

# State Water Project Incidental Take Permit Risk Assessment for Delta Smelt and Longfin Smelt. Off-cycle meeting for Conditions of Approval (COA) 8.4.2 Larval and Juvenile Longfin Smelt Protection.

## Section 1: Overview

**Date:** 01/11/2024

### **Life Stages Present:**

Longfin Smelt (LFS): Larvae, Sub-Adults, and Adults

### **Advice to Water Operations Management Team (WOMT):**

SMT recommends limiting SWP exports to target the State's share of a -3,500 cfs OMRI on a 7-day average under COA 8.4.2.

### **Risk Assessment:**

*Longfin Smelt:* LFS migration and spawning are on-going. Larval LFS have been detected in the Lower San Joaquin River, Lower Sacramento River, and the Confluence by Smelt Larva Survey (SLS) 13 and SLS 1. Larval Entrainment Study (LES) also detected a larva on 1/10/24 approximately 1 km from Clifton Court Forebay. Distribution of LFS is throughout the Central and South Delta. SLS 1 triggered COA 8.4.2 larval and juvenile LFS protection on 01/10/24 with the detection of larval LFS at four of the 12 Central and South Delta stations (809, 812, 815, and 901), which limits the OMRI to no more negative than -5,000 cfs on a 7-day average. With COA 8.4.2 triggered, the SMT met for an off-cycle meeting to re-assess risk for larval LFS in this area and determine if an OMRI recommendation more positive than -5,000 cfs on a 7-day average is warranted. With the -4,800 to -5,100 cfs OMRI expected this week and Qwest projected to be around +600, the SMT determined that risk in this area is still moderate, but increased OMRI restrictions are warranted due to the detections within the Central and South Delta. SMT recommends limiting SWP exports to target the State's share of a -3,500 cfs OMRI on a 7-day average under COA 8.4.2.

### **Discussion of larval LFS risk:**

- PTM run discussed in this meeting included only results from the injection point at station 809 due to technical difficulties. Results from injection points from 812 and 815 will be provided by the next SMT meeting scheduled on 01/16/24.
- Detections of LFS larvae at SLS stations 809, 812, 815, and 901 from SLS surveys 12 and 1, as well as one larva detected by LES in West Canal suggest LFS being spread throughout the Central and South Delta.
- CDFW originally recommended -2,000 cfs OMRI due to the larval distribution being well within the zone of influence and Qwest forecasted to be positive only in this condition.

- DWR updated the Qwest forecast and indicate +1,300 cfs under state share of -3,500 cfs OMRI.
- SMT came to a consensus that with the positive Qwest projected (approximately +1,300 cfs), a -3,500 cfs OMRI would be appropriate and is expected to limit entrainment into the OMR corridor and may help push the larvae in the San Joaquin River downstream towards Chipps Island.

## Section 2: Basis for Advice

The 2020 ITP ([Incidental Take Permit for Long-Term Operation of the State Water Project in the Sacramento-San Joaquin Delta 2081-2019-066-00](#)) states that advice to 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.*

8.4.2 Larval and Juvenile Longfin Smelt Entrainment Protection. From January 1 through June 30, when a single Smelt Larva Survey (SLS) or 20 mm Survey (20 mm) sampling period exceeds one of the following thresholds:

- LFS larvae or juveniles found in four or more of the 12 SLS or 20 mm stations in the central Delta and south Delta (Stations 809, 812, 815, 901, 902, 906, 910, 912, 914, 915, 918, 919), or
- LFS catch per tow exceeds five LFS larvae or juveniles in two or more of the 12 stations in the central Delta and south Delta (Stations 809, 812, 815, 901, 902, 906, 910, 912, 914, 915, 918, 919).

Permittee shall restrict south Delta exports for seven consecutive days to maintain a seven-day average OMR index no more negative than -5,000 cfs. Permittee shall also immediately convene the SMT to conduct a risk assessment (see Condition of Approval 8.5.1.2) to assess the risk of larval and juvenile LFS entrainment into the South Delta Export Facilities, determine if an OMR flow restriction is warranted, and recommend an OMR flow limit between -1,250 and -5,000 cfs. The SMT risk assessment and operational advice shall be reviewed by the WOMT (Condition of Approval 8.1.3) via the Collaborative Real-time Decision-making process (Condition of Approval 8.1.4). Permittee shall operate to the export restriction and OMR flow target approved through Conditions of Approval 8.1.3 and 8.1.4. Each week the SMT shall convene to conduct a new risk assessment and determine whether to maintain, or off ramp from, export restrictions based on the risk to LFS, or until the DS and LFS off-ramp has been met as described in Condition of Approval 8.8 (End of OMR Management).

From January 1 through June 30, DWR and CDFW SMT staff shall conduct weekly, or more often as needed, risk assessments (see Condition of Approval 8.5.1.2) to assess the risk of larval and juvenile LFS entrainment into the South Delta Export Facilities. As a part of the risk assessment the SMT shall provide advice on the appropriate OMR flow targets to minimize LFS entrainment or entrainment risk, or both. The SMT shall provide its advice to WOMT (Condition of Approval

8.1.3) and use the Collaborative Approach to Real-time Risk Assessment process described in Condition of Approval 8.1.4 to determine if an OMR flow restriction is warranted and determine OMR flow limit between -1,250 and -5,000 cfs. The OMR flow limit shall be in place until the next risk assessment conducted by the SMT determines that it is no longer necessary to minimize take or related impacts to LFS, or until the DS and LFS off-ramp has been met as described in Condition of Approval 8.8 (End of OMR Management).

### **Discussion of Conditions of Approval**

*Provide discussion addressing criteria for each Condition of Approval listed in “Basis for Advice” section. Refer to data below where appropriate.*

COAs relevant to OMR management went into effect December 1<sup>st</sup>. The Smelt Monitoring Team (SMT) conducted a Risk Assessment based on COA 8.1.5.2.

8.4.2: This COA is in effect as of 01/01/24 and was triggered on 01/10/24 by SLS survey 1 which detected larval LFS at four of the 12 Central and South Delta stations, with five larvae total in that region. SMT convened an off-cycle meeting on 01/11/24 and recommended limiting SWP exports to target the State’s share of a -3,500 cfs OMRI on a 7-day average.

### 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. Delta Cross Channel [DCC] gate closure and actions such as integrated early winter pulse protection, etc.)*
  - DCC: Closed on 11/27/23. Expected to remain closed for the season.
  - OMR management season initiated on 01/01/2024 based on COA 8.3.2.
- Controlling Factors: OMR (-5,000 cfs on a 7-day average)
- Water Temperature:
  - Clifton Court Forebay (CCF) Daily Average Water Temperature = NA
  - 3 Station Average = 9.69°C
- Tidal Cycle: Transitioning from Spring to Neap tide.
- Turbidity:
  - 8.3.1 Freeport 3-day average = 21.66 formazin nephelometric units (FNU)
  - 8.5.1 Old River at Bacon Island (OBI) Turbidity = 2.38 FNU
- Salinity: X2 = ~79 km
- Hydrologic Footprint: DWR will re-run the Particle Tracking Model requested and provide to SMT prior to next SMT meeting.

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

- Outages
  - State Water Project (SWP): None
  - Central Valley Project (CVP): None
- Exports:
  - CCF: 2,600 cfs. Anticipated range: 2,000 to 3,500 cfs
  - Jones: 3,600 cfs. Anticipated range: 3,600 to 4,200 cfs
- Meteorological Forecast: Cold and dry Monday day; precipitation chances return Monday night and persist through this weekend.
- Six-day Storm Event Projection: NA

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

- DCC Gates position: Expected to remain closed for the season.
- Sacramento River flow at Freeport: 16,470 cfs as of 01/10/24.
  - Anticipated range: 14,000 to 20,000 cfs
- San Joaquin River flow at Vernalis: 1,880 cfs as of 01/10/24.
  - Anticipated range: 1,750 to 2,250 cfs
- Qwest: -884 cfs as of 01/09/24. Anticipated range: highly variable with expected precipitation but -1,000 to -2,000 cfs.
- OBI Turbidity: No anticipated changes.
- NDOI: 14,300 cfs as of 01/09/24. Anticipated range: 10,000 to 20,000 cfs.
- Upstream releases:
  - Keswick = 5,000 cfs. No anticipated changes.
  - Nimbus = 1,750 cfs. No anticipated changes.
  - Goodwin = 1,000 cfs. No anticipated changes.
  - Oroville = 1,750 cfs. No anticipated changes.

Table 1: Comparison of OMR and OMR Index (5-day and 14-day averages for OMR Index and USGS gauge were reported on [SacPAS website](#), accessed 11 January 2024.

Date	Averaging Period	USGS gauges (cfs)	Index (cfs)
01/07/24	Daily	-5,490	-5,030
01/07/24	5-day	-5,330	-4,920
01/07/24	14-day	-5,510	-6,100

## Section 4: Distribution and Biology

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

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

- FMWT September to December Index: 464
  - In December, two LFS were detected in the Lower Sacramento River, and 86 LFS were detected in San Pablo Bay, Carquinez Strait, Suisun Bay, and Montezuma Slough.
- Other Surveys:
  - EDSM: Three adult (FL: > 84mm) and 78 sub-adult (FL: 58-83mm) LFS were detected in the Confluence, Suisun Bay, and Suisun Marsh during the week of 01/01/24 (Table 1). Some of the adult-sized LFS were not measured in order to reduce handling stress for the broodstock collection (indicated as FL: > 84mm).
  - Chipps Island Trawl: Two adult (FL: >84mm) LFS were detected during the week of 01/01/24 (Table 2).
  - Bay Study: The December survey detected four adult (FL: 93-98mm) and 47 sub-adult (FL: 53-77mm) LFS in the Lower Sacramento River and the Confluence region, and ten adult (FL: 85-112mm) and 36 sub-adult (FL: 50-72mm) LFS in the South Bay, Central Bay, San Pablo Bay, and the Suisun region.
  - SLS: Survey 13 detected two larval (FL: 7mm) LFS in the San Joaquin River, 40 larval (FL: 5-9mm) LFS in the Lower Sacramento River and Confluence region, and 11 larval (FL: 6-10mm) LFS in Suisun Marsh (Table 3). Processing for Survey 13 is complete. Survey 12 detected two yolk-sac larvae (FL: 5-6mm) in the Lower Sacramento River.
- Salvage: No LFS have been salvaged at either facility this water year.

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

##### **Notes:**

- SLS 1 is on the water this week.
- In this document, salvage will be noted in three ways:
  - Salvage (pre-expansion) represents the number of fish detected in subsamples at the fish salvage facilities.
  - Salvage (post-expansion) represents the estimated total number of fish detected at the fish salvage facilities using appropriate expansion factors for the subsampled time. This may be reported as either daily or weekly value.
  - Cumulative seasonal salvage represents the year-to-date sum of salvage (post-expansion) for the current water year.

Attachments: Table 1: EDSM catch table, Table 2: Chipps Island Trawl catch table, Table 3: Smelt Larva Survey (SLS) 13 catch table, Table 4: SLS 1 catch table, and Figure 1: Map of SLS sampling stations.

Table 1. Delta Smelt (DSM) and Longfin Smelt (LFS) catch for EDSM 2023 Phase 1 Kodiak

trawls on the week of 01/01/24. Only stations with DSM or LFS catch are reported here. Some adult-sized LFS were not measured in order to reduce handling stress for the broodstock collection (indicated as FL: > 84mm). These data are preliminary and subject to change.

Date	Stratum	Subregion	Station Code	Species	Mark Type	Fork Length (mm)	Total Catch	Disposition
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM05	LFS	None	71	1	UC Davis/DOP
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	58	1	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	61	1	UC Davis/DOP
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	61	1	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	62	2	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	64	2	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	65	3	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	66	3	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	67	5	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	68	1	UC Davis/DOP
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	68	5	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	69	2	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	70	1	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	71	2	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	72	3	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	73	7	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	74	1	UC Davis/DOP
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	74	2	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	75	3	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	76	2	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	77	1	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	77	1	UC Davis/DOP
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	78	4	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	79	1	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	80	3	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	81	1	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	82	1	Released
1/2/2024	Suisun Marsh	Suisun Marsh	24-23-SM06	LFS	None	83	2	Released
1/3/2024	Suisun Marsh	Grizzly Bay	24-23-SM04	LFS	None	66	1	UC Davis/DOP
1/3/2024	Suisun Marsh	Grizzly Bay	24-23-SM04	LFS	None	72	1	UC Davis/DOP
1/3/2024	Suisun Marsh	Grizzly Bay	24-23-SM04	LFS	None	75	2	UC Davis/DOP
1/3/2024	Suisun Marsh	Grizzly Bay	24-23-SM04	LFS	None	80	1	Released
1/5/2024	Suisun Bay	Confluence	24-23-SB06	LFS	None	74	1	Released
1/5/2024	Suisun Bay	Honker Bay	24-23-SB07	LFS	None	>84	3	Released
1/5/2024	Suisun Bay	Honker Bay	24-23-SB07	LFS	None	60	1	Released
1/5/2024	Suisun Bay	Honker Bay	24-23-SB07	LFS	None	68	1	UC Davis/DOP
1/5/2024	Suisun Bay	Honker Bay	24-23-SB07	LFS	None	68	2	Released
1/5/2024	Suisun Bay	Honker Bay	24-23-SB07	LFS	None	70	1	Released
1/5/2024	Suisun Bay	Honker Bay	24-23-SB07	LFS	None	71	1	Released
1/5/2024	Suisun Bay	Honker Bay	24-23-SB07	LFS	None	73	1	Released
1/5/2024	Suisun Bay	Honker Bay	24-23-SB07	LFS	None	78	1	UC Davis/DOP
1/5/2024	Suisun Bay	Honker Bay	24-23-SB07	LFS	None	80	1	UC Davis/DOP
1/5/2024	Suisun Bay	Honker Bay	24-23-SB07	LFS	None	82	1	UC Davis/DOP

Table 2: Delta Smelt (DSM) and Longfin Smelt (LFS) catch for Chipps Island Trawl on the week of 01/01/24. Only stations with DSM or LFS catch are reported here. Some adult-sized LFS were not measured in order to reduce handling stress for the broodstock collection (indicated as FL: > 84mm). These data are preliminary and subject to change.

Date	Station Code	Species	Mark Type	Fork Length (mm)	Total Catch	Disposition
1/4/2024	SB018N	LFS	None	>84	2	Broodstock

Table 3: SLS 13 catch table. Processing is on-going. These data are preliminary and subject to change.

Year	Survey #	SLS Station	Date	Turbidity (FNU)	Secchi (cm)	Sample Status	Species	Smelt Catch	ID Status	Min Length (mm)	Max Length (mm)	Mean Length (mm)	Yolk Sac (# of Individuals)
2023	13	508	12/28/2023	7.3	78	Processed	Longfin Smelt	11	Complete	6	9	7.1	11
2023	13	513	12/28/2023	8.3	68	Processed	Longfin Smelt	8	Complete	5	8	6.8	8
2023	13	520	12/27/2023	8.2	72	Processed	Longfin Smelt	4	Complete	6	8	6.8	2
2023	13	609	12/28/2023	14.2	48	Processed	Longfin Smelt	4	Complete	8	10	8.5	0
2023	13	610	12/28/2023	11.1	53	Processed	Longfin Smelt	7	Complete	6	7	6.9	7
2023	13	703	12/27/2023	9.4	79	Processed	Longfin Smelt	1	Complete	8	8	8.0	1
2023	13	704	12/27/2023	7.3	86	Processed	Longfin Smelt	1	Complete	7	7	7.0	1
2023	13	705	12/27/2023	7.9	87	Processed	Longfin Smelt	2	Complete	6	7	6.5	1
2023	13	707	12/27/2023	9.7	71	Processed	Longfin Smelt	1	Complete	7	7	7.0	1
2023	13	801	12/27/2023	7.9	71	Processed	Longfin Smelt	7	Complete	6	7	6.3	7
2023	13	804	12/27/2023	13.2	64	Processed	Longfin Smelt	5	Complete	5	7	6.2	5
2023	13	809	12/26/2023	4.5	127	Processed	Longfin Smelt	1	Complete	7	7	7.0	1
2023	13	812	12/26/2023	3.6	140	Processed	Longfin Smelt	1	Complete	7	7	7.0	1

Table 4: SLS 1 catch table. Processing is on-going. These data are preliminary and subject to change.



Year	Survey #	SLS Station	Date	Turbidity (FNU)	Secchi (cm)	Sample Status	Species	Smelt Catch	ID Status	Min Length (mm)	Max Length (mm)	Mean Length (mm)	Yolk Sac (# of Individuals)
2024	1	703	1/9/2024	63.5	87	Processed	Longfin Smelt	10	Complete	6	8	7.1	10
2024	1	705	1/9/2024	6.9	94	Processed	Longfin Smelt	2	Complete	6	7	6.5	2
2024	1	809	1/8/2024	5.1	91	Processed	Longfin Smelt	2	Complete	7	8	7.5	2
2024	1	812	1/8/2024	5.8	95	Processed	Longfin Smelt	1	Complete	8	8	8.0	0
2024	1	815	1/8/2024	3.8	99	Processed	Longfin Smelt	1	Complete	8	8	8.0	1
2024	1	901	1/8/2024	2.9	151	Processed	Longfin Smelt	1	Complete	6	6	6.0	1

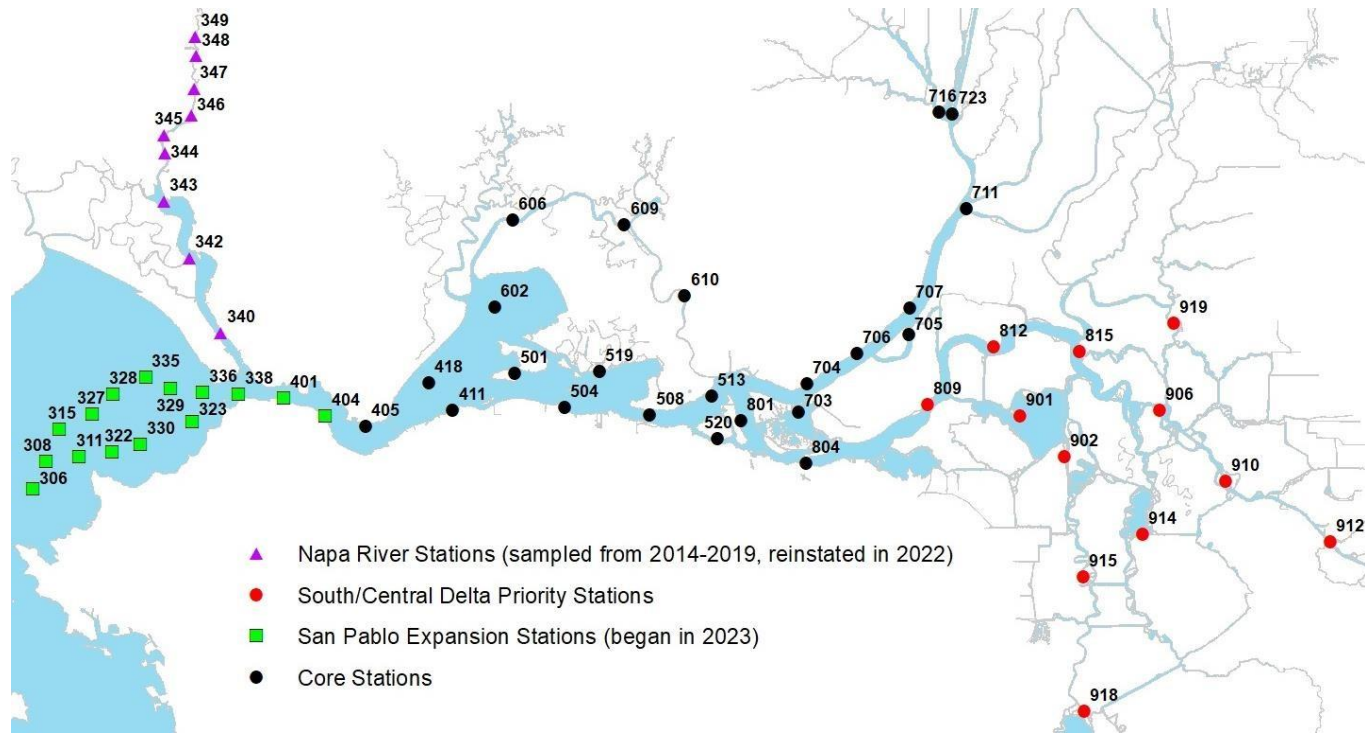


Figure 1: Map of SLS sampling stations.