Salmon Monitoring Team (SaMT) Weekly Meeting
Conference call: 4/28/20 at 9:00 a.m.

Executive Summary:

- Old and Middle River (OMR) flows are expected to range from -1,000 to -2,000 cfs during the period 4/28/2020 to 5/4/2020.
- No Delta performance measures have been exceeded
    - The Delta Performance threshold with the highest potential for exceedance is the 50% of single year natural steelhead loss threshold for the period of April 1 through June 15.
        - Preliminary estimate indicates that current (4/26/20) steelhead loss (236 fish) is approximately 30% of the threshold (776 fish) set between April 1 and June 15. During the SaMT call, the group was aware that additional salvage of steelhead occurred on 4/27/20 at the SWP during a predator flush, with a loss of 8.66 fish.
    - It is unlikely, but possible, that the hatchery winter-run Chinook salmon threshold could be exceeded during the remainder of the OMR management season. Only a few individual fish in salvage are needed to exceed the performance threshold of 55.4 hatchery winter-run Chinook salmon lost.
        - There are no losses of hatchery winter-run Chinook salmon to date for water year 2020.
- SaMT did not have any recommendations for WOMT or any advice to change Delta operations. OMRs are more positive than any action responses required by a trigger exceedance.

Objective: Provide information to the Water Operations Management Team (WOMT), the U.S. Bureau of Reclamation (Reclamation) and California Department of Water Resources (DWR) on measures to reduce adverse effects from Delta operations of the CVP and the SWP on salmonids and green sturgeon. SaMT notes will be posted to Reclamation's web page https://www.usbr.gov/mp/bdo/salmon-monitoring-team.html.

- **California Department of Fish and Wildlife (CDFW):** Geir Aasen, Kristal Davis-Fadtke, Kyle Griffiths, Kim Holley, Andrew Huneycutt, Brian Jones, Ken Kundargi, Duane Linander, Paige Uttely
- **DWR:** Chris Cook, Brittany Davis, Mike Ford, Bryant Giorgi, Farida Islam, Kevin Reece, Reza Shahcheraghi, Ian Uecker
- **Kearns & West:** Matt Marvin
- **National Marine Fisheries Service (NMFS):** Kristin Begun, Jeff Stuart, Garwin Yip
- **Reclamation:** Towns Burgess, Elissa Buttermore, Josh Israel, Suzanne Manugian, Ben Nelson, Tom Patton
- **State Water Resources Control Board (SWRCB):** Chris Carr, Stanley Mubako, Craig Williams
- **US Fish and Wildlife Service (USFWS):** Katherine Sun

Agenda Items:

1. Introductions (9:00-9:03)

Purpose: Provide an accurate record of who is attending these calls

2. Relevant Actions and Triggers (9:04-9:08)
   Purpose: Review of relevant actions and triggers status and discuss any changes

3. Outlook, Current Operations, and Weather Forecast (9:09 – 9:17)
   Purpose: Review operations and weather sections on Weekly Outlook. Discuss Delta operations to consider context for evaluating Assessment questions about Delta operation effects

4. Review of Environmental Data (9:18-9:20).
   Purpose: Review environmental data to consider context for evaluating Assessment questions about Delta operations effects

5. Fish Abundance and Distribution (9:21-9:40)
   Purpose: Review fish monitoring data to inform fish distribution estimates, fish exposure, and behaviour cues that is part of the next section
      a. Hatchery Releases
      b. Historical Fish Monitoring Data
      c. Fish Monitoring: RSTs/trawls/seines
      d. Fish Monitoring: Salvage
      e. Migration Status: Estimates of Fish Distribution

6. Fish Exposure and Behavioural Cues (9:41-9:56)
   Purpose: Assist in assessing entrainment risk of Delta operations on salmonids and sturgeon. Complete Evaluation section questions of the Assessment. Review draft assessment.
      a. Historical Patterns (Comparison of abundance, timing, and loss to prior years)
      b. Current Conditions (DSM2, Entrainment Models)
      c. Sensitivity to Operational Actions - review assessment document

7. Other Topics (9:57-9:58)
   Purpose: Identify additional topics that are not in the regular agenda

8. Additional Considerations for WOMT (9:58-10:00)
   Purpose: Highlight information that SaMT would like WOMT to consider related to changes to Delta water operations

9. Next SaMT Meeting (10:00)

Agenda Item 2.
Relevant Actions and Triggers Review

Delta Cross Channel (DCC) Gate Operations

- DCC gates are currently closed per operations described in the SWRCB's D-1641, and Reclamation's Proposed Action 4.10.5.3 and are expected to remain closed until 5/20/20.

OMR Flow Management

- Implementation of this action in water year (WY) 2020 began on 1/1/20 under the 2009 NMFS Long Term Operations (LTO) biological opinion and was superseded by Reclamation's Proposed Action 4.10.5.10 (OMR Management) on 2/18/20 following the signing of the Record of Decision, and requires that OMR flow be no more negative than -5,000 cfs. OMR flows are reported weekly with the OMR index and the tidally filtered U.S. Geological Survey (USGS) gauges at the daily, 5-day and 14-day running averages.
- On 3/27/20, NMFS provided a revised winter-run Chinook salmon juvenile production estimate (JPE) letter (Revised JPE letter) to Reclamation reflecting updated hatchery information. The revised JPE letter provides the Reclamation with the revised JPE and incidental take limit (ITL) for hatchery origin juvenile Sacramento River winter-run Chinook salmon for WY 2020 based on the estimated number of hatchery fish released.
    - The revised incidental take for juveniles released from Livingston Stone National Fish Hatchery into the Sacramento River is **923 hatchery-produced (adipose fin clipped)** winter-run Chinook salmon.
    - The revised incidental take of juveniles released into Battle Creek is **622 hatchery produced (adipose fin clipped and left ventral fin clipped)** winter-run Chinook salmon.
- Refer to the weekly operations and fish outlook for more triggers relevant to the CDFW Incidental Take Permit (ITP) and the 2019 ROC Proposed Action (see Agenda Item 3).
- DWR's ITP was signed on 3/31/20 and can be found online here: Incidental Take Permit for Long Term Operations of the State Water Project
- SaMT members noted that the installation of the South Delta agricultural barriers will begin on 5/1/20, which will subsequently influence OMR flow management.

Agenda Item 3.

Weekly Fish and Water Operations Outlook 4/28/2020 – 5/4/2020

Dry weather with above normal temperatures through the middle of next week. Central Valley high temperatures are forecasted to be in the mid to upper 80's. Near or above record highs are expected Tuesday, with some Central Valley locations in the 90's. Delta outflow is being maintained to meet D-1641 X2 requirements and Emmaton electrical conductivity (EC) for agriculture. The D-1641 San Joaquin River "pulse flow" period is effective through May 10, with the combined exports of both projects at 100% of the Vernalis inflow (3-day average) or 1,500 cfs, whichever is greater. SWP exports are also limited by Spring Outflow curtailments, as described in Section 8.17 of CDFW's Long Term ITP for the SWP.

Tributary/Division	Projected Intended Operations and Ranges for week	Related Environmental and Fish Conditions
Clear Creek	Whiskeytown Release: 200 cfs	• Adult spring-run Chinook salmon immigration March – June. • Late-fall run Chinook salmon emergence from redds through May. • Steelhead emergence from redds through May
Sacramento River	Shasta Storage: 3.71 MAF Total Release to Sacramento: 9,500 cfs to 10,500 cfs (Releases are made to support observed legal diversion demands on the Sacramento River in addition to Delta demands)	• End of winter-run Chinook salmon juvenile migration, adults migrating and holding. • Spring-run Chinook salmon juveniles rearing and emigrating. • Fall-run Chinook salmon fry in gravel with continued emergence, juveniles rearing and emigrating. • End of late-fall Chinook salmon spawning, eggs and fry in gravel. • Steelhead spawning at peak. • Green sturgeon adults present.
Feather River	Oroville Storage: 2.48 MAF Total Release to Feather: 1,550 cfs to 2,000 cfs	• Most of the fall-run Chinook salmon eggs have hatched and emerged from the gravel. Rearing and emigration continues for spring-run and fall-run juveniles. • Steelhead eggs are in gravel, hatching and emergence is ongoing. • Late-fall-run Chinook salmon eggs in gravel, hatching, and emergence is continuing.
American River	Folsom Storage: 0.67 MAF Total Release to American: 1,000 to 1,500 cfs, currently implementing a pulse flow	• Peak emergence of fall-run Chinook salmon estimated to have occurred mid-March. Fall-run Chinook salmon that have emerged are currently rearing and emigrating out of the lower American River. • Steelhead spawning has concluded. Preliminary steelhead spawning survey data indicate majority of juvenile steelhead are estimated to have emerged. Steelhead are currently rearing and emigrating out of the lower American River. • Length-at-date spring-run Chinook salmon juveniles present (non-

		natal rearing).
Stanislaus River	New Melones Storage: 1.91 MAF Total Release to Stanislaus: 400 cfs to 1,500 cfs (Spring Pulse Flow)	• Majority of Chinook salmon fry rearing and emigrating. • Historical timing indicates the majority of steelhead spawning has concluded. Eggs are currently in the gravel and emergence may continue through May. Historical data indicates steelhead are emerging and rearing now.
Delta	Freeport: 7,500 to 9,000 cfs Vernalis: 1,700 to 2,800 cfs Delta Outflow index: 7,100 to 8,500 cfs Combined Exports: 1,700 to 2,800 cfs JPP: 800 to 2,700 cfs CC: 200 to 1,500 cfs Expected OMR Index Values: -1,000 to -2,000 cfs (Max.: -5,000 cfs) X2 position: 74 to 81 km QWEST: +1,000 cfs to +2,000 cfs DCC: Closed	• 9-10% winter-run Chinook salmon juveniles present in Delta and 90% past Chipps Island. • 48-58% spring-run Chinook salmon juveniles present in Delta and 32-37% past Chipps Island. • Fall-run Chinook salmon juveniles rearing. • Steelhead juvenile migration occurring. • Green sturgeon adult and juveniles present. • Delta smelt spawning presently, larval Delta smelt salvaged. • Longfin smelt finishing spawning, larval longfin smelt salvaged.

Table 2. Relevant Water Year 2020 Fish and Environmental Criteria and Status in 2019 Reclamation LTO Proposed Action and NMFS and USFWS Biological Opinions.

Species/run	Threshold	Current Status	Weekly Trend	Updated through
Natural winter- run Chinook salmon loss	50% Single-year loss threshold = **5,001** 50% of 1.17% of JPE = 5,001 WY2020 JPE: 854,941	Loss (LAD) = **188** (3.8% of 50% single-year loss threshold)	Decreasing	4/26/20
Hatchery winter-run Chinook salmon loss	Single-year loss threshold = 110.8 50% of 0.12% of Sac. R releases JPE= 55.4 JPE of Sac. R releases: 92,291 152,000 (~60% of production) released on 3/10/20 97,505 (~40% of production) released on 3/23/20	Loss = **0**	Potentially increasing	4/26/20
Natural steelhead loss	1) December 1 – March 31 (not active): 50% loss threshold = **707** 50% of 1,414 from December 1 – March 31 = 707 2) April 1 – June 15 (active): 50% loss threshold = **776** 50% of 1,552 from April – June 15= 776	1) Loss = 402 (not active) (56.9% of 50% December 1 – March 31 loss threshold) **2)** Loss = **236** (30% of 50% April 1 – June 15 loss threshold)	Increasing	4/26/20
Hatchery spring-run Chinook salmon surrogates	Loss > 0.5% of each release group: 1) 12-9-2019: 84,869 = **424.3** 2) 12-18-2019: 77,672 = **388.4** 3) 01-13-2020: 77,866 = **389.3**	**1) 20.2** **2) 25.0** **3) 0**	No change expected	4/26/20
Green sturgeon	Cumulative salvage = **74**	Salvage = **0**	No change expected	4/26/20
Delta smelt	1) Daily Avg. < 12 NTU at OBI 2) March-June: OMR ≥ -5000 cfs 3) 3 days exceeding Clifton Court Daily Aver. T ≥ 77°F	1) OBI Daily Avg Turbidity = 3.0 FNU (4/26/20) 2) QWEST: Positive 3) ≥ 77 °F Days = 0	Expected to remain stable	4/27/20

Table 3: Relevant Water Year 2020 Fish Criteria and Status for Listed Fish under the SWP Long-Term Incidental Take Permit. *This table is draft and under revision by DWR.*

Species	Action	Timeframe	Current Action Status	Threshold(s)	**Current Relevant Data**	**Weekly Trend**	**Last Updated**	**Comments**
Chinook salmon	OMR Mgmt. triggered (8.3.2)	Jan. 1 - Jun. 30 *(when >= 5% of SR or WR in Delta)*	In effect	- 5% of the WR or SR population in Delta	**9-10% WR estimated in-Delta, 48-58% SR estimated in-Delta**	**Ongoing**	**4/27/20**	**90% of WR estimated to have exited the Delta, 32-37% of SR estimated to have exited.**
	Winter-run yearly loss (8.6.1)	Nov. 1 - Jun. 30	In effect	- 1.17% loss of unclipped (natural) WR JPE = 10,002 fish - 0.12% loss of clipped (hatchery) WR = 110 fish	**current yearly loss = 183.72 (1.84%) natural, 0 hatchery**	**salvage likely to continue**	**4/27/20**	**Based on 4/26/20 Salvage data**
	WR discrete daily loss (8.6.2)	Nov. 1 - Dec. 31	N.A.	11/1-11/30: loss of 6/day unclipped older juv. WR 12/1-12/31: loss of 26/day clipped older juv. WR	**N.A.**		**N.A.**	
	WR relative daily loss (8.6.3)	Jan. 1 - May 31	In effect	1/1 - 1/31: 0.00635% loss of WR JPE = 54.29 fish 2/1 - 2/28: 0.00991% = 84.72 3/1 - 3/31: 0.0146% = 124.82 **4/1 - 4/30: 0.00507% = 43.35** 5/1 - 5/31: 0.0077% = 65.83	**max single daily loss from prev. week = 8.66 fish as 4/21/20**	**No change – salvage below "trigger" levels**	**4/27/20**	**Based on 4/26/20 Salvage data. (WR last observed on 4/26/20)**
	Spring-run surrogate protection (8.6.4)	Feb. 1 - Jun. 30	N.A.*	- Feather CWT SR surrogates cum. loss >0.25% for any release group OR - Coleman or Nimbus Fall Run >0.25% for any release group	**N.A.**	**N.A.**	**4/27/20**	***CDFW not implementing 8.6.4 in this WY**
Delta smelt	Integrated Early Winter Pulse Protection ('First Flush') (8.3.1)	Dec. 1 - Jan. 31	N.A.	- Three-day Freeport daily flow running avg >= 25,000 AND - [Three-day Freeport turbidity running avg >=50 NTU OR Smelt Monitoring Team recommendation]	**avg flow = -- cfs avg turbidity = -- NTU**	**N.A.**	**N.A.**	
	Turbidity Bridge Avoidance (8.5.1)	Dec. 15 - Apr. 1	N.A.	- avg. OBI turbidity > 12 NTU	**OBI = 2.3 NTU**	**none expected**	**4/27/20**	

Species	Action	Timeframe	Current Action Status	Threshold(s)	**Current Relevant Data**	**Weekly Trend**	**Last Updated**	**Comments**
	Larval and/Juvenile Delta Smelt Protection (8.5.2)	ongoing	In effect	- 5-day cum. salvage of juv. DS >= [average 3-yr FMWT index + 1] = 1.67	**current 5-day salvage = 0 fish**	**none expected**	**4/27/20**	**One 12mm DSM detected at CVP 4/13/20**
Longfin smelt	Early Adult Protection (8.3.3)	Dec. 1 - Feb. 28	N.A.	- Cum. salvage > [most recent FMWT/10] = 1.2 fish OR - Smelt Monitoring Team determines high likelihood of LFS movement into high-risk areas	**Cum. Salvage = 0 adults**	**none expected**	**N.A.**	
	OMR Mgt. for Adults (8.4.1)	Dec. 1 - Feb. 28	N.A.	- Smelt Monitoring Team recommendation		**none expected**	**N.A.**	
	Larval and Juvenile Longfin Smelt Entrainment Protection (8.4.2)	Jan. 1 - Jun. 30	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	**LFS at 1 (20mm#3) stations LFS catch/tow >5 at 0 (20mm#3) stations**	**Not triggered - no OMR recommendation expected**	**4/27/20**	**42 (SWP) and 1170 (CVP) LFS salvaged through 4/20/20**
	High Flow OMR Off-Ramp for Longfin smelt (8.4.3)	ongoing	In effect	- Sac. R. at Rio Vista >55,000 OR - SJR at Vernalis >8,000	**Rio Vista = 6,000 - 7,000 cfs SJ = 1,700 - 2800 cfs**	**No change**	**4/27/20**	**Forecasted Values**

Operations

Operations Category	Location	Operations on 4/21/20	Operations on 4/28/20
Clifton Court Inflow	Clifton Court Forebay	1,100 cfs	1,000 cfs currently, reductions to 500 cfs to 800 cfs over the coming days as CVP increases exports. Combined exports will not exceed 1:1 inflow to export ratio criterion.
SWP Reservoir Releases	Feather – Oroville	1,550 cfs	1,550 cfs
SWP Reservoir Storage	San Luis (SWP)	962 TAF	959 TAF
SWP Reservoir Storage	Oroville	2,441 TAF	2,480 TAF
Environmental Parameters	Sacramento River at Freeport	9,500 cfs	8,800 cfs
Environmental Parameters	San Joaquin River at Vernalis	2,700 cfs	2,060 cfs
Environmental Parameters	Delta Outflow Index	10,000 cfs	8,160 cfs
Environmental Parameters	E:I (14-day)	10% (14-day avg.)	12% (14-day avg.)
Environmental Parameters	X2	73 km	74 km, moving upstream
CVP Exports	Jones Pumping Plant	1,600 cfs currently, scheduled decrease to 1,000 cfs on 4/23/20.	1,000 cfs, increasing to 1,600 cfs on 4/29/20. Combined exports will not exceed 1:1 inflow to export ratio criterion.
CVP Reservoir Releases	American – Nimbus	1,500 cfs currently. Ramping up and down between 1,000 cfs and 1,500 cfs starting later this week.	1,200 cfs, currently in mini pulse, holding for ~5 days. Will increase to 1,250 cfs on 5/3/20.

Operations Category	Location	Operations on 4/21/20	Operations on 4/28/20
CVP Reservoir Releases	Sacramento – Keswick	7,500 cfs currently. Increasing to 9,500 cfs by 4/24/20 as a result of increasing diversion demands on the river.	9,750 cfs and holding
CVP Reservoir Releases	Stanislaus - Goodwin	400 cfs currently, scheduled increase to 1,200 cfs on 4/23/20, continuing spring pulse flows	900 cfs, scheduled increase to 1,300 cfs before decreasing, continuing spring pulse flows
CVP Reservoir Releases	Trinity - Lewiston	450 cfs currently, scheduled changes in releases for pulse flows	1,500 cfs, continuing pulse flows into July
CVP Reservoir Storage	San Luis (CVP)	584 TAF	570 TAF
CVP Reservoir Storage	Shasta	3,750 TAF	3,708 TAF
CVP Reservoir Storage	Folsom	637 TAF	679 TAF. Continued snowmelt could potentially increase storage. Inflow is currently close to 5,000 cfs.
CVP Reservoir Storage	New Melones	1,909 TAF	1,904 TAF. Lack of snowpack has resulted in minimal changes to storage.
CVP	DCC Gates	Closed	Closed

cfs = cubic feet per second
MAF = million acre feet
TAF = thousand acre feet
km = kilometer

Location of X2 measured from the Golden Gate

Factors controlling Delta exports: Controlling factor for 4/21/20 – 4/27/20 was the 1:1 I:E ratio per D-1641 criteria.

Agenda Item 4.
Review of Environmental Data
OMR Demonstration Project: OMR Index and USGS Tidally Filtered Values are displayed on SacPAS. http://www.cbr.washington.edu/sacramento/data/delta_loss.html

Approximate OMR gauge data as of 4/25/20

	USGS gauges (cfs)	**Index (cfs)**
Daily	-1,500 cfs	-1,200 cfs
5-day	-1,300 cfs	-1,300 cfs
14-day	-1,100 cfs	-1,300 cfs

Approximate OMRs as of 4/27/20:

	Index (cfs)
Daily	-1,300 cfs
5-day	- 1,200 cfs
14-day	-1,200 cfs

Agenda Item 5.

Fish Abundance and Distribution

Hatchery Releases

On April 22, 20, the USFWS released approximately 3.2 million brood year 2019 fall-run Chinook salmon from the Coleman National Fish Hatchery into Battle Creek. This is the fourth and final release of the production group and will include 25% marked with adipose fin clip and Coded Wire Tagged (CWT).

On April 23 and 24, 20, the CDFW released approximately 997,395 brood year 2019 fall-run Chinook salmon from Feather River Fish Hatchery into San Francisco Bay at Mare Island. This release includes 25% adipose fin clip and CWT fish.

On April 27 and 28, 20, the CDFW released approximately 900,000 brood year 2019 fall-run Chinook salmon from Mokelumne River Hatchery into the San Joaquin River at the Sherman Island Net Pen site. This release will include 25% CWT fish.

Fish Monitoring

Historical Fish Monitoring Data

Because of challenges with limited data and interpretation of real-time steelhead catch data, SaMT reviews historical catch data on SacPAS's Migration Timing and Conditions page and the Salvage Timing page.

Migration Timing: SacPAS Migration Timing Website

Average percent of annual emigrating population for each species of interest (based on LAD) captured at the following locations by 4/26 for the years 2005 to 2018.

Brood Years	Species, species run	Red Bluff Diversion Dam	Tisdale RST	Knights Landing RST	Beach Seines	Sac Trawl (Sherwood)	Chipps Island Trawl
2005 – 2018	Winter-run Chinook salmon	100%	99.8%	100%	100%	92.9%	97.6%
2005 – 2018	Spring-run Chinook salmon	93.2%	98.1%	98.2%	99.4%	89.4%	69.6%
2005 – 2018	Steelhead	8.3%	86.9%	83.4%	79.7%	96.1%	92.9%

Salvage timing: SacPAS Salvage Timing Website

Average percent for each species (based on LAD) of interest salvaged at the SWP and CVP Delta Fish Facilities by 4/26 in previous years. Average sampled represents historic data spanning years 2005 – 2018.

Brood Year	Species, species run	Average Percent Salvaged at SWP and CVP Delta Facilities
Average 2005 - 2018	Winter-run Chinook salmon (unclipped)	99.8%
Average 2005 – 2018	Spring-run Chinook salmon (unclipped)	58.4%
Average 2005 – 2018	Steelhead (unclipped)	81%

Current Fish Monitoring Data

Fish monitoring data summarized over the past week are found on Bay Delta Live. Unless otherwise noted, reported races are based on fork length (LAD).

Location	Feather River RST Eye Side Channel[A]	Feather River RST Herringer[B]	GCID RST[C]	Tisdale RST[D]	Knights Landing RST[E]	LAR RST[G]	Sacramento Trawls[F]	Chipps Island Midwater Trawl[F]	Caswell RST[H]	Butte Creek Okie Diversion Trap[I]	Butte Creek Okie Screw Trap [J]
Sample Dates	4/20/20 – 4/26/20	4/20/20 – 4/26/20		4/20/20 – 4/26/20	4/20/20 – 4/27/20	4/21/20 – 4/22/20	4/19/20 – 4/21/20, 4/23/20	4/19/20-4/21/20, 4/23/20-4/24/20	4/21/20 – 4/24/20		
Chinook									5		
FR Chinook	5,915	998		52	5	383	54	30			
SR Chinook	54	9		28	3	10	32	270			
WR Chinook											
LFR Chinook	53	3		1		8					
Chinook (ad-clip)				14 FR 7 SR	1 SR		27	108	22 VIE		
Steelhead (natural)	12				2	1 fry		1			
Steelhead (ad-clip)				1		1		4			
Green Sturgeon											
Flows (avg. cfs)	700	1,550		5,514	4,963						
W. Temp. (avg. °F)	55.7	62.5		64.3	65.5						
Turbidity (avg. NTU)	1.5	1.7		6.8	8.2						

[A] Feather River RST data from Eye Side Channel sampling period was from 4/20/20 at 9:46 to 4/26/20 at 10:56.
[B] Feather River RST data at Herringer sampling period was from 4/20/20 at 14:24 to 4/26/20 at 9:44.
[C] GCID RST data were not available.
[D] Tisdale RST sampling period was from 4/20/20 at 9:45 to 4/26/20 at 9:30. RST operating at full cone.
[E] Knights Landing RST sampling period was from 4/20/20 at 9:45 to 4/27/20 at 10:15. RST operating at half cone.
[E] DatCall sampling data period was from 4/19/20 to 4/25/20.
[G] Lower American River RST sampling period was from 4/21/20 to 4/22/20.
[H] Caswell RST sampling period was from 4/21/20 to 4/24/20.
[I] Butte Creek Okie Diversion Trap data were not available.
[J] Butte Creek Okie Screw Trap data were not available.

- SaMT members noted that GCID had stopped reporting as of 4/23/20, which may be a result of monitoring limitations associated with COVID-19 or due to high catches of hatchery fall-run Chinook salmon.
- SaMT members noted that the number of spring-run Chinook salmon observed at Chipps Island are at least in part representative of the recent fall-run Chinook salmon hatchery releases based on the numbers of clipped chinook passing Chipps Island.

Fish Monitoring Gear Efficiency/Disruptions: COVID-19 impacts.

Monitoring Survey	Status (as of 4/28/20) Most Recent Change in Green
Delta	
SWP regular counts, CWT reading, and larval sampling	Ongoing through modified staffing
CVP regular counts, CWT reading, and larval sampling	Ongoing through modified staffing
Smelt Larval Survey	Completed, data analysis ongoing
20mm Survey	Starting 4/13, modified survey (South and Central Delta priority stations)
Bay Study	On hold until further notice
DJFMP- Chipps and Sacramento Trawls	Ongoing
DJFMP- Seines	Suspended
EDSM	Ongoing
EMP	Discrete sampling will not occur in April, Continuous sampling continues
Mossdale	On hold until further notice
USGS Flow monitoring	Continuous monitoring continues
Sacramento River	
Acoustic tagging Battle Creek hatchery	Tagged ~250 fish
Acoustic tagging Fall-run Chinook	Will not occur this March and April
Acoustic tagging Spring-run Chinook	Unlikely to occur
Acoustic tagging-Pulse Flow experiment	Under review
Red Bluff Diversion Dam screw trap	Suspended on March 26 until further notice
Knights Landing screw trap	Ongoing through modified staffing
Tisdale screw trap	Ongoing through modified staffing
Redd dewatering and stranding surveys	Suspended
Sacramento Carcass and Redd Surveys	Continuing
San Joaquin River	
SJRRP CDFW Field Monitoring	On hold until further notice
San Joaquin River Steelhead (Mokelumne Hatchery) acoustic tagging	Cancelled
SJRRP USFWS and USBR Field Monitoring	Ongoing with modified staffing

Green Sturgeon

Three juvenile green sturgeon were detected in the Sacramento River, North of Sherman Lake on 4/21/20 and 4/23/20.

DOSS Weekly Salvage Update

Reporting Period: April 20-April 26, 2020

Prepared by Kyle Griffiths on April 27, 2020 14:59

Preliminary Results -Subject to Revision

Criteria	20-Apr	21-Apr	22-Apr	23-Apr	24-Apr	25-Apr	26-Apr	Trend	
Loss Densities									
Wild older juvenile CS	0	1.52	0	0	0	0	1.19	↗	0.39
Wild steelhead	7.45	4.26	4.17	1.21	1.36	0	3.57	↗	3.15
Exports									
SWP daily export	2,108	2,539	1,637	1,597	1,224	1,405	1,688	↗	1,743
CVP daily export	1,958	3,178	3,174	1,974	1,952	1,950	1,951	↘	2,305
SWP reduced counts	0	0	0	0	0	0	0		
CVP reduced counts	0	0	0	0	0	0	0		

Loss Density = fish lost/TAF; water export = AF; Trend = compared to previous week; wild = adipose fin present
Loss = estimated number of fish lost at the CVP and SWP Delta export facilities based on estimated salvage (see below)
Reduced counts = percentage of time that routine salvage sample time were less than 30 min per 2 hours of salvage and export operations
Yellow highlighted dates indicate TFCF salvage outage occurred

Chinook Salmon Weekly/Season Salvage and Loss

Combined salvage and loss for both CVP and SWP fish facilities

Race determined by size at date of capture; hatchery = adipose fin missing;

		Weekly Total			Season Total		Season Total _ LAD	
Category		**Salvage**	**Loss**	**Trend**	**Salvage**	**Loss**	**Salvage**	**Loss**
Wild								
	Winter Run	3	13	↗	70	145	105	188
	Spring Run	541	1,896	↗	1,910	3,404	1914	3407
	Late Fall Run	0	0	→	12	8	12	8
	Fall Run	110	268	↗	291	438	252	392
	Unclassified	0	0	→	0	0	0	0
	Total	**654**	**2,177**		**2,283**	**3,995**	**2283**	**3995**
Hatchery								
	Winter Run	1	4	↗	18	16	79	90
	Spring Run	32	95	↗	1,164	1,538	1028	1415
	Late Fall Run	0	0	→	195	153	186	144
	Fall Run	0	0	→	25	17	109	75
	Unclassified	0	0	→	0	0	0	0
	Total	**33**	**99**		**1,402**	**1,724**	**1402**	**1724**

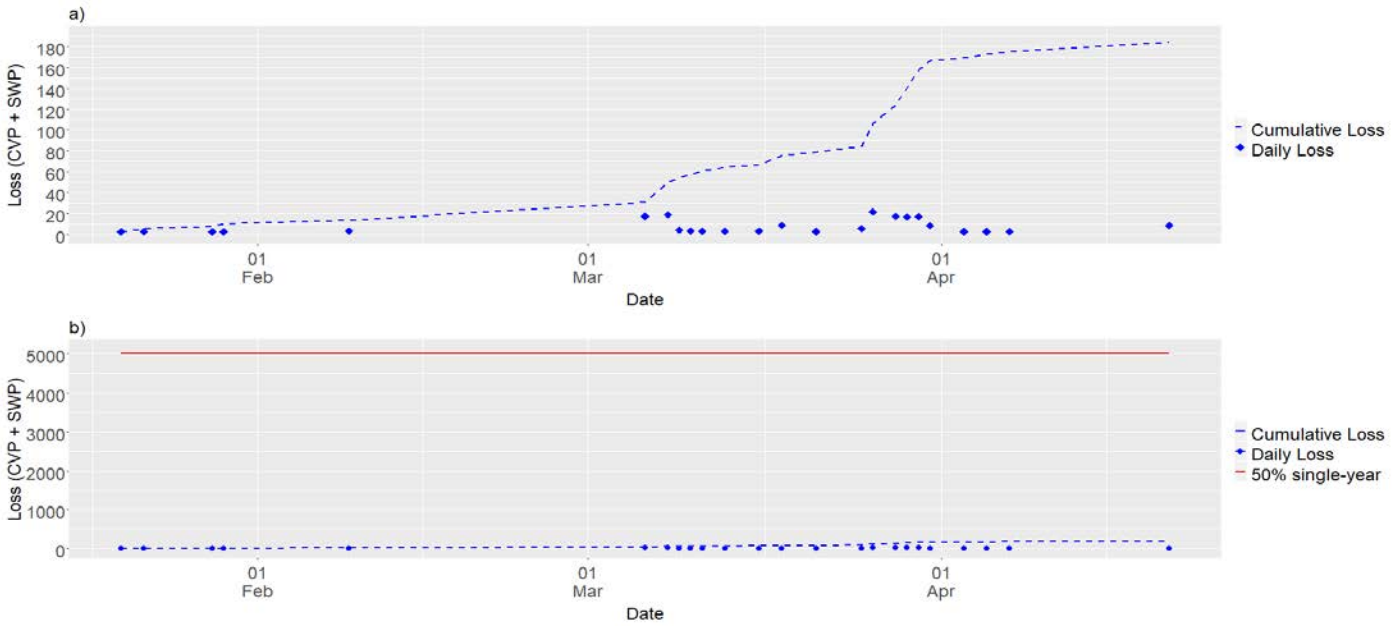
Trend = weekly loss per race; Salvage = estimated number of fish collected by the CVP and SWP fish protective facilities per unit of time
NC = cannot be calculated; hatchery salmon salvage and loss estimates have been corrected using CWT readings when available

Steelhead Weekly/Season Salvage and Loss

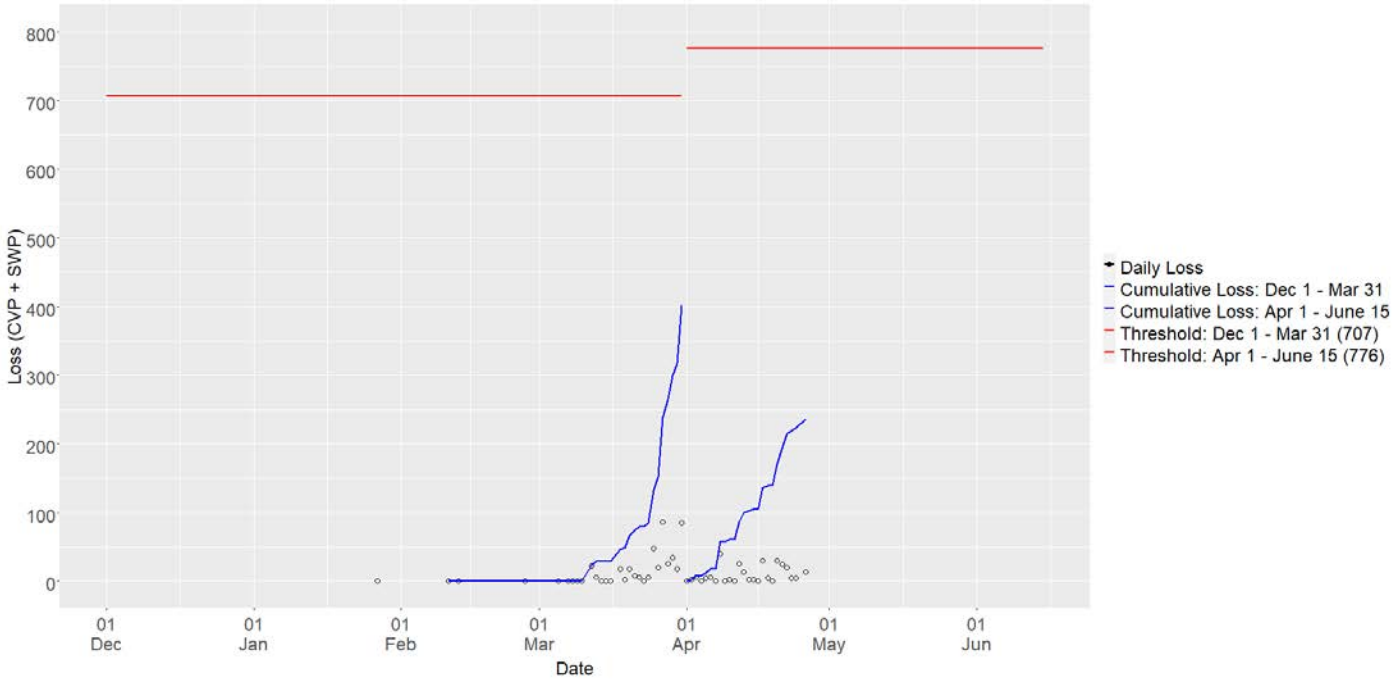
Combined salvage and loss for both CVP and SWP fish facilities

	Weekly Total			Season Total		Season Total after 4/1	
Category	**Salvage**	**Loss**	**Trend**	**Salvage**	**Loss**	**Salvage**	**Loss**
Wild	29	96	↗	246	638	95	237
Hatchery	30	86	↗	417	626	242	332
Total	**59**	**182**		**663**	**1,265**		

State Water Project loss = salvage x 4.33; Central Valley Project loss = salvage x 0.68



WY2020 loss values through salvage season for winter-run sized Chinook salmon. Values depicted are not genetically corrected. Last loss occurred 4/21/20. Figure created 4/24/20 with most recent available data (4/22/20).

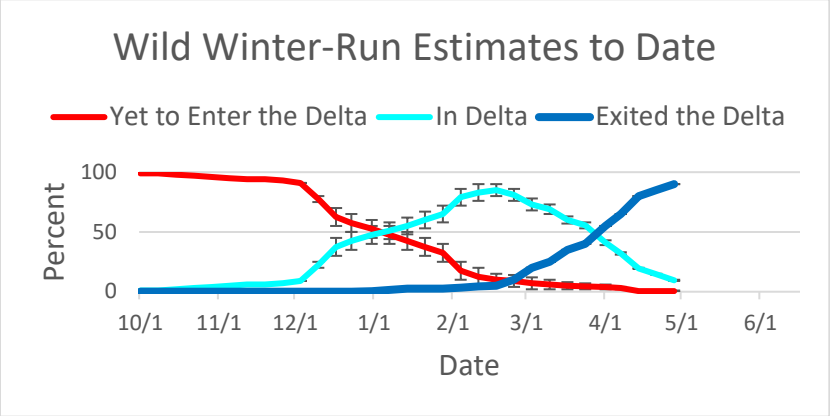


Cumulative WY2020 loss of natural-origin steelhead with 50% single year loss thresholds depicted by red lines. Figure created on 4/27/20 with most recent available data (4/26/20).

SaMT Estimates of Fish Distribution
SaMT estimates of the current distribution of listed Chinook salmon, as a percentage of the population, are based on recent monitoring data and historical migration timing patterns.

Location	Yet to Enter Delta (Upstream of Knights Landing)	In the Delta	Exited the Delta (Past Chipps Island)
Young-of-year (YOY) winter-run Chinook salmon	0-1% Last week: 0-1%	9-10% Last week: 14-15%	90% Last week: 85%
YOY spring-run Chinook salmon	10-15% Last week: 15-20%	48-58% Last week: 48-58%	32-37% Last week: 27-32%
YOY hatchery winter-run Chinook salmon	0-5% Last week: 5-15%	40% Last week: 40-45%	55-60% Last week: 45-50%
Natural origin steelhead	15-30% Last week: 20-35%	35-55% Last week: 35-55%	30-35% Last week: 25-30%

Rationale for changes in distribution
Natural winter-run Chinook salmon:
Over 3.8 million BY 2019 winter-run Chinook salmon have passed RBDD so far in WY 2020. In the last week, no winter-run Chinook salmon were captured at any monitoring locations. Based on seasonal timing, SaMT estimates that the percentage of winter-run Chinook salmon population within the Delta changed from 14-15% to 9-10%. SaMT also estimates an additional 5% exited past Chipps Island equating to an estimated total of 90% exiting the Delta. Based on the time of year, the majority of winter-run Chinook salmon juveniles have migrated out of the Delta.



WY 2020 natural winter-run Chinook salmon distribution

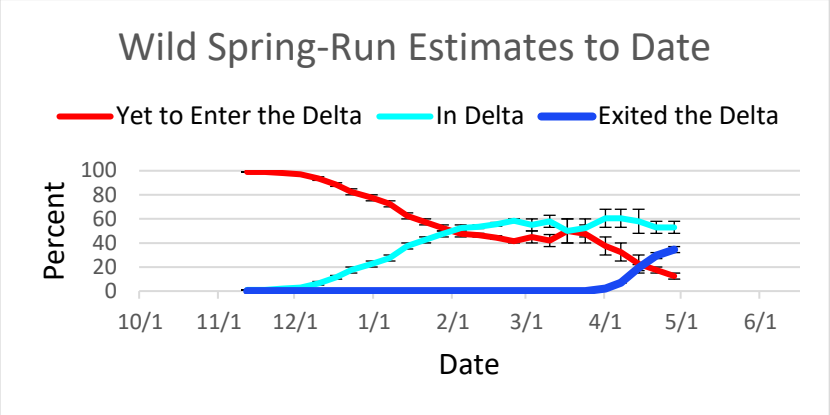
Hatchery winter-run Chinook salmon: Hatchery winter-run Chinook salmon were released into Sacramento River and Battle Creek (3/10/20 and 3/23/20, respectively). Since these acoustically-

tagged fish were released, they have been detected at most receiver locations including: Butte City, Wilkins Slough, I-80/I-50, Tower Bridge, Georgiana Slough, and Benicia Bridge (western Suisun Bay), indicating that many of these fish have moved into the Delta and out past Benicia. In the past week, 2 acoustically-tagged winter-run Chinook salmon were detected (1 at the Tower Bridge and 1 at I-80/I-50 Bridge on 4/24/20).

Although acoustically-tagged fish were only detected in the Delta over the past week, SaMT noted that some transmitter batteries have likely expired, and therefore not all fish remaining in the system are detectable. SaMT estimates that an additional 10% of hatchery winter-run Chinook salmon have moved through the system and out past Chipps Island over the past week. CalFish Acoustic Tag Tracking website - winter-run Chinook salmon

Natural spring-run Chinook salmon:
In the last week, 3 juvenile spring-run Chinook salmon were observed at Knights Landing, 32 at Sacramento Trawl, and 270 at Chipps Island. Beach seine sites were not sampled. Historical timing based on passage at Knights Landing indicate that 99.8% of the natural young-of-year spring-run Chinook salmon are considered to be in the Delta by this time of year, but excludes Butte Creek and Feather River spring-run Chinook salmon that typically emigrate into the Delta later in the season and are not captured at the Knights Landing monitoring station. Historical timing indicates that young-of-year spring-run Chinook salmon from Mill, Deer, and Butte creeks are entering the mainstem Sacramento River and emigrating through the Delta. SaMT estimates 10-15% of the spring-run Chinook salmon population are upstream of the Delta, 48-58% are in the Delta, and 32-37% have exited past Chipps Island.

It is important to note that this week's large numbers of spring-run Chinook salmon were observed at downstream monitoring sites following the fall-run Chinook salmon production releases from Coleman NFH which include 75% unmarked fish. Natural spring-run Chinook salmon are indistinguishable from larger, unmarked hatchery origin fall-run Chinook salmon and the average FL of this year's releases suggest a large portion of the fall-run Chinook salmon would be counted as spring-run Chinook salmon where monitoring sites assign run using LAD criteria.

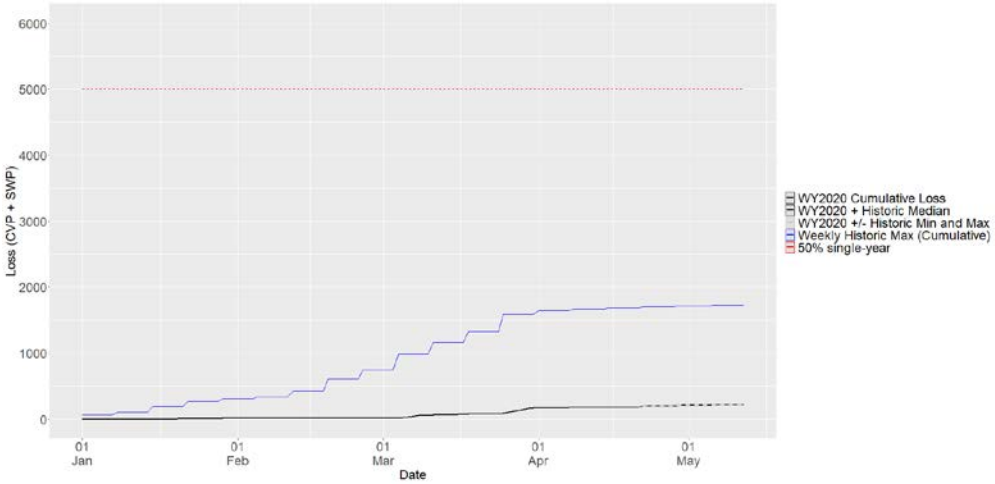


WY 2020 natural spring-run Chinook salmon distribution estimates to date
Natural Steelhead:

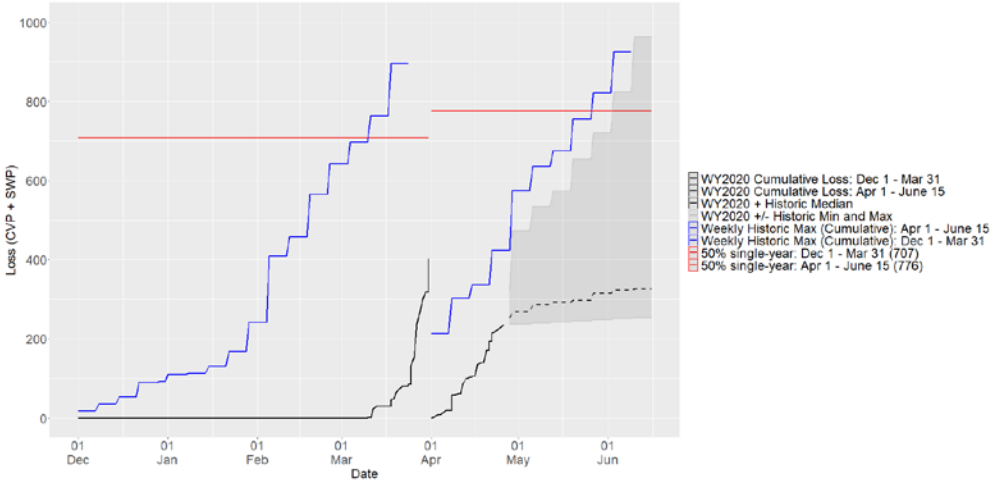
Several factors increase uncertainty of measuring downstream movements of steelhead including varying life history and residency times, as well as monitoring gear avoidance. To provide an estimate of steelhead presence in the Delta, SaMT discussed historical catch and emigration timing data. Natural-origin steelhead were observed in salvage (weekly loss = 96) and at Chipps Island Trawl (n = 1) during this past week. Historically, 81% of steelhead are salvaged by this time of the year. SaMT estimates that 35-55% of steelhead are in the Delta this week and that 30-35% have exited past Chipps Island. These estimates are based on historical timing rather than upper river monitoring data.

Agenda Item 6.
Fish Exposure and Behavioral Cues

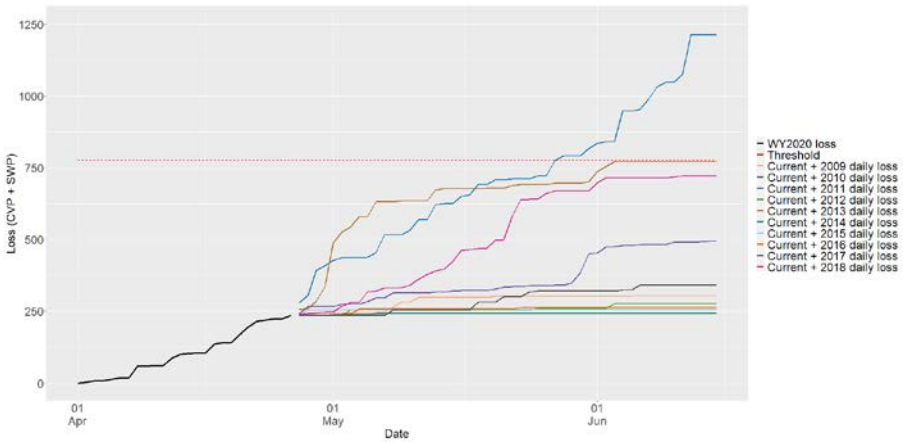
Historical Patterns



Daily winter-run Chinook salmon loss accumulates towards single-year loss thresholds. Based on historical weekly maximum and minimum loss values from 2009-2018 *(note historic data are calendar-based not WY-based)*, WY2020 observed weekly loss (and potential future loss) is not trending towards exceeding LTO Proposed Action loss thresholds.



Daily steelhead loss accumulates towards single-year loss thresholds: December 1 – March 31, April 1 – June 15. Based on historical weekly maximum and minimum loss values from 2009-2018 *(note historic data are calendar-based not WY-based)*, WY2020 observed weekly loss (and potential future loss) could exceed the 50% loss threshold at this time depending on the magnitude of loss observed in April and May 2020. See Table A4 for years included in calculations of weekly summary statistics.



Daily steelhead loss accumulates towards single-year loss thresholds: April 1 – June 15. Based on historical cumulative loss values from 2009 – 2018 (*note historic data are calendar-based not WY-based)*, WY2020 observed loss (and potential future loss) could exceed the 50% loss threshold at this time depending on the magnitude of loss observed in April and May 2020.

Current Conditions
Entrainment into the Interior Delta:

The Delta STARS Model (Delta STARS web site) is an individual-based simulation model that estimates survival, travel time, and routing of juvenile salmon migrating through the Delta. Routing probabilities at Three-Mile Slough and Broad Slough (junction of the Sacramento and San Joaquin rivers) are not estimated by the STARS model.

Juvenile winter-run Chinook salmon are present currently in these regions (10% as estimated by SaMT). DCC gates are closed and flows at Freeport have decreased compared to last week. It is not likely juveniles will experience changes in rearing, foraging, sheltering or migration behavior in the western Delta and Sacramento River. The STARS model projects route-specific proportion of entrainment, survival, and travel times (data accessed through the website on 4/27/20; most recent data for 4/16/20). This model does not estimate entrainment into other lower Sacramento River sloughs (i.e. Three-Mile Slough). The probability of entrainment into the Central Delta is not related to Delta exports at levels described in the Scenarios; it is related to Sacramento River flows and tidal influences. Decreasing outflow this week is likely to result in a return to levels of entrainment into Georgiana Slough previously observed this spring, which is higher than last week. Travel time is approximately 50% longer through Georgiana Slough to Chipps Island as compared to the Sacramento River and Sutter, and Steamboat slough routes.

	DCC	Georgiana Slough	Sacramento River	Sutter and Steamboat Sloughs
Proportion of Entrainment	0%	27%	46%	26%
Survival		18%	52%	41%
Travel time		17.1 days	10.3 days	10.9 days

STARS model projections for route-specific entrainment, travel times, and survival

DSM2
DSM2 – Results are provided in the Assessment documents weekly on Mondays and Fridays.

- **Entrainment into the Central Delta from the Sacramento River and Western Delta:** On the Lower Sacramento River (i.e., DSM2 Channel 434) and most of the channels in the Central Delta (i.e., DSM2 Channel 21, DSM2 Channel 49) there are no modeled difference in magnitude or range of velocities and flows between baseline -1,500 cfs and either of the models runs: Scenario -1,000 cfs and Scenario -2,000 cfs.

- **Entrainment into the South Delta from the San Joaquin and Central Delta:** At Old River between Franks Tract and the San Joaquin River (DSM2 Channel 124), and in channels in the Lower San Joaquin River at Columbia Cut (DSM2 Channel 160) there are no modeled differences in magnitude or range of velocities and flows between baseline -1,500 cfs and either of the model runs: Scenario -1,000 cfs and Scenario -2,000 cfs.

- **Entrainment into the Facilities from the South Delta:** In channels in the South Delta along Old River (DSM2 Channel 94) and Middle River (DSM2 Channel 148) just downstream of the CVP and SWP, there were no modeled differences in magnitude or range of velocities and flows between baseline -1,500 cfs and either of the model runs: Scenario -1,000 cfs and Scenario -2,000 cfs. Further north, closer to the Central Delta, at Old River north of Rock Slough (DSM2 Channel 107), modeled conditions between scenarios and baseline OMR conditions mirrored results from DSM2 Channel 94 and DSM2 Channel 148, channels in the South Delta along Old River and Middle River. Along Old River adjacent to Grant Line Canal (DSM2 Channel 81), Scenario -2,000 cfs resulted in slightly more positive minimum flow and velocity values compared to baseline OMR and Scenario -1,000 cfs conditions. Under all scenarios the frequency of positive velocity was about 34-37%.

Sensitivity to Operational Actions - SaMT Feedback on Entrainment Risk

The questions from OMR Flow Management Guidance Document (page 20) are provide below.

1) After January 1, are more than 5% of the juveniles from one or more salmonid species present in the Delta?
    - Yes.
        - Currently 9-10% natural winter-run Chinook salmon, 48-58% spring-run Chinook salmon, 40% of hatchery winter-run Chinook salmon, and 35-55% of steelhead are estimated to be in the Delta.
2) Does the action (Delta exports, OMR flows, DCC gate operations) impact fish movement and change the potential distribution of fish?
    - *DSM2:* There are no modeled difference in magnitude or range of velocities and flows between baseline and either of the models runs: Scenario -1,000 cfs and Scenario -2,000 cfs at many locations throughout the delta. In channels in the South Delta along Old River and Middle River just downstream of the CVP and SWP, there were no modeled differences in magnitude or range of velocities and flows between baseline and either of the model runs: Scenario -1,000 cfs and Scenario -2,000 cfs. Along Old River adjacent to Grant Line Canal (DSM2 Channel 81), Scenario -2,000 cfs resulted in slightly more positive minimum flow and velocity values compared to baseline OMR and Scenario -1,000 cfs conditions. Under all scenarios the frequency of positive velocity was about 34-37%.
    - *Entrainment into the Interior Delta from the Sacramento River:* The probability of entrainment into the Central Delta is not related to Delta exports at levels described in the Scenarios; it is related to Sacramento River flows and tidal influences. Decreasing outflow this week is likely to result in a return to levels of entrainment into Georgiana Slough previously observed this spring, which is higher than last week.
    - *Winter-run:* SaMT expects few winter-run Chinook salmon to be impacted by Delta operations. The majority of winter-run Chinook salmon have migrated past Chipps Island. Only 9-10% remain in the Delta, most of which are likely still in the Sacramento River corridor. With a small percentage of the winter-run

Chinook salmon population in the southern Delta there is a smaller percentage at risk.

- *Spring-run:* SaMT believes there is higher degree of uncertainty in spring-run Chinook salmon distribution than winter-run Chinook salmon due to the presence of spring-run sized Chinook salmon emigrating from upper Sacramento River tributaries late in April and May and the relative abundance of these fish in the juvenile spring-run Chinook salmon population. Furthermore, the size of unmarked fall-run Chinook salmon juveniles from hatcheries releases overlap with the size of natural-origin spring-run Chinook salmon making it difficult to distinguish between hatchery fall-run Chinook salmon and natural spring-run Chinook salmon. Based on historical trends in salvage, the estimated loss of spring-run Chinook salmon to date is 58.4% of the annual population total. As of 4/26/20, 1,910 fish have been salvaged (loss = 3,404) and if historical trends in salvage were to continue, then 5,829 spring-run sized Chinook salmon are predicted to be lost by the end of the salvage period. Based on this prediction and recent observations, spring-run Chinook salmon loss is expected to increase over the next week. Only two fish identified as spring-run Chinook salmon in salvage by LAD were identified as genetically spring-run Chinook salmon following genotyping (data through 4/20/2020). While data from the San Joaquin River tributaries regarding Chinook salmon fork length was limited due to COVID-19 impacts, data that are available are not consistent with what we would expect to see if fish were observed salvage. LAD is not very accurate during this time of year, especially in the Delta. The LAD table was also created for Sacramento River Chinook and may be less applicable to San Joaquin mainstem and tributary Chinook, further decreasing its accuracy.
- *Steelhead:* DSM2 modeling of the scenarios show little variation between scenarios in modeled hydrodynamic conditions, including channels in the South Delta. Adult steelhead may be migrating upstream through the Delta to spawn and kelts may be emigrating downstream through the Delta following spawning, however, neither are likely to be affected by the hydraulic alteration modeled in the range of scenarios as they transit along the main migration routes through the Delta. However, emigrating steelhead from the San Joaquin River basin are expected to be routed into the Old River channel at the Head of Old River. Those fish are vulnerable to exports effects. The range of conditions in scenarios is not expected to affect the duration that adult steelhead migrate through the Delta or increase the potential for indirect predation. Tidal hydrodynamics will continue to dominate the north Delta and central Delta where reduced exports do not influence flow magnitude, velocity, or proportion of negative flows. The installation of the South Delta agricultural barriers will start on 5/1/20 at the Old River at Tracy and Middle River locations (Grant Line installation is projected for 5/11/20) and will change hydrodynamics in the South Delta. Installation of the barriers will promote higher predation rates adjacent to the barriers and result in less fish surviving to appear in salvage. Installation of the barriers impede flows through the south Delta channels and redirect more water down the mainstem San Joaquin River. As the flow of water is impeded in the South Delta channels by the barriers, more water from the north is required to sustain export levels, leading to

more negative OMR flow levels. However, this change won't be as substantial as when the Head of Old River barrier is installed. San Joaquin River nodes, including at Head of Old River, do not show an influence of reduced exports on flow magnitude, velocity of proportion of negative flows. Entrainment and loss at the facilities for juvenile steelhead in the south Delta is expected to decrease, in part due to the increased transit times to the facilities and potential for increased predation. The loss rate of natural steelhead and hatchery-origin steelhead both increased in comparison to last week (4/20/20 to 4/26/20 weekly loss natural-origin = 96 fish; weekly loss of hatchery origin = 86 fish; 4/20/20 to 4/26/20).

3) How much loss has occurred in the past week (4/20/20 - 4/26/20)?
    - Losses of salmonids in both clipped and natural fish have been observed at the SWP and CVP facilities. An increase in salvage at the CVP of San Joaquin-origin salmonids is expected over the upcoming week due to an increase in exports. Salvage is expected to decrease at the SWP as exports are reduced over the next week.
    - In the past week, natural-origin winter-run sized Chinook salmon were salvaged at the Delta fish collection facilities (weekly loss = 13 fish).
    - Natural-origin spring-run sized Chinook salmon (LAD) were salvaged last week at the Delta fish collection facilities (weekly loss = 1,896 fish). Weekly loss total likely includes larger natural and hatchery origin fall-run which are misidentified as spring-run Chinook salmon using LAD methodology
    - Hatchery-origin spring-run Chinook salmon were salvaged at both facilities (weekly loss = 95 fish). All fish were San Joaquin River Restoration Program fish, none were from the Feather River Fish Hatchery. To date, only one fish from a Feather River Fish Hatchery spring-run Chinook salmon release has been detected in salvage (4/10/20).
    - Hatchery-origin steelhead were observed in salvage at both facilities (weekly loss = 86 fish).
    - Natural-origin steelhead were observed in salvage at both facilities (weekly loss = 96)
    - 2 steelhead were salvaged at SWP on 4/27/20 in predator flushes.
4) What is the likelihood of increased loss exceeding the next single-year loss threshold based on the population distribution, abundance, and behavior of fish in Delta?
    - Unlikely. Annual cumulative loss is not approaching any of the Delta Performance Thresholds. Please refer to operations outlook for details.
    - It is unlikely that that any Delta performance thresholds for natural winter-run Chinook salmon will be exceeded. Hatchery winter-run Chinook salmon and steelhead might eventually exceed the single-year thresholds by the end of the OMR management season, but low exports reduce the likelihood of exceeding the threshold in the next week.
    - Based on historical trends in salvage, natural steelhead loss was 81% of the annual average loss for this date. As of 4/26/20, loss was 616 fish with a loss of 402 fish between December 1 and March 30. If historical trends in salvage were to continue, then cumulative loss is estimated to be 768 fish by the end of the salvage period. For the April 1 through June 15 50% threshold of 776 natural steelhead lost, it is expected that 366 natural steelhead would be lost or an

estimated 47% of the 50% loss threshold. Based on this prediction and recent observations, steelhead loss is expected to increase over the next week. If historical maximum loss occurs, the 50% loss threshold could be exceeded.
    - It is unlikely that older juvenile Chinook salmon daily loss thresholds would be exceeded (DWR ITP requirement).
5) If a single-year loss threshold has been exceeded, do continued OMR restrictions benefit fish movement based on real-time information?
    - Not applicable. No thresholds have been exceeded during this water year.
6) If OMR is more negative than -5,000 cfs, are there changes in spawning, rearing, foraging, sheltering, or migration behavior beyond those anticipated to occur under OMR management at -5,000 cfs?
    - Not applicable. Current OMR flows more positive than -5,000 cfs.

Agenda Item 7.
Other Topics

8.1.5.1.C. Assessment of risk of entrainment into the central Delta and CVP/SWP facilities for winter-run Chinook salmon and spring-run Chinook salmon in the Sacramento River:

8.1.5.1.C.ii. Exposure Risk:	Spring-run Chinook salmon: medium (based on STARS) Winter-run Chinook salmon: low
8.1.5.1.C.iii. Routing risk:	Spring-run Chinook salmon: medium (based on STARS) Winter-run Chinook salmon: low
8.1.5.1.C.iv. Overall Risk:	Spring-run Chinook salmon: medium (based on STARS) Winter-run Chinook salmon: low

8.1.5.1.D. CVP/SWP facilities entrainment risk for winter-run Chinook salmon and spring-run Chinook in the central Delta over the next week:

8.1.5.1.D.iii. Exposure risk assessments:	Winter-run Chinook salmon: low Spring-run Chinook salmon: medium
8.1.5.1.D.iv. Reporting OMR/export risk:	
OMR -1,000 cfs:	Winter-run Chinook salmon: low Spring-run Chinook salmon: low
OMR -2,000 cfs:	Winter-run Chinook salmon: low Spring-run Chinook salmon: low
8.1.5.1.D.v. Overall entrainment risk:	Winter-run Chinook salmon: low Spring-run Chinook salmon: low

Agenda Item 8.
Additional Considerations for WOMT
OMRs are more positive than any action responses required by trigger exceedance. No advice to change Delta operations.

Agenda Item 9.
Next SaMT Meeting is scheduled for Tuesday, 5/5/20 at 9:00 a.m.