

# Smelt Monitoring Team – Tuesday, March 14<sup>th</sup>, 2023

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## PARTICIPANTS

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

## ACTION ITEMS

- USFWS to evaluate options for EDSM 20mm sampling in the South Delta and may coordinate with CDFW.

## MEETING SUMMARY

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

#### Relevant Actions & Triggers

USBR noted the Preferred Action (PA) measure for Larval and Juvenile Delta Smelt will go into effect tomorrow (March 15<sup>th</sup>). Under the Interim Operations Plan (IOP), larval or juvenile Delta Smelt (DS) protections can go into effect according to the PA or Incidental Take Permit (ITP) Condition of Approval 8.5.2 requirements (whichever is more protective). 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 Old and Middle River (OMR) Guidance Document or ITP as needed.

#### 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 cubic feet per second (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 <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 Delta Smelt (DS) has been collected in monitoring surveys.	Off-ramped 1/17/23; triggered 12/31/22, implemented 1/3/23 to 1/16/23

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

OMR Management Measures	Requirement	Time Frame	Trigger	Triggered?
OMR Management	Manage to a more positive OMR than -5,000 cfs.	From the onset of OMR management to the end.		Active as of 1/17/23
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 DS 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 by detection of a ripe female by Spring Kodiak Trawl (SKT) 2; Triggered 1/17/23 to 2/8/23
Larval and Juvenile Delta Smelt	(1) Reclamation will operate to an OMRI no more negative than -5000 cfs. (2) Reclamation will operate to an OMRI no more negative than -3500 cfs.	On or after March 15 of each year until off-ramp criteria are met.	(1) 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. (2) If QWEST is negative AND Secchi depth in the south Delta is less than 1 m.	Not active
End of OMR Management	OMR criteria may control operations until June 30 (for DS 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 (CCF) reaches 77°F for 3 consecutive days	Not active

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 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		Active
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 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	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 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.	Off-ramped 1/17/23; triggered 12/31/22, implemented 1/3/23 to 1/16/23
8.3.3 (Adult Longfin Smelt Entrainment Protection)	After December 1, if an Integrated Early Winter Pulse Protection (COA 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 28th	Salvage threshold for water year (WY) 2023 is 40.	Off-ramped 12/31/22 with triggering of COA 8.3.1

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
8.4.1 (OMR Management for Adult Longfin Smelt)	<p>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:</p> <p>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</p>	Onset of OMR management through Feb 28 <sup>th</sup>	SMT recommendation based on weekly risk assessment.	Off-ramped with detection of LFS larvae in Smelt Larval Survey (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 off-ramp occurs	(1) LFS 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) 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.	Triggered by SLS 4 on 2/16/23; by SLS 5 on 2/28/23; temporarily off-ramped by COA 8.4.3 (3/2/23-present)
8.4.3 High flow offramp for Longfin Smelt	If triggered, COA 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, triggered 3/2/23

Condition of Approval	Requirement	Time Frame	Trigger	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 agrees that the action may be ended or modified.	Turbidity at OBI > 12 FNU	Active; Triggered 1/17/23 to 2/8/23; 2/15/23 to 2/17/23; 2/21/23 to 2/26/23
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 trigger (2) or (3) are met, this Condition of Approval will restrict south Delta exports to maintain a seven-day average OMR index no more negative than -3,500 cfs until the average Secchi depth is greater than 1 meter in the south Delta stations in a subsequent SLS or 20 mm survey. If average south Delta Secchi depth continues to be less than or equal to 1 meter in a subsequent SLS or 20mm survey then Permittee shall continue restrictions and request a risk assessment by the Smelt Monitoring Team to determine if additional advice and subsequent restrictions are warranted and provide advice to WOMT.	Nov 1 <sup>st</sup> through June 30 <sup>th</sup> or until off-ramped by 8.8	(1) 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 2022 September through November FMWT index for DS was zero.  Or (2) when a larval/juvenile DS is detected in SLS/20 mm  Or (3) the 3-day average water temperature at Jersey Point is $\geq 12^{\circ}\text{C}$ and Secchi from the most recent SLS/20 mm survey is $\leq 1\text{m}$ averaged across the 12 stations (809, 812, 815, 901, 902, 906, 910, 912, 914, 915, 918, and 919)	Active, not triggered

Condition of Approval	Requirement	Time Frame	Trigger	Triggered?
8.8 (End of OMR Management)	If triggered, OMR Management would be off-ramped for LFS and DS.	From the onset of OMR management through June 30 <sup>th</sup>	Daily mean water temperature at CCF is >25° C for three consecutive days.	Active; not triggered
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 LFS, and from March 1 <sup>st</sup> through June 30 <sup>th</sup> for DS	Larval Smelt are detected at SLS Station 716 during the period identified for each species, and/or when recommended by the SMT.	Not active; water year type is above normal as of 03/01/23

## Current Operations & Outlook

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

- USBR reported on weather conditions noting the arrival of another warm atmospheric river (AR) bringing significant rain and wind with the system breaking by mid-week. Light and infrequent precipitation will carry on through the week after the AR systems. Precipitation will favor the spine and southern region of the Sierra with the Sacramento and San Joaquin valley floors receiving about one to two inches of rain.
- Releases from Whiskeytown Dam on Clear Creek are currently 200 cfs.
- Releases from Keswick Dam on the Sacramento River are 3,250 cfs with a change order issued for March 14<sup>th</sup> targeting 4,750 cfs to support side flow management.
- Releases from Nimbus Dam on the American River are 30,000 cfs for Folsom flood management.
- Releases from Goodwin Dam on the Stanislaus River are 1,500 cfs due to Tulloch side flow management.
- Delta Cross Channel (DCC) gates remain closed. No changes expected for the next seven-day period.
- As March 14<sup>th</sup>, the Delta is in the last quarter of a neap cycle with tidal sequence muted by high flows. A spring tide will arrive with the new moon on March 21<sup>st</sup>.
- The federal facility is exporting 4,200 cfs.
- DWR reported that State facility exports will continue at 9,500 cfs to March 15<sup>th</sup> and will adjust to 6,680 cfs by March 16<sup>th</sup> due to US Army Corps of Engineers permits.
- Feather River releases are 15,000 cfs and will likely increase to above 20,000 cfs with runoff.
- As of March 13<sup>th</sup>, Sacramento River flows at Freeport were about 81,000 cfs.
- San Joaquin River flows at Vernalis were 21,000 cfs as of March 13<sup>th</sup>, will peak at approximately 30,000 cfs later this week.
- Delta outflows were 100,000 cfs as of March 13<sup>th</sup> and will increase over the next couple of days, likely to remain below 200,000 cfs.
- As of March 13<sup>th</sup>, QWEST was just below 32,000 cfs with flows expected to increase to 55,000 cfs.
- March 13<sup>th</sup> Rio Vista flows were 70,000 cfs and will likely reach approximately 140,000 cfs.
- X2 is west of Martinez (< 56 km).

- The expected daily OMR index values as of March 13<sup>th</sup> are -2,100 to +7,000 cfs.
  - March 11<sup>th</sup> OMR at USGS gauge:
    - Daily: -4,600 cfs
    - Five-Day: -5,300 cfs
    - 14-Day: -4,400 cfs
  - March 11<sup>th</sup> OMR Index:
    - Daily: -5,100 cfs
    - Five-Day: -5,000 cfs
    - 14-Day: -4,500 cfs
  - March 13<sup>th</sup> OMR Index:
    - Daily: -3,300 cfs
    - Five-Day: -4,600 cfs
    - 14-Day: -4,700 cfs
  - With the high San Joaquin River flows, the Index value could reach +7,000 within the coming week.

No updates to the survey table.

## Review of Environmental Conditions and Survey Updates

CDFW delivered catch updates on relevant surveys to the SMT.

- SLS 6 and 20-mm Survey 1 were scheduled to sample from March 13<sup>th</sup> to the 16<sup>th</sup>, but the 14<sup>th</sup> was cancelled due to weather concerns. The new timeframe is now the 13<sup>th</sup> to the 17<sup>th</sup>.
  - Average Secchi depth at the 12 South and Central Delta stations
    - SLS 6: 45.6 cm
    - 20mm Survey: 53.7 cm
- SLS 5 was on the water from February 27<sup>th</sup> to March 1<sup>st</sup>. All stations were sampled. New detections not reported last week are as follows, processing is ongoing:
  - Larval LFS
    - Suisun Bay and West region: 364
- SKT Survey 3 was on the water from March 6<sup>th</sup> to the 9<sup>th</sup>. New detections not reported last week are as follows, processing is ongoing:
  - LFS
    - Station 405: Three (Fork Length (FL) = 67-92 mm)
    - Station 411: Three (FL = 92-101 mm)
    - Station 504: One (FL = 21 mm)
    - Station 606: One (FL = 20 mm)
    - Station 520: One (FL = 21 mm)
  - Juvenile LFS
    - Detections occurred in Suisun Marsh, Suisun Bay, and confluence (FL = ~20 mm). This is the first detection of juvenile LFS this season.
  - DS
    - Station 709: Two (FL = 72 and 76 mm; both had left orange anterior VIE tags)

USFWS provided updates on the Enhanced Delta Smelt Monitoring Program (EDSM) and Chipps Island Trawl.

- EDSM sampled the week of March 6<sup>th</sup> Monday through Thursday completing all sites.
  - DS: Two
    - Suisun Marsh: One (FL = 72 mm; ad-clipped)
    - Sacramento Deep Water Ship Channel: One (FL = 65 mm; VIE-Tagged; Left, Orange, Anterior)
    - The DS abundance estimate for the week of March 6<sup>th</sup> is 2,447.
  - LFS: 14
    - Suisun Marsh and Suisun Bay: Six (FL = 74-87 mm)
- EDSM is scheduled to sample this week Monday, March 13<sup>th</sup> through Friday, March 17<sup>th</sup>.
- Chipps Island sampled the week of March 6<sup>th</sup> Monday through Friday completing 50 tows.
  - DS: Zero
  - LFS: 44 (FL = 76-113 mm)
- Chipps Island will sample Sunday, Monday, Wednesday, Thursday and Friday on the week of the 13<sup>th</sup>.

CDFW provided a salvage and qualitative larval sampling update (March 6<sup>th</sup> to the 12<sup>th</sup>).

- No osmerids were detected at either facility.
- Operations
  - State Facility
    - Reduced counts on March 9<sup>th</sup> from 1900 to 2300 due to high fish numbers.
    - Reduced counts on March 9<sup>th</sup> from 0100 to 0130 in holding tank #2 due to maintenance.
    - Reduced counts on March 10<sup>th</sup> at 0100 due to unexpected flow change.
  - Federal Facility
    - Missed counts on March 9<sup>th</sup> from 1740 to 2400 due to a power outage.
    - Reduced counts on March 10<sup>th</sup> at 1400 due to a procedural variance.

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

### Delta Smelt

USBR clarified that federal agencies will follow both the PA and the IOP for larval DS protection. Where there is a discrepancy between the two guidelines, the agencies will defer to the more protective regulatory guideline.

DWR inquired if the concurrent EDSM Kodiak trawl and 20-mm Survey runs will lead to USFWS re-evaluating the possibility of sampling in the South Delta. Given the abundance of salvage and detections in the South Delta this year it may be wise to initiate 20-mm sampling in the region. CDFW concurred and suggested that EDSM and 20-mm could alternate weeks sampling in the South Delta. USFWS noted EDSM has not sampled the South Delta using the 20-mm gear in the past but will discuss internally and report back to the SMT.

CDFW noted that temperatures are increasing at Clifton Court Forebay, having just reached 13° C while other stations remain around 10° C.

DWR mentioned that turbidity did briefly exceed 12 FNU late last week, but did not last for more than a day. Increased winds today and a positive OMR index anticipated later this week could lead to elevated turbidity at OBI. For the coming week, a turbidity bridge avoidance action would not control operations if the OMR index is more positive than -2,000 cfs.

Lastly, DWR highlighted that Yolo Bypass is overtopping and will continue to do so for the next five days resulting in zooplankton rich water for fish in the North Delta.



The SMT agreed the risk of entrainment for DS in the OMR corridor is moderate as long as the OMR index remains negative and/or if a turbidity bridge forms, and low if OMR becomes positive. The SMT agreed risk for DS is low in the Lower San Joaquin River and elsewhere in the system.

### **Longfin Smelt**

CDFW remarked that conditions are favorable for LFS, citing high flows, a less negative OMR index, and recent EDSM and SKT detections downstream. The SMT agreed risk for LFS subadults and adults is now low throughout the entire system. For LFS larvae and juveniles, the SMT agreed risk has decreased to moderate for fish in the OMR corridor as long as the OMR index remains negative (and low if OMR becomes positive) and is low in the lower San Joaquin River and elsewhere in the system.

CDFW noted the water year type as of March 1<sup>st</sup> remains above normal, therefore ITP COA 8.12 (Barker Slough) remains inactive.

### **PTM Results**

DWR reviewed results between the two previous PTM runs and noted that the number of days between the PTM injection date and the date the scenarios diverged was inconsistent between the two runs. In the future DWR will strive to be consistent and standardize injection dates as the day of the meeting and the divergence date as the day recommendations could go into effect. DWR will incorporate these considerations into their PTM process going forward.

### **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, conditions, data, and reflects the discussion documented in Part 2 above.

#### **ITP Longfin Smelt and Delta Smelt Risk Assessment**

The SMT reviewed and discussed updates to the ITP Risk Assessment for DS and LFS, which include the latest dates, detections, conditions, data, and reflects the discussion documented in Part 2 above.

### **Part 4: Additional Considerations/Discussion**

No items to elevate to WOMT.