

# State Water Project Incidental Take Permit Risk Assessment for Delta Smelt and Longfin Smelt

## Section 1: Overview

**Date: December 22, 2020**

### **Life Stages Present:**

Delta Smelt: Adult

Longfin Smelt: Adult

### **Advice to WOMT:**

No advice is warranted for south Delta or Barker Slough operations.

### **Risk Assessment:**

Risk of entrainment into the central and south Delta or into the export facilities in the south Delta is low for Delta Smelt and low to moderate for Longfin Smelt across the range of expected OMR Index levels.

*Delta Smelt:* Based on distribution patterns over the past decade and no recent detection data, Delta Smelt are unlikely to be prevalent in the South Delta. Limited detection data support Delta Smelt being present in Suisun Marsh and west of the Sacramento-San Joaquin confluence. High X2 position could mean the distribution of Delta Smelt extends further upstream of the confluence. Precipitation is anticipated but change to Freeport flows and turbidity are not expected to reach “First Flush” conditions within the next seven days. The likelihood of Delta Smelt adult entrainment is slightly elevated relative to the previous seven days due to the range of potential OMR values being more negative during the next seven days and seasonal timing. The overall probability of Delta Smelt moving into the south Delta is low. The projected OMR Index limits are at a level that is sufficiently protective and low turbidity creates an overall low likelihood of entrainment.

*Longfin Smelt:* Evaluation of recent catch data does not indicate that Longfin Smelt (LFS) have entered the central or south Delta, however there is evidence that they have begun migrating upstream. At this time of year, the SMT looks to the Chipps Island survey to predict Longfin Smelt migration upstream into the Delta. Chipps Island Survey collected three age-2 LFS (FL = 105 – 114 mm) and three age-1 LFS (FL = 68 – 74 mm) on 12/08/2020 and 12/09/2020. December FMWT reported four LFS with one collected in San Pablo Bay, one in Suisun Bay, one near Chipps Island and one in the lower Sacramento River. EDSM collected 5 LFS (FL = 72 – 106 mm) in Grizzly Bay on 12/17/2020. UC Davis Otolith and Geochemistry Laboratory collected ripe and post spawn LFS while sampling in south San Francisco Bay on 12/12/2020. See section 4-B below for catch details.

### **Section 1-A: Sacramento River and Confluence**

Risk of entrainment into central Delta and export facilities for Delta Smelt and Longfin Smelt in Sacramento River (8.1.5.2 C ii, iii, iv)

- Exposure Risk:
  - Delta Smelt: Low
  - Longfin Smelt: Low
- Routing Risk:
  - Delta Smelt: Low
  - Longfin Smelt: Low
- Overall Entrainment Risk
  - Delta Smelt: Low
  - Longfin Smelt: Low

## Section 1-B: Central Delta

Risk of entrainment into the export facilities for Delta Smelt and Longfin Smelt in the central Delta

- Exposure Risk:
  - Delta Smelt: Low
  - Longfin Smelt: Low
- Change in exposure from previous week:
  - Delta Smelt: No change
  - Longfin Smelt: Slight increase in exposure associated with onset of upstream migration, however, there have been no detections in areas associated with elevated risk of entrainment into the export facilities.
- Reporting Old and Middle River Index (OMRI) (*Number and range of OMRI bins will vary based on anticipated hydrology and operations*)
  - OMRI is approximately -2,500 cfs and projected to remain between -2,500 cfs and -5,500 cfs.
  - OMRI (Export Scenario OMRI = -2,500 cfs)
    - Delta Smelt: Low Risk
    - Longfin Smelt: Low Risk
  - OMRI (Export Scenario OMRI = -5,500 cfs)
    - Delta Smelt: Low Risk
    - Longfin Smelt: Moderate for fish in OMR corridor (for fish in proximity to Bacon Island, the risk is moderate, for fish in the main-stem San Joaquin River, an OMRI of -5,000 cfs is considered protective)

## Section 2: Basis for Advice

The 2020 [Incidental Take Permit for Long-Term Operation of the State Water Project in the Sacramento-San Joaquin Delta 2081-2019-066-00](#) (ITP) states that advice to Water Operations Management Team (WOMT) shall be based the following Conditions of Approval:

*List relevant Condition of Approval number and title based on species/life stage, time of year, etc.*

### 8.1.5.2 Smelt Monitoring Team Risk Assessment

#### 8.3.1 Integrated Early Winter Pulse Protection.

Between December 1 and January 31 each year Permittee shall 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 the following criteria:

- 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 Nephelometric Turbidity Units (NTU), 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.

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, until the OMR Management Season ends (Condition of Approval 8.8).

The Integrated Early Winter Pulse Protection Action may only be initiated once during the December 1 through January 31 time period each year.

### **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 been 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 (Condition of Approval 8.3) if:

- Cumulative combined LFS expanded salvage (total estimated LFS counts at the CVP and SWP salvage facilities beginning December 1 through February 28 exceeds the most recent Fall Midwater Trawl (FMWT) LFS index<sup>1</sup> divided by 10, OR
- Real-time monitoring of abiotic and biotic factors indicates a high risk of LFS movement into areas at high risk of future entrainment, as determined by DWR and CDFW Smelt Monitoring Team staff.

When evaluating the possibility of LFS movement into areas that may be subject to an elevated risk of entrainment, the Smelt Monitoring Team shall evaluate catch of LFS with fork length  $\geq 60$  mm by the Chipps Island Trawl (conducted by USFWS) as an early warning indicator for LFS migration movement into the Delta, in addition to other available survey and abiotic data. The Smelt Monitoring Team shall communicate the results of these risk assessments and advice to the WOMT (Condition of Approval 8.1.3), and operational decisions shall be made as described in Condition of Approval 8.1.4 (Collaborative Approach to Real-Time Risk Assessment).

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<sup>1</sup> The Fall Midwater Trawl (FMWT) Survey annual abundance index for LFS is calculated as the sum of September through December monthly abundance indices and is typically reported at about the same date as adult salvage begins in December. The FMWT Index available beginning on December 1 each year shall be used to establish this threshold.

## Discussion of Conditions of approval

Provide sentence or two addressing criteria for each Condition of Approval listed in "Basis for Advice" section. Refer to data below where appropriate.

SMT will conduct weekly risk assessments as described in Condition of Approval 8.1.5.2.

8.3.1 Environmental conditions have not exceeded the thresholds identified in this condition. The SMT examined abiotic conditions and determined that risk is low for Delta Smelt.

8.3.3 No LFS have been salvaged this water year. The cumulative expanded salvage threshold is 2 based on the most recently available FMWT Index. The November Index, which was reported to the SMT via email on 11/25/2020, will be used until the annual index is finalized in late December or early January. The SMT examined abiotic conditions and determined that risk is low for Longfin Smelt. See section 4-B for the discussion of the FMWT Index.

## Section 3: Hydrology and Operations

Assessment of hydrologic, operational, and meteorological information. 8.1.5.2 A.

### Section 3-A: Water operations conditions. 8.1.5.2.A. i

- Antecedent Actions: (e.g. DCC gate closure and actions such as integrated early winter pulse protection, etc.)
  - DCC gates will remain closed for the remainder of the season (through May 20, 2021 per the PA description for DCC gate operations) but may be opened to maintain water quality during drought conditions for up to 5 days and for up to 2 events as per the PA in December and January.
  - Grantline Canal agricultural barrier was breached on 11/11/2020. The OMRI equation was adjusted accordingly to accommodate the change in barrier status.
- Controlling Factors: Delta outflow and water quality
- Water Temperature:
  - CCF = Not discussed (Condition of Approval 8.8: Daily average temperature at CCF exceeds 25°C for 3 consecutive days)
  - 3 Station Average = 9.78°C
- Tidal Cycle: Transitioning from neap to spring cycle. Could see increased salinity prior to storm which could have a minor impact on operations.
- Turbidity:
  - 8.3.1 Freeport 3-day average = 5.36 FNU
  - 8.5.1 Turbidity at OBI Feb 1 to April 1
- Salinity: X2 is upstream of Collinsville
- Hydrologic Footprint:
  - No PTM models were run this week. CDFW will request PTM runs if any LFS are collected in the San Joaquin River or central/south Delta.

### **Section 3-B: Water operations outlook. 8.1.5.2.A. ii**

- Outages
  - SWP: No export or salvage outages reported for the period of 12/15/2020 to 12/21/2020
- CVP: No export or salvage outages reported for the period of 12/07/2020 to 12/14/2020. Exports
  - CCF: 2000 cfs as of 12/22/2020 and is projected to increase to 3000 cfs on 12/23/2020
  - CVP: 800 cfs.
  - Barker Slough: Not reported. Will begin reporting when Barker Slough Condition of Approval go into effect January 15<sup>th</sup>.
- Meteorological Forecast: Mostly cloudy with wind gusts upto 22 mph. Rain is expected to arrive Friday 12/25/2020
- Storm Event Projection: Rain is expected to arrive Friday 12/25/2020 with precipitation possible into the following week. Storm is not expected to result in First Flush conditions.

### **Section 3-C: Projected conditions. 8.1.5.2.A. iii**

- DCC Gates position: Closed for season (through May 20, 2021)
- Sacramento River flow at Freeport: Approximately 9,600cfs and will likely increase with runoff from a storm projected to arrive Friday 12/25/2020.
- San Joaquin River flow at Vernalis: 1000 cfs
- Qwest: + 700 cfs as of 12/21/2020 and will vary depending on precipitation and exports.
- Old River at Bacon Island Turbidity: Not reported
- Freeport Turbidity (3-day average): 5.36 FNU.
- Expected changes in South Delta Exports: Exports may increase if water quality permits.
- NDOI: 7,900 as of 12/22/2020.

Table 1: Comparison of OMR and OMR Index (5-day and 14-day averages reported on [SacPAS website](#), accessed Dec 22, 2020)

Date	Averaging Period	USGS gauges (cfs)	Index (cfs)
12/22/2020	Daily	Not Reported	-2,500 cfs
12/19/2020	5-day	Not Reported	-1,570 cfs
12/19/2020	14-day	Not Reported	-1,630 cfs
NA	Daily	Not Reported	Not Reported
12/18/2020	5-day	-1,220 cfs	-1,540 cfs
12/18/2020	14-day	-1,600 cfs	-1,680 cfs

## Section 4: Distribution and Biology.

### 8.1.5.2.B. Assessment of biological information for Delta Smelt and Longfin Smelt

#### **Section 4-A: Delta Smelt population status 8.1.5.2.B. i**

- EDSM did not collect any Delta Smelt last week (12/14/2020 – 12/18/2020).
- Delta Smelt LCM discussion. Not Discussed.
- Biological Conditions: None reported.
- % in Delta zones: SMT did not discuss distribution in terms of percentage in Delta zones.
- Other Surveys: No Delta Smelt detections were reported in recent sampling including Bay Study and FMWT. FCCL brood stock collection has not detected any Delta Smelt in the lower Sacramento River after 5 days of sampling. December SLS began on 12/14/2020 and sampled 12 south and central Delta stations. No Delta Smelt were detected. There will be a second December SLS survey beginning on 12/28/2020. Both December SLS surveys will only be conducted in the south and central Delta. January SLS is scheduled to begin 2 weeks after the second December SLS survey.
- The last Delta Smelt detection occurred on 11/09/2020 in Suisun Marsh.
- Salvage: No Delta Smelt have been detected at either salvage facility this season.

#### **Section 4-B: Longfin Smelt population status 8.1.5.2.B. ii.**

- FMWT Index: The November FMWT Index is 21.7. Indices for September and October were zero. Preliminary December FMWT catch reported 4 Longfin Smelt, with one collected in San Pablo Bay, Suisun Bay, the lower Sacramento River and one near Chipps Island. Fork lengths and station numbers were not available at the time of the call. The annual index is typically distributed in late December or early January.
- Bay Study: During November sampling, 42 Longfin Smelt were collected. One was collected in Carquinez Strait. The rest were collected in San Pablo and San Francisco Bays. December Bay Study began 12/01/2020 but was interrupted after two days of sampling. No Longfin Smelt were detected.
- Other Surveys: EDSM collected 5 LFS in Grizzly Bay last week (12/13/2020 to 12/19/2020). Forklengths were 72, 73, 74, 75 and 106 mm). Chipps Island Survey did not sample last week.
- December SLS began on 12/14/2020 and sampled 12 stations in the south and central Delta. No Longfin Smelt were detected. There will be a second December SLS survey beginning on 12/28/2020. Both December SLS surveys will only be conducted in the south and central Delta. January SLS is scheduled to begin 2 weeks after the second December SLS survey.
- UC Davis Otolith Lab collected Longfin Smelt in south San Francisco Bay including spent and ripe adults on 12/12/2020.
- Salvage: No Longfin Smelt have been detected at either salvage facility.

**Section 4-C:** Additional data sources to assess sensitivity to entrainment Delta. 8.1.5.2.C & D. i

- SMT estimated X2 using a tool developed by DWR staff that applies the same methodology used to calculate X2 reported on CDEC. There is interest in validating the results of this tool.

**Notes:** The SMT ITP Risk Assessments can be accessed on the CDFW [Water Branch website](#).

The Onset of OMR management has not been triggered.

FCCL brood stock collection has not collected any Delta Smelt this year.

EDSM sampling was postponed due to heavy fog on 12/21/2020 and 12/22/2020.

The SMT discussed potential variability in operations. A storm is expected to reach the area on Friday 12/25/2020, however, the extent to which it will affect operations will depend on the amount of precipitation that it produces. The storm is not expected to cause "First Flush" conditions.

**Attachments:**

*Insert catch reports, PTM results, Salvage tables, etc.*