Weekly Fish and Water Operations Outlook 12/14/2021 – 12/20/2021

A significant storm will bring rain, wind, and heavy mountain snow through Tuesday. Another system will bring additional rain and snow Wednesday into Thursday. Drier weather is expected Friday and Saturday.

Tributary/ Division	Anticipated Weekly Ranges	Related Environmental and Fish Conditions
Clear Creek	• Current Release: 200 cfs • Anticipated Weekly Range of Releases to Clear Creek: 200 cfs	• Spring-run Chinook Salmon eggs are incubating, hatching, and fry are rearing in the system. • Adult fall-run Chinook Salmon spawning is mostly complete. Many millions of Fall-run Chinook Salmon eggs are incubating in the gravel and some eggs are beginning to hatch. • O. mykiss and steelhead adults are present, and their migrations upstream into Clear Creek will continue through the next few months. They are just starting to spawn, and their spawning will continue through March. • Late-fall run Chinook Salmon are migrating and entering Clear Creek to spawn. Their peak spawning will occur December through February. (*updated 12/13/2021*)
Sacramento River	• Shasta Storage: 1.125 MAF • Current Release: 3,250 cfs • Anticipated Weekly Range of Releases: 3,250 cfs w/ possibility of increases due to flood/Keswick side-flow management.	• Winter-run Chinook Salmon juveniles present in low numbers above RBDD and distributed throughout the Sacramento River and to the Delta. • Spring-run Chinook Salmon, few remaining alevins in gravel, many fry present and migrating downstream. • Fall-run Chinook Salmon adults spawning, eggs, and alevin in gravel, spawning mostly completed, fry emergence and passage beginning to increase daily. • Late fall-run Chinook Salmon holding and early spawning occurring. • Green Sturgeon adults and juvenile present in lower river with Delta entry likely. • Adult steelhead present: juveniles absent from upper river catch. Hatchery steelhead released into Battle Creek 12/12/2021 and should be present in the river. (*updated 12/13/21*)

Tributary/ Division	Anticipated Weekly Ranges	Related Environmental and Fish Conditions
Feather River	• Oroville Storage: 1.068 MAF • Current Release: 1,500 cfs • Anticipated Weekly Range of Releases: 950 cfs to 1,500 cfs • Daily temperature targets: 51°F (±4°F) at Fish Hatchery	• Fall-run Chinook Salmon spawning, eggs, and alevin in gravel. Some fry present • Fall-run Chinook Salmon spawning is mostly complete. Eggs and alevin in gravel and some fry present • Juvenile and Adult steelhead present • Spring-run Chinook Salmon eggs and alevins in gravel. Some fry present. (*updated 12/13/21*)
American River	• Folsom Storage: 371 TAF • Current Release: 550 cfs • Anticipated Weekly Range of Releases: 550 cfs w/ possibility of increases due to flood/Natoma side-flow management	• Fall-run Chinook Salmon holding and spawning. Eggs are in gravel. • Juvenile and adult steelhead expected to be present. *(updated 11/18/21)*
Stanislaus River	• New Melones Storage: 875 TAF o Current Release: 200 cfs • Anticipated Range of Weekly Releases: 200 cfs w/ possibility of increases due to flood/Tulloch side-flow management	• Juvenile and adult *O. mykiss* expected to be present • Adult fall-run Chinook Salmon present • Adult Chinook Salmon spawning observed (*updated 11/18/2021*)
Delta	• Freeport: 7,000 to 27,500 cfs • Vernalis: 500 to 2,000 cfs • Delta Outflow index: 3,000 to 30,000 cfs • Combined Exports: 4,200 to 9,700 cfs • JPP: 2,700 cfs to 4,200 cfs • CCF:1,500 cfs to 5,500 cfs • Expected OMR Index Values: -4,000 to -10,000 cfs • DCC Gates: Closed as of 11/30/2021 per Proposed Action.	• Juvenile winter-run Chinook Salmon 65-70% yet to enter Delta, 30-34% in Delta, 0-1% exited Delta past Chipps Island • YOY spring-run Chinook Salmon: 97-100% yet to enter Delta, 0-3% in Delta, 0% exited past Chipps Island • Juvenile Steelhead: 93-98% yet to enter Delta, 2-6% in Delta, 0-1% exited Delta past Chipps Island • Adult fall-run Chinook Salmon entering Delta and migrating upstream towards spawning grounds • Adult steelhead present • Adult and juvenile Green Sturgeon present • Subadult Delta Smelt expected to be present in the Sacramento Deep Water Ship Channel and in the vicinity of X2. • Longfin Smelt juveniles >60mm have been detected at Chipps and are moving into the Delta. Juveniles present in Suisun Marsh, San Pablo and Central Bay. Adults present in Suisun Bay, and Suisun Marsh. Longfin

Tributary/ Division	Anticipated Weekly Ranges	Related Environmental and Fish Conditions
		Smelt have been detected in the Sacramento Deep Water Ship Channel and Lower Sacramento River. (*updated 12/14/2021*)

* Environmental and fish conditions updated by respective watershed groups at varying intervals that may not coincide with the weekly range of Water Operations

Table 2a-b: WY 2022 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 2022 Salmonid Current Loss and Delta Smelt Abiotic Conditions. Additional Real-Time OMR Restrictions and Performance Objectives (4.10.5.10.2) and Onset of OMR Management (4.10.5.10.1).

Species/run	**Threshold**	**Current Status**	**Weekly Trend**	**Updated**
Green sturgeon	WY 2022 salvage = 74	WY 2022 salvage = 0 (0%)	No change expected	12/12/2021
Natural winter-run Chinook Salmon	WY 2022 loss = TBD *	WY 2022 loss = 0	Possible but unlikely	12/12/2021
Natural Steelhead **	Dec 1 – Mar 31 = 707 (50% of 1,414) Apr 1 – June 15 = 776 (50% of 1,552)	Dec 1 – Mar 31 = 3.4 (0.47%) Apr 1 – June 15 = 0 (0%)	Possible	12/12/2021
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 = 6621 Turbidity = 3.60	Increasing	12/14/2021

* TBD – no draft JPE produced, ITL and performance thresholds are TBD currently

** Steelhead observed on 10/30/2021 and 11/19/2021 are included in the December 1 through March 31 period

Table 2b. 10-Year Salmonid Cumulative Loss

Species/run	**Threshold**	**Current Status**	**Updated**
Natural winter-run Chinook salmon	Loss = 8,738	Cumulative loss = 204.9 (2.3%)	12/12/2021
Hatchery winter-run Chinook salmon	Loss = 5,356	Cumulative loss = 0 (0%)	12/12/2021
Natural steelhead	Loss = 6,038 (Dec 1 – Mar 31) Loss = 5,826 (Apr 1 – June 15)	Cumulative loss = 446.59 (7.4%, Dec 1 – Mar 31) 374.8 (6.4%, Apr 1 – June 15)	12/12/2021

Table 3a-d: Relevant Water Year 2022 Fish Criteria and Status for Listed Fish under the SWP Long-Term Incidental Take Permit.

Table 3a: Chinook Salmon

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 (when ≥ 5% of spring-run or winter- run in Delta)	Not in effect	- 5% of the Winter-run or Spring-run population in Delta	N.A.	N.A.	10/4/21	N.A.
Winter-run yearly loss (8.6.1)	Nov. 1 - Jun. 30	In effect (Based on JPE Value)	TBD (Based on JPE guidance)	Current yearly WR loss (natural) = 0; Current yearly WR loss (hatchery) = 0	Possible but unlikely for natural Winter-run	12/13/21	Based on salvage data from 12/12/21
Winter-run discrete daily loss (8.6.2)	Nov. 1 - Dec. 31	In effect	12/1-12/31: loss 26/day unclipped older juv. Winter-run	max single daily loss from previous week = 0.00 fish (no WR observed yet)	No change expected	12/13/21	Based on salvage data from 12/12/21
Spring-run surrogate protection (8.6.4)	Feb. 1 - Jun. 30	Not in effect:	TBD (based on the number of fish released)	N.A.	N.A.	11/1/21	N.A.

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	In effect, not triggered	- three-day Freeport daily flow running avg >= 25,000 AND [three-day Freeport turbidity running avg >=50 NTU OR Smelt Monitoring Team recommendation]	**FPT 6,144 cfs & 3.11 fnu**	**no change expected**	**12/13/21**	**using data from 12/12/21**
Turbidity Bridge Avoidance (8.5.1)	Dec. 15 - Apr. 1	Not in effect	Occurs after the Integrated Early Winter Pulse protection or February 1 (whichever until April 1) comes first - avg. OBI turbidity > 12 NTU	**N.A.**	**N.A.**	**N.A.**	**N.A.**
Larval and/Juvenile Delta smelt Protection (8.5.2)	ongoing	In effect, not triggered	- 5-day cum. salvage of juv. DS >= 1 [average 3-yr FMWT index + 1] OR. 3-day cum. salvage of juv. DS >11	**current 5-day salvage = 0**	**no change expected**	**12/13/2021**	**Based on salvage data from 12/12/21**

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	In effect, not triggered	- Cum. salvage > [most recent FMWT/10] = 1 (Sept.-Oct. Index) fish OR Smelt Monitoring Team determines high likelihood of LFS movement into high-risk areas	Cum salvage total = 0	no change expected	12/13/21	based on salvage data from 12/12/21
OMR Mgt. for Adults (8.4.1)	Dec. 1 -Feb. 28	In effect, not triggered	- Smelt Monitoring Team recommendation	N.A.	N.A.	N.A.	N.A.
Larval and Juvenile longfin smelt Entrainment Protection (8.4.2)	Jan 1 – Jun 30	Not in effect	- 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 >=2 stations	N.A.	N.A.	N.A.	N.A.
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, not triggered	- Sac. R. at Rio Vista >55,000, OR SJR at Vernalis >8,000	Rio Vista = 7,000 to 25,000 cfs SJ = 500 to 2,000 cfs	N.A.	12/13/21	N.A.

Table 3d: OMR

Action	Timeframe	Current Action Status	Threshold(s)	**Current Relevant Data**	**Weekly Trend**	**Last Updated**	**Comments**
OMR Mgmt. Offramp (8.3.2)	Jun. 1 – Jun. 30	Not in effect	>95% of the Winter-run and Springrun populations have migrated past Chipps Island AND Current daily average water temperature at Mossdale Exceeds 22.2°C for 7 nonconsecutive days in June AND Current daily average water temperature at Prisoners Point exceeds 22.2°C for 7 non-consecutive days in June. Current daily mean water temperature at CCF is greater than 25°C for three consecutive days	N/A	N.A.	10/4/21	N.A.

Table 4. Fish monitoring gear efficiency and disruptions.

Monitoring Survey	**Notes (as of 11/02/2021)**	**Status ***
Delta	N.A.	N.A.
SWP regular counts, CWT reading, and larval sampling	Active (No disruptions)	1
CVP regular counts, CWT reading, and larval sampling	Active (No disruptions)	1
Smelt Larval Survey	Active (partial disruption)	2
20mm Survey	Not Active	4
Spring Kodiak Trawl	Not Active	4
Fall Mid-water Trawl	Active (No disruptions)	1
Summer Townet Survey	Not Active	4
Bay Study	Active (No disruptions)	1
DJFMP- Chipps and Sacramento Trawls	Active (5x a week)	1
DJFMP- Seines	Active with one disruption: not sampling San Joaquin Seines (due to low water)	2
EDSM	Active (some disruptions due to fog and wind)	2
EMP	Active (No disruptions)	1
Mossdale	Not active (due to low water and vessel availability)	4
USGS Flow monitoring	Active (No disruptions)	1
Sacramento River	N.A.	N.A.
Red Bluff Diversion Dam screw trap	Active (No disruptions)	1
Knights Landing screw trap	Active (No disruptions)	1

Monitoring Survey	**Notes (as of 11/02/2021)**	**Status ***
Tisdale screw trap	Active (No disruptions)	1
GCID screw trap	Active (partial disruptions – cone was removed 12/10 due to high water flows)	2
Redd dewatering and stranding surveys	Not Active	4
Sacramento Carcass and Redd Surveys	Active (No disruptions)	1
Feather River	N.A.	N.A.
Feather River screw trap	Active (weekdays only)	1
San Joaquin River	N.A.	N.A.
SJRRP CDFW Field Monitoring	Active (No disruptions)	1
SJRRP USFWS and USBR Field Monitoring	Active (No disruptions)	1
Stanislaus Fish Weir	Active (No disruptions)	1

* Status: Weekly categories include:

[1] Active (ongoing sampling)

[2] Partial Interruption (some sampling interruptions)

[3] Interrupted (sampling fully suspended)

[4] Not Active (sampling not scheduled)