile DS 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 DS are within the entrainment zone of the pumps based on real-time sampling of spawning adults or young of year life stages	Active; not 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 (25° C) for 3 consecutive days	Not triggered

ITP Conditions of Approval

Condition of Approval	Requirement	Time Frame	Trigger	Active? Triggered?
8.1.5.2 (Smelt Monitoring Team Risk Assessment)	Outlines contents for weekly risk assessments of DS and Longfin Smelt (LFS) required under 8.1.5 and 8.1.1	Nov 1 <sup>st</sup> through June 30 <sup>th</sup> 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 (SMT) 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 SMT 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.	Not active
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 <sup>st</sup> through Feb 28 <sup>th</sup> , exceeds most recent Fall Midwater Trawl (FMWT) Index divided by 10, or SMT determines that there is a high risk of entrainment.	Dec 1 through Feb 28 <sup>th</sup>	Salvage threshold is three LFS for WY 2021.	Not active
8.4.1 (OMR Management for Adult Longfin Smelt)				Off-ramped due to detection of Longfin Smelt larvae on December 28 <sup>th</sup>
8.4.2 <sup>2</sup> (Larval and Juvenile)	If triggered, it will restrict south Delta exports for seven consecutive	January 1st through June	(1) LFS larvae or juveniles are found in four or more of	Triggered on 1/26,

<sup>2</sup> CDFW confirmed that the “average catch per tow > 5 larvae or juveniles” referred to by Condition 8.4.2 should be calculated as the average of the three tows done at each station, i.e., the total LFS reported at each station in the 20-mm Survey is divided by three to calculate average catch per tow. Also, the SMT should always use the most recent survey data to determine whether the Condition is triggered; if only partial data is available, they refer to the previous survey available.

Condition of Approval	Requirement	Time Frame	Trigger	Active? Triggered?
Longfin Smelt Entrainment Protection)	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.	30th or until the temperature offramp occurs	the 12 Smelt Larval Survey (SLS) or 20 mm stations in the central or south Delta, Or (2) LFS 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	2/2, 2/23, 3/9, 3/16, 3/30
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 <sup>st</sup> until April 1 <sup>st</sup>	Turbidity at OBI > 12 FNU	Off-ramped; not 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	Nov 1 <sup>st</sup> through June 30 <sup>th</sup> or until off-ramped by 8.8	When the five-day salvage of juvenile DS is greater than or equal to one plus the average prior three years' FMWT index (rounded down). The threshold for this year is one.	Active; Not Triggered

Condition of Approval	Requirement	Time Frame	Trigger	Active? Triggered?
	will be based on level of risk. Furthermore, if salvage of DS 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.			
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 <sup>th</sup>	Daily mean water temperature at Clifton Court Forebay is >25° C (77° F) for three consecutive days.	No
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 <sup>th</sup> through March 31 <sup>st</sup> in dry and critical water years for LFS, and from March 1 <sup>st</sup> through June 30 <sup>th</sup> of dry and critical water years for DS	Larval Smelt are detected at SLS Station 716 during the period identified for each species, and/or when recommended by the SMT	Off-ramped for LFS; Active but not triggered for DS

## Current Operations & Outlook

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

- USBR Central Valley Office (CVO) reported that a heat wave is expected later this week, with triple digit temperatures forecasted through Sunday.
- Releases from Whiskeytown Dam on Clear Creek are currently 125 cfs. CVO is finalizing the schedule for a pulse with a peak of 600 cfs on Clear Creek.
- Releases on the Sacramento River from Keswick Dam are currently 7,500 cfs and will increase to 8,000 cfs tomorrow (June 16<sup>th</sup>).
- American River releases from Nimbus Dam are currently 1,850 cfs.
- Releases from Goodwin Dam on the Stanislaus River are currently 1,500 cfs.
- In the Delta, pumping operations remain consolidated into a single facility, with all exports routed through Banks and no pumping at Jones. This configuration will be reversed starting on Thursday (June 17<sup>th</sup>), when most exports will shift to Jones.
- The Delta Cross-channel (DCC) Gates are opening on Wednesday (June 16<sup>th</sup>), taking advantage of improved salinity conditions during the neap tide cycle. CVO anticipates challenging conditions will return later in the month as a strong spring tide will increase salinity in the Delta.
- DWR reported that Feather River releases from Oroville are currently 2,550 cfs.

- Sacramento River flows at Freeport are currently 6,200 cfs; operators hope to see flows increase in the coming days as the Shasta releases reach the Delta.
- San Joaquin River flows at Vernalis are 1,300 cfs.
- Clifton Court inflows will remain at 850 cfs today (June 15<sup>th</sup>) and tomorrow (June 16<sup>th</sup>), then decrease to 300 cfs Thursday (June 17<sup>th</sup>) and Friday (June 18<sup>th</sup>), before decreasing further to 100 to 125 cfs over the weekend. On Saturday (June 19<sup>th</sup>), 200 cfs of water will be moved out of Jones through the Intertie to Bethany Reservoir.
- Delta outflows were 3,600 cfs yesterday; depending on upstream demand, this may increase later in the week when Shasta releases reach the Delta.
- QWEST was near zero yesterday; when the CC Gates open Wednesday (June 16<sup>th</sup>), QWEST will increase to 2,000 to 2,500 cfs.
- OMRI is -1,200 cfs and is anticipated to remain near this level over the next seven days.
- Several consecutive >100° F days are needed for temperatures at CCF to reach the 77° F/25° C OMR management off-ramp trigger; the forecasted heat wave indicates CCF may approach or meet this trigger in the coming week.
- Construction of the West False River drought barrier is still underway and should be complete by July 1<sup>st</sup>; the barrier is starting to influence flow at the False River.

## Review of Environmental Conditions and Survey Updates

USBR updated the monitoring survey table in the outlook to reflect that larval sampling at the SWP and CVP has been off-ramped for the season. CDFW noted that the Environmental Monitoring Program (EMP) is ongoing.

CDFW shared survey updates.

- 20-mm Survey 6 (June 1<sup>st</sup> to 4<sup>th</sup>) processing is 55% complete. No DS have been detected so far. Eight LFS were detected, all downstream of the confluence. No smelt were detected at any of the twelve central and south Delta stations, or Station 716 (Barker Slough). CDFW shared catch data with SMT members via email yesterday (June 14<sup>th</sup>).
- Due to boat issues yesterday, 20-mm Survey 7 started today (June 15<sup>th</sup>) and will run through June 18<sup>th</sup>.
- Processing of 20-mm Survey 4 is complete; catch data is available on CDFW's website.
- Summer Townet Survey 1 is currently processing.
- Summer Townet Survey 2 will run June 21<sup>st</sup> to 25<sup>th</sup>.
- The Bay Study June survey is currently on the water.

USFWS reported on the EDSM Program.

- EDSM Phase 2 (20-mm) sampled only two days last week, June 10<sup>th</sup> and 11<sup>th</sup>, due to boat issues. They sampled two of six strata and 10 of 40 sites. Processing is ongoing.
  - No DS have been detected so far, so no abundance estimate will be generated.
  - No LFS were detected.
- EDSM crews are scheduled to sample Monday through Thursday this week. Both boats are back on the water and USFWS anticipates crews will sample all 40 sites.
- The total number of LFS identified by EDSM Phase 2 sampling remains 1,704.
- The Chipps Island Trawl caught zero DS and zero LFS in the last week.
  - The Chipps Island Trawl is scheduled to sample three days this week.

CDFW provided a salvage update (June 8<sup>th</sup> to June 14<sup>th</sup>).

- No DS or LFS were salvaged at either facility.

- The CVP is not currently exporting.
- The most recent LFS salvage occurred on May 31<sup>st</sup>.
- The SWP's expanded salvage season total remains at 677 LFS.
- The CVP's expanded salvage season total remains at 188 LFS.

USBR shared water quality data (three-station average daily water temperature as of June 14<sup>th</sup> was 21.14° C; daily average turbidity at Old River at Bacon Island (OBI) was 3.13 FNU and is currently 2.20 FNU). The seven-day weather forecast for Antioch is sunny and clear with winds from the W to WNW at 7 to 14 mph and gusts up to 28 mph and temperatures reaching 108° F on Thursday; the seven-day weather forecast for Stockton is sunny and clear with W to WNW winds from 7 to 15 mph and gusts up to 20 mph and temperatures reaching 109° F on Thursday. X2 is 94.95 km. The water temperature at CCF was 22.61° C (72.7° F); there have been zero days with temperatures >25° C (77° F).

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

CDFW shared several observations to inform the risk assessment for LFS:

- No LFS were detected by 20-mm Survey 6 in the central or south Delta.
- No LFS have been salvaged in the last two weeks.
- Exports continue to be low.
- Temperatures at CCF are already higher than the typical range for juvenile LFS and could exceed 25° C in the coming week.

CDFW asked if SMT members thought LFS salvage was over for the season.

- CDFW agreed that LFS salvage has likely ended for Water Year 21 and suggested risk could be classified as low, even within the OMR corridor, due to low exports.
- DWR agreed, given current temperatures and that no LFS have been salvaged in the past two weeks.

CDFW also noted that no DS were detected at Station 716 in 20-mm Survey 6, so there is no advice warranted for Barker Slough operations under Condition 8.12.

## 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 included making minor changes in anticipated conditions in the Delta (including OMR Index, turbidity, X2, and QWEST values), as well as:

- Removing adults from the life stages currently in the system.
- Updating the current distribution section to reference the Summer Townet Survey and note the SMT requested the off-ramp of larval sampling at the CVP and SWP on June 1<sup>st</sup>.

The group reviewed the relevant assessment questions: (1) Between December 1 and January 31, has any first flush condition been exceeded? (2) Do DS have a high risk of migration and dispersal into areas at high risk of future entrainment? (3) Has a spent female DS 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? (7) After March 15 and if QWEST is negative, are larval or juvenile DS within the entrainment zone of the CVP and SWP pumps based on surveys? (8) Based on real-time spatial distribution of DS and currently available turbidity information, should OMR be managed to no more negative than -3,500? (9) What do hydrodynamic models, informed by EDSM or other relevant data, suggest the estimated percentage of larval and juvenile DS that could be entrained may be?

- The responses to questions one through nine either did not change at all or were updated to reflect the latest dates and abiotic data.

USBR reviewed the Executive Summary.

- SMT members agreed to update the language referencing the most recent DS detections to reflect the date of last detection (May 6<sup>th</sup>) rather than the location and number of fish.

No non-consensus issues were identified.

## **Additional Considerations/Discussion**

### *Temperature Off-Ramp*

SMT members discussed how they would address a potential temperature off-ramp of OMR management.

- CDFW noted that in the past the SMT has shared a notification of reaching the off-ramp trigger via email and not held any additional meetings for the season.
- DWR and USBR supported taking the same approach this year.
- USFWS pointed out that it is possible for the OMR management off-ramp to be triggered and then have temperatures revert to cooler levels. However, there is currently no mechanism for the SMT to continue meeting if temperatures drop back below the threshold. Historically, DS were salvaged every month of the year, so it is possible fish are still in the system even after temperatures reach 25° C (77° F).
  - DWR asked if temperature data at the time of salvage was available to assess if salvage ever occurred above 25° C.
  - USFWS offered to look for relevant temperature data. USFWS pointed out that CCF is one of the hottest parts of the Delta and thus may not be the most appropriate station to use for the temperature off-ramp.
- CDFW agreed that any fish left in the Delta after the temperature off-ramp are likely of high value to the species because of their potential contribution towards increasing resilience of the species to increased water temperatures and climate change and this topic is worth further discussion. CDFW also agreed that no further SMT meetings are needed after the off-ramp is triggered.

SMT members agreed to add the temperature off-ramp trigger to the list of potential post-season meeting topics. SMT members also agreed, when appropriate, to acknowledge the trigger via email and that additional meetings would not be needed after OMR management was off-ramped.

### *Post-Season Meeting Planning*

DWR asked the SMT to confirm the scope of their post-season meeting.

- CDFW, NMFS, and USBR agreed that the SMT should focus on topics that are consistent with the existing ITP and BiOp language.



SMT members reviewed the latest version of the post-season planning outline and sorted suggested topics into categories. The list of potential categories and topics includes:

#### Process Items

- Consider how to streamline and restructure the ITP Risk Assessment.
- Consider how to ensure consensus on changes to meeting notes during the weekly review period.
- Consider other data sources that could be included in the assessment in addition to hard triggers, e.g., use data from the Chipps Island Trawl and Bay Study in addition to the FMWT.
- Consider what the SMT would do if the FMWT index for LFS is zero.
- Develop criteria and/or decision-making frameworks, including conceptual models, to help make decisions more repeatable, particularly related to:
  - On-ramping of OMR management
  - Interpretation of PTM runs
  - Initiation of OMR management for adult LFS protection
- Develop definitions for high, medium, and low risk.
- Consider whether PTM runs or other tools could inform Barker Slough advice.
- Standardize data distribution across all surveys.
- Add San Luis Reservoir levels to the outlook.

#### Proposed Studies

- Ground truth the DWR X2 tool.
  - Integrate tool onto webpage.

#### Data Analysis

- Explore the role of OMRI and QWEST in the initial distribution of fish using the first year of December SLS data.
- Analyze DJFMP data to better understand movement of LFS past Chipps Island and into the south Delta.
- Explore if OMR management can have a positive effect on adult distribution and reduce later young of year entrainment and salvage.
- Develop a web tool using historical data to help identify patterns in DS life history in the absence of DS detections.
  - Also incorporate abiotic surrogates for distribution.
- Explore how QWEST effects salvage and distribution.
- Determine what would be a meaningful site-specific change in catch (i.e., could increases of one or two individuals at a single station be the result of random sampling variability, tow time, etc.).
- Explore the relationship between larval distribution and X2 during spawning/adult migration.

#### Items for Discussion

- Consider using SLS to monitor the smaller Delta Smelt larvae in case these stages are better sampled than using the 20-mm Survey in March.
- Can the SMT use information from reaching triggers to inform risk to young of year fish?
- Timing and purpose of qualitative larval sampling.
- Should shorter tow durations be considered when calculating average catch per tow?

#### Items for Possible Elevation to WOMT

- Reconsider the method for determining the salvage trigger for DS.

- Reconsider the temperature off-ramp for OMR management.

KW will coordinate with SMT members to schedule the post-season meeting and develop a draft agenda. SMT members agreed to attend a brief planning call to review the agenda before submitting a post-season meeting proposal to the LTO Coordination Group.

USBR offered to share a list of potential revisions to the OMR guidance document they developed based on input from the LTO Coordination Group and Salmon Monitoring Team and SMT leads.

Agencies reported no items for elevation to WOMT.