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

Section 1: Overview

Date: 01/18/2022

Life Stages Present:

Delta Smelt (DS): Adults, sub-adults
Longfin Smelt (LFS): Adults, sub-adults, and larvae

Advice to Water Operations Management Team (WOMT):

No Advice.

Risk Assessment:

Delta Smelt: Based on distribution patterns over the past decade and rare detections, DS are unlikely to be prevalent in the south Delta, but with salvage of a 54 mm, adipose clipped DS at the Tracy Fish Collection Facility on 1/16/2022, DS are present in the south Delta. Limited detection data support DS being present in the Sacramento Deep Water Ship Channel (SDWSC), lower San Joaquin River, south Delta, and the lower Sacramento River. Three marked Delta Smelt have been collected since 1/11/2022. If the daily average turbidity in Old River at Bacon Island (OBI) cannot be maintained less than 12 FNU, exports will be managed to achieve an OMR no more negative than -2,000 cfs until daily average turbidity at Bacon Island drops below 12 FNU (COA 8.5.1). The likelihood of DS adult entrainment remains low despite the salvaged fish, given the current low turbidity in the south Delta, and the expected OMR index range over the next seven days.

Longfin Smelt: OMR is projected to be no more negative than -5,000 cfs due to initiation of OMR management. X2 is currently downstream of the confluence at 75 km. The SMT has determined that the overall risk of entrainment is low for larvae, sub-adults, and adults to the observed distribution. Qwest recently turned negative however the increase in risk entrainment associated with negative Qwest may have been offset by favorable hydrology observed over prior weeks. LFS adults are present in the Delta based on detections by Chipps Island Trawl and EDSM. There is evidence that spawning has occurred in the south Delta due to detections by Smelt Larva Survey (SLS) 13 and Larval Entrainment Pilot Study (LEPS), however, SLS 1 has been canceled due to COVID mitigation which limits data availability. This distribution is consistent with the expected upstream spawning distribution associated with drier hydrology. LFS protections would be relaxed under wet conditions described in COA 8.4.3, however, the thresholds described within have not been met.

Barker Slough: The relevant COA (8.12) is not active based on the current Sacramento River Index Forecast as of January 1, 2022, being Below Normal. If subsequent water year forecasts reflect a drier hydrology of Dry or Critical, then 8.12 will become active.

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):
    - DS: Low. DS are expected to have made their migration in response to first flush and be holding in anticipation for temperatures conducive to spawning. Low turbidity persists in the OMR corridor, adult DS are associated with areas of higher turbidity. Therefore, we expect DS to have a lower likelihood of moving into areas with higher risk of entrainment.
    - LFS: Risk for larvae is low due to OMR management being initiated. See 'Routing Risk' for more information on adults and sub-adults.
- Routing Risk (Behavior and life history):
    - DS: Low due to low turbidity in the central and south Delta.
    - LFS: Low risk of entrainment. Larvae do not exhibit swimming behaviors that would result in volitional movement into areas with a higher risk of entrainment. Spawning migration is underway. There is potential for adult and sub-adult movement into the central Delta. However, recent wet conditions, as indexed by X2, reduce the likelihood of adults and sub-adults moving into the south and central Delta. Increase in X2 of approximately 10 km over the last week was insufficient to increase the likelihood of adult and sub-adult movement into the south and central Delta. X2 remains downstream of the confluence.
- Overall Entrainment Risk:
    - DS: Low. Turbidity Bridge Avoidance is expected to maintain low turbidity conditions in the central and south Delta.
    - LFS: Low for adults, sub-adults and larvae, due to:
        - Exports targeting OMR no more negative than -5,000 cfs reduces risk of entrainment for larvae.
        - Lack of detections of adults and sub-adults in the Lower San Joaquin/South Delta.
        - Adult salvage has been rare following the Pelagic Organism Decline.

Section 1-B: Central Delta

Risk of entrainment into the export facilities for DS and LFS in the central Delta (8.1.5.2 D iii, iv, v)

- Exposure Risk (Low, Medium, High):
    - DS: Low. DS are present in the south Delta based on the detection of a marked fish in salvage. However, the likelihood of adult and sub-adult DS entrainment remains low given persistent low turbidity in the OMR corridor and operations

targeting an OMR Index no more negative than -5,000 cfs. There is a high degree of uncertainty regarding the response of cultured fish to environmental cues typically applied to wild DS.

- LFS: Low risk for adult and sub-adult LFS entrainment if they are present in the Lower San Joaquin River and south Delta. No LFS have been detected by EDSM in the southern Delta and Lower San Joaquin strata.
    - Low risk for larvae observed in the lower San Joaquin River by SLS 12 due to favorable hydrology (Positive Qwest and exports targeting OMRI no more negative than -5,000 cfs).
    - SLS 13 showed a low density of larvae at the south and central Delta stations. Detections were insufficient to trigger COA 8.4.2.
    - One LFS larvae was detected in West Canal near Clifton Court Forebay (CCF) by LEPS (COA 7.6.2) on 1/5/2022. Larvae present in the South Delta are at high risk of entrainment. However, an OMR recommendation would not mitigate risk for larvae already present in the immediate vicinity of CCF.

- Change in exposure from previous week: (Note: The change in risk compared to previous weeks is not required by the Incidental Take Permit [ITP]).
    - DS: No change from last week. The detection in salvage may represent a short term increase in risk, however the single fish does not provide sufficient information to inform longer term risk of entrainment in the next week.
    - LFS: Hydrodynamically, Qwest becoming more negative represents an increase in risk of entrainment for larvae, however, this risk may have been offset by favorable hydrology over previous weeks. Lack of larval fish survey data limits the SMT's ability to assess the current spawning distribution. No change from last week for LFS larvae outside of the zone of influence of the export facilities. However, the presence of LFS larvae in the immediate vicinity of the export facilities has been confirmed by recent sampling.
- Reporting Old and Middle River Index (OMRI) (Number and range of OMRI bins will vary based on anticipated hydrology and operations)
    - The SMT determined that risk of entrainment is low across the range of expected OMRI values for fish outside of the Old and Middle River corridor. SLS 13 detected 3 LFS larvae in the south and central Delta, however this is insufficient to trigger COA 8.4.2.

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 on the following Conditions of Approval:

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

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 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 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[1] divided by 10, OR

[1] 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.

- 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 ≥ 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).

8.4.1 OMR Management for Adult Longfin Smelt. From the onset of OMR Management (Condition of Approval 8.3) through February 28, the Smelt Monitoring Team shall conduct weekly, or more often as needed, risk assessments (see Condition of Approval 8.1.5.2) and decide whether to recommend an OMR flow requirement between -5,000 cfs and -1,250 cfs to minimize entrainment and take of adult LFS. The Smelt Monitoring Team may provide advice to restrict south Delta exports for seven consecutive days to achieve a seven-day average OMR index within three risk categories:

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

If a risk assessment conducted by the Smelt Monitoring Team determines that a more restrictive OMR flow requirement is needed to minimize take of adult LFS, the Smelt Monitoring Team shall provide its advice to WOMT (Condition of Approval 8.1.3) and operational decisions shall be made following the process described in Condition of Approval 8.1.4 (Collaborative Approach to Real-time Risk Assessment).

This Condition will terminate when a high-flow off-ramp occurs (Condition of Approval 8.4.3), or when LFS spawning has been detected in the system, as determined by the Smelt Monitoring Team, or, if there is disagreement and resolution is not reached within WOMT, as determined by CDFW. The Smelt Monitoring Team shall consider results from Additional LFS Larval Sampling (Condition of Approval 7.6.1) to inform its assessment of the start of LFS spawning. After LFS spawning has been observed, Permittee shall implement Condition of Approval 8.4.2 to minimize take of larval and juvenile LFS.

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 Smelt Monitoring Team 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 Smelt Monitoring Team 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 Smelt Monitoring Team 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 Smelt Monitoring Team 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 Smelt Monitoring Team shall provide advice on the appropriate OMR flow targets to minimize LFS entrainment or entrainment risk, or both. The Smelt Monitoring Team 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 Smelt Monitoring Team 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).

8.4.3 High Flow Off-Ramp from Longfin Smelt OMR Restrictions. OMR management for adult, juvenile, or larval LFS as described in Conditions of Approval 8.4.1 and 8.4.2 are not required, or would cease if previously required, when river flows are (a) greater than 55,000 cfs in the Sacramento River at Rio Vista or (b) greater than 8,000 cfs in the San Joaquin River at Vernalis. If flows subsequently drop below 40,000 cfs in the Sacramento River at Rio Vista or below 5,000 cfs in the San Joaquin River at Vernalis, the OMR limit previously required as a part of Conditions of Approval 8.4.1 and 8.4.2 shall resume.

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 in Old River at Bacon Island (OBI) at a level of less than 12 NTU. If the daily average turbidity at OBI is greater than 12 NTU, Permittee shall restrict south Delta exports to achieve an OMR flow that is no more negative than -2,000 cfs until the daily average turbidity at OBI is less than 12 NTU.

If, after five consecutive days of OMR flow that is less negative than -2,000 cfs and the daily average turbidity at OBI is not less than 12 NTU, the Smelt Monitoring Team may convene to assess the risk of entrainment of DS (Condition of Approval 8.1.5.2). The Smelt Monitoring Team 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 Smelt Monitoring Team may also determine that OMR restrictions to manage turbidity are infeasible and may instead provide advice for a different OMR flow target that is between -2,000 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 in Condition of Approval 8.1.4 (Collaborative Real-time Risk Assessment) to determine if south Delta exports may increase after five days of OMR 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 OMR index no more negative than -5,000 cfs. Additionally, if the five-day cumulative salvage threshold is met or exceeded, Permittee shall immediately convene the Smelt Monitoring Team 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 OMR than -5,000 cfs. The Smelt Monitoring Team may provide advice for further restrictions within three risk categories:

- Low risk: Limit OMR between -4,000 cfs to -5,000 cfs
- Medium risk: Limit OMR between -2,500 cfs to -4,000 cfs
- High risk: Limit OMR 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 Smelt Monitoring Team 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 OMR 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 OMR index 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 OMR 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 Smelt Monitoring Team, 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 Smelt Monitoring Team 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 Smelt Monitoring Team, 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 discussion addressing criteria for each Condition of Approval listed in "Basis for Advice" section. Refer to data below where appropriate.

COAs relevant to initiating OMR management went into effect December 1st. The Smelt Monitoring Team conducted a Risk Assessment based on COA 8.1.5.2.

8.3.1: This COA was triggered by conditions measured on 12/17/2021 when the running three-day average of daily flow and turbidity reached 27,152 cfs and 66.79 FNU respectively. Operations were reduced on 12/20/2021 targeting a 14-day average OMR index no more negative than -2,000 cfs for 14 consecutive days. 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).

8.3.3: This COA is no longer active due to the initiation of an Integrated Early Winter Pulse Protection (COA 8.3.1).

8.4.1: This COA is no longer active due to the detection of larval LFS by Smelt larva Survey (SLS).

8.4.2: This COA went into effect on 01/03/2022 following the 14-day Integrated Early Winter Pulse Protection (COA 8.3.1). Data for SLS 13 (12/27/2021 through 12/30/2021) did not trigger this COA. **SLS 1 has been canceled due to COVID mitigation.** SLS 2 is scheduled for the week of Jan 24.

8.5.1: This COA went into effect on 01/03/2022 following the 14-day Integrated Early Winter Pulse Protection (COA 8.3.1). Current OBI turbidity levels are below the threshold

8.5.2: The FMWT Annual Index for DS is zero for the fourth consecutive year. The salvage threshold is one Juvenile DS. No juvenile DS have been salvaged this water year. One cultured subadult DS (FL = 54 mm, adipose fin clipped) was salvaged on 1/16/2022.

8.12: This COA is not active due to water year type. The current water year type forecast is Below Normal. This COA may become active as the Water Year Type forecast is updated.

8.13: The Sacramento Valley Water Year Type Index (SVI) January forecast corresponding to the 50% probability of exceedance is 7.5 which is in the range for a Below Normal water year classification. The forecast was reported on the California Data Exchange Center (CDEC) Water Supply Index Webpage, accessed on 01/11/2022.

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.)*
    - OMR Management was initiated on 01/03/2021 following the 14-day Integrated Early Warning Pulse Protection action (COA 8.3.1).
    - COA 8.3.1 was triggered by conditions measured on 12/17/2021. Exports were reduced to comply with this COA on 12/20/2021 through 01/02/2021.
    - DCC gates closed on 11/30/2021.
    - The Drought barrier at False River has been notched. The notch is quite large, such that hydrodynamically no barrier is present.
- Controlling Factors: OMRI 14-day average no more negative than -5,000 cfs.
- Water Temperature:
    - Clifton Court Forebay (CCF) Daily Average Water Temperature = NA
    - 3 Station Average = 10.41°C
- Tidal Cycle: Not discussed
- Turbidity:
    - 8.3.1 Freeport 3-day average = NA
    - 8.5.1 Old River at Bacon Island (OBI) Turbidity = 5.17 NU
- Salinity: X2 = 76km

- Hydrologic Footprint: No Particle Tracking Models (PTMs) were requested.

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

- Outages:
  - State Water Project (SWP): None
  - Central Valley Project (CVP): None.
- Exports: Combined exports are targeting an OMRI no more negative than -5,000 cfs.
  - CCF: 1,300 cfs on 1/18/2022. 1,500 to 1,700 the rest of the week.
  - Jones: 4,050 cfs
- Meteorological Forecast: No significant precipitation is in the forecast.

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

- DCC Gates position: Closed 11/30/2021.
- Sacramento River flow at Freeport is 15,500 cfs. Sacramento River flow at Rio Vista is 12,000 cfs.
- San Joaquin River flow at Vernalis: 940 cfs
- Qwest: -2,000 cfs
- OBI Turbidity: 5.17 FNU
- Expected changes in South Delta Exports: Exports are not expected to change substantially in the next 7 days.
- NDOI: 10,600 cfs and is expected to decrease.
- Upstream releases: (Note: upstream releases may increase due to flood management)
  - Keswick = 3,250 cfs
  - Nimbus = 3,500 cfs
  - Goodwin = 200 cfs
  - Oroville = 950 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 01/18/2022.

Date	Averaging Period	USGS gauges (cfs)	Index (cfs)
01/18/2022	Daily	Not Reported	-5,000 cfs
01/15/2022	5-day	-5,080 cfs	-5070 cfs
01/15/2022	14-day	-4,470 cfs	-4,750 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

- The last DS (adipose fin clipped) detection occurred on 1/18/2022 in Suisun Marsh.
- EDSM: From 01/10/2022 through 01/13/2022 EDSM collected 1 cultured DS in the SDWSC. EDSM collected one additional cultured DS (FL = 85 mm, adipose fin clipped) in Suisun Marsh. This fish was reported during the SMT call and will be reported on next week's EDSM catch table. It is not reported in the current version of Table 1 below.
- Chipps Island Trawl did not collect any DS during sampling conducted from 1/09/2022 through 1/15/2022.
- Salvage: One cultured sub-adult DS (adipose fin clipped, 54 mm) was salvaged on 01/16/2022 at the Tracy Fish Collection Facility at Jones Pumping Plant, representing an estimated salvage of 4 DS. No DS have been salvaged at the SWP.
- Fall Mid-water Trawl (FMWT) Index for DS = 0
- DS life cycle model (LCM) discussion: NA
- Biological Conditions: NA
- % of population in Delta zones: NA

Salvage: One DS (54 mm FL, adipose fin clipped) was detected at the Tracy Fish Collection Facility on 01/16/2022 and was expanded to an estimated salvage of four. Section 4-B: Longfin Smelt population status 8.1.5.2.B. ii.

- FMWT Index for LFS = 323
- Other Surveys:
  - EDSM: From 01/10/2022 through 01/13/2022 EDSM collected eleven LFS in Suisun Marsh, and six LFS in Suisun Bay. See Table 1 for details.
  - Chipps Island Trawl: From 1/09/2022 through 1/15/2022 Chipps Island Trawl collected 28 LFS. See Table 2 for details.
  - SLS 13 reported 4 LFS larvae in samples processed to date. See Table 3 for details. Sample processing has been postponed due to COVID mitigation. SLS 1 has been canceled due to COVID mitigation.
  - Salvage: No LFS have been salvaged at either facility.

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

Notes:

- COVID mitigation measures have disrupted sample collection and processing. SLS 1 has been canceled and LEPS paused sampling until 1/18/2022. SLS 13 sample processing has been postponed as well. As a result, no new data was reported for CDFW surveys during this call.
- Spring Kodiak Trawl is scheduled to begin 1/18/2022 and LEPS will resume.
- The second experimental release of DS occurred on 1/11/2022 and 1/12/2022. 12,800 DS were released over 2 hard releases. An additional hard release of several thousand DS is scheduled for 1/24/2022. The final release is scheduled for the week of 1/31/2022.
- The SMT will reassess the need to initiate qualitative larval sampling at the fish facilities on a weekly basis. Larval sampling began in February last year and could inform

interpretation of data collected by LEPS. However, staffing shortages associated with COVID may limit this effort to one report per week.

- The SMT discussed PTM runs and is working towards a standardized set of scenarios and insertion points. Two scenarios and three insertion points are used for PTM runs. The base case scenario would represent the highest possible exports, based on forecasted hydrology, with an alternative lower export scenario to inform how risk of entrainment of passive particles (representing fish larvae) varies with export rate. The SMT could look to OMR levels in COA 8.5.2 for possible scenarios and emphasized the need for consistency to allow for interpretation between runs. The need to retrospectively interpret PTM runs in year 2020 was also pointed out to prevent the high salvage of juvenile LFS observed that year. CDFW will review prior year's PTM run requests to inform this effort.

Attachments: Table 1: EDSM Catch Table, Figure 1: EDSM Sample Locations, Table 2: Chipps Island Catch Table, Table 3: SLS 13 Catch Table

Table 1. Delta Smelt (DSM) and Longfin Smelt (LFS) catch per station for EDSM 2022 Phase 1 Kodiak trawls, from 1/10/2022–1/13/2022. These data are preliminary and subject to change.

Water Year	Phase	Station Code	Date	# Tows	Species	Mark Type	Fork Length	Total Catch	Stratum
2022	1	22-24-HB01	1/11/2022	4	LFS	None	79	1	Suisun Bay
2022	1	22-24-SBM01	1/11/2022	4	LFS	None	78	1	Suisun Bay
2022	1	22-24-SBM01	1/11/2022	4	LFS	None	105	1	Suisun Bay
2022	1	22-24-SBM02	1/11/2022	4	LFS	None	76	1	Suisun Bay
2022	1	22-24-SBM02	1/11/2022	4	LFS	None	82	1	Suisun Bay
2022	1	22-24-SBM02	1/11/2022	4	LFS	None	102	1	Suisun Bay
2022	1	22-24-SBW01	1/12/2022	4	NA	NA	NA	NA	Suisun Bay
2022	1	22-24-SBW02	1/12/2022	4	NA	NA	NA	NA	Suisun Bay
2022	1	22-24-SBW03	1/12/2022	4	NA	NA	NA	NA	Suisun Bay
2022	1	22-24-CF01	1/13/2022	4	NA	NA	NA	NA	Suisun Bay
2022	1	22-24-CF02	1/13/2022	4	NA	NA	NA	NA	Suisun Bay

Water Year	Phase	Station Code	Date	# Tows	Species	Mark Type	Fork Length	Total Catch	Stratum
2022	1	22-24-CF03	1/13/2022	4	NA	NA	NA	NA	Suisun Bay
2022	1	22-24-GB01	1/10/2022	4	LFS	None	61	1	Suisun Marsh
2022	1	22-24-GB01	1/10/2022	4	LFS	None	74	1	Suisun Marsh
2022	1	22-24-GB02	1/10/2022	4	LFS	None	67	1	Suisun Marsh
2022	1	22-24-GB02	1/10/2022	4	LFS	None	72	1	Suisun Marsh
2022	1	22-24-GB02	1/10/2022	4	LFS	None	73	1	Suisun Marsh
2022	1	22-24-GB02	1/10/2022	4	LFS	None	78	1	Suisun Marsh
2022	1	22-24-GB02	1/10/2022	4	LFS	None	83	1	Suisun Marsh
2022	1	22-24-SM01	1/10/2022	4	LFS	None	65	1	Suisun Marsh
2022	1	22-24-SM01	1/10/2022	4	LFS	None	69	1	Suisun Marsh
2022	1	22-24-SM01	1/10/2022	4	LFS	None	71	1	Suisun Marsh
2022	1	22-24-SM01	1/10/2022	4	LFS	None	83	1	Suisun Marsh
2022	1	22-24-RV01	1/10/2022	4	NA	NA	NA	NA	Lower Sac River

Water Year	Phase	Station Code	Date	# Tows	Species	Mark Type	Fork Length	Total Catch	Stratum
2022	1	22-24-RV04	1/10/2022	4	NA	NA	NA	NA	Lower Sac River
2022	1	22-24-RV05	1/10/2022	4	NA	NA	NA	NA	Lower Sac River
2022	1	22-24-LSR01	1/11/2022	4	NA	NA	NA	NA	Lower Sac River
2022	1	22-24-RV02	1/11/2022	4	NA	NA	NA	NA	Lower Sac River
2022	1	22-24-RV03	1/11/2022	4	NA	NA	NA	NA	Lower Sac River
2022	1	22-24-LSJ02	1/10/2022	4	NA	NA	NA	NA	Lower San Joaquin River
2022	1	22-24-LSJ03	1/10/2022	4	NA	NA	NA	NA	Lower San Joaquin River
2022	1	22-24-LSJ04	1/10/2022	4	NA	NA	NA	NA	Lower San Joaquin River

Water Year	Phase	Station Code	Date	# Tows	Species	Mark Type	Fork Length	Total Catch	Stratum
2022	1	22-24-LSJ01	1/11/2022	4	NA	NA	NA	NA	Lower San Joaquin River
2022	1	22-24-PP01	1/11/2022	4	NA	NA	NA	NA	Lower San Joaquin River
2022	1	22-24-SJT01	1/11/2022	4	NA	NA	NA	NA	Lower San Joaquin River
2022	1	22-24-CS01	1/13/2022	4	NA	NA	NA	NA	Cache Slough
2022	1	22-24-CS02	1/13/2022	4	NA	NA	NA	NA	Cache Slough
2022	1	22-24-CS03	1/13/2022	4	NA	NA	NA	NA	Cache Slough
2022	1	22-24-LSSC01	1/12/2022	4	NA	NA	NA	NA	Sac DW Ship Channel
2022	1	22-24-LSSC02	1/12/2022	4	NA	NA	NA	NA	Sac DW Ship Channel

Water Year	Phase	Station Code	Date	# Tows	Species	Mark Type	Fork Length	Total Catch	Stratum
2022	1	22-24-LSSC03	1/12/2022	3	DSM	AdClipped	72	1	Sac DW Ship Channel
2022	1	22-24-HC01	1/12/2022	4	NA	NA	NA	NA	Southern Delta
2022	1	22-24-HC02	1/12/2022	4	NA	NA	NA	NA	Southern Delta
2022	1	22-24-MIW01	1/13/2022	2	NA	NA	NA	NA	Southern Delta
2022	1	22-24-MIW02	1/13/2022	4	NA	NA	NA	NA	Southern Delta
2022	1	22-24-OR01	1/13/2022	2	NA	NA	NA	NA	Southern Delta

Unmarked DSM collected during Phase 1 are transferred alive to FCCL to contribute to DSM broodstock if tow temperatures are below 17°C. If tow temperatures are above 17°C, unmarked DSM are flash frozen in liquid nitrogen and transferred to the UC Davis Aquatic Health Program for processing. All marked DSM are flash frozen in liquid nitrogen and transferred to UC Davis for processing.

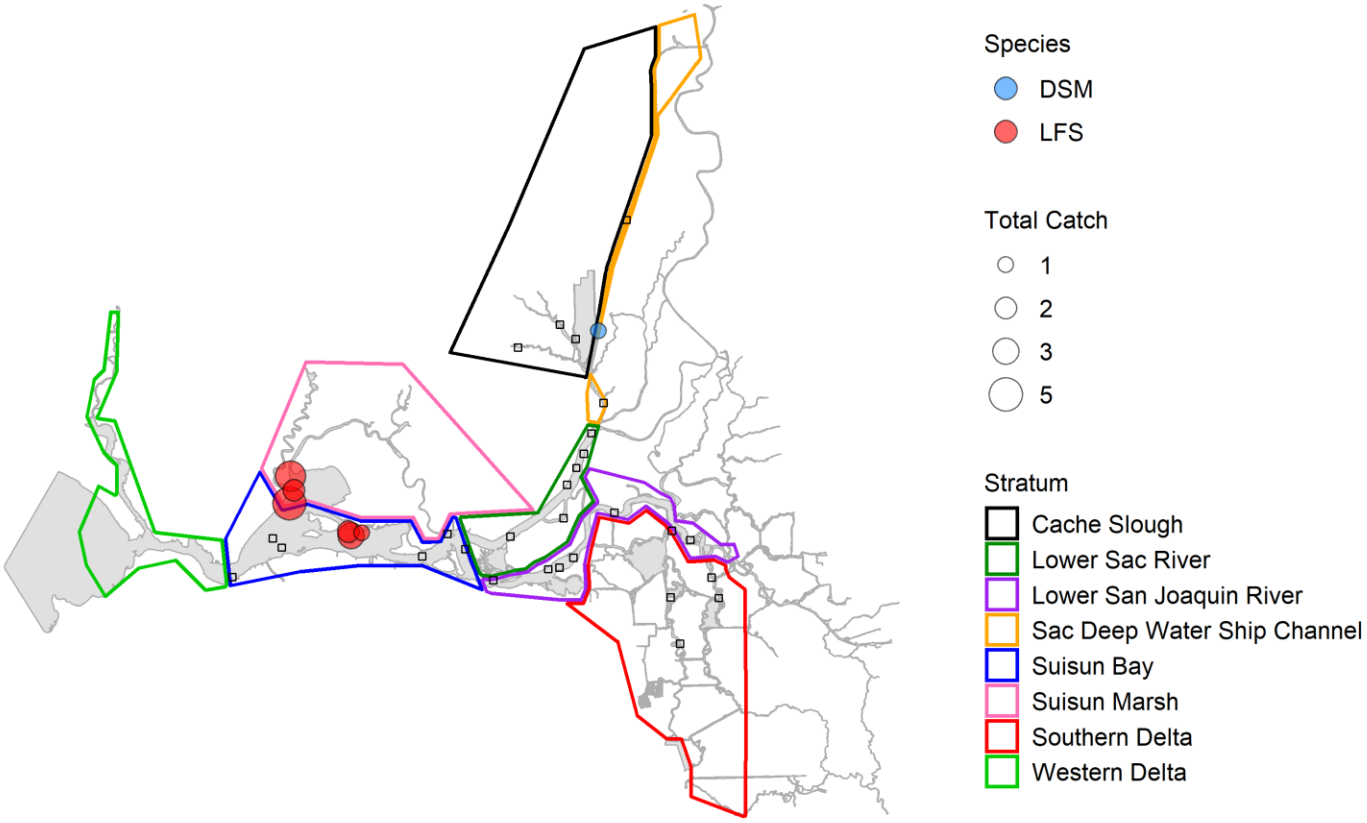

Figure 1. Delta Smelt (DSM) and Longfin Smelt (LFS) catch per station for EDSM 2022 Phase 1 Kodiak trawls, from 1/10/2022–1/13/2022. Sites with no DSM or LFS catch are indicated with squares.

Table 2. Delta Smelt (DSM) and Longfin Smelt (LFS) catch in Chipps Island mid-water trawls from 1/9/2022–1/14/2022. These data are preliminary and subject to change.

Year	Station Code	Date	Species	Fork Length	Total Catch	Mark Type	Maturation	Special Study	Location
2022	SB018M	1/9/2022	LFS	94	1	None	E	n/a	Chipps Island
2022	SB018M	1/9/2022	LFS	107	1	None	M	n/a	Chipps Island
2022	SB018N	1/9/2022	LFS	74	1	None	E	n/a	Chipps Island
2022	SB018N	1/9/2022	LFS	101	1	None	X	n/a	Chipps Island
2022	SB018N	1/9/2022	LFS	99	1	None	E	n/a	Chipps Island
2022	SB018N	1/9/2022	LFS	93	1	None	X	n/a	Chipps Island
2022	SB018N	1/9/2022	LFS	84	1	None	E	n/a	Chipps Island
2022	SB018N	1/9/2022	LFS	74	1	None	n/p	n/a	Chipps Island
2022	SB018S	1/9/2022	LFS	84	1	None	X	n/a	Chipps Island
2022	SB018S	1/9/2022	LFS	70	1	None	X	n/a	Chipps Island
2022	SB018S	1/9/2022	LFS	80	1	None	n/p	n/a	Chipps Island
2022	SB018M	1/10/2022	LFS	134	1	None	n/p	n/a	Chipps Island
2022	SB018N	1/10/2022	LFS	74	1	None	n/p	n/a	Chipps Island

Year	Station Code	Date	Species	Fork Length	Total Catch	Mark Type	Maturation	Special Study	Location
2022	SB018S	1/10/2022	LFS	78	1	None	n/p	n/a	Chipps Island
2022	SB018S	1/10/2022	LFS	94	1	None	n/p	n/a	Chipps Island
2022	SB018S	1/10/2022	LFS	182	1	None	n/p	n/a	Chipps Island
2022	SB018S	1/10/2022	LFS	80	1	None	n/p	n/a	Chipps Island
2022	SB018S	1/10/2022	LFS	73	1	None	n/p	n/a	Chipps Island
2022	SB018S	1/10/2022	LFS	80	1	None	n/p	n/a	Chipps Island
2022	SB018S	1/10/2022	LFS	80	1	None	n/p	n/a	Chipps Island
2022	SB018M	1/11/2022	LFS	72	1	None	n/p	n/a	Chipps Island
2022	SB018M	1/11/2022	LFS	108	1	None	n/p	n/a	Chipps Island
2022	SB018N	1/11/2022	LFS	131	1	None	n/p	n/a	Chipps Island
2022	SB018N	1/11/2022	LFS	103	1	None	n/p	n/a	Chipps Island
2022	SB018N	1/11/2022	LFS	112	1	None	n/p	n/a	Chipps Island
2022	SB018S	1/11/2022	LFS	82	1	None	n/p	n/a	Chipps Island
2022	SB018M	1/13/2022	LFS	74	1	None	n/p	n/a	Chipps Island

Year	Station Code	Date	Species	Fork Length	Total Catch	Mark Type	Maturation	Special Study	Location
2022	SB018M	1/14/2022	LFS	84	1	None	n/p	n/a	Chipps Island

As requested, LFS > 80 mm fork length collected in Chipps Island trawls during Dec-Apr are transferred alive to FCCL to contribute to LFS broodstock if tow temperatures are below 14.5°C. Generally, LFS collected >65 mm are checked for expression (M=milt, E=eggs, X=no expression). Fish transferred to FCCL are NOT expressed. All DSM are flash frozen in liquid nitrogen and transferred to the UC Davis Aquatic Health Program for processing. L*: Fish dead, taken back to LFWO lab for preservation.

Table 3. Longfin Smelt catch per station from 2021 Smelt Larva Survey, Survey 13. Longfin incidental take permit criteria stations are highlighted in blue (Barker Slough Pumping Plant) and yellow (South Delta exports). Survey 13 was in the field from 12/27/2021 – 12/30/2021.

Year	Survey #	SLS Station	Turbidity (NTU)	Sample Status	Species	Smelt Catch	Min Length	Max Length	Mean Length
2021	13	340	41.0	Not Processed	NA	NA	NA	NA	NA
2021	13	342	53.1	Not Processed	NA	NA	NA	NA	NA
2021	13	343	35.8	Not Processed	NA	NA	NA	NA	NA
2021	13	344	36.7	Not Processed	NA	NA	NA	NA	NA
2021	13	345	41.1	Not Processed	NA	NA	NA	NA	NA
2021	13	346	43.6	Not Processed	NA	NA	NA	NA	NA
2021	13	347	22.5	Not Processed	NA	NA	NA	NA	NA
2021	13	348	20.6	Not Processed	NA	NA	NA	NA	NA
2021	13	349	16.7	Not Processed	NA	NA	NA	NA	NA
2021	13	405	37.2	Not Processed	NA	NA	NA	NA	NA
2021	13	411	40.4	Not Processed	NA	NA	NA	NA	NA
2021	13	418	28.3	Not Processed	NA	NA	NA	NA	NA
2021	13	501	48.8	Not Processed	NA	NA	NA	NA	NA
2021	13	504	55.3	Not Processed	NA	NA	NA	NA	NA
2021	13	508	46.4	Processed	Longfin Smelt	7	5	8	6.7
2021	13	513	40.2	Processed	Longfin Smelt	9	5	7	6.3

Year	Survey #	SLS Station	Turbidity (NTU)	Sample Status	Species	Smelt Catch	Min Length	Max Length	Mean Length
2021	13	519	67.8	Processed	Longfin Smelt	6	5	9	7.0
2021	13	520	35.8	Processed	Longfin Smelt	5	6	8	6.8
2021	13	602	67.3	Not Processed	NA	NA	NA	NA	NA
2021	13	606	100.0	Not Processed	NA	NA	NA	NA	NA
2021	13	609	36.9	Not Processed	NA	NA	NA	NA	NA
2021	13	610	52.6	Not Processed	NA	NA	NA	NA	NA
2021	13	703	34.1	Processed	NA	No Smelt Catch	NA	NA	NA
2021	13	704	42.9	Processed	Longfin Smelt	1	6	6	6.0
2021	13	705	32.8	Processed	Longfin Smelt	1	6	6	6.0
2021	13	706	48.8	Processed	Longfin Smelt	1	6	6	6.0
2021	13	707	40.4	Processed	NA	No Smelt Catch	NA	NA	NA
2021	13	711	42.4	Processed	NA	No Smelt Catch	NA	NA	NA
2021	13	716	45.3	Processed	Longfin Smelt	1	5	5	5.0
2021	13	723	45.4	Processed	NA	No Smelt Catch	NA	NA	NA
2021	13	801	37.0	Processed	Longfin Smelt	5	6	7	6.8
2021	13	804	33.3	Processed	Longfin Smelt	5	7	10	7.8
2021	13	809	17.3	Processed	Longfin Smelt	2	6	7	6.5
2021	13	812	21.8	Processed	NA	No Smelt Catch	NA	NA	NA
2021	13	815	20.1	Processed	NA	No Smelt Catch	NA	NA	NA
2021	13	901	12.2	Processed	NA	No Smelt Catch	NA	NA	NA
2021	13	902	6.0	Processed	NA	No Smelt Catch	NA	NA	NA
2021	13	906	11.2	Processed	NA	No Smelt Catch	NA	NA	NA
2021	13	910	11.9	Processed	NA	No Smelt Catch	NA	NA	NA
2021	13	912	33.8	Processed	NA	No Smelt Catch	NA	NA	NA
2021	13	914	4.8	Processed	Longfin Smelt	1	9	9	9.0
2021	13	915	4.2	Processed	NA	No Smelt Catch	NA	NA	NA
2021	13	918	4.2	Processed	NA	No Smelt Catch	NA	NA	NA
2021	13	919	27.9	Processed	NA	No Smelt Catch	NA	NA	NA