Weekly Fish and Water Operations Outlook 5/16/2023 – 5/22/2023

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 and dry this week. Chance of thunderstorm and mountain showers this weekend.

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 | * Current Release: 200 cfs * Anticipated Weekly Range of Releases: 200 cfs. | * Spring-run Chinook Salmon adults are migrating into Clear Creek. * Spring-run Chinook Salmon juveniles are rearing/emigrating. * Fall-run Chinook Salmon juveniles are rearing/emigrating. * Late fall-run Chinook Salmon fry and juveniles are rearing/emigrating. * *O. mykiss* adults are spawning, eggs are incubating/hatching, and fry and juveniles are rearing/emigrating. * *(updated 4/17/23)* |
| Sacramento River | * Shasta Storage: 4.451 MAF * Current Release: 13,000 cfs * Anticipated Weekly Range of Releases: 10,000 cfs to 13,000 cfs for storage management. | * Spring-run Chinook salmon fry have completed final redd emergence and are migrating downstream. * Holding adult winter-run Chinook are beginning to spawn in the upper river. Winter-run carcass survey has begun. * 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. * Late-fall-run juveniles are emerging and beginning to migrate downstream. * O. mykiss adults are commencing spawning, eggs are incubating. * (updated 5/8/23) |
| Feather River | * Oroville Storage: 3.389 MAF * Current Release: 15,000 cfs * Anticipated Weekly Range of Releases: 10,000 cfs to 25,000 cfs * Daily temperature maximum: 59 F at Fish Hatchery | * Fall-run Chinook salmon juveniles are rearing/emigrating. * Spring-run Chinook salmon juveniles are rearing/emigrating. Adults are migrating upstream and starting to enter the hatchery. * *O. mykiss* adult spawning is complete. Juveniles are rearing/emigrating. *(updated 5/15/23)* |
| American River | * Folsom Storage: 851TAF * Current Release: 10,000 cfs * Anticipated Weekly Range of Releases: 10,000 to 15,000 cfs for storage management. | * Adult fall-run Chinook Salmon have completed spawning. Eggs have emerged and fry are beginning to migrate downstream. * Redd and carcass surveys have ended. * Juvenile and adult *O. mykiss* are present. Adult steelhead are spawning in river. Fry are beginning to emerge. * (*updated 4/3/23*) |
| Stanislaus River | * New Melones Storage: 1.602 MAF * Current Release: 1,500 cfs * Anticipated Range of Weekly Releases: 1,500 cfs. | * Adult *O. mykiss* are present and juveniles are rearing and migrating. * Juvenile fall-run Chinook salmon are rearing and migrating downstream. * *(updated 5/1/23)* |
| Delta | * Freeport: 35,000 to 55,000 cfs * Vernalis: 23,000 to 30,000 cfs * Delta Outflow index: 60,000 to 75,000 cfs * Combined Exports: 3,500 to 10,180 cfs * JPP: Current 3,500 cfs Range 900 cfs to 3,500 cfs * CCF: Current 3,000 cfs Range 0 cfs to 6,680 cfs * Expected Daily OMR Index Values: +2,500 cfs to +11,000 cfs * DCC Gates: Closed as of 11/28 and expected to remain closed for seasonal operation. | * Adult O. mykiss present. * Spring-run and winter-run Chinook salmon juveniles are migrating downstream and into the Delta. Many winter-run Chinook salmon have exited the Delta and spring-run Chinook salmon are beginning to exit the Delta as well. * Adult and juvenile Green Sturgeon present * 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. * Last week, 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. * (updated 5/16/23) |

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 | 5/15/2023 |
| Natural winter-run Chinook Salmon | WY 2023 loss = 292  (50% of 1.17% of JPE) | WY 2023 loss = 109.88(37.6%) | Possible salvage | 5/15/2023 |
| 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 = 238.15(30.7% of the 50% threshold) | Possible salvage | 5/15/2023 |
| 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 | 5/15/2023 |
| Battle Creek  Hatchery winter-run Chinook salmon | WY 2023 loss = 40 (1% of JPE) | WY 2023 loss = 0 (0%) | No change expected | 5/15/2023 |
| 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 | 5/15/2023 |
| 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 |
| 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%) | 5/15/2023 |
| Hatchery winter-run Chinook salmon | Loss = 5,356 | Cumulative loss =  6.71 (0.13%) | 5/15/2023 |
| 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)  842.6(14.5%, Apr 1 – June 15) | 5/15/2023 |

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 date4/25/2023), 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  *(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 | 12/18/22 |  |
| 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 | 5/15/23 | Based on salvage data from 5/14/23 |
| 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 | 5/15/23 | Based on salvage data from 5/14/23 |
| 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 | 5/15/23 | Based on salvage data from 5/14/23 |

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>= 25,000 AND  [three-day Freeport turbidity running avg >=50 NTU OR Smelt Monitoring Team recommendation] | FPT flow: Not relevant  FPT turbidity: Not relevant | Decreasing | 1/30/23 |  |
| 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 >= 1[average 3-yrFMWT index + 1], then –5000 OMR  - If DS in SLS/20mm or 3-d temp at Jersey Point >= 12C, and SLS/20mm Secchi for 12 south delta stations <= 1m, then –3500 OMR | Current 5-day salvage = 0  3-day SJJ temp = 17.98 C  20mm 5 avg Secchi = 107 cm\* | Turbidity expected to decrease | 5/15/23 | Data from 5/14/23  \*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 |  |
| 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 - 5/12 |
| 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 30,000 cfs | N/A | 5/15/23 |  |

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 | -Delta is in excess  -QWEST is > 0  -Measurable amount of precipitation has occurred  -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)  -Cumulative salvage at CVP and SWP of yearling CNFH LFR Chinook salmon (as yearling CHNSR surrogates) is < 0.5% with any of the release groups  -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. | N/A | N/A | 1/3/23 | Based on storm conditions |
|  |  |  |  |  |  |  |  |
| OMR  Mgmt.  Offramp  (8.8) | Jun. 1 – Jun. 30 | Not in effect | ->95% of the Winter-run and Spring run populations have migrated past Chipps Island AND  -Current daily average water temperature at Mossdale and Prisoners Point.   * Days exceeded: Criteria met as of 6/16/2022 |  | N/A | 10/10/22 |  |

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 5/16/2023) | 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 Townet 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 |
| 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 |