



# Weekly Assessment of CVP and SWP Delta Operations on ESA-listed Species

October 24, 2023

## Executive Summary

### Operational Conditions

See Weekly Fish and Water Operation Outlook document for October 24 – October 30.

### Winter-run Chinook Salmon

No loss of natural winter-run Chinook Salmon (by length at date, LAD) has occurred in the past week at the State or Federal fish salvage facilities. Loss of natural winter-run Chinook Salmon at the Central Valley Project (CVP) and State Water Project (SWP) fish collection facilities is unlikely to occur over the next week. 0-1% of juvenile natural winter-run Chinook Salmon from brood year (BY) 2023 are estimated to be present in the Delta. The Delta Cross Channel (DCC) gates closure reduces far-field effects on winter-run Chinook Salmon juveniles that are potentially present in the Sacramento River near the DCC gates into the interior Delta.

### Spring-run Chinook Salmon

No loss of natural spring-run Chinook Salmon (by length at date, LAD) has occurred in the past week at the State or Federal fish salvage facilities. 0% of juvenile natural spring-run Chinook Salmon was estimated in the Delta. It is unlikely that juvenile natural spring-run Chinook Salmon from BY 2023 are present near the DCC gates; CV spring-run Chinook Salmon adults have nearly completed spawning and eggs are in gravel. The DCC closure is unlikely to affect natural spring-run Chinook Salmon in the next seven days.

### Central Valley Steelhead

No loss of natural California CV (CCV) steelhead has occurred in the past week at the State and Federal fish salvage facilities. Loss of Central Valley steelhead at the Central Valley Project (CVP) and State Water Project (SWP) fish collection facilities is unlikely to occur over the next week. 0% of CCV steelhead were estimated in the Delta. DCC closure reduces exposure to Central Valley steelhead juveniles that are potentially present in the Sacramento River near the DCC gates.

### DCC gates recommendation

The DCC gates were closed on 10/23/2023 for Collinsville salinity/fall X2 requirements. Closing the DCC gate may also reduce straying of Mokelumne River fall-run Chinook Salmon

attracted by Mokelumne flows. The DCC gate is currently scheduled to re-open on 10/27/2023 for salinity/seasonal weekend operation, and to allow boaters passage to the interior Delta. The gates will then be closed again on 10/3/2023.

### Monitoring Teams summary

There were no non-consensus issues to report from the Salmon Monitoring Team.

## Operational and Regulatory Conditions

See current Weekly Fish and Water Operation Outlook document.

## Biology, Distribution, and Evaluation Winter-run Chinook salmon, Spring-run Chinook salmon, Central Valley Steelhead

### Population Status

#### *Winter-run Chinook Salmon*

- Delta Life Stages:
  - Juveniles, Adults
- Supporting Information regarding Exposure
  - Catch at Red Bluff Diversion Dam continues to increase, which suggests that juvenile winter-run Chinook Salmon have started their migration towards the middle reaches of the Sacramento River. Knights Landing, Tisdale, and Lower Sacramento rotary screw traps have observed winter-run Chinook salmon which further confirms that winter-run Chinook salmon have begun migrating downstream.
- Supporting Information regarding DCC Management Effects
  - DCC gate operations will continue with a weekday closed/weekend open pattern.
  - See Attachment A – Mokelumne River pulse flow plan plot and data.

#### *Spring-run Chinook Salmon*

- Delta Life Stages:
  - Young-of-year (YOY) and Yearlings
- Supporting Information regarding Exposure
  - See additional supporting information found in winter-run Chinook Salmon section.
  - Mill Creek and Deer Creek daily flows were recorded more than 95 cfs over the past week.

- Supporting Information regarding DCC Management Effects
  - See additional supporting information in winter-run Chinook Salmon section.

**Central Valley Steelhead**

- Delta Life Stages:
  - Spawning Adults, Kelts, Juveniles
- Supporting Information regarding Exposure of CCV Steelhead
  - See Additional supporting information found in winter-run Chinook Salmon.
- Supporting Information regarding DCC Management Effects on Central Valley steelhead
  - See additional supporting information found in winter-run Chinook Salmon.

**Distribution**

Table 1. Salmonid distribution estimates

<b>Location</b>	<b>Yet to Enter Delta (%)</b>	<b>In the Delta (%)</b>	<b>Exited Delta past Chipps Island (%)</b>
Young-of-year (YOY) winter-run Chinook salmon	Current: 99-100 % Last Week: 99-100%	Current: 0-1% Last Week: 0-1%	Current: 0% Last Week: 0%
YOY spring-run Chinook salmon	Current: 100% Last Week: 100 %	Current: 0% Last Week: 0%	Current: 0% Last Week: 0%
YOY hatchery winter-run Chinook salmon	Current: NA Last Week: NA	Current: NA Last Week: NA	Current: NA Last Week: NA
Natural origin steelhead	Current: 100% Last Week: 100 %	Current: 0% Last Week: 0%	Current: 0% Last Week: 0%

Table 2. Historic migration and salvage patterns. Last updated 10/23/2023.

Species	Red Bluff Diversion Dam	Tisdale Rst	Knights Landing Rst	Sac Trawl Sherwood Catch Index	Chippis Island Trawl Catch Index	Salvage
Chinook, Winter-run, Unclipped	65.7%(57.5%,73.8%) BY: 2013 - 2022	7.6%(1.8%,13.4%) BY: 2013 - 2022	6.5%(2.2%,10.8%) BY: 2013 - 2022	0.0%(0.0%,0.0%) BY: 2013 - 2022	0.0%(0.0%,0.0%) BY: 2013 - 2022	0.0%(0.0%,0.0%) WY: 2014 - 2023
Chinook, Spring-run, Unclipped	0.3%(-0.0%,0.6%) BY: 2013 - 2022	0.0%(-0.0%,0.0%) BY: 2013 - 2022	0.0%(0.0%,0.0%) BY: 2013 - 2022	0.0%(0.0%,0.0%) BY: 2013 - 2022	0.0%(0.0%,0.0%) BY: 2013 - 2022	0.0%(0.0%,0.0%) WY: 2014 - 2023
Steelhead, Unclipped (January-December)	N/A	N/A	N/A	N/A	N/A	N/A
Steelhead, Unclipped (December-March)	N/A	N/A	N/A	N/A	N/A	N/A
Steelhead, Unclipped (April-June)	N/A	N/A	N/A	N/A	N/A	N/A

Table 3. Knight’s Landing (KLCI) and Sacramento Seine and Trawl (SCI). No catch indices for juvenile salmonid migration were triggered during the past week.

Date	KLCI	SCI Trawl	SCI Seine	Trigger Exceeded
10/23/23	N/A	0	0	No
10/22/23	N/A	N/A	N/A	No
10/21/23	N/A	N/A	N/A	No
10/20/23	0.54	0	0	No
10/19/23	N/A	N/A	N/A	No
10/18/23	N/A	0	0	No
10/17/23	N/A	N/A	N/A	No
10/16/23	0.50	0	N/A	No

Table 4. Mean daily flow and percent change (Wilkins Slough, Deer Creek, Mill Creek; cfs from CDEC) and temperature and percent change (Knights Landing; °F from RST).

Date	Mill Creek (MLM): mean daily flow (cfs)	Mill Creek (MLM): flow percent change	Mill Creek (MLM): Alert	Deer Creek (DCV): mean daily flow (cfs)	Deer Creek (DCV): flow percent change	Deer Creek (DCV): Alert	Wilkins Slough (WLK): mean daily flow (cfs)	Knights Landing RST: water temperature (f)	Alert Triggered
10/22/2023	100.2	1.1%	Flow>95cfs	102.0	2.0%	Flow>95cfs	4,869.3	N/A	N/A
10/21/2023	99.2	-0.1%	Flow>95cfs	100.0	0.4%	Flow>95cfs	4,734.1	N/A	N/A
10/20/2023	99.2	-0.4%	Flow>95cfs	99.6	-0.4%	Flow>95cfs	4,893.7	N/A	N/A
10/19/2023	99.6	-1.1%	Flow>95cfs	100.0	-1.2%	Flow>95cfs	4,991.1	N/A	N/A
10/18/2023	100.8	-0.7%	Flow>95cfs	101.2	-0.5%	Flow>95cfs	5,211.2	N/A	N/A
10/17/2023	101.5	0.6%	Flow>95cfs	101.7	0.6%	Flow>95cfs	5,349.2	N/A	N/A
10/16/2023	100.9	-1.4%	Flow>95cfs	101.1	-0.9%	Flow>95cfs	5,470.9	N/A	N/A

Table 5. STARS model simulations for route-specific entrainment, travel times, and survival.

Stock	Date	Route	Median Travel Time	Survival	Routing Probability
Winter Chinook	2023-10-22	Overall	6.71	0.08	N/A
Winter Chinook	2023-10-22	Sacramento River	6.27	0.08	0.58
Winter Chinook	2023-10-22	Yolo Bypass	9.76	0.49	0.00
Winter Chinook	2023-10-22	Sutter Slough	6.36	0.13	0.14
Winter Chinook	2023-10-22	Steamboat Slough	6.07	0.08	0.14
Winter Chinook	2023-10-22	Interior Delta	9.62	0.03	0.13
Late-fall Chinook	2023-10-22	Overall	12.49	0.28	N/A

Stock	Date	Route	Median Travel Time	Survival	Routing Probability
Late-fall Chinook	2023-10-22	Delta Cross Channel	20.70	0.12	0.20
Late-fall Chinook	2023-10-22	Georgiana Slough	19.20	0.16	0.18
Late-fall Chinook	2023-10-22	Sacramento River	9.18	0.37	0.35
Late-fall Chinook	2023-10-22	Sutter and Steamboat Slough	9.28	0.34	0.26

## Evaluation

1. How much salmonid loss has occurred in the past week?

No loss of juvenile winter-run Chinook Salmon, spring-run Chinook Salmon, or Steelhead has occurred in the past week at the CVP and SWP fish salvage facilities.

2. Were salmonids observed near the DCC gate in the last seven days?

Juvenile salmonids are present near the DCC gates but historical monitoring data indicates that they are not present in the Delta in significant numbers at this time. Closure of the DCC gates would reduce likelihood of entraining juvenile salmonids into the Interior Delta.

3. Given forecasted conditions and observations of salmonids, what are the effects of DCC gate operations on salmonids in the next seven days?

Juvenile winter-run Chinook Salmon are present near the DCC gates but have not triggered any actions. Closure of the gates would positively impact any present juvenile salmonids by preventing entrainment into the interior Delta. Closure of the DCC gates, also reduces straying of Mokelumne River adult fall-run Chinook salmon during the fall attraction flow releases.

# Attachment A.

## Mokelumne River Pulse Flow Plan

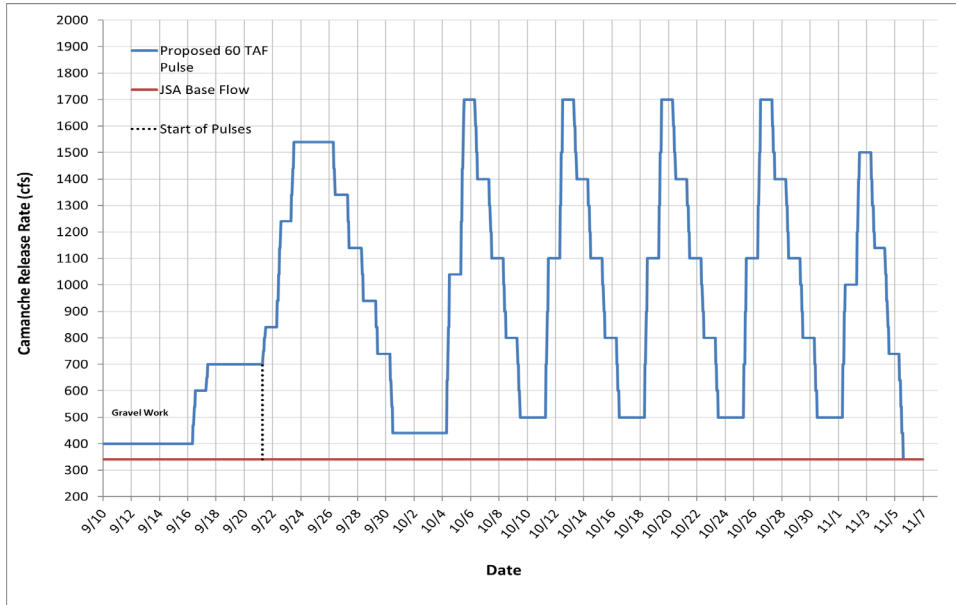


Figure A1. September 2023 Mokelumne River Pulse Flow plan (source: 2023Final Pulse Flow Plan\_rev1; tab: Pulse Flow – Hourly INPUT (wse))

Table A1. September 2023 Mokelumne River Pulse Flows Accounting (source: 2023 Final Pulse Flow Plan\_rev 1; tab: Pulse Flow Accounting (wse))

Date	JSA Minimum Release (cfs)	INPUT - Base Flow (cfs)*	Add. Pulse Flow (cfs)	Total Release (cfs)	Daily Release Volume (AF)	Cumulative Release Volume (AF)
9/21/2023	340	340	443	783	1552	1552
9/22/2023	340	340	717	1057	2096	3648
9/23/2023	340	340	1075	1415	2807	6455
9/24/2023	340	340	1200	1540	3055	9509
9/25/2023	340	340	1200	1540	3055	12564
9/26/2023	340	340	1075	1415	2807	15370
9/27/2023	340	340	875	1215	2410	17780
9/28/2023	340	340	675	1015	2013	19793
9/29/2023	340	340	475	815	1617	21410
9/30/2023	340	340	225	565	1121	22531
10/1/2023	340	340	100	440	873	23403
10/2/2023	340	340	100	440	873	24276
10/3/2023	340	340	100	440	873	25149
10/4/2023	340	340	450	790	1567	26716
10/5/2023	340	340	1078	1418	2812	29527
10/6/2023	340	340	1185	1525	3025	32552
10/7/2023	340	340	885	1225	2430	34982
10/8/2023	340	340	585	925	1835	36817
10/9/2023	340	340	285	625	1240	38056
10/10/2023	340	340	160	500	992	39048
10/11/2023	340	340	510	850	1686	40734
10/12/2023	340	340	1110	1450	2876	43610
10/13/2023	340	340	1185	1525	3025	46635
10/14/2023	340	340	885	1225	2430	49064
10/15/2023	340	340	585	925	1835	50899
10/16/2023	340	340	285	625	1240	52139
10/17/2023	340	340	160	500	992	53131
10/18/2023	340	340	510	850	1686	54817
10/19/2023	340	340	1110	1450	2876	57693
10/20/2023	340	340	1185	1525	3025	60717
10/21/2023	340	340	885	1225	2430	63147
10/22/2023	340	340	585	925	1835	64982
10/23/2023	340	340	285	625	1240	66221



<b>Date</b>	<b>JSA Minimum Release (cfs)</b>	<b>INPUT - Base Flow (cfs)*</b>	<b>Add. Pulse Flow (cfs)</b>	<b>Total Release (cfs)</b>	<b>Daily Release Volume (AF)</b>	<b>Cumulative Release Volume (AF)</b>
10/24/2023	340	340	160	500	992	67213
10/25/2023	340	340	510	850	1686	68899
10/26/2023	340	340	1110	1450	2876	71775
10/27/2023	340	340	1185	1525	3025	74800
10/28/2023	340	340	885	1225	2430	77230
10/29/2023	340	340	585	925	1835	79064
10/30/2023	340	340	285	625	1240	80304
10/31/2023	340	340	160	500	992	81296
11/1/2023	340	340	460	800	1587	82883
11/2/2023	340	340	960	1300	2579	85461
11/3/2023	340	340	960	1300	2579	88040
11/4/2023	340	340	583	923	1831	89871
11/5/2023	340	340	400	740	1468	91339