

2024 SWP ITP Operations Summary and Chinook Salmon Assessment

Date: 11/19/2024

Summary for the Water Operations Management Team (WOMT):

Spring-run Chinook Salmon (SR) risk into the central Delta has increased to medium this week. Yearling SR are anticipated to move into the Delta due to the storm events in the upcoming week and due to hydrology it is possible for them to be entrained into the central Delta. SR risk into the facilities remains low this week due to seasonal timing of SR in the south Delta.

SaMT discussed hatchery late fall-run Chinook Salmon releases from Coleman National Fish Hatchery that would serve as yearling spring-run surrogates for COA 8.4.5. COA 8.4.5 states:

Permittee shall, in coordination with Reclamation, restrict exports based on the presence of hatchery-origin CHNSR and associated yearling late fall-run and young-of-year fall-run Chinook Salmon surrogate groups at the SWP and CVP salvage facilities...Yearling CHNSR surrogates shall be selected from late- fall Chinook Salmon in-river release groups from the Coleman National Fish Hatchery... WOMT, with input from SaMT, shall select three in-river releases of late fall-run Chinook Salmon from Coleman National Fish Hatchery from November through February to use as yearling CHNSR surrogates

SaMT discussed the proposed yearling Spring-run Surrogate Release Schedule from Coleman National Fish Hatchery:

Production Release: Releasing ~700,000 fish on Wednesday, Nov 20

1st surrogate release: Releasing ~67,000 - 74,000 fish about 3 days after the production release, regardless of precipitation events (around Nov 25)

2nd surrogate release: Releasing ~67,000 - 74,000 fish in Late December, ideally preceding (by ~3-7 days) a precipitation event and at least a week after the previous surrogate release.

3rd surrogate release: Releasing ~67,000 - 74,000 fish in Mid-January, ideally preceding (by ~3-7 days) a precipitation event and at least a week after the previous surrogate release

Proposal to WOMT from CDFW: Rather than using the 1st surrogate release group that is occurring on 11/25/24 for one of the yearling spring-run surrogate groups, CDFW proposes to instead use the production release group that is occurring on 11/20/24. Reclamation and DWR did not have any concerns with this proposed recommendation but wanted to consult their WOMT representative before reaching a final consensus.

CDFW is requesting a decision today (11/20/24) to approve a Spring-run Surrogate Release Schedule:

1. The production release would replace the previously planned 1st surrogate release for the purposes of the SWP ITP COA 8.4.5 as described above (option #1- CDFW preferred)
2. The Spring-run Surrogate Release Schedule as initially proposed and discussed by SaMT (option #2)

Rationale: The production release will consist of a larger release group and will also be released prior to the first big storm event of the season which is likely to be a better representation of yearling spring-run Chinook Salmon outmigration.

Spring-run Chinook Salmon Risk Assessment for 11/19/24 - 11/25/24

Section 1: Sacramento River and Confluence

Assessment of risk of entrainment into the central Delta for SR in the Sacramento River:

- Exposure Risk:
 - SR: Medium
- Routing Risk:
 - SR: Medium
- Overall Entrainment Risk:
 - SR: Medium
- Change in risk of entrainment into the central Delta (increased/decreased risk compared to last week):
 - SR: Increased from previous week
 - Exposure Risk is estimated as medium this week. YOY SR are not estimated to be in the Delta this week due to seasonal timing; however, with the upcoming storm events projected, yearling SR are likely to begin migrating downstream and into the Delta. Routing Risk is estimated as medium this week based on hydrologic conditions. DCC gates are projected to re-open for weekend operations, STARS Model is predicting 28% entrainment into Georgiana Slough, and Freeport flows remain low; therefore, SR may be affected by Delta operations. Although Freeport flows are anticipated to increase with the upcoming storm events, SR are expected to move downstream with the upcoming storm. Therefore, the overall entrainment into the central Delta has increased to medium.

Section 2: Facilities Risk

Central Valley Project/State Water Project (CVP/SWP) facilities entrainment risk for WR and SR in the central Delta over the next week:

- Exposure Risk:
 - SR: Low
- Reporting OMR/Export Risk:
 - Baseline OMR (-3,600 cfs)
 - SR: Low
 - Scenario 1 OMR: (-3,500 cfs)
 - SR: Low
 - Scenario 2 OMR: (-10,000 cfs)
 - SR: High
- Overall Entrainment Risk:
 - SR: Low
- Change in risk of entrainment into the facilities (increased/decreased risk compared to last week):
 - SR: Similar to previous week
 - Exposure Risk are both low this week due to no WR salvage occurring for water year (WY) 2025. Reporting OMR/Export Risk is high this week due to a more negative than -5,000 cfs OMRI anticipated this upcoming week and exports estimated to be high. No SR have been observed at the export facilities for WY 2025 and it is unlikely for SR to be near the export facilities due to seasonal timing. Therefore, the overall entrainment risk into the facilities is estimated to be low this week.

Section 3: Distribution and Biology

- Adult escapement:
 - Adult SR will likely complete their spawning by mid-November.
- Redd distribution and fry emergence timing:

- SR eggs are incubating in the gravel. There have been some detections of early emergence based on detections in the Tisdale RST; however, those LAD SR are likely WR based on seasonal timing.
- Hatchery releases (Feather River Fish Hatchery and Coleman National Fish Hatchery):
 - No releases so far this WY.
 - Coleman National Fish Hatchery is planning on a production releasing a late fall-run Chinook Salmon into Battle Creek on 11/20/24, along with another late fall-run Chinook Salmon release a few days after the production release around 11/23/24. These releases will count towards COA 8.4.5 for yearling SR surrogate releases and tracking of these fish in the SWP and CVP facilities will be closely monitored.
- Distribution of length-at-date (LAD) natural-origin young-of-year (YOY) and yearling SR:
 - Feather River: Lower Feather RSTs will begin trapping next week. Juveniles are beginning to emerge from redds and in gravel.
 - Butte Creek: Butte Creek Carcass Surveys ended on 10/28/24. Only 20 carcasses were observed. No juvenile salmonids have been observed passing through the RSTs as of 11/18/24.
 - Sacramento River: Carcass surveys still ongoing. Red Bluff Diversion Dam (RBDD) RSTs are observing juveniles passing through.
 - Mill and Deer Creek: As of 11/13/24, no juveniles have been observed at the Mill and Deer Creek RSTs.
- Distribution of natural-origin yearling SR:
 - Yearling SR are likely to be migrating downstream into the Delta with the storm events that are projected in the upcoming week. LAD yearling fall-run Chinook Salmon, which have the potential to be yearling SR, have not been observed in any of the real-time monitoring stations so far the WY.
 - Any genetic SR that is larger than the LAD YOY SR, according to the Delta Model, will be classified as a yearling SR.

Section 4: Risk Evaluation

- Levels of risk and change in risk
 - Definitions of what “high, medium, and low” risk means relative to cumulative thresholds, weekly thresholds, and hatchery surrogate thresholds. These thresholds are based on professional opinion and scientific literature, including Perry et al. 2018, Hance et al. 2021, and NMFS 2019.
 - **Central Delta Entrainment Risk:** The intent is to characterize the risk of exceeding weekly thresholds such as Knights Landing triggers and the potential to set fish up rearing in the interior with reduced survival and for those fish that would pass closer to the export facilities when they transition to emigrating elevating the chance that those fish would be loss at the export facilities.
 - **Exposure Risk:** Percentage of fish anticipated to be near the DCC gates, Knights Landing, Lower Sacramento River, and/or in the North Delta and anticipated to be moving downstream (due to storm events, seasonal migration timing, etc.).
 - High: Majority of the population is estimated to be in the Delta (> 60%)
 - Medium: 40%-60% of the population is estimated to be in the Delta
 - Low: Minimal proportion of population estimated to be in the Delta (0%-40%)
 - **Routing Risk:** Characterize risk of fish affected by flow conditions that divert fish from the main channel.

- High:
 - Low flows at Freeport [FPT gauge] (< 12,000 cfs)
 - DCC gates are open
 - STARS Model indicates a significant proportion of flow being diverted into Georgiana Slough (> 35%)
 - Georgiana Slough Bio-Acoustic Fish Fence (BAFF) not operating
- Medium:
 - Low flows at Freeport (< 12,000 cfs)
 - STARS Model indicates a proportion of flow being diverted into Georgiana Slough (30-40%)
- Low
 - High flows at Freeport (> 12,000 cfs)
 - Mute tidal effects at Georgiana Slough junction and STARS Model indicates a low proportion of flow being diverted into Georgiana Slough (< 30%)
- Overall Risk: Informed by above two risk categories
- **Facilities Entrainment Risk**: The intent is to characterize the risk of exceeding a daily, annual, or cumulative loss threshold. For fish in the central Delta, OMR levels could result in entrainment into the facilities.
 - Exposure Risk:
 - High:
 - Large numbers of fish are being observed in salvage over the previous week
 - Exposure Risk for central Delta entrainment is high
 - Medium:
 - Fish are being observed over the previous week
 - Low:
 - No fish have been observed over the previous week
 - Exposure Risk for central Delta entrainment is low
 - Reporting Risk:
 - High: OMR index is less than -5,000 cfs
 - Medium: OMR index is around -4,000 cfs to -5,000 cfs
 - Low: OMR index is greater than -3,500 cfs
 - Overall Risk: Informed by above two risk categories and can be further informed by models such as the Winter-Run Chinook Salmon Machine Learning Tool Model

Thresholds for Relevant Conditions of Approval (COAs)

COA 8.17 2024 Early Season Natural Winter-run Chinook Salmon Discrete Daily Loss Threshold

- November Daily Loss Threshold: 6 older juvenile Chinook Salmon
 - Highest Daily Loss: 0
 - This COA will be in effect and implemented through 12/20/24 or until the ROD is signed. COA 8.2.1 will not be implemented until then.

COA 8.2.1 Natural-origin Winter-run Chinook Salmon Early Season Weekly Loss Thresholds

- Not applicable until 12/21/24 or when the ROD is signed.

COA 8.4.3 Winter-run Chinook Salmon Annual Loss Thresholds

- Natural-origin WR: N/A [0.05% of the natural-origin WR Juvenile Production Estimate (JPE)]
 - Current Annual Loss: N/A
 - 50% Threshold based on natural-origin WR JPE: N/A
 - Risk of exceeding threshold: N/A
 - Days Threshold was exceeded in previous week:
 - Days Operated to Threshold after Exceedance:
 - 75% Threshold based on natural-origin WR JPE: N/A
 - Risk of exceeding threshold: N/A
 - 100% Threshold based on natural-origin WR JPE: N/A
 - Risk of exceeding threshold: N/A
 - Hatchery WR: N/A [0.12% of the Livingston Stone National Fish Hatchery (LSNFH) hatchery release JPE]
 - Current Annual Loss: N/A
 - 50% Threshold based on hatchery WR JPE: N/A
 - Risk of exceeding threshold: N/A
 - 75% Threshold based on hatchery WR JPE: N/A
 - Risk of exceeding threshold: N/A
 - 100% Threshold based on hatchery WR JPE: N/A
 - Risk of exceeding threshold: N/A

COA 8.4.5 Spring-run Chinook Salmon Protection Action and Surrogate Annual Loss Threshold

- Hatchery Origin Yearling SR Surrogates (0.25% of total in-river FR releases for each release group from Coleman National Fish Hatchery (CNFH):
 - Group 1 Loss Threshold: N/A
 - Highest Daily Loss: N/A
- Hatchery Origin Young-of-Year SR Surrogates (0.25% of total in-river FR releases for each release group from Coleman National Fish Hatchery (CNFH):
 - Group 1 Loss Threshold: N/A
 - Highest Daily Loss: N/A
- Hatchery Origin Young-of-Year SR Surrogates (0.25% of total in-river SR releases for each release group from Feather River Hatchery (FRH):
 - Group 1 Loss Threshold: N/A
 - Highest Daily Loss: N/A

Hydrology and Operations Updates

Water Operations

Weather Conditions:

- Meteorological Forecast on 11/19/24:
 - *“Cold temperatures this morning with low elevation frost. Storm system arrives midday, with periods of moderate to heavy rain, mountain snow, and gusty winds then expected through the end of the week and into the weekend.”*
 - [NOAA - National Weather Service Forecast](#)

Antecedent Actions: (e.g., Actions such as integrated early winter pulse protection, etc.)

- N/A

Exports and OMRI Ranges:

- Exports: 11/19/24 – 11/25/24
 - SWP: 1,500 to 6,680 cfs
 - CVP: 2,700 to 4,200 cfs
- For previous 30 day CVP and SWP operation updates: [Operations and Delta Status](#)

OMRI: 11/19/24 – 11/25/24

- Expected Daily Values: -3,500 cfs to -10,000 cfs

DCC Gates position:

- DCC gates closed 11/18 and may re-open on 11/22.

Freeport flows:

- 8,500 cfs to 38,000 cfs

Georgiana Slough Bio-Acoustic Fish Fence (BAFF):

- The Georgiana Slough BAFF is installed and began operating on 11/15/24. However, a car collided into the facility which caused the aerator machine to break and is unrepairable. A temporary aerator is likely to be installed soon; however, in the meantime the lights and sound are the only thing working on the BAFF until the temporary aerator is installed.
- Releases of acoustically-tagged hatchery fish are anticipated to occur from December through March to study the effectiveness of the BAFF. These studies will be included in a table in this section once releases occur.

Real-time Monitoring Data

SacPAS Tools

Section 1: STARS Model

Available on SacPAS at: [Delta STARS Model](#)

Table 1. STARS Model

<u>Date:</u> (11/18/24)	<u>DCC</u> <u>Gates</u>	<u>Georgiana</u> <u>Slough</u>	<u>Sacramento</u> <u>River</u>	<u>Sutter and</u> <u>Steamboat Slough</u>	<u>Yolo</u> <u>Bypass</u>
Late Fall-Run Proportion of Entrainment	N/A- not open	0.28	0.46	0.26	N/A

<u>Date:</u> (11/18/24)	<u>DCC</u> <u>Gates</u>	<u>Georgiana</u> <u>Slough</u>	<u>Sacramento</u> <u>River</u>	<u>Sutter and</u> <u>Steamboat Slough</u>	<u>Yolo</u> <u>Bypass</u>
Late Fall-Run Survival	N/A-not open	0.19	0.53	0.40	N/A
Winter-Run Proportion of Entrainment	N/A	0.13	0.59	0.14/0.14	N/A
Winter-Run Survival	N/A	0.11	0.26	0.34/0.38	N/A

Section 2: Historical Migration

Knights Landing RST and Chippis Island Trawls Historical Timing from Brood Years 2009-2023. Available at: [Unclipped Winter Chinook Cohort Juvenile Migration Timing and Conditions Graph and Table: SacPAS Sacramento Prediction and Assessment of Salmon and other fishes](#)

Delta Monitoring Stations

Rotary Screw Trap Data

Red Bluff Diversion Dam RST: Estimated juvenile WR passage at Red Bluff Diversion Dam for 11/3/24 is 348,758 fish.

Table 2. Fish monitoring data for RST data for the 11/19/24 SaMT meeting. The following table presents fish monitoring data summarized over the past week. Unless otherwise noted, reported sizes are fork length. FR = fall-run, WR = winter-run, SR = spring-run, LFR = late-fall-run.

Location	Butte Creek RST	Tisdale RST	Knights Landing RST	Lower Sac RST	Lower Feather RST	Feather at Herringer RST	Feather at Eye-Side RST
Sample Date	N/A	11/12/24 - 11/18/24	11/12/24 - 11/18/24	11/12/24 - 11/18/24	N/A	N/A	N/A
Chinook Adults	0	0	0	0	N/A	N/A	N/A
FR Chinook	0	0	0	0	N/A	N/A	N/A
SR Chinook	0	0	0	0	N/A	N/A	N/A
WR Chinook	0	0	0	0	N/A	N/A	N/A
LFR Chinook	0	0	0	0	N/A	N/A	N/A
Chinook (ad-clip)	0	0	0	0	N/A	N/A	N/A
Steelhead (wild)	0	0	0	0	N/A	N/A	N/A

Location	Butte Creek RST	Tisdale RST	Knights Landing RST	Lower Sac RST	Lower Feather RST	Feather at Herringer RST	Feather at Eye-Side RST
Steelhead (ad-clip)	0	0	0	0	N/A	N/A	N/A
Green Sturgeon	0	0	0	0	N/A	N/A	N/A
Flows (avg. cfs)	N/A	4,153	4,267	7,339	N/A	N/A	N/A
W. Temp. (avg. °F/C)	N/A	11.2 °C	11.5 °C	11.3 °C	N/A	N/A	N/A
Turbidity (avg. NTU)	N/A	5.1	5.8	4.2	N/A	N/A	N/A

Delta Trawl and Seine Data

Table 3. Fish monitoring data for trawl and seine data for the 11/19/24 SaMT meeting. The following table presents fish monitoring data summarized over the past week. Unless otherwise noted, reported sizes are fork length. FR = fall-run, WR = winter-run, SR = spring-run, LFR = late-fall-run.

Location	Chippis Island Midwater Trawl	Mossdale Kodiak Trawl	Beach Seines	Sac Trawl
Sample Date	11/10/24-11/16/24	11/10/24-11/16/24	11/10/24-11/16/24	11/10/24-11/16/24
Chinook Adults	0	0	0	0
FR Chinook	0	0	0	0
SR Chinook	0	0	0	0
WR Chinook	0	0	0	0
LFR Chinook	0	0	0	0
Chinook (ad-clip)	0	0	0	0
Steelhead (wild)	0	0	0	0
Steelhead (ad-clip)	0	0	0	0
Green Sturgeon	0	0	0	0
Flows (avg. cfs)	N/A	N/A	N/A	N/A
W. Temp. (avg. °F/C)	N/A	N/A	N/A	N/A

LAD/Genetic Loss Data for Older Juvenile Chinook Salmon and Spring-run Chinook Salmon

No loss of LAD or genetic WR or SR in the previous week.

- [SacPAS - Salvage Timing](#)

2024 SWP ITP COAs Currently in Effect

The 2024 [Incidental Take Permit for Long-Term Operation of the State Water Project in the Sacramento-San Joaquin Delta](#) 2081-2023-054-00 (SWP ITP). This week's operations summary and assessment is based on the following COAs which are currently applicable:

COA 8.2.1 Natural-origin Winter-run Chinook Salmon Early Season Weekly Loss Thresholds

To minimize entrainment and loss of early-migrating natural-origin CHNWR, Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve a 7-day average of the OMR index no more negative than -5,000 cfs for seven consecutive days, when the genetically verified 7-day rolling sum of CHNWR loss, calculated daily, exceeds the following thresholds (see calculation details and survival variables in Attachments 2 and 6):

- *From November 1 through November 30: Product of November Multiplier and the Red Bluff Diversion Dam juvenile CHNWR brood year passage total at the end of the second biweekly period in October, whereby the November Multiplier is: November Multiplier = $0.0011 \times 0.25 \times \text{SurvivalFry-to-Smolt} \times \text{SurvivalSmolt}$*
- *From December 1 through December 31: Product of December Multiplier and the Red Bluff Diversion Dam juvenile CHNWR brood year passage total estimated at the end of the second biweekly period in November, whereby the December Multiplier is: December Multiplier = $0.0021 \times 0.25 \times \text{SurvivalFry-to-Smolt} \times \text{SurvivalSmolt}$*

If the 7-day rolling sum of CHNWR loss, calculated daily, is exceeded during a period of reduced exports, Permittee shall, in coordination with Reclamation, continue to adjust south Delta exports to achieve a 7-day average of the OMR index no more negative than -5,000 cfs, until seven days after the most recent exceedance. Loss shall be calculated for the south Delta export facilities using the 2018 CDFW loss equation (Attachment 8). Permittee shall, in coordination with Reclamation, initially adjust exports in response to meeting the thresholds above based on length-at-date identification of natural-origin older juvenile Chinook Salmon. If genetic analysis of natural-origin juvenile Chinook Salmon observed in salvage at the SWP or CVP subsequently indicates that any given Chinook Salmon is not a genetically confirmed CHNWR, that fish will not count toward the loss threshold exceedance, and continued export adjustments pursuant to the OMR limit may not be required. While a new, more rapid genetic method, SHERLOCK, undergoes field testing, both it and the current genetic method, GT-seq, shall be used to determine the final identification. In the event that SHERLOCK and GT-seq provide different run assignments, the results from the GT-seq method shall be used to determine the final run assignment for the purposes of implementing Condition of Approval 8.2.1. If a fish is not genetically identifiable or if genetic identification is pending, then the Delta model length-at-date criteria shall be used to classify the race of the juvenile Chinook Salmon in salvage for the purposes of implementing Condition of Approval 8.2.1.

COA 8.4.3 Winter-run Chinook Salmon Annual Loss Thresholds

To minimize entrainment and loss of juvenile CHNWR, Permittee shall, in coordination with Reclamation, adjust south Delta exports to manage the OMR index to avoid exceeding the following annual loss thresholds:

- *Natural-origin CHNWR Loss Threshold: 0.5% of JPE*
- *Hatchery-origin CHNWR Loss Threshold: 0.12% of JPE*

JPEs and annual loss thresholds will be calculated for natural-origin CHNWR, for hatchery-origin CHNWR from Livingston Stone National Fish Hatchery (LSNFH) released into the Sacramento River near Redding, and for LSNFH hatchery-origin CHNWR released into Battle Creek. The JPE for natural and hatchery-origin CHNWR is

calculated by the JPE Subteam annually, consistent with Attachment 2, and is described in the yearly recommendation letter produced by the JPE Subteam and transmitted to NMFS and CDFW. NMFS and CDFW issues an Annual JPE Letter, with the JPE Subteam recommendation included as an enclosure to the letter, to Permittee and Reclamation. Hatchery releases of CHNWR are tracked individually, and Permittee shall sum cumulative loss, confirmed by coded wire tag (CWT), across release groups with the same JPE and annual loss threshold. Permittee shall calculate loss for the south Delta export facilities using the 2018 CDFW loss equation (Attachment 8). Permittee shall count annual loss of natural and hatchery-origin CHNWR at the SWP and CVP salvage facilities for each brood year, starting July 1 of the calendar year through June 30 of the following calendar year. If cumulative loss of either natural or hatchery-origin CHNWR in a brood year exceeds 50% of the annual loss thresholds, then Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve a 7-day average of the OMR index no more negative than -3,500 cfs for seven consecutive days. If a CHNWR is salvaged during the 7-day action, the action will be extended for another seven days. At the conclusion of the action, Permittee, in coordination with Reclamation shall revert to the weekly distributed loss threshold until the 75% threshold is reached or throughout the end of the OMR Management season (Condition of Approval 8.6).

COA 8.4.5 Spring-run Chinook Salmon Protection Action and Surrogate Annual Loss Thresholds

To minimize entrainment and loss of juvenile CHNSR, Permittee shall, in coordination with Reclamation, restrict exports based on the presence of hatchery-origin CHNSR and associated yearling late fall-run and young-of-year fall-run Chinook Salmon surrogate groups at the SWP and CVP salvage facilities. Permittee shall, in coordination with CDFW, Reclamation, USFWS, and NMFS through the SaMT, select CHNSR yearling and young-of-year surrogate groups. Yearling CHNSR surrogates shall be selected from late fall Chinook Salmon in-river release groups from the Coleman National Fish Hatchery. Young-of-year CHNSR and associated surrogate groups shall be selected from fall- and spring-run Chinook Salmon in-river release groups from the Feather River Fish Hatchery and Coleman National Fish Hatchery.

From November 1 through the end of OMR Management (Condition of Approval 8.6) each water year:

- (1) If a cumulative loss threshold for a surrogate release group is exceeded in November or December, Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve a 7-day average of the OMR index no more negative than -5,000 cfs for seven consecutive days; and
- (2) If a cumulative loss threshold for a surrogate release group is exceeded after the onset of OMR Management (Condition of Approval 8.3), or on or after January 1 through the end of OMR Management or June 30, whichever comes first, Permittee shall, in coordination with Reclamation, adjust south Delta exports to achieve a 7- day average of the OMR index no more negative than -3,500 cfs for seven consecutive days.

The cumulative loss threshold for CWT CHNSR surrogate groups at the SWP and CVP salvage facilities is greater than 0.25% for each release group:

- Yearling CHNSR surrogates: WOMT, with input from SaMT, shall select three inriver releases of late fall-run Chinook Salmon from Coleman National Fish Hatchery from November through February to use as yearling CHNSR surrogates. Input from SaMT may include a proposal with several alternatives. If three in-river releases appropriately distributed from November through February are not achievable in a given year because of hatchery limitations, then an alternative plan shall be developed to ensure the adequate characterization and minimization of natural-origin yearling CHNSR can still be achieved that year. This plan shall be subject to CDFW approval.

- *Young-of-year CHNSR surrogates: WOMT, with input from SaMT, shall select six in-river releases comprised of CHNSR and fall-run Chinook Salmon from the Feather River Fish Hatchery and fall-run Chinook Salmon from the Coleman National Fish Hatchery from March through May to use as young-of-year CHNSR surrogates. Input from SaMT may include a proposal with several alternatives. If six in-river releases appropriately distributed from March through May are not achievable in a given year because of hatchery limitations, then an alternative plan shall be developed to ensure the adequate characterization and minimization of natural-origin young-of-year CHNSR can still be achieved that year. This plan shall be subject to CDFW approval.*

Permittee shall, in coordination with Reclamation and SaMT, use real-time monitoring data, relevant tools, and new science gained through ongoing efforts to develop a CHNSR JPE and LCM to inform weekly risk assessments (October through June) for natural-origin juvenile CHNSR. If the risk assessment or WOMT representatives identifies a more positive OMR flow may be needed to minimize take of natural-origin juvenile CHNSR, WOMT may consider a more positive OMR flow requirement.

COA 8.17 2024 Early Season Natural Winter-run Chinook Salmon Discrete Daily Loss Threshold:

From the effective date of this ITP through December 20, 2024 Permittee shall, in coordination with Reclamation, adhere to the following criteria to minimize take of early migrating CHNWR. To minimize entrainment, salvage, and take of early-migrating natural CHNWR, Permittee shall restrict south Delta exports for five consecutive days to achieve a five-day average OMR index no more negative than -5,000 cfs when daily loss of older juveniles (natural older juvenile Chinook Salmon70 and yearling CHNSR used as a surrogate for CHNWR) at the SWP and CVP salvage facilities exceeds the following thresholds:

- *From November 1 – November 30: 6 older juvenile Chinook Salmon*
- *From December 1 – December 31: 26 older juvenile Chinook Salmon*

All natural older juvenile Chinook Salmon juveniles shall be identified based on the Delta Model length-at-date criteria. Loss shall be calculated for the South Delta Export Facilities using the equation provided in CDFW 2018 (Attachment 8). From the effective date of this ITP through December 20, 2024, or finalization of a new ROD, whichever occurs first, Permittee shall not be required to implement Condition of Approval 8.2.1 (Natural-origin Winter-run Chinook Salmon Early Season Weekly Loss Thresholds). This Condition of Approval carries forward Condition of Approval 8.6.2 from the 2020 ITP for Long-term Operation of the SWP in the Sacramento-San Joaquin Delta (ITP No. 2081-2019-066-00 and is applicable only for the time period described in this Condition of Approval