

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

## Section 1: Overview

**Date: 2 March, 2021**

### **Life Stages Present:**

Delta Smelt: Adult, Juvenile [Enhanced Delta Smelt Monitoring (EDSM) has collected two Delta Smelt in the juvenile size bin]

Longfin Smelt: Adult, Larvae

### **Advice to WOMT:**

Conditions of Approval 8.4.2, Larval and Juvenile Longfin Smelt Entrainment Protection, and 8.12, Barker Slough Pumping Plant Longfin and Delta Smelt Protection, were triggered based on data collected by Smelt Larva Survey 4 (SLS 4). The Smelt Monitoring Team (SMT) determined that the advice provided during the previous meeting should continue and that operations should target a daily OMR Index no more negative than -2,500 cfs for the protection of juvenile and larval Longfin Smelt under Condition of Approval 8.4.2. The Barker Slough Pumping Plant (BSPP) maximum diversion limit associated with Condition of Approval 8.12 remains in effect and limits BSPP maximum diversion rate to be less than 60 cfs on a seven-day running average. No advice was provided for the protection of Delta Smelt.

### **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 (DS) across the range of expected OMRI levels and high for Longfin Smelt (LFS) at OMRI levels more negative than -2,500 cfs.

*Delta Smelt:* Based on distribution patterns over the past decade and recent detections, DS are unlikely to be prevalent in the South Delta. Limited detection data supports DS being present in Suisun Marsh, west of the Sacramento-San Joaquin confluence, and within the Sacramento Deep Water Ship Channel. The distribution of DS is expected to extend upstream of the confluence which is supported by historical Spring Kodiak Trawl (SKT) data analysis. The predicted precipitation over the weekend may influence turbidity at Old River at Bacon Island (OBI), but it is not expected to reach 12 Formazin Nephelometric Units (FNU) in the next 7 days. The likelihood of DS adult entrainment is slightly elevated relative to the previous seven days due to seasonal timing. The predicted less negative levels of OMRI decrease the potential for entrainment of DS in the central Delta, which includes fish in the lower San Joaquin River, into the south Delta.

*Longfin Smelt*: Smelt Larva Survey 4 (SLS 4) sampled all 12 stations listed in Condition of Approval 8.4.2 on 2/22/2021 and completed processing for those samples as well as the sample collected at station 716 in Barker Slough. Larval Longfin Smelt (LFS) were detected at 4 of the stations listed in Condition of Approval 8.4.2. This meets one of the criteria to trigger Condition of Approval 8.4.2, Larval and Juvenile Longfin Smelt Entrainment Protection. The SMT determined that risk of entrainment into the export facilities was high for larvae in the central Delta at an OMR Index more negative than -2,500 cfs and recommends that operations not exceed this level. Two larval LFS were also collected at station 716 in Barker Slough which triggers the maximum diversion rate restriction described in Condition of Approval 8.12.

SLS 4 sampled all stations from 2/22/2021 through 2/25/2021 and sample processing is 54% complete. One hundred and thirty-eight LFS larvae were detected in samples processed at the time of the call. CDFW field crews reported an error in data reported for SLS 4 during the previous SMT meeting. Originally, 18 LFS larvae were reported at station 809 [Total Length (TL) = 6-8 mm]. That number was revised from 18 to 19. Catch at all other stations listed in Condition of Approval 8.4.2 was confirmed as follows: 8 LFS at station 812 (TL = 7-8 mm), 1 LFS at 901 (TL = 16 mm), and 2 LFS at station 902 (TL = 7 mm). Of the 30 larvae collected in the south and central Delta, 15 had yolk sacs present and none were larger than 8 mm total length, indicating that they recently hatched and would behave similarly to passive particles. One larval LFS (FL = 14.6 mm) was collected at the Tracy Fish Collection Facility on 2/28/2021 extending the observed distribution to the export facilities. Water temperatures within the Delta are currently within the range associated with LFS spawning and hatching. Enhanced Delta Smelt Monitoring (EDSM) collected a ripe female on 3/2/2021 in Suisun Marsh. This indicates that more LFS spawning may occur and that larvae may continue to emerge. The SMT determined that an OMR Index no more negative than -2,500 cfs would reduce the risk of entrainment into the export facilities for LFS larvae in the central Delta. However, projected operations are expected to result in an OMR Index less negative than -2,500 cfs and Qwest is becoming more favorable to downstream transport (i.e., more positive) for larvae in the lower San Joaquin River. While this change in hydrology reduces risk for larvae in the lower San Joaquin River, risk of entrainment into the south Delta export facilities remains high for larvae in the central Delta.

## Section 1-A: Sacramento River and Confluence

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

- Exposure Risk (Hydrology):
  - Delta Smelt: Low
  - Longfin Smelt: Low
- Routing Risk (Behavior and life history):
  - Delta Smelt: Low
  - Longfin Smelt: Moderate risk of LFS adults moving from the confluence into the Central Delta of their own volition. Enhanced Delta Smelt Monitoring (EDSM) detected a ripe female LFS in Montezuma Slough on 3/2/2021.
- Overall Entrainment Risk
  - Delta Smelt: Low
  - Longfin Smelt: Low

## Section 1-B: Central Delta

Risk of entrainment into the export facilities for DS and LFS in the central Delta

- Exposure Risk:
  - Delta Smelt: Low
  - Longfin Smelt: High
- Change in exposure from previous week:
  - Delta Smelt: Slightly elevated due to seasonal timing and previously elevated turbidity in the central Delta.
  - Longfin Smelt: Risk of entrainment for larvae in the lower San Joaquin River has decreased compared to last week due to hydrology becoming more favorable to downstream transport. However, exposure to risk of entrainment remains high for larvae in the central Delta.
- Reporting OMRI (*Number and range of OMRI bins will vary based on anticipated hydrology and operations*)
  - OMRI is projected to be -800 cfs
  - Scenario OMRI > -2,500 cfs
    - Moderate risk of entrainment for OMRI less negative than -2,500 cfs. A more negative OMRI creates a high risk of entrainment into the facilities for LFS larvae in the central Delta.
    - Newly hatched LFS larvae are present in the central Delta as far upstream as Old River at Holland Cut (station 902). Older larvae are present further upstream. One larval LFS (FL = 14.6 mm) was collected at the Tracy Fish Collection Facility.
    - Approximately 50% of LFS larvae reported for SLS 4 stations in the south and central Delta (15 out of 30) had yolk sacs present, and all of the 30 larvae were smaller than 8 mm TL. This indicates that they were recently hatched, making them highly susceptible to hydrologic influence.

- There is potential for continued spawning and hatching in the region. EDSM collected a ripe adult female LFS in Suisun Marsh and water temperature is within the range at which Longfin Smelt spawn.

## 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 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**

#### **8.4.2 Larval and Juvenile Longfin Smelt Entrainment Protection.**

From January 1 through June 30, when a single 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 OMRI 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 OMRI flow restriction is warranted, and recommend an OMRI flow limit between -1,250 cfs 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 OMRI 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 OMRI 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 OMRI flow restriction is warranted and determine an OMRI flow limit between -1,250 cfs and -5,000 cfs. The OMRI 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).

### **8.5.1 Turbidity Bridge Avoidance.**

The purpose of this Condition is to minimize the risk of entrainment of adult DS in the corridors of the Old and Middle rivers into the south Delta export facilities. This Condition is intended to avoid the formation of a turbidity bridge from the San Joaquin River shipping channel to the south Delta export facilities, which historically has been associated with elevated salvage of pre-spawning adult DS.

After the Integrated Early Winter Pulse Protection (Condition of Approval 8.1.3) or February 1 (whichever comes first), until April 1, Permittee shall manage exports to maintain daily average turbidity at OBI to a level less than 12 NTU<sup>1</sup>. If the daily average turbidity at OBI is greater than 12 NTU, Permittee shall restrict south Delta exports to achieve an OMRI flow that is no more negative than -2,000 cfs until the daily average turbidity at OBI is less than 12 NTU.

If, after five consecutive days of OMRI flow that is less negative than -2,000 cfs, the daily average turbidity at OBI is not less than 12 NTU the SMT may convene to assess the risk of entrainment of DS (Condition of Approval 8.1.5.2). The SMT may provide advice to WOMT regarding changes in operations that could be conducted to minimize the risk of entrainment of DS (Condition of Approval 8.1.3). The SMT may also determine that OMRI restrictions to manage turbidity are infeasible and may instead provide advice for a different OMRI flow target that is between -2,000 cfs and -5,000 cfs and is protective based on turbidity and adult DS distribution and salvage to the WOMT for consideration (Condition of Approval 8.1.3). Operational decisions shall be made following the process described in Condition of Approval 8.1.4 (Collaborative Real Time Risk Assessment).

Turbidity readings at individual sensors can generate spurious results in real time. Spurious results could be incorrectly interpreted as a turbidity bridge, when in fact the cause is a result of local conditions or sensor error. To assess whether turbidity readings at OBI are attributable to a sensor error or a localized turbidity spike, Permittee, in coordination with Reclamation, may consider and review data from other nearby locations and sources. Additional information that will be reviewed include regional visualizations of turbidity, alternative sensors, and boat-based turbidity mapping, particularly if there was evidence of a local sensor error. Permittee may bring data from these additional sources to the Smelt Monitoring Team for consideration during the development of a risk assessment to be provided to the WOMT for evaluation (Condition of Approval 8.1.3).

Permittee shall use the decision-making process described Condition of Approval 8.1.4 (Collaborative Real-time Risk Assessment) to determine if south Delta exports may increase after five-days of OMRI no more negative than -2,000 cfs, or to determine that this action is not

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<sup>1</sup> Current instrumentation uses Formazin Nephelometric Units (FNU).

warranted due to a sensor error or localized turbidity event. Permittee shall implement this action until CDFW is in agreement that the action may be ended or modified.

### **8.5.2 Larval and Juvenile Delta Smelt Protection.**

If the five-day cumulative salvage of juvenile DS at the CVP and SWP facilities is greater than or equal to one plus the average prior three years' FMWT index (rounded down), Permittee shall restrict south Delta exports for seven consecutive days to maintain a seven-day average OMRI no more negative than -5,000 cfs. Additionally, if the five-day cumulative salvage threshold is met or exceeded, Permittee shall immediately convene the SMT to conduct a risk assessment (Condition of Approval 8.1.5.2) and determine the future risk of entrainment and take of larval and juvenile DS. The Smelt Monitoring Team may provide advice to further restrict south Delta exports to maintain a more positive OMRI than -5,000 cfs. The SMT may provide advice for further restrictions within three risk categories:

- Low risk: Limit OMRI between -4,000 cfs to -5,000 cfs
- Medium risk: Limit OMRI between -2,500 cfs to -4,000 cfs
- High risk: Limit OMRI between -1,250 cfs to -2,500 cfs

The duration and magnitude of operational advice shall be provided to the WOMT (Condition of Approval 8.1.3) and decisions shall be made following the process described in Condition of Approval 8.1.4 (Collaborative Real Time Risk Assessment). When conducting risk assessments to evaluate the risk of entrainment and take of juvenile DS, the SMT shall evaluate the following information sources, in addition to any other models or surveys they deem appropriate and those listed in Condition of Approval 8.1.5.2:

- Results from a CDFW approved DS life cycle model.
- DS recruitment levels identified by the Smelt Monitoring Team using the CDFW-approved life cycle model that links environmental conditions to recruitment, including factors related to loss as a result of entrainment such as OMRI flows. In this context, recruitment is defined as the estimated number of post-larval DS in June per number of spawning adults in the prior February-March period.
- Hydrodynamic models and forecasts of entrainment informed by the EDSM or other relevant survey data to estimate the percentage of larval and juvenile DS that could be entrained.

If expanded salvage at the CVP and SWP facilities of juvenile DS exceeds 11 within a three-day period under this condition, Permittee shall restrict south Delta exports for seven consecutive days to maintain a seven-day average OMRI no more negative than -3,500 cfs. If juvenile DS continue to be salvaged at the CVP and SWP facilities during the seven days of OMRI restrictions, 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 (see Condition of Approval 8.1.3) and follow the decision-making process described in Condition of Approval 8.1.4.

## **8.12 Barker Slough Pumping Plant Longfin and Delta Smelt Protection.**

Permittee shall operate the Barker Slough Pumping Plant (BSPP) to protect larval LFS from January 15 through March 31 of dry and critical water years. Permittee shall operate to protect larval DS from March 1 through June 30 of dry and critical years. If the water year type changes after January 1 to below normal, above normal or wet, this action will be suspended. If the water year type changes after January to dry or critical, Permittee shall operate according to this Condition of Approval.

From January 15 through March 31 of dry and critical water years, Permittee shall reduce the maximum seven-day average diversion rate at BSPP to less than 60 cfs when larval LFS are detected at station 716. In addition, in its weekly meetings from January 15 through March 31, the Smelt Monitoring Team shall review LFS abundance and distribution survey data and other pertinent abiotic and biotic factors that influence the entrainment risk of larval LFS at the BSPP. When recommended by the SMT, and as approved through the decision-making processes described in Conditions of Approval 8.1.3 and 8.1.4, Permittee shall reduce the maximum seven-day average diversion rate at BSPP according to the advice provided by the Smelt Monitoring Team.

From March 1 through June 30 of dry and critical water years, Permittee shall reduce the maximum seven-day average diversion rate at BSPP to less than 60 cfs when larval DS are detected at station 716. In addition, in its weekly meetings from March 1 through June 30, the SMT shall review DS abundance and distribution survey data and other pertinent abiotic and biotic factors that influence the entrainment risk of larval DS at the BSPP (including temperature and turbidity). When recommended by the SMT, and as approved through the decision-making processes described in Conditions of Approval 8.1.3 and 8.1.4, Permittee shall reduce the maximum seven-day average diversion rate at BSPP to less than 60 cfs. The DS requirements described in this condition may be adjusted to align with USFWS requirements to minimize take of DS through an amendment to this ITP.

## **8.13 Water Year Type Definition.**

All references to water year type in this ITP shall be defined based on the Sacramento Valley Index unless otherwise noted.

### **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 did not exceed the thresholds identified in this condition during Water Year 2021. This Condition of Approval ended on 1/31/2021.

8.3.3 This Condition of Approval ended on 2/28/2021.

8.4.1 This Condition of Approval ended on 12/28/2021 when SLS detected a larval LFS in the lower San Joaquin River.

8.4.2 SLS 4 reported that larvae were detected at four of 12 stations listed in this Condition of Approval during the previous SMT meeting. The SMT recommended that advice provided at the previous meeting remain in effect and that operations target an OMRI no more negative than -2,500 cfs.

8.5.1 This Condition of Approval has not been triggered. Turbidity at OBI was below 12 FNU on 2/1/2021 and continues to remain below the trigger threshold. Turbidity exceeded 14 FNU on 1/27/2021 before decreasing below the threshold on 1/29/2021.

8.5.2 The three-year average FMWT Index for DS is zero, resulting in a salvage threshold of one for juvenile DS. Young of year DS are not expected to be present at this time of year.

8.12 SLS 4 collected 2 larval LFS (Total Length = 6 – 7 mm) at station 716. This meets the criterion to trigger this Condition of Approval and required Barker Slough Pumping Plant Operations to maintain a diversion rate less than 60 cfs on a seven-day average. Notification of this trigger was transmitted to DWR via email on 2/26/2021.

### 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.)
  - ITP Condition of Approval 8.3.2 Salmonid Presence limits exports to maintain a 14-day running OMRI average no more negative than -5,000 cfs as of 1/1/2021.
  - DCC gates will remain closed for the remainder of the season (through May 20, 2021 per the PA description for DCC gate operations).
  - 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 X2
- 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 = 12.42°C
- Tidal Cycle: Not discussed
- Turbidity:
  - 8.3.1 Freeport 3-day average = Not reported. 8.3.1 terminated without being triggered.

- 8.5.1 OBI Turbidity = 6.79 FNU
  - Reached a peak of 14.19 FNU on 1/27/2021 before decreasing below the 12 FNU threshold before 2/1/2021
- Salinity: X2 > 81 km, upstream of Collinsville and was estimated to be at 84.4 km on the Sacramento River and 84.2 km in the San Joaquin River.
- Hydrologic Footprint: No new PTM run was requested.

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

- Outages
  - SWP: No export or salvage outages reported for the period of 2/23/2021 to 3/01/2021
  - CVP: Salvage operations at the Tracy Fish Collection Facility were interrupted from 0930 to 1030 on 2/25/2021
- Exports
  - CCF: Decreased to 300 cfs. targeting a Net Delta Outflow Index (NDOI) of 7,100 cfs on a three-day average.
  - Jones: Decreased to minimum export level of 800 cfs. May cycle pumps if further reductions are necessary.
- Meteorological Forecast: Chance of rain Friday and Monday.
- Storm Event Projection: Forecasted storm event is expected to be smaller than previous events.

#### **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: 8,035 cfs and will continue to decrease
- San Joaquin River flow at Vernalis: 950 cfs and will decrease after upstream releases move through the system over the next several days.
- Qwest+600 cfs as of 3/2/2021 and is projected to increase to +1,300 cfs.
- Old River at Bacon Island Turbidity: 6.79 FNU.
- Expected changes in South Delta Exports: Exports are expected to remain at minimum levels for the near future.
- NDOI: ~ 7,100 cfs

Table 1: Comparison of OMR and OMR Index (5-day and 14-day averages OMR Index gauge reported on [SacPAS website](#), accessed 3/02/2021. 5-day and 14-day OMR USGS gauge values were calculated from data reported on [CDEC](#), accessed 3/02/2021)

| Date      | Averaging Period | USGS gauges (cfs) | Index (cfs) |
|-----------|------------------|-------------------|-------------|
|           | Daily            | Not Reported      | -800 cfs    |
| 2/27/2021 | 5-day            | -2,885 cfs        | -2,510 cfs  |
| 2/27/2021 | 14-day           | -3,685 cfs        | -3,630 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 collected any DS during sampling conducted from 2/20/2021 through 3/1/2021. No abundance estimate was calculated
- The 2020 Annual FMWT Index for DS is zero for the third consecutive year.
- Delta Smelt LCM discussion. Not Discussed.
- Biological Conditions: Not Discussed
- % of population in Delta zones: SMT did not discuss distribution in terms of percentage in Delta zones.
- Other Surveys: The last DS detection was on 1/21/2021 by Fish Conservation and Culture Laboratory (FCCL) broodstock collections.
- Salvage: No DS have been detected at either salvage facility this season. No DS have been detected in larval sampling at the Tracy Fish Collection Facility (CVP) or Skinner Fish Facility (SWP). Larval sampling began at the Tracy Fish Collection Facility on 2/15/2021 and at the Skinner Fish Facility on 2/22/2021.

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

- FMWT Index: The FMWT Annual Index for LFS is 28. Monthly indices for September and October are zero, the index for November is 22 and index for December is 6.
- Bay Study: In February, Bay Study collected 5 adult Longfin Smelt [ Fork Length (FL) = 85-90 mm]; two in the lower Sacramento River, two in Suisun Bay, and one in South Bay. They also collected 19 juveniles (FL = 60-82 mm): seven in Suisun Bay, seven in Central Bay, and five in South Bay.
- Other Surveys:
  - Chipps Island Trawl collected six LFS during sampling between 2/21/2021 and 3/1/2021. One LFS was caught on 2/25/2021 (FL = 83 mm), four LFS were caught on 2/28/2021 (81 to 96 mm), and one LFS was caught on 3/1/2021 (93 mm).. These LFS were not checked for reproductive status because of transfer to FCCL.

EDSM collected one LFS (FL = 84 mm, no expression) in San Pablo Bay on 2/22/2021, one juvenile LFS (FL = 25 mm) in the Napa River on 3/1/2021, and 4 LFS (FL = 75 – 83 mm) in Suisun Marsh on 3/2/2021. The 75 mm LFS collected in Suisun Marsh was expressing eggs.

- SLS 3 sample collection and processing is complete. For stations relevant to 8.4.2; 11 LFS larvae were collected at station 809 and one was collected at station 812. No LFS larvae were collected at station 716 which informs Condition of Approval 8.12. In total, 308 LFS larvae were collected ranging in size from five to 11 mm. See Attachment 1 for SLS 3 catch details.
- SLS 4 sampled from 2/22/2021 through 2/25/2021 and sample processing is 54% complete. At the time of the call, SLS 4 reported 138 LFS; including 19 LFS at 809 [Total Length (TL) = 6-8 mm], eight LFS at 812 (TL = 7-8 mm), one LFS at 901 (TL = 16 mm), two LFS at 902 (TL = 7 mm) and two LFS at 716 (TL = 6 – 7 mm). Of the 30 larvae collected in the south and central Delta, 15 had yolk sacs present and none were larger than 8 mm total length.
- February Spring Kodak Trawl sampled from 2/1/2021 through 2/5/2021 and collected 1 LFS at station 501.
- Salvage: One LFS (14.6 mm) was detected in larval sampling at the CVP on 2/28/2021.

**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.

**Notes:**

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

The SMT discussed the need to standardize PTM run scenarios to streamline the process. Requests for PTM runs should be structured to address a specific question. Given the dry forecast, hydrologic conditions are not expected to change which limits the utility of a PTM run. DSM II does not have a direct input for precipitation. Any assumptions would rely on the river forecast which predicts hydrology over the next six days. DWR is working towards automating the PTM run process.

**Survey Update:**

- SLS 4 sampled all stations and sample processing is 54% complete. One hundred and thirty-eight larval LFS were reported for stations processed at the time of the call. Sample processing is expected to be completed this week.
- SLS 5 is scheduled to begin 3/8/2021.
- Spring Kodiak Trawl 3 began 3/1/2021.
- March Bay Study began 3/1/2021 and is scheduled to run through 3/18/2021.

- EDSM collected 1 LFS (FL = 84 mm) in San Pablo Bay on 2/22/2021, one juvenile LFS (FL = 25 mm) in the Napa River on 3/1/2021, and 4 LFS (FL = 75 – 83 mm) in Suisun Marsh on 3/2/2021
- Chipps Island Trawl collected 6 LFS (FL = 81 – 93 mm) from 2/23/2021 through 3/1/2021.

## Attachments

Attachment 1: Longfin Smelt catch per station from 2021 Smelt Larva Survey, Survey 3, which sampled 2/8/2021 – 2/10/2021.

| Year | Survey | Station | Turbidity | Sample Status | Species       | Smelt Catch    | Min Length | Max Length | Avg Length |
|------|--------|---------|-----------|---------------|---------------|----------------|------------|------------|------------|
| 2021 | 3      | 405     | 16.1      | Processed     | Longfin Smelt | 2              | 9          | 9          | 9          |
| 2021 | 3      | 411     | 29.1      | Processed     | Longfin Smelt | 2              | 8          | 10         | 9          |
| 2021 | 3      | 418     | 12.5      | Processed     | Longfin Smelt | 3              | 8          | 8          | 8          |
| 2021 | 3      | 501     | 17.6      | Processed     | Longfin Smelt | 25             | 7          | 10         | 8.4        |
| 2021 | 3      | 504     | 15        | Processed     | Longfin Smelt | 8              | 7          | 9          | 8          |
| 2021 | 3      | 508     | 36.1      | Processed     | Longfin Smelt | 12             | 7          | 9          | 8          |
| 2021 | 3      | 513     | 17.4      | Processed     | Longfin Smelt | 17             | 6          | 11         | 7.176471   |
| 2021 | 3      | 519     | 41.5      | Processed     | Longfin Smelt | 11             | 6          | 8          | 7.454545   |
| 2021 | 3      | 520     | 21.8      | Processed     | Longfin Smelt | 20             | 6          | 9          | 7.4        |
| 2021 | 3      | 602     | 32.4      | Processed     | Longfin Smelt | 75             | 6          | 10         | 8.28       |
| 2021 | 3      | 606     | 41.2      | Processed     | Longfin Smelt | 30             | 7          | 11         | 8.7        |
| 2021 | 3      | 609     | 23.8      | Processed     | Longfin Smelt | 3              | 7          | 8          | 7.333333   |
| 2021 | 3      | 610     | 16.4      | Processed     | Longfin Smelt | 12             | 7          | 8          | 7.5        |
| 2021 | 3      | 703     | 15.9      | Processed     | Longfin Smelt | 6              | 8          | 9          | 8.166667   |
| 2021 | 3      | 704     | 21.8      | Processed     | Longfin Smelt | 14             | 6          | 10         | 7.642857   |
| 2021 | 3      | 705     | 8         | Processed     | Longfin Smelt | 1              | 7          | 7          | 7          |
| 2021 | 3      | 706     | 11.1      | Processed     | Longfin Smelt | 10             | 6          | 9          | 7.1        |
| 2021 | 3      | 707     | 9.1       | Processed     | Longfin Smelt | 2              | 7          | 7          | 7          |
| 2021 | 3      | 711     | 6.7       | Processed     | NA            | No Smelt Catch | NA         | NA         | NA         |
| 2021 | 3      | 716     | 10        | Processed     | NA            | No Smelt Catch | NA         | NA         | NA         |

| Year | Survey | Station | Turbidity | Sample Status | Species       | Smelt Catch    | Min Length | Max Length | Avg Length |
|------|--------|---------|-----------|---------------|---------------|----------------|------------|------------|------------|
| 2021 | 3      | 723     | 9.8       | Processed     | Longfin Smelt | 2              | 5          | 6          | 5.5        |
| 2021 | 3      | 801     | 17.2      | Processed     | Longfin Smelt | 33             | 6          | 10         | 7.636364   |
| 2021 | 3      | 804     | 11.4      | Processed     | Longfin Smelt | 8              | 6          | 8          | 7.375      |
| 2021 | 3      | 809     | 12.2      | Processed     | Longfin Smelt | 11             | 7          | 10         | 8.2        |
| 2021 | 3      | 812     | 13.9      | Processed     | Longfin Smelt | 1              | 7          | 7          | 7          |
| 2021 | 3      | 815     | 9.9       | Processed     | NA            | No Smelt Catch | NA         | NA         | NA         |
| 2021 | 3      | 901*    | 5.9       | Processed     | NA            | No Smelt Catch | NA         | NA         | NA         |
| 2021 | 3      | 902     | 4.4       | Processed     | NA            | No Smelt Catch | NA         | NA         | NA         |
| 2021 | 3      | 906*    | 5.6       | Processed     | NA            | No Smelt Catch | NA         | NA         | NA         |
| 2021 | 3      | 910     | 11.1      | Processed     | NA            | No Smelt Catch | NA         | NA         | NA         |
| 2021 | 3      | 912     | 9.8       | Processed     | NA            | No Smelt Catch | NA         | NA         | NA         |
| 2021 | 3      | 914     | 5.2       | Processed     | NA            | No Smelt Catch | NA         | NA         | NA         |
| 2021 | 3      | 915     | 4.8       | Processed     | NA            | No Smelt Catch | NA         | NA         | NA         |
| 2021 | 3      | 918     | 5.2       | Processed     | NA            | No Smelt Catch | NA         | NA         | NA         |
| 2021 | 3      | 919     | 10.4      | Processed     | NA            | No Smelt Catch | NA         | NA         | NA         |