



# Weekly Fish and Water Operations Outlook

5/23/2023 – 5/29/2023

## Water Project Operational Intent for Week

- COA 8.17 of the ITP, Export Curtailments for Spring Outflow, is in effect, with a 4:1 Vernalis flow/export ratio, due to a Wet Year classification. However, because the three-day averaged Delta Outflow is greater than 44,500 cfs, the export restriction is “off-ramped”.

## Biological Context

- The Bay/Delta is in “excess” conditions and no ESA biological protections are “controlling” water project operations.

## Forecasted Weather

- Warm on Monday, then cooling all week through the weekend. “Pop-Up” thunderstorms and showers in the mountains all week.

## Tables

Table 1: Anticipated weekly operational ranges by tributary. Environmental and fish conditions updated by respective watershed groups at varying intervals that may not coincide with the weekly range of Water Operations

Tributary/Division	Anticipated Weekly Ranges	Related Environmental and Fish Conditions
Clear Creek	<ul style="list-style-type: none"> <li>• Current Release: 200 cfs</li> <li>• Anticipated Weekly Range of Releases: 200 cfs.</li> </ul>	<ul style="list-style-type: none"> <li>• Spring-run Chinook Salmon adults are migrating into Clear Creek.</li> <li>• Spring-run Chinook Salmon juveniles are rearing/emigrating.</li> <li>• Fall-run Chinook Salmon juveniles are rearing/emigrating.</li> <li>• Late fall-run Chinook Salmon juveniles are rearing/emigrating.</li> <li>• O. mykiss eggs are incubating/hatching, and fry and juveniles are rearing/emigrating</li> </ul> <p><i>(Updated 4/23/23)</i></p>

Tributary/Division	Anticipated Weekly Ranges	Related Environmental and Fish Conditions
Sacramento River	<ul style="list-style-type: none"> <li>• Shasta Storage: 4.460 MAF</li> <li>• Current Release: 11,000 cfs</li> <li>• Anticipated Weekly Range of Releases: 10,000 cfs to 13,000 cfs for storage management.</li> </ul>	<ul style="list-style-type: none"> <li>• Spring-run Chinook salmon fry have completed final redd emergence and are migrating downstream.</li> <li>• Holding adult winter-run Chinook are beginning to spawn in the upper river. Winter-run carcass survey has begun.</li> <li>• Adult Winter-run and Spring-run Chinook are actively migrating upstream into their holding and spawning areas; for spring-run this is occurring in both the river and the tributaries.</li> <li>• Late-fall-run juveniles are emerging and beginning to migrate downstream.</li> <li>• O. mykiss adults are commencing spawning, eggs are incubating.</li> </ul> <p><i>(Updated 5/22/23)</i></p>
Feather River	<ul style="list-style-type: none"> <li>• Oroville Storage: 3.397 MAF</li> <li>• Current Release: 13,000 cfs</li> <li>• Anticipated Weekly Range of Releases: 7,000 cfs to 15,000 cfs</li> <li>• Daily temperature maximum: 55 +/- 4 F at Fish Hatchery</li> </ul>	<ul style="list-style-type: none"> <li>• Fall-run Chinook salmon juveniles are rearing/emigrating.</li> <li>• Spring-run Chinook salmon juveniles are rearing/emigrating. Adults are migrating upstream and starting to enter the hatchery.</li> <li>• O. mykiss adult spawning is complete. Juveniles are rearing/emigrating.</li> <li>• Adult green sturgeon are currently spawning in the lower Feather River.</li> </ul> <p><i>(Updated 5/23/23)</i></p>
American River	<ul style="list-style-type: none"> <li>• Folsom Storage: 910 TAF</li> <li>• Current Release: 12,000 cfs</li> <li>• Anticipated Weekly Range of Releases: 10,000 to 15,000 cfs for storage management.</li> </ul>	<ul style="list-style-type: none"> <li>• Adult fall-run Chinook Salmon have completed spawning. Eggs have emerged and fry are beginning to migrate downstream.</li> <li>• Redd and carcass surveys have ended.</li> <li>• Juvenile and adult O. mykiss are present. Adult steelhead are spawning in river. Fry are beginning to emerge.</li> </ul> <p><i>(Updated 4/3/23)</i></p>
Stanislaus River	<ul style="list-style-type: none"> <li>• New Melones Storage: 1.693 MAF</li> <li>• Current Release: 1,500 cfs</li> <li>• Anticipated Range of Weekly Releases: 1,500 cfs.</li> </ul>	<ul style="list-style-type: none"> <li>• Adult O. mykiss are present and juveniles are rearing and migrating.</li> <li>• Juvenile fall-run Chinook salmon are rearing and migrating downstream.</li> </ul> <p><i>(Updated 5/1/23)</i></p>

Tributary/Division	Anticipated Weekly Ranges	Related Environmental and Fish Conditions
Delta	<ul style="list-style-type: none"> <li>• Freeport: 35,000 to 55,000 cfs</li> <li>• Vernalis: 23,000 to 28,000 cfs</li> <li>• Delta Outflow index: 55,000 to 70,000 cfs</li> <li>• Combined Exports: 6,700 to 10,880 cfs</li> <li>• JPP: Current 3,500 cfs Range 2,700 cfs to 4,200 cfs</li> <li>• CCF: Current 6,680 cfs Range 4,000 cfs to 6,680 cfs</li> <li>• Expected Daily OMR Index Values: +2,500 cfs to +6,000 cfs</li> <li>• DCC Gates: Closed as of 11/28 and expected to remain closed for seasonal operation.</li> </ul>	<ul style="list-style-type: none"> <li>• Adult <i>O. mykiss</i> present.</li> <li>• Spring-run and winter-run Chinook salmon juveniles are migrating downstream and into the Delta. The majority of winter-run Chinook salmon have exited the Delta and spring-run Chinook salmon are exiting the Delta as well.</li> <li>• Adult and juvenile Green Sturgeon present</li> <li>• Delta Smelt spawning is ongoing. 34 confirmed larval DS have been detected since 3/13/23 in the Confluence, lower Sac River, Honker Bay, Suisun Bay, Suisun Marsh, Sac Deepwater Ship Channel, and Cache Slough / Liberty Island. No DS were detected in salvage in the last two weeks, and adult DS cumulative seasonal salvage is 52.</li> <li>• The week of 5/8/23, 1 Longfin Smelt adult was detected. Spawning is ending and LFS larvae and juveniles have been detected in the past month in the lower Sacramento River, confluence, Suisun Bay, Suisun Marsh, and downstream to Carquinez, Napa River, and San Pablo Bay. No LFS were detected in salvage in the last two weeks, and cumulative seasonal adult salvage is 26.</li> </ul> <p style="text-align: right;"><i>(Updated 5/16/23) (Salmon content update 5/22/23)</i></p>

Table 2a-b: WY 2023 relevant Fish and Environmental Criteria and Status in 2019 Reclamation LTO Action Cumulative loss for the duration of 2019 Biological Opinion began upon signature of ROD, 2/19/2020.

Table 2a: WY 2023 Salmonid Current Loss and Delta Smelt Abiotic Conditions. Additional Real-Time OMR Restrictions and Performance Objectives (4.10.5.10.2, 4.10.5.10.3) and Onset of OMR Management (4.10.5.10.1). Genetic identification of salmon is not used in calculating loss, but results are included in the Assessment as they become available. The Final WR JPE for BY2022 is 49,924.

Species/run	Threshold	Current Status	Weekly Trend	Updated
Green sturgeon	WY 2023 salvage = 74	WY 2023 salvage = 0 (0%)	No change expected	5/22/2023

Species/run	Threshold	Current Status	Weekly Trend	Updated
Natural winter-run Chinook Salmon	WY 2023 loss = 292 (50% of 1.17% of JPE)	WY 2023 loss = 109.88(37.6%)	Possible salvage	5/22/2023
Natural Steelhead	Dec 1 – Mar 31 = 707; (50% of 1,414), 1060.5; (75% of 1,414)  Apr 1 – June 15 = 776 (50% of 1,552)	WY 2023 loss = 1175.36 Dec 1 – Mar 31 = 1015.16 (95.7% of the 75% threshold) Apr 1 – June 15 = 246.31(31.7% of the 50% threshold)	Possible salvage	5/22/2023
Sacramento River Hatchery winter-run Chinook salmon	WY 2023 loss = 114.6 (50% of 0.12% of JPE)	WY 2023 loss = 0 (0%)	Possible salvage	5/22/2023
Battle Creek Hatchery winter-run Chinook salmon	WY 2023 loss = 40 (1% of JPE)	WY 2023 loss = 0 (0%)	No change expected	5/22/2023
Proposed Action Hatchery yearling spring-run Chinook salmon surrogates	> 0.5% of each release group 1) 12/5/2022 group 1: 71,057 = 355.3 2) 12/23/2022 group 2: 66,735 = 333.7 3) 1/13/2023 group 3: 60,712 = 303.6	WY 2023 loss = 1) 127.5 (35.9%) 2) 141.3 (42.3%) 3) 32.0 (10.5%)	Possible salvage	5/22/2023
Delta Smelt	After Dec. 1: Running 3-day avg. flows at Freeport >25,000 cfs  Running 3-day avg. turbidity at Freeport =>50 FNU	Freeport 3-day avg. Flow = Not relevant Turbidity = Not relevant	Triggered 12/31/22, ended 01/16/23	1/23/2023

Species/run	Threshold	Current Status	Weekly Trend	Updated
Delta Smelt	Daily avg. Turbidity at OBI=> 12 FNU	OBI Daily Average = Not relevant	Implemented 1/17/2023-2/8/2023; ripe females detected by SKT on 2/8/2023 have off-ramped Turbidity Bridge Avoidance	4/10/2023
Delta Smelt	Daily avg. Temperature at CCF > 25°C for three consecutive days	CCF daily avg. Temperature = Not relevant	Not relevant	12/20/2022

Table 2b. 10-Year Salmonid Cumulative Loss

Species/run	Threshold	Current Status	Updated
Natural winter-run Chinook salmon	Loss = 8,738	Cumulative loss = 368.95 (4.2%)	5/22/2023
Hatchery winter-run Chinook salmon	Loss = 5,356	Cumulative loss = 6.71 (0.13%)	5/22/2023
Natural steelhead	Loss = 6,038 (Dec 1 – Mar 31) Loss = 5,826 (Apr 1 – June 15)	Cumulative loss = 1576.46 (26.1%, Dec 1 – Mar 31) 850.76(14.60%, Apr 1 – June 15)	5/22/2023

Table 3a-d: Relevant Water Year 2023 Fish Criteria and Status for Listed Fish under the SWP Long-Term Incidental Take Permit.

Table 3a: Chinook Salmon

\* Based on NMFS letter received on 1/20/2023, Final WR JPE for BY2022 is 49,924.

\*\* Based on the lab results received (up to sample date 4/25/2023), there was **1** natural WR identified through genetic verification process.

Action	Timeframe	Current Action Status	Threshold(s)	Current Relevant Data	Weekly Trend	Last Updated	Comments
OMR Mgmt. triggered (8.3.2)	Jan. 1 - Jun. 30 <i>(when ≥ 5% of spring-run or winter-run in Delta)</i>	Not in effect	-5% of the Winter-run or Spring-run population in Delta	N/A	N/A	12/18/22	N/A
Winter-run yearly loss (8.6.1)	Nov. 1 - Jun. 30	In effect	584.11 (based on final JPE)*	WR loss: 109.88**	Possible salvage	5/22/23	Based on salvage data from 5/21/23
Winter-run discrete daily loss (8.6.2)	Nov. 1 - Dec. 31	Not in effect	12/1-12/31: loss of 26/day unclipped older juv. Winter-run	Daily loss from 12/18 unclipped WR loss: 17.54 fish loss >26	Possible salvage	1/3/23	Based on salvage data from 12/18/22
Mid and late season Winter-run daily loss threshold (8.6.3)	Jan 1 – May 31	In effect	5/1/23 - 5/31/23 Daily loss of older juvenile greater than 3.84; Updated with genetic results as they become available. If genetics confirms the older juvenile is NOT a WR then COA will offramp.	No salvage of LAD Older Juvenile since last week	Possible salvage	5/22/23	Based on salvage data from 5/21/23

Action	Timeframe	Current Action Status	Threshold(s)	Current Relevant Data	Weekly Trend	Last Updated	Comments
Spring-run surrogate protection (8.6.4)	Feb. 1 - Jun. 30	In effect	Hatchery Origin Young-of-year SR Surrogates (0.25% of total in-river FR releases for each release group from FRFH or CNFH) Group 1 (FRFH) Threshold: 1,828.64 (0.25% of 731,457) Group 2 (FRFH) Threshold: 1,821.47 (0.25% of 728,586) Group 3 (FRFH) Threshold: 2,204.70 (0.25% of 881,880) Group 1 (CNFH) Threshold: 1,002.24 (0.25% of 400,897) Group 2 (CNFH) Threshold: 5,871.92 (0.25% of 2,348,768)	No salvage from this group have been observed yet at either fish facility.	Possible salvage	5/22/23	Based on salvage data from 5/21/23

Table 3b: Delta Smelt

Action	Timeframe	Current Action Status	Threshold(s)	Current Relevant Data	Weekly Trend	Last Updated	Comments
Integrated Early Winter Pulse Protection ('First Flush') (8.3.1)	Dec. 1 - Jan. 31	Off-ramped 1/17/2023	- three-day Freeport daily flow running avg $\geq 25,000$ AND  [three-day Freeport turbidity running avg $\geq 50$ NTU OR Smelt Monitoring Team recommendation]	FPT flow: Not relevant  FPT turbidity: Not relevant	Decreasing	1/30/23	N/A
Turbidity Bridge Avoidance (8.5.1)	Dec. 15 - Apr. 1	Off-ramped 4/1/2023; implemented 1/17/2023-2/8/2023, 2/24/2023 - 2/26/2023, 3/18/2023 - 3/31/2023	Occurs after the Integrated Early Winter Pulse protection or February 1 (whichever comes first) until April 1 -avg. OBI turbidity $> 12$ FNU	OBI = 15.87 FNU	Expected to decrease	4/3/23	Data from 4/2/23
Larval and/Juvenile Delta smelt Protection (8.5.2)	ongoing	In effect, not triggered	- If 5-day cum. salvage of juv.DS $\geq 1$ [average 3-yrFMWT index + 1], then -5000 OMR - If DS in SLS/20mm or 3-d temp at Jersey Point $\geq 12$ C, and SLS/20mm Secchi for 12 south delta stations $\leq 1$ m, then -3500 OMR	Current 5-day salvage = 0 3-day SJJ temp = 20.06 C 20mm 5 avg Secchi = 107 cm*	Turbidity expected to decrease	5/15/23	Data from 5/21/23  *Data from 5/8/23



Table 3c: Longfin Smelt

Action	Timeframe	Current Action Status	Threshold(s)	Current Relevant Data	Weekly Trend	Last Updated	Comments
Early Adult Protection (8.3.3)	Dec. 1 - Feb. 28	Off-ramped	-Cum. salvage > [most recent FMWT/10] =40 fish (Sept.-Dec. Index) OR -Smelt Monitoring Team determines high likelihood of LFS movement into high-risk areas	Cum salvage total = 26	No change expected	3/20/23	First salvage on 1/1/23.
OMR Mgt. for Adults (8.4.1)	Dec. 1 -Feb. 28	Off-ramped	-Smelt Monitoring Team recommendation	N/A	N/A	12/27/22	N/A
Larval and Juvenile Longfin Smelt Entrainment Protection (8.4.2)	Jan 1 – Jun 30	In effect, not triggered	-LFS larvae or juveniles in >=4 SLS or 20 mm stations in central and south Delta, OR -LFS catch/tow >5 larvae or juveniles in >=2stations	20mm #5: no LFS catch in the central and south Delta	None expected, not active due to triggering of 8.4.3	5/14/23	20mm #5 was in the field 5/8 - 5/11  20mm #6 is on the water 5/22-5/25
High Flow OMR Off-Ramp for Longfin Smelt (8.4.3)	Based on the status of 8.3.3, 8.4.1, & 8.4.2	In effect, triggered	-Sac. R. at Rio Vista>55,000, OR  SJR at Vernalis >8,000	Rio Vista = 30,000 – 45,000 cfs SJ = 23,000 to 28,000 cfs	N/A	5/22/23	N/A

Table 3d: OMR

Action	Timeframe	Current Action Status	Threshold(s)	Current Relevant Data	Weekly Trend	Last Updated	Comments
OMR Storm Flexibility (8.7)	Jan 1 – Jun 30	Not in Effect	<p>-Delta is in excess</p> <p>-QWEST is &gt; 0</p> <p>-Measurable amount of precipitation has occurred</p> <p>-None of COA's are controlling operations (8.3.1, 8.3.3, 8.4.1, 8.4.2, 8.5.1, 8.5.2, 8.6.1, 8.6.2, 8.6.3, 8.6.4)</p> <p>-Cumulative salvage at CVP and SWP of yearling CNFH LFR Chinook salmon (as yearling CHNSR surrogates) is &lt; 0.5% with any of the release groups</p> <p>-Risk Assessments conducted by the SaMT/SMT determines no changes in spawning, rearing, foraging, sheltering, or migration behavior as a result of OMR Flex operations beyond those are likely to occur.</p>	N/A	N/A	1/3/23	Based on storm conditions
OMR Mgmt. Offramp (8.8)	Jun. 1 – Jun. 30	Not in effect	<p>-&gt;95% of the Winter-run and Spring run populations have migrated past Chipps Island AND</p> <p>-Current daily average water temperature at Mossdale and Prisoners Point.</p> <ul style="list-style-type: none"> <li>Days exceeded: Criteria met as of 6/16/2022</li> </ul>	N/A	N/A	10/10/22	N/A

Table 4: Fish monitoring gear efficiency and disruptions. Status Categories: [1] Active (ongoing sampling), [2] Partial Interruption (some sampling interruptions), [3] Interrupted (sampling fully suspended), [4] Not Active (sampling not scheduled)

Monitoring survey	Region	Notes (as of 5/23/2023)	Status
SWP regular counts, CWT reading	Delta	Not Active (as of 5/15)	4
SWP larval sampling	Delta	Not Active (as of 5/15)	4
CVP regular counts, CWT reading	Delta	Active	1
CVP larval sampling	Delta	Active	1
Smelt Larval Survey	Delta	Not Active	4
LEPS	Delta	Not Active (Completed for year)	4
20mm Survey	Delta	Active	1
Spring Kodiak Trawl	Delta	Not Active (Completed for year)	4
Fall Mid-water Trawl	Delta	Not Active	4
Summer Towntnet Survey	Delta	Not Active	4
Bay Study	Delta	Active	1
DJFMP- Chipps and Sacramento Trawls	Delta	Active	1
DJFMP- Seines	Delta	Active (San Joaquin River Seine is partially inactive)	1
EDSM	Delta	Active	1
EMP	Delta	Active	1
Mossdale	Delta	Active	1
USGS Flow monitoring	Delta	Active	1
Red Bluff Diversion Dam Rotary Screw Trap (RST)	Sacramento River	Active	1
Knights Landing RST	Sacramento River	Active	1
Tisdale RST	Sacramento River	Active	1
GCID RST	Sacramento River	Not Active	4
Yuba River (Hallwood) RST	Yuba River	Active	1
Redd dewatering and stranding surveys	Sacramento River	Not Active	4
Sacramento Carcass and Redd Surveys	Sacramento River	Active	1

<b>Monitoring survey</b>	<b>Region</b>	<b>Notes (as of 5/23/2023)</b>	<b>Status</b>
Lower Sacramento RST	Sacramento River	Active	1
Feather River (upper DWR) RST	Feather River	Active	1
Feather River (lower CDFW) RST	Feather River	Active	1
SJRRP CDFW Field Monitoring	San Joaquin River	Not Active	4
SJRRP USBR Field Monitoring	San Joaquin River	Interrupted	3
Stanislaus Fish Weir	Stanislaus River	Not Active	4
American River Carcass/Redd Surveys	American River	Not Active	4
Caswell RST	Stanislaus River	Active	1
Wallace Weir	Cache Slough	Active	1
Butte Creek RST	Butte Creek	Active	1