

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

## Section 1: Overview

**Date: 9 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, Juvenile, Larvae

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

The Smelt Monitoring Team (SMT) recommends that the advice provided under 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 continue. Smelt Larva Survey 5 (SLS 5) reported that larval Longfin Smelt (LFS) were detected at five of the stations listed in Condition of Approval 8.4.2. Data was available for eight of the 12 relevant stations at the time of the SMT meeting. The SMT determined that the advice provided during the previous meeting should continue and that operations should target a daily OMR Index (OMRI) 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. SLS 5 has yet to sample station 716, which informs Barker Slough operations. Barker Slough Pumping Plant has ceased diversions until March 26 to perform annual maintenance. No advice was provided for the protection of Delta Smelt (DS).

### **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 rare detections in this water year, 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 volume of predicted precipitation and wind velocity this week may influence turbidity at Old River at Bacon Island (OBI), and it is possible 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 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*: SLS 5 sampled the 12 south and central Delta stations listed in Condition of Approval (COA) 8.4.2 on 3/8/2021. Data for eight of those stations was available at the time of the SMT meeting. Larvae were reported at five SLS stations (809, 812, 815, 901 and 915), triggering COA 8.4.2 for the third time this season. No larvae were reported at stations 902, 914 and 918. The first juvenile LFS (FL = 20 mm) was detected in salvage on 3/3/2021 at the Tracy Fish Collection Facility. This fish was collected during a standard 30-minute sample and represents an expanded count of 4. Larval LFS (FL < 20 mm) have been detected during qualitative larval sampling at the Tracy Fish Facility on 2/28/2021, 3/3/2021 and 3/6/2021, as well as at the Skinner Fish Facility on 3/1/2021. These larval detections by SLS and in salvage depict a more upstream distribution within the central and southern Delta compared to previous weeks. Adult LFS have been detected in the Lower Sacramento River, near Chipps Island, and in Suisun Bay and Suisun Marsh. A ripe female LFS was detected by EDSM in the lower Napa River. Larger LFS (FL ≥ 80 mm) collected by Chipps Island Trawl and all LFS collected by Spring Kodiak Trawl (SKT) are not checked for reproductive status in the field. The continued presence of ripe adult LFS suggests that spawning may still be underway. The more upstream distribution of larval and juvenile LFS and the ongoing presence of adult LFS in the system indicate that a more positive OMRI may continue to limit entrainment risk of individuals in the central Delta to the salvage facilities.

### **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. 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 range from -500 cfs to -3,500 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.
      - SLS 5 results exceeded one of the criteria to trigger Condition of Approval 8.4.2. LFS were detected at 5 of the relevant stations.
      - A juvenile LFS was salvaged at the Tracy Fish Facility and larval LFS have been detected at both facilities in qualitative larval sampling.
      - Distribution of younger larvae, which are more efficiently collected by SLS, has extended upstream. SLS 5 detected larvae as far upstream as station 915.

## 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.

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

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 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 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 5 reported that larvae were detected at five of the stations listed in this Condition of Approval. Data was available for eight of the 12 stations at the time of the 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 to continue to be protective of larval LFS in the northern OMR corridor.

8.5.1 This Condition of Approval has not been triggered. Turbidity at OBI has been below 12 FNU since 2/1/2021. 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 requires 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. SLS had not yet sampled station 716 at the time of the SMT meeting.

### 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.
  - Barker Slough Pumping Plant has ceased diversions until 3/26 to conduct annual maintenance.
- 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 = 13.41°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 = 2.71 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 86.7 km on the Sacramento River and 86.6 km in the San Joaquin River.
- Hydrologic Footprint: The SMT requested a PTM run with injection locations at stations 809, 812 and 901 with OMRI scenarios based on current hydrology and a scenario with an OMRI of -2,500 cfs. The actual OMRI modeled will be determined Monday and will depend on observed precipitation.

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

- Outages
  - SWP: No exports on 3/4/2021 and 3/6/2021 to maintain a 3-day average Net Delta Outflow Index (NDOI) no less than 7,100 cfs.
  - CVP: No exports from noon to midnight on 3/4/2021, 1:00 AM to noon on 3/5/2021 and from noon to midnight on 3/6/2021 to maintain a 3-day average NDOI no less than 7,100 cfs.
- Exports
  - CCF: 300 cfs to 3,500 cfs depending on precipitation.
  - Jones: 400 cfs to 1,800 cfs depending on precipitation
- Meteorological Forecast: Rain expected Tuesday through Wednesday with 0.1 inches to 0.25 inches forecast for Antioch.
- Storm Event Projection: Unsettled weather system is moving through the region.

### **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: 7,600 cfs
- San Joaquin River flow at Vernalis: 1,060 cfs
- Qwest: Trending positive with a seven-day average of approximately +1,500 cfs.
- Old River at Bacon Island Turbidity: 2.71FNU.
- Expected changes in South Delta Exports: Exports may vary depending on precipitation measured at the Stockton Fire Station.
- NDOI: Average of 7,100 cfs. Ranges from 6,800 cfs to 7,600 cfs.
- OMR Index has ranged from -800 cfs to -1,200 cfs

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 3/09/2021.)

Date	Averaging Period	USGS gauges (cfs)	Index (cfs)
3/9/2021	Daily	Not Reported	-1,000 cfs
3/5/2021	5-day	-1,400 cfs	-820 cfs
3/5/2021	14-day	-2,150 cfs	-2,250 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 DS during sampling conducted from 3/2/2021 through 3/8/2021. 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:
  - Chippis Island Trawl collected five LFS during sampling conducted from 3/2/2021 through 3/7/2021. Two LFS (FL = 82 – 83 mm) were collected on 3/2/2021, one (FL = 71 mm) was collected on 3/4/2021, and two (FL = 78 – 99 mm) were collected on 3/7/2021. Chippis Island Trawl retains LFS 80 mm and larger (FL) for

FCCL and does not check these fish for reproductive status. Fish smaller than the 80 mm FL cutoff are checked.

- EDSM collected 5 LFS (FL = 75 – 83 mm). Four were collected in Suisun Marsh and one was collected in the lower Napa River.
- SLS 5 sampled the 12 stations listed on Condition of Approval 8.4.2 on 3/8/2021. Data from 8 of those stations was available at the time of the call. SLS 5 collected larval LFS at the following stations; 809: 12 LFS (7-11 mm), 812: 2 LFS (8-9 mm), 815: 1 (9 mm), 901: 1 (7 mm yok sac present), none at 902, 915: 2 (7-8 mm) no yolk sac), none at 918, none at 914.
- SLS 4 sample processing is complete. SLS 4 sampled from 2/22/2021 through 2/25/2021 and reported a total of 319 LFS (FL = 6 – 12 mm). See the attached catch table for details.
- SKT 3 completed sampling at all stations from 3/1/2021 through 3/4/2021. One LFS (FL = 85 mm) was collected in the lower Sacramento River, 4 LFS (FL = 60 – 80 mm) were collected in Suisun Bay, and one LFS (FL = 80 mm) was collected in Carquinez Strait.
- Salvage: One juvenile LFS (FL = 20 mm) was detected in Salvage on 3/3/2021 at the Tracy Fish Collection Facility. This fish was collected during a standard 30-minute sample and represents an expanded count of 4. Larval LFS (FL < 20 mm) have been detected during qualitative larval sampling at the Tracy Fish Facility on 2/28/2021, 3/3/2021 and 3/6/2021, as well as at the Skinner Fish Facility on 3/1/2021.

**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](#).

SLS 5 is scheduled to complete sampling 3/10/2021. SLS 6 is scheduled to begin next week, 20mm 1 is scheduled to begin 3/22/2021 and SKT 4 is scheduled to begin 3/29/2021. EDSM is limited to two crews this week due to COVID-19 safety precautions.

The SMT discussed a discrepancy in the DWR turbidity reports for 3/4/2021 and 3/5/2021. The discrepancy arose from the method used to calculate the daily average turbidity at OBI. CDEC calculates the daily average from hourly data which resulted in an elevated turbidity reading due to several high turbidity values occurring on the hour. The average of the 15-minute event data resulted in lower daily turbidity value for February 28<sup>th</sup> and March 3<sup>rd</sup> than what was reported on CDEC. The ITP allows the Permittee to bring other data to the SMT for consideration when there is evidence of a sensor error or spurious turbidity reading. DWR monitors the turbidity data closely and will notify the SMT if there are any questionable turbidity results. The SMT will discuss the process for identifying sensor errors at a future meeting.

## Attachments

Attachment 1: Longfin Smelt catch per station from 2021 Smelt Larva Survey, Survey 4, which sampled 2/22/2021 – 2/25/2021.

Year	Survey	Station	Turbidity	Sample Status	Species	Smelt Catch	Min Length	Max Length	Avg Length
2021	4	405	11.6	Processed	NA	No Smelt Catch	NA	NA	NA
2021	4	411	15.5	Processed	Longfin Smelt	1	9	9	9
2021	4	418	9.3	Processed	NA	No Smelt Catch	NA	NA	NA
2021	4	501	21.5	Processed	Longfin Smelt	4	6	9	7.8
2021	4	504	12.7	Processed	NA	No Smelt Catch	NA	NA	NA
2021	4	508	25.8	Processed	Longfin Smelt	11	6	12	8.7
2021	4	513	12.9	Processed	Longfin Smelt	55	6	11	7.7
2021	4	519	31.2	Processed	Longfin Smelt	38	6	10	8.6
2021	4	520	20.9	Processed	Longfin Smelt	35	6	12	8.7
2021	4	602	19.7	Processed	Longfin Smelt	4	7	8	7.5
2021	4	606	37.3	Processed	Longfin Smelt	19	7	11	8.8
2021	4	609	34.3	Processed	Longfin Smelt	8	7	11	8
2021	4	610	25.8	Processed	Longfin Smelt	3	7	7	7
2021	4	703	15.7	Processed	Longfin Smelt	8	7	10	8.3
2021	4	704	18.1	Processed	Longfin Smelt	30	6	11	7.5
2021	4	705	11	Processed	Longfin Smelt	2	6	7	6.5
2021	4	706	9.2	Processed	Longfin Smelt	19	6	10	7.6
2021	4	707	13.7	Processed	Longfin Smelt	18	6	12	7.3
2021	4	711	5.6	Processed	Longfin Smelt	1	9	9	9

Year	Survey	Station	Turbidity	Sample Status	Species	Smelt Catch	Min Length	Max Length	Avg Length
2021	4	716	7.4	Processed	Longfin Smelt	2	6	7	6.5
2021	4	723	7.2	Processed	NA	No Smelt Catch	NA	NA	NA
2021	4	801	13.9	Processed	Longfin Smelt	17	7	11	8.5
2021	4	804	9.2	Processed	Longfin Smelt	14	6	12	7.6
2021	4	809	5.5	Processed	Longfin Smelt	19	6	8	6.8
2021	4	812	5.8	Processed	Longfin Smelt	8	7	8	7.3
2021	4	815	5.6	Processed	NA	No Smelt Catch	NA	NA	NA
2021	4	901	4.7	Processed	Longfin Smelt	1	6	6	6
2021	4	902	5.4	Processed	Longfin Smelt	2	7	8	7.5
2021	4	906	4.7	Processed	NA	No Smelt Catch	NA	NA	NA
2021	4	910	3.9	Processed	NA	No Smelt Catch	NA	NA	NA
2021	4	912	3.1	Processed	NA	No Smelt Catch	NA	NA	NA
2021	4	914	3.8	Processed	NA	No Smelt Catch	NA	NA	NA
2021	4	915	3.3	Processed	NA	No Smelt Catch	NA	NA	NA
2021	4	918	3.5	Processed	NA	No Smelt Catch	NA	NA	NA
2021	4	919	3.7	Processed	NA	No Smelt Catch	NA	NA	NA