

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

## Section 1: Overview

**Date: January 12, 2021**

### **Life Stages Present:**

Delta Smelt: Adult, Juvenile (EDSM collected one Delta Smelt in the juvenile size bin)

Longfin Smelt: Adult, Larvae

### **Advice to WOMT:**

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

### **Risk Assessment:**

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

*Delta Smelt:* Based on distribution patterns over the past decade and one recent detection, Delta Smelt are unlikely to be prevalent in the South Delta. Limited detection data support Delta Smelt being present in Suisun Marsh, west of the Sacramento-San Joaquin confluence, and within the Sacramento Deep Water Ship Channel. High X2 position could mean the average distribution of Delta Smelt extends further upstream of the confluence which is supported by historical Spring Kodiak Trawl (SKT) data. Precipitation is not anticipated, changes to Freeport flows and turbidity are not expected to reach “First Flush” conditions within the next seven days. The overall probability of Delta Smelt moving into the south Delta is low. The projected OMR Index limits are at a level that is sufficiently protective and low turbidity creates an overall low likelihood of entrainment. On 1/6/2021 a 51 mm, juvenile Delta Smelt with no expression was collected in the Sacramento Deep Water Ship Channel. This individual may be a freshwater resident and not representative of the migratory life history pattern of Delta Smelt.

*Longfin Smelt:* Evaluation of recent catch data indicates that Longfin Smelt (LFS) larvae are present in the lower San Joaquin River near Jersey Point and that adults and age 1 individuals are present at the Sacramento-San Joaquin Confluence, in Suisun Marsh and Bay, and in the Sacramento Deep Water Ship Channel. Particle Tracking Model (PTM) runs were evaluated, and it was determined the lower export scenario (OMR= – 2,500 cfs) reflected projected operations. Projected operations and hydrology are expected to result in an OMR Index no more negative than -3,500 cfs which is considered sufficiently protective for Longfin Smelt based on their current distribution. Smelt Larva Survey 1 (SLS 1) reported 6 larvae near Jersey Point (809) and 2 at Station 812 in the lower San Joaquin River. All 12 criteria stations listed in Condition of Approval 8.4.2 were sampled, however, at the time of today’s SMT meeting data from two

stations (901 and 906) are pending completion of sample processing. SMT will reconvene if pending data triggers this Condition of Approval. (Note: Sample processing was completed after the SMT meeting and the results were distributed via email. No additional LFS larvae were detected and Condition of Approval 8.4.2 was not triggered). Spring Kodiak Trawl 1 (SKT 1) collected 57\* LFS. Forty-six were collected near the confluence of the Sacramento and San Joaquin Rivers, 6 were collected in Suisun Bay and 5 were collected in the Sacramento Deep Water Ship Channel (DWSC). (\***Note:** Catch numbers were revised following the SMT call due to partial misidentification. An identification error was made on SKT (01/06/2021). The previously reported catch of 29 Longfin Smelt at station 513 and the 17 Longfin Smelt at station 508, near the confluence, were misidentified. No smelt were caught at either station. All other Longfin Smelt caught during SKT survey 1 have been verified. The attached catch table has been updated to reflect a total of 11 Longfin Smelt collected in Suisun Bay and Marsh and the Sacramento Deep Water Ship Channel. The SMT was notified of the error via email on 1/14/2021.) December Smelt Larva Survey (SLS) collected 3 larval LFS (Total Length = 7 mm, yolk sac present) at station 809 near Jersey Point on the lower San Joaquin River on 12/28/2020. Chipps Island Survey collected one adult LFS (FL = 107 mm) during recent sampling. EDSM collected 6 LFS (FL = 59 – 82 mm) in Suisun Marsh on 1/4/2021, 16 LFS (FL = 65 – 115mm) in Suisun Marsh on 12/28/2020 and one LFS (FL = 74 mm) in Suisun Bay on 12/24/2020. The annual Fall Midwater Trawl (FMWT) index for LFS is 28. December FMWT reported four LFS with one collected in San Pablo Bay, one in Suisun Bay, one near Chipps Island and one in the lower Sacramento River. See section 4-B below for catch details.

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

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

- Exposure Risk (Hydrology):
  - Delta Smelt: Low
  - Longfin Smelt: Low
- Routing Risk (Behavior and life history):
  - Delta Smelt: Low
  - Longfin Smelt: Moderate risk of adults moving from the confluence into the Central Delta of their own volition. Adults have been detected in the Sacramento DWSC which indicates that migration is underway, and presence of larvae in the lower San Joaquin River indicates that adults have entered the Lower San Joaquin and successfully spawned.
- Overall Entrainment Risk
  - Delta Smelt: Low
  - Longfin Smelt: Low

## Section 1-B: Central Delta

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

- Exposure Risk:
  - Delta Smelt: Low
  - Longfin Smelt: Low
- Change in exposure from previous week:
  - Delta Smelt: No change
  - Longfin Smelt: Risk is similar to last week. Onset of hatching in the lower San Joaquin River exposes larvae to entrainment, however, anticipated OMR Index levels are sufficiently protective
- Reporting Old and Middle River Index (OMRI) (*Number and range of OMRI bins will vary based on anticipated hydrology and operations*)
  - OMRI is approximately -2,500 cfs and projected to remain between -1,000 cfs to -3,500 cfs.
  - OMRI (Export Scenario OMRI = -2,500 cfs)
    - Delta Smelt: Low Risk
    - Longfin Smelt: Low Risk

## Section 2: Basis for Advice

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

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

### 8.1.5.2 Smelt Monitoring Team Risk Assessment

#### 8.3.1 Integrated Early Winter Pulse Protection.

Between December 1 and January 31 each year Permittee shall reduce south Delta exports for 14 consecutive days to maintain a 14-day average OMR index no more negative than -2,000 cfs, and convene the Smelt Monitoring Team within one day of triggering the following criteria:

- Three day running average daily flows at Freeport greater than, or equal to, 25,000 cfs, AND
- Three day running average of daily turbidity at Freeport is greater than, or equal to, 50 Nephelometric Turbidity Units (NTU), OR
- The Smelt Monitoring Team determines that real-time monitoring of abiotic and biotic factors indicates a high risk of DS migration and dispersal into areas at high risk of future entrainment.

After maintaining a 14-day average OMR index no more negative than -2,000 cfs for 14 days, Permittee shall maintain a 14-day average OMR index no more negative than -5,000 cfs, initiating the OMR Management season, until the OMR Management Season ends (Condition of Approval 8.8).

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

### **8.3.3 Adult Longfin Smelt Entrainment Protection.**

After December 1, if an Integrated Early Winter Pulse Protection (Condition of Approval 8.3.1) has not yet been initiated, Permittee shall reduce south Delta exports to maintain a 14-day average OMR index no more negative than -5,000 cfs and initiate OMR Management (Condition of Approval 8.3) if:

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

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

### **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

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

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).

#### **8.5.2 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 sentence or two addressing criteria for each Condition of Approval listed in “Basis for Advice” section. Refer to data below where appropriate.*

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

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

8.3.3 No LFS have been salvaged this water year. The cumulative expanded salvage threshold is 3 based on the most recently available FMWT Index. The annual index for 2020 is 28 and was reported to the SMT via email on 1/4/2020. The SMT examined abiotic conditions and determined that risk is low to moderate for Longfin Smelt. See section 4-B for the discussion of the FMWT Index.

8.4.1 This Condition of Approval begins with the onset of OMR management and terminates when spawning is detected in the system. The second December SLS survey detected larval LFS in the lower San Joaquin River on 12/28/2020 which terminated this Condition of Approval.

8.4.2 This Condition of Approval began on January 1<sup>st</sup>. The criteria have not been met to trigger this Condition of Approval. Data from two criteria stations is pending for SLS 1. There were detections at two of the criteria stations and catch per tow was greater than 5 at one criteria station. SMT will reconvene if pending data from SLS 1 triggers this Condition of Approval. December SLS survey 13 detected 3 larval LFS at station 809 near Jersey Point in the lower San Joaquin River.

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

8.12 This Condition of Approval goes into effect January 15<sup>th</sup> for Longfin Smelt.



## 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 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) but may be opened to maintain water quality during drought conditions for up to 5 days and for up to 2 events as per the PA in December and January. If DCC gates are opened between December 1 and January 31, the CVP and SWP will divert at Health and Safety pumping levels.
  - 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: Water quality
- Water Temperature:
  - CCF = Not discussed (*Condition of Approval 8.8: Daily average temperature at CCF exceeds 25°C for 3 consecutive days*)
  - 3 Station Average = 9.90°C
- Tidal Cycle: Currently in a spring cycle which peaks 1/11/2021 through 1/13/2021, and will transition into a neap cycle over the next week.
- Turbidity:
  - 8.3.1 Freeport 3-day average = 5.86 FNU
  - 8.5.1 Turbidity at OBI Feb 1 to April 1
- Salinity: X2 is upstream of Collinsville and was estimated to be 92.6 km on the Sacramento River and 94.9 km on the San Joaquin River.
- Hydrologic Footprint:
  - The SMT received the PTM models requested by CDFW last week to inform risk of entrainment for larval Longfin Smelt present in the lower San Joaquin River near Jersey Point. The PTM run included two additional insertion points, one at Prisoner's Point (station 815) and one south of Franks Tract (station 902), to inform potential entrainment risk if SLS 1 detected larvae at these stations. Larvae have been detected at SLS station 809 (Jersey Point) and 812, the inclusion of additional insertion points does not imply the presence of larvae. The SMT received results via email on 1/8/2021. See attachment "PTM Forecast 1\_5\_2021.pdf" for results. Operations are not expected to result in and OMR Index as negative as -5,000 cfs. Hydrologic conditions are expected to remain relatively stable over the next week, therefore no new PTM run was requested this week.

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

- Outages
  - SWP: No export or salvage outages reported for the period of 1/5/2021 to 1/11/2021
  - CVP: No export or salvage outages reported for the period of 1/5/2021 to 1/11/2021
- Exports
  - CCF: 1,500 cfs
  - CVP: 800 cfs
  - Barker Slough: Not reported. Will begin reporting when Condition of Approval 8.12, Barker Slough Pumping Plant Longfin and Delta Smelt Protections, goes into effect January 15<sup>th</sup>.
- Meteorological Forecast: Seven-day weather forecast for Antioch mostly cloudy to sunny with winds less than 13 mph
- Storm Event Projection: No substantial precipitation is expected in the near future.

### **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: 8,860 cfs and is expected to decrease
- San Joaquin River flow at Vernalis: 940 cfs
- Qwest: Qwest is expected to remain near zero.
- Old River at Bacon Island Turbidity: Not reported
- Freeport Turbidity (3-day average): 5.86 FNU.
- Expected changes in South Delta Exports: Exports may increase if water quality permits.
- NDOI: 5,000 cfs to 6,000 cfs

Table 1: Comparison of OMR and OMR Index (5-day and 14-day averages for USGS gauge data were not reported on [SacPAS website](#), accessed 1/12/2021)

Date	Averaging Period	USGS gauges (cfs)	Index (cfs)
1/11/2021	Daily	Not Reported	-3,100 cfs
1/11/2021	5-day	Not Reported	Not Reported
1/12/2021	14-day	Not Reported	-2,600cfs

## 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 collected 1 Delta Smelt (FL = 51 mm) in the Sacramento DWSC on 1/6/2021.
- The 2021 Annual FMWT Index for Delta Smelt is zero for the third consecutive year.
- Delta Smelt LCM discussion. Not Discussed.
- Biological Conditions: The Delta Smelt collected in the Sacramento DWSC was below the 58mm cutoff used to distinguish between adults (> 58mm) and juveniles. It may be a pre-spawn adult and is likely a freshwater resident.
- % of population in Delta zones: SMT did not discuss distribution in terms of percentage in Delta zones.
- Other Surveys: Other than EDSM, no Delta Smelt detections were reported in recent sampling including FMWT, Chipps Island Trawl, SLS, and SKT. The Fish Conservation and Culture Laboratory (FCCL) Brood stock collection has not detected any Delta Smelt this season. Collections typically end before the onset of spawning in the wild. Two December SLS surveys were conducted on 12/14/2020 through 12/15/2020 (SLS 12) and on 12/28/2020 (SLS 13). They sampled 12 south and central Delta stations. No Delta Smelt were detected. The standard SLS survey began 1/11/2021 and will sample the full set of stations.
- Salvage: No Delta Smelt have been detected at either salvage facility this season.

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

- FMWT Index: The FMWT Annual Index for Longfin Smelt is 28. Monthly indices for September and October are zero, the index for November is 22 and index for December is 6.
- Bay Study: The most recent Bay Study data was collected in early November and is not likely to reflect current distribution. During November sampling, 42 Longfin Smelt were collected. One was collected in Carquinez Strait. The rest were collected in San Pablo and San Francisco Bays. December Bay Study began 12/01/2020 but was interrupted after two days of sampling. No Longfin Smelt were detected by Bay Study in December.
- Other Surveys: Chipps Island Survey collected two adult LFS (FL = 107 mm and 111 mm) on 1/4/2021 and 1/5/2021, respectively. EDSM collected 6 LFS (FL = 59 – 82 mm) in Suisun Marsh on 1/4/2021, 16 LFS (FL = 65 – 115mm) in Suisun Marsh on 12/28/2020 and one LFS (FL = 74 mm) in Suisun Bay on 12/24/2020.
- SLS 1 started on 1/11/2021 and is underway. Of the stations sampled and processed to date, 6 larvae were collected in the Lower San Joaquin River at station 809, near Jersey Point, and 2 were collected at station 812, approximately halfway between Jersey Point and Prisoner's Point. Yolk sacs were present on 4 of the larvae collected at 809. Two December SLS surveys were conducted on 12/14/2020 through 12/15/2020 (SLS 12) and on 12/28/2020 (SLS 13). They sampled 12 south and central Delta stations. No Longfin

Smelt were detected during SLS 12. SLS 13 collected 3 larvae (Total Length = 7 mm) with yolk sacks intact at station 809 near Jersey Point in the lower San Joaquin River.

- **Note:** Spring Kodiak Trawl (SKT) collected 57\* LFS (FL = 51 – 115 mm). Forty-six were collected near the confluence of the Sacramento and San Joaquin Rivers, six were collected in Suisun Bay and five were collected in the Sacramento Deep Water Shipping Channel. \*Catch numbers were revised following the SMT call due to partial misidentification. An identification error was made on SKT (01/06/2021). The 29 Longfin Smelt at station 513 and the 17 Longfin Smelt at station 508, near the confluence, were misidentified. No smelt were caught at either station. All other Longfin Smelt caught during SKT survey 1 have been verified. The attached catch table has been updated to reflect a total of 11 Longfin Smelt collected in Suisun Bay and Marsh and the Sacramento Deep Water Ship Channel. See Attachments for catch details.
- **Salvage:** No Longfin Smelt have been detected at either salvage facility.

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

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

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

San Francisco Bay Study has delayed January sampling. EDSM sampling has been delayed this week due to staffing shortages. EDSM staff may be redirected to assist with FCCL broodstock collection.

The SMT discussed the PTM runs and determined that the OMR Index is not likely to reach - 5,000 cfs due to water quality. The lower export scenario is more likely to reflect actual conditions. Therefore, the SMT assessed a single OMR Index bin for the risk assessment. The PTM model uses current hydrology to forecast particle movement. The only variable changed between the two scenarios is the OMR Index. PTM results have been included as an attachment to the ITP Risk Assessment and SMT Notes. CDFW suggested that the group include language along with the PTM run explaining that the additional insertion points do not imply that there are larvae present at these locations.

The Delta Smelt collected by EDSM in the Sacramento Deep Water Ship Channel was smaller than the average Delta Smelt observed during January in prior years of SKT sampling and below the 58 mm cutoff to be considered an adult. This could indicate that it experienced poor conditions over summer which may have ramifications for spawning success. There is some natural variability in size of Delta Smelt, and it is not historically uncommon for SKT to collect a few fish this size in January. It is also possible that it is a freshwater resident which does not reflect the migratory life history and may not indicate that fish are moving. Turbidity throughout the Delta is fairly low except for locations in Suisun Bay and in the upper Sacramento Deep Water Ship Channel. The SMT has not observed “First Flush” conditions and it is still relatively early in the season. However, detection at the federal salvage facility last year did not follow a first flush. The location where it was collected is farther upstream than Delta

Smelt collected in summer and fall in other long-term monitoring surveys (Summer Townet and Fall Midwater Trawl). Unpublished USFWS analysis of January through May Delta Smelt distribution in SKT showed that fish are typically distributed upstream of the confluence at this time of year and that there is no relationship with X2. This warrants further analysis.

The LFS catch in SKT was unusually high following a low December FMWT index. There are two possible explanations for this. LFS may be holding in low salinity water or SKT may have detected a late migration. The unpublished USFWS analysis mentioned above showed a positive correlation between LFS distribution in SKT and X2.

Attachments:

Attachment 1. Spring Kodiak Trawl Longfin Smelt catch for Survey 1, 2021 (1/5-1/8). Data is preliminary and subject to change.

Station	# of Longfin Smelt	Range of FL (mm)
340	Not Sampled	NA
405	0	NA
411	0	NA
418	0	NA
501	0	NA
504	1	115
519	0	NA
602	1	71
606	4	51 - 82
609	0	NA
610	0	NA
508	0	NA
513	0	NA
520	0	NA
801	0	NA
804	0	NA
704	0	NA
706	0	NA
707	0	NA
711	0	NA
712	0	NA
713	0	NA
715	0	NA
716	0	NA
719	5	90 – 100
724	0	NA
809	0	NA
812	0	NA
815	0	NA
902	0	NA
906	0	NA
910	0	NA
912	0	NA
914	0	NA
915	0	NA
919	0	NA
920	0	NA
921	0	NA
922	0	NA
923	0	NA

## Spring Kodiak Trawl Sampling Stations

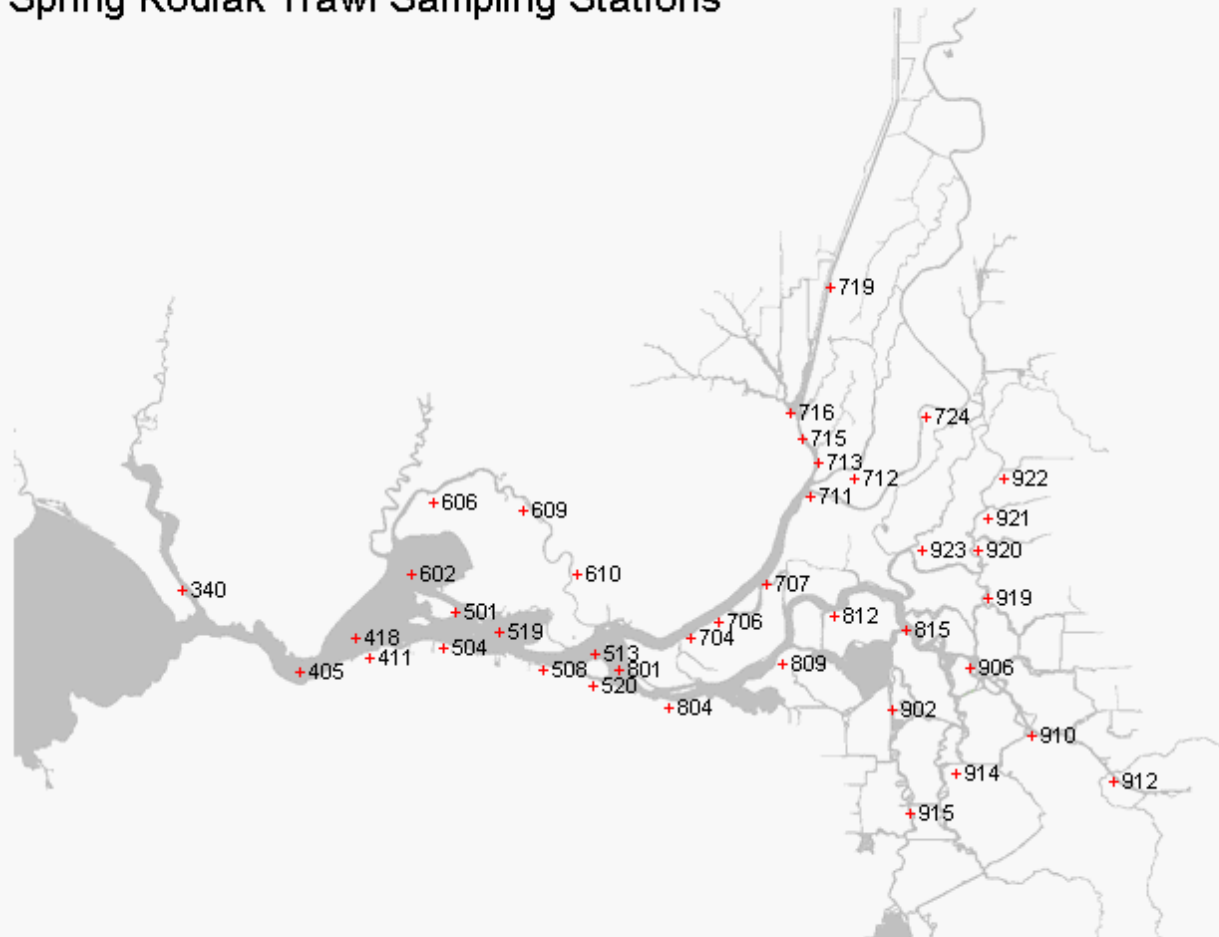
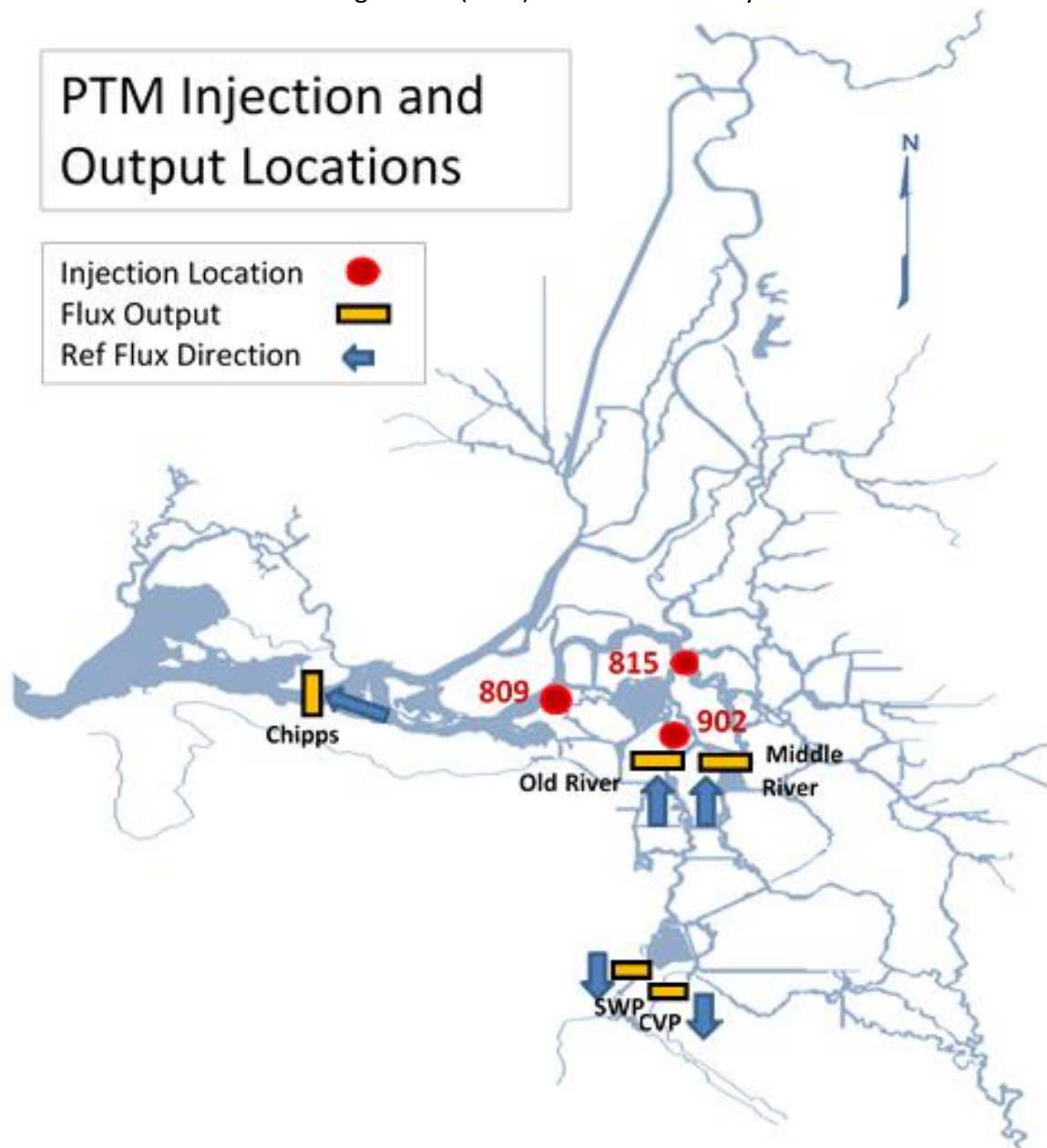


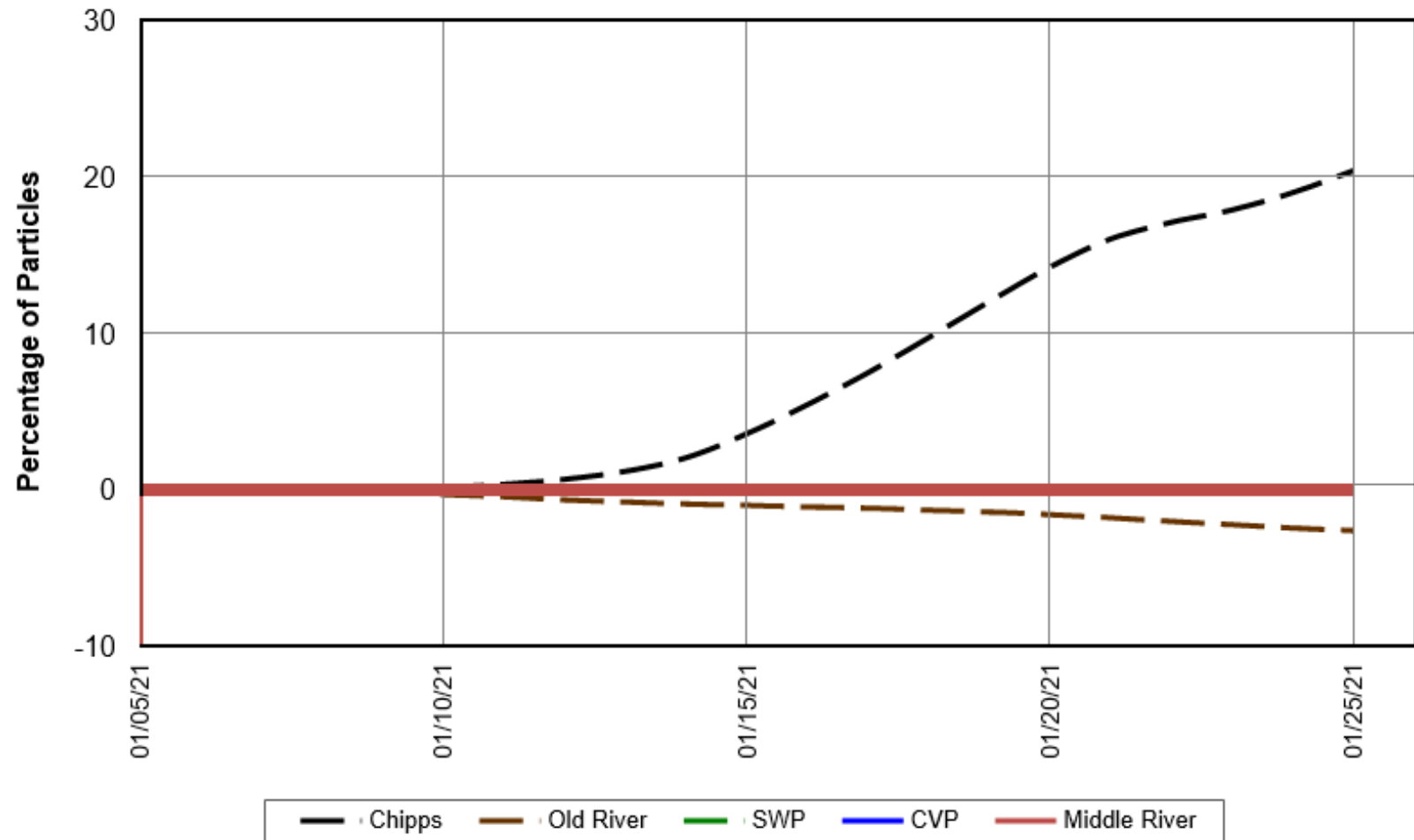
Figure 1: CDFW's Spring Kodiak Trawl Station Locations



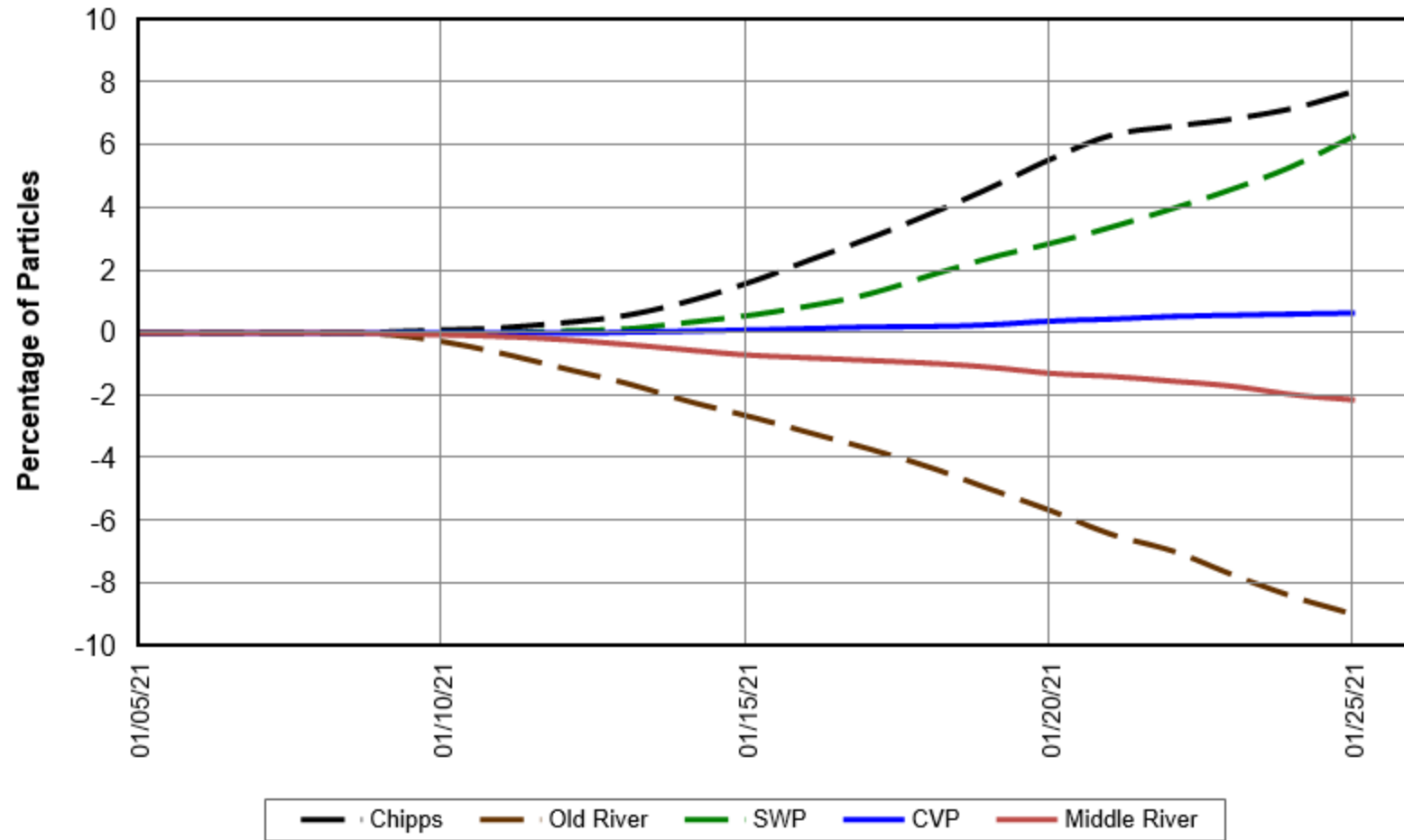
Attachment 2: Particle Tracking Model (PTM) Forecast 5 January 2021.



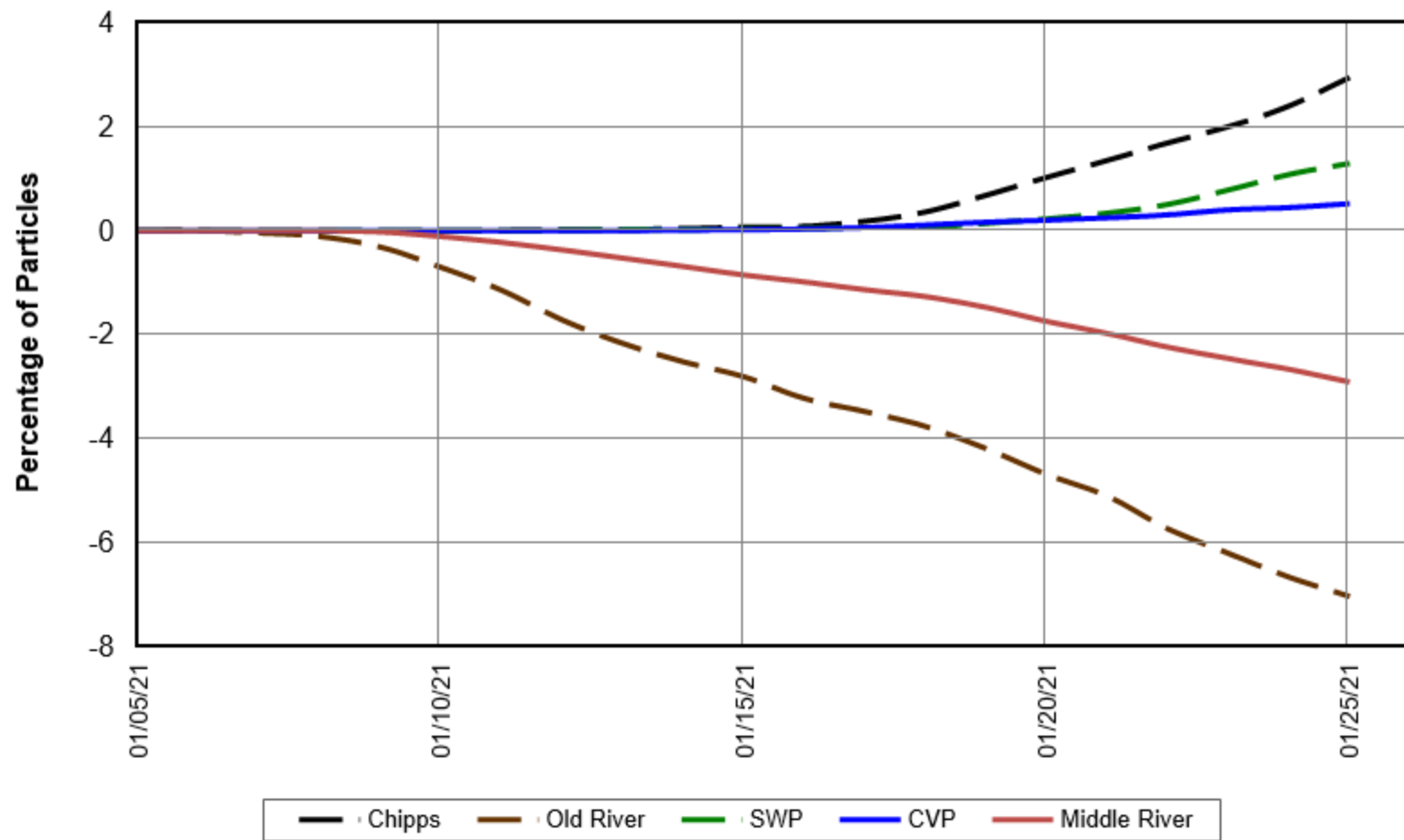
### Base Case, Particles inserted at Sampling Site 809 on 01-05-2021



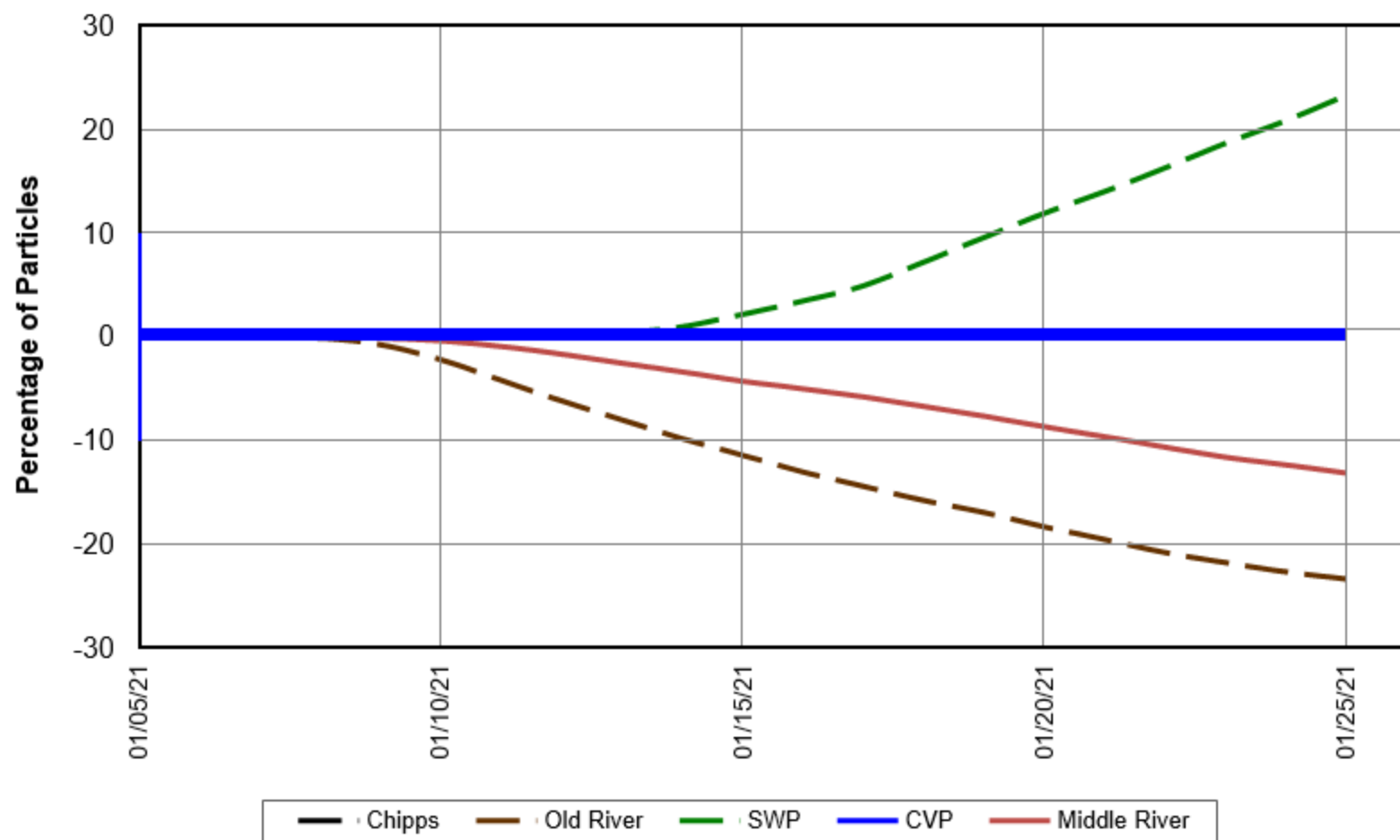
**-5000 cfs OMR Case, Particles inserted at Sampling Site 809 on  
01-05-2021**



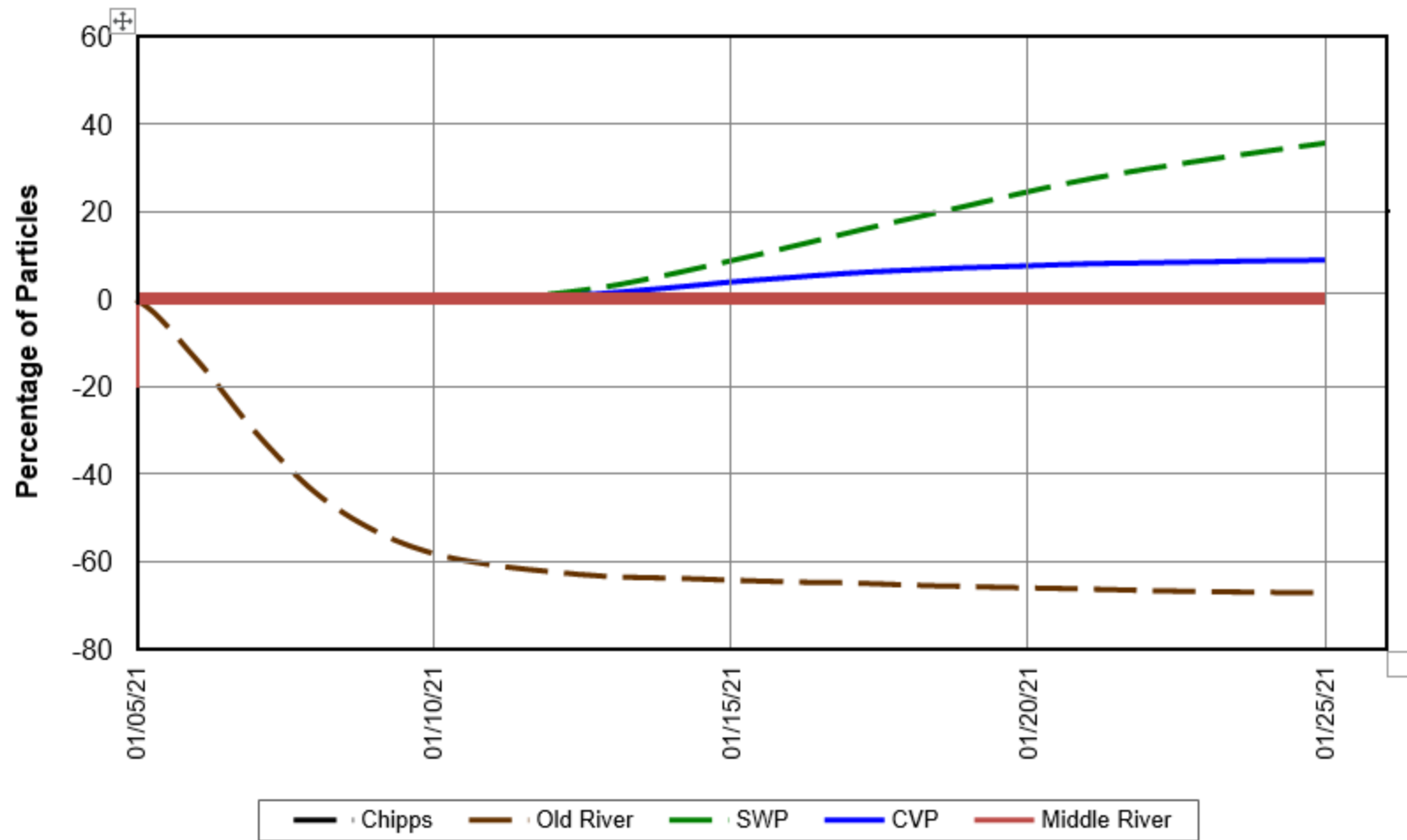
### Base Case, Particles inserted at Sampling Site 815 on 01-05-2021



**-5000 cfs OMR Case, Particles inserted at Sampling Site 815 on  
01-05-2021**



# Base Case, Particles inserted at Sampling Site 902 on 01-05-2021



**-5000 cfs OMR Case, Particles inserted at Sampling Site 902 on  
01-05-2021**

