

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

1. Operational Conditions

See Weekly Fish and Water Operation Outlook document for November 3– November 9 and Attachment A for hydrological conditions.

2. Executive Summary

a. Winter-run Chinook Salmon

No loss of natural winter-run Chinook salmon (by length at date, LAD) has occurred in the past week at the State or Federal fish salvage facilities. Loss of natural winter-run Chinook salmon at the Central Valley Project (CVP) and State Water Project (SWP) fish collection facilities is unlikely to occur over the next week. 0-1% of juvenile natural winter-run Chinook salmon from brood year (BY) 20 are estimated to be present in the Delta. The Delta Cross Channel (DCC) gates closure for the Lower Mokelumne River pulse flow reduces exposure of winter-run Chinook salmon juveniles that are potentially present in the Sacramento River near the DCC gates into the interior Delta. The effects of DCC closure would be positive, if juveniles are present. DCC gates closure has the potential to impact water quality.

b. Spring-run Chinook salmon

No loss of natural Central Valley (CV) spring-run Chinook salmon has occurred in the past week at the State and Federal fish salvage facilities. Loss of Central Valley spring-run Chinook salmon at the CVP and SWP fish collection facilities is unlikely to occur over the next week. 0-1% of spring-run Chinook salmon are estimated to be in the Delta. There are no juvenile natural spring-run Chinook salmon from BY 20 near the DCC gates; CV spring-run Chinook salmon adults are building redds and spawning upstream. The exposure and effects of DCC closure are unlikely for natural spring-run Chinook salmon.

c. Central Valley Steelhead

No loss of natural California CV (CCV) steelhead has occurred in the past week at the State and Federal fish salvage facilities. Loss of Central Valley steelhead at the Central Valley Project (CVP) and State Water Project (SWP) fish collection facilities is unlikely to occur over the next week. 0-1% of juvenile CCV Steelhead are estimated to be present in the Delta. DCC closure reduces exposure to Central Valley steelhead juveniles that are potentially present in the Sacramento River near the DCC gates. The effects of DCC gate closure are likely to be positive if juveniles CCV steelheads are present.

d. DCC gates recommendation

The DCC gates were closed at 1600 on October 28 and opened at 1000 on October 31 to reduce straying of Mokelumne River fall-run Chinook salmon, attracted by lower Mokelumne River pulse flows, into the Sacramento River through the DCC. Gates are scheduled to be cycled open during the weekends and closed during the week (closed: November 2 to November 6 and November 9 and November 13). Any juvenile CCV steelhead and winter-run Chinook salmon migrating past the DCC during the closure would benefit from the closure.

e. Delta Smelt

Based on recent distribution patterns over the past decade and limited detection data that Delta Smelt are unlikely to be prevalent in the South Delta. Within the projected OMR Index limits there is a low risk of entrainment. First Flush conditions are not anticipated to occur within the next seven days.

3. Winter-run Chinook salmon

• How much loss has occurred in the past week?

No loss of juvenile winter-run Chinook salmon has occurred in the past week at the CVP and SWP fish salvage facilities.

• What is the distribution of fish within the Delta?

On 11/03/2020 SaMT estimated 0-1% of juvenile winter-run Chinook salmon were present in the Delta. In October, the Glenn Colusa Irrigation District (GCID) rotary screw traps (RSTs) have observed 583 winter-run Chinook salmon juveniles (by length at date criteria) in their daily catches. Since few winter-run Chinook salmon have been observed in RST monitoring locations farther downstream (0 at Tisdale and 0 at Knights Landing in the past week), the fish appear to be holding in the middle reaches of the Sacramento River. Movement of winter-run Chinook salmon juveniles into the lower reaches of the Sacramento River and upper Delta are likely to occur with precipitation events and increasing river flows and turbidity.

• What is the exposure to winter-run Chinook salmon due to DCC gate closure?

Juvenile winter-run Chinook salmon have not been observed this year near the DCC gates and historical monitoring data indicates that juvenile winter-run Chinook salmon are not in the Delta at this time. Closure of the DCC gates would reduce exposure and possible entrainment of juvenile winter-run Chinook salmon into the Interior Delta via the DCC gates.

• What are the effects to winter-run Chinook salmon due to DCC gate closure?

It is unlikely juvenile winter-run Chinook salmon are present near the DCC gates. Closure of the gates would positively impact any present juvenile winter-run Chinook salmon.

Supporting Information regarding Exposure of winter-run Chinook salmon

Natural winter-run Chinook salmon distribution estimate for 11/03/2020

<u>Yet to Enter Delta</u>	<u>In Delta</u>	<u>Exited Delta past Chipps Island</u>
99-100%	0-1%	0%

Natural winter-run Chinook salmon average percent of annual emigrating population (LAD) captured at following locations and salvaged at Delta fish facilities by 11/01 between 2010 - 2019

<u>Red Bluff Diversion Dam</u>	<u>Tisdale RST</u>	<u>Knights Landing RST</u>	<u>Sac Trawl (Sherwood)</u>	<u>Chipps Island Trawl</u>	<u>Salvaged at Delta Facilities</u>
74.4%	14.5%	17.4%	0.9%	0%	0%

Knight's Landing (KLCI) and Sacramento Seine and Trawl (SCI)

No catch indices for juvenile salmonid migration were triggered during the past week.

Date	KLCI	SCI Seine	SCI Trawl	Trigger Exceeded?
11/1/2020				
10/31/2020	0	0	0	
10/30/2020	0	0	0	
10/29/2020	0	0	0	
10/28/2020	0	0	0	
10/27/2020	0	0	0	
10/26/2020	0	0	0	

Mean daily flow and percent change (Wilkins Slough, Deer Creek, Mill Creek; cfs from CDEC) and temperature and percent change (Knights Landing; °F from RST) No warning alerts for juvenile salmonid migration were triggered during the past week.

Date	Wilkins Slough flow (WLK)	Deer Creek flow (DCV)	DCV Δ	Mill Creek flow (MLM)	MLM Δ	Knights Landing temperature (°F)	Alert Triggered
11/01/2020	38532	80.4	0.3%	100.5	0.5%		MLM > 95 cfs
10/31/2020	3920.8	80.2	0.3%	100.0	0.7%		MLM > 95 cfs
10/30/2020	3859.2	79.9	0.5%	99.3	-0.2%	56.3	MLM > 95 cfs
10/29/2020	3892.5	79.5	0.3%	99.5	-0.5%	56.1	MLM > 95 cfs
10/28/2020	3932.0	79.2	1.2%	100.0	0.6%	55.8	MLM > 95 cfs
10/27/2020	3763.6	78.3	0.5%	99.4	0.5%	55.6	MLM > 95 cfs

Supporting Information regarding DCC Management Effects on winter-run Chinook salmon

10/27/2020 Water Quality Modeling Assumptions:

- DCC closures:
 - a. Closed at 1600 on October 28 and Open at 1000 on October 31
 - b. Closed at 1600 on November 2 and Open at 1000 on November 6
 - c. Closed at 1600 on November 9 and Open at 1000 on November 13

STARS model simulations for route-specific entrainment, travel times, and survival for 11/01/2020. Freeport flows for 11/01/2020 were 7616 cfs.

	DCC	Georgiana Slough	Sacramento River	Sutter and Steamboat
Proportion of Entrainment	5%	28%	41%	24%
Survival	10%	14%	41%	31%
Travel Time	24.04 d	19.33 d	10.81 d	11.28 d

4. Spring-run Chinook salmon

- How much loss has occurred in the past week?

No loss of juvenile CV spring-run Chinook salmon has occurred in the past week at the CVP and SWP fish salvage facilities.

- **What is the distribution of fish within the Delta?**
On 11/03/2020 SaMT estimated 0-1% of juvenile CV spring-run Chinook salmon were present in the Delta. Mill Creek flows were recorded higher than 95 cfs seven times over the past week (10/26/2020 – 11/1/2020). This is indicative yearling spring-run Chinook salmon may begin to move out of tributaries into the mainstem Sacramento River.
- **What is the exposure to CV spring-run Chinook salmon due to DCC gate closure?** No juvenile young-of-year CV spring-run Chinook salmon (LAD) have been observed near the DCC gates and adults are building redds and spawning upstream. Yearling CV spring run Chinook salmon remain in natal tributaries and no environmental criteria indicating the initiation of fish migration behavior has been exceeded. Historical monitoring data does not detect spring-run Chinook salmon in the Delta at this time.
- **What are the effects to CV spring-run Chinook salmon due to DCC gate closure?** The exposure and effects of DCC closure on natural CV spring-run Chinook salmon are similar to winter-run Chinook salmon. Closure of the gates would reduce entrainment of any juvenile CV spring-run Chinook salmon near the DCC gates into the interior Delta.

Supporting Information regarding Exposure of spring-run Chinook salmon

Natural spring-run Chinook salmon distribution estimate for 11/03/2020

<u>Yet to Enter Delta</u>	<u>In Delta</u>	<u>Exited Delta past Chipps Island</u>
99-100%	0-1%	0%

Natural spring-run Chinook salmon average percent of annual emigrating population (LAD) captured at following locations and salvaged at Delta fish facilities by 11/01 between 2010 - 2019

<u>Red Bluff Diversion Dam</u>	<u>Tisdale RST</u>	<u>Knights Landing RST</u>	<u>Sac Trawl (Sherwood)</u>	<u>Chipps Island Trawl</u>	<u>Salvaged at Delta Facilities</u>
9.5%	0.1%	0.6%	0%	0%	0%

See additional supporting information found in winter-run Chinook salmon section (section 3.b.).

Supporting Information regarding DCC Management Effects on spring-run Chinook salmon

See additional supporting information in winter-run Chinook salmon section (section 3.b.).

5. California Central Valley Steelhead

- **How much loss has occurred in the past week?**
No loss of juvenile CCV steelhead has occurred in the past week at the CVP or SWP fish salvage facilities.
- **What is the distribution of fish within the Delta?**

11/03/2020

On 11/03/2020 SaMT estimated 0-1% of juvenile CCV steelhead were present in the Delta.

- **What is the exposure to CCV steelhead due to DCC gate closure?**
No juvenile Central Valley steelhead have been observed near the DCC gates in regional monitoring efforts and historical monitoring data does not detect steelhead in the Delta at this time. However, SaMT estimated that 0-1% of the population of CCV steelhead may be present in the Delta at this time. Closure of the DCC gates would reduce exposure and possible entrainment of juvenile CCV steelhead into the interior Delta via the DCC gates.
- **What are the effects to CCV steelhead due to DCC gate closure?**
It is unlikely juvenile Central Valley steelhead are present near the DCC gates. Closure of the gates would positively impact any present juvenile Central Valley steelhead.

Supporting Information regarding Exposure of CCV Steelhead

Central Valley steelhead distribution estimate for 11/03/2020

Yet to Enter Delta	In Delta	Exited Delta past Chipps Island
99-100%	0-1%	0%

Central Valley steelhead average percent of annual emigrating population (LAD) salvaged at Delta fish facilities by 11/01 between 2010 - 2019

Salvaged at Delta Facilities
0.3%

See “Additional supporting information found in winter-run Chinook salmon” (section 3.b.).

Supporting Information regarding DCC Management Effects on Central Valley steelhead

See additional supporting information found in winter-run Chinook salmon (section 3.b.).

6. Delta Smelt

a. Weekly Evaluation for Delta Smelt

- i. Between December 1 and January 31, has any first flush condition been exceeded?**

The question is not applicable until Dec. 1st

- ii. Do DSM have a high risk of migration and dispersal into areas at high risk of future entrainment? (December 1- January 31)**

The question is not applicable until Dec. 1st

- iii. Has a spent female been collected?**

This question is not applicable until Turbidity Bridge Avoidance begins.

- iv. Is OBI turbidity likely to exceed 12NTU during the next week? What conditions are likely to create this turbidity event?**

This question is not applicable until Turbidity Bridge Avoidance begins.

- v. After March 15 and if QWEST is negative, are larval or juvenile Delta Smelt within the entrainment zone of the CVP and SWP pumps based on surveys?**

This question is not applicable until March 15th.

- vi. **Based on real-time spatial distribution of Delta Smelt and currently available turbidity information, what is the OMR level between -3,500 and -5,000 cfs that manages weekly entrainment in the context of annual larval and juvenile entrainment levels?**

This question is not applicable until March 15th.

- vii. **What do hydrodynamic models, informed by EDSM or other relevant data, suggest the estimated percentage of larval and juvenile DSM that could be entrained may be?**

This question is not applicable until March 15th.

b. Supporting Information regarding Exposure of Delta Smelt Delta Smelt Life Stage: Adult

Brood Year 2020 (adult delta smelt)

- Abundance estimate:** The most recent population abundance estimate for Delta Smelt was 2,490. This was calculated from the sampling between 9/21/2020-9/24/2020. EDSM last collected adult Delta Smelt on 9/23/2020.
- Biological Conditions:** Based on our understanding of life history and limited distribution data Delta Smelt adults would be holding below the confluence in anticipation of migration

Delta Smelt Distribution Estimates

COVID-19 has cancelled some of the surveys for Delta Smelt. Real time detection data is currently limited to EDSM sampling and 20mm Survey, and the Smelt Monitoring Team, has limited capacity to estimate where Delta Smelt are within the Delta. Larval sampling is not being conducted at the state or federal salvage facilities.

Table 4. Summary of all reported detections of Delta Smelt by Region and Salvage Facilities. Start and End dates reflect period of time between updates to SMT. Regional categories are determined from EDSM sampling (Updated 11/3/2020).

Start Date	End Date	Life Stage	North	South	West	Far West	Salvage
11/3/2020	NA	Adult					
		Larvae/Juvenile					

Table 5. Summary of recent Delta Smelt detections reported since last assessment and the total detections for the current water year. Notes reflect latest information on reported detections or completion of survey for the water year and now include both larval and adult detections (Updated 11/3/2020).

Sampling Method	New Detections	WY2021	Notes
EDSM	0	0	Last Detection:9/23/2020

Final Assessment
11/03/2020

Sampling Method	New Detections	WY2021	Notes
SKT	0		
SLS	0		Begins:12/7/2020 Only South and Central Delta
20-mm	0	0	Begins: March
Bay Study	0	0	
FMWT	0	0	Finalized by 11/10/2020

Final Assessment
11/03/2020

The Smelt Monitoring Team expects environmental conditions (i.e. flow, turbidity, temperatures) for the next week to remain stable with continued seasonally decreasing temperatures. The Fish and Water Operation Outlook OMR Index values are expected to range between -1,500 and -3,500 cfs between 11/3/2020 and 11/10/2020.

Table 6. Relevant Environmental Factors to the current management actions for Delta Smelt.

Date Reported	FPT 3 Day Running Avg. of Daily Flows (cfs)	FPT 3 Day Running Avg. of Turbidity (FNU)
11/3/2020	7324	2.07

Supporting Information regarding OMR Management Effects on Delta Smelt

Attachment A

10/27/2020 Water Quality Modeling Results

Alternatives include a base case assuming no closure and an alternative assuming the closures described below:

- Closed at 1600 on October 28 and Open at 1000 on October 31
- Closed at 1600 on November 2 and Open at 1000 on October 6
 - Closed at 1600 on November 9 and Open at 1000 on November 13

Conclusion:

Model results indicate that no water quality concern level targets will be exceeded. However, observed daily EC exceeded the criteria at Jersey Point and Bethel. DCC gates should be closed during time period described above.

Figure A1. Water quality modeling at Jersey Point conducted on 10/27/20. Neither modelled alternatives (DCC gates open versus closed) indicate an exceedance of the electrical conductivity standard of 1800 umhos/cm. Observed EC values have exceeded the concern level.

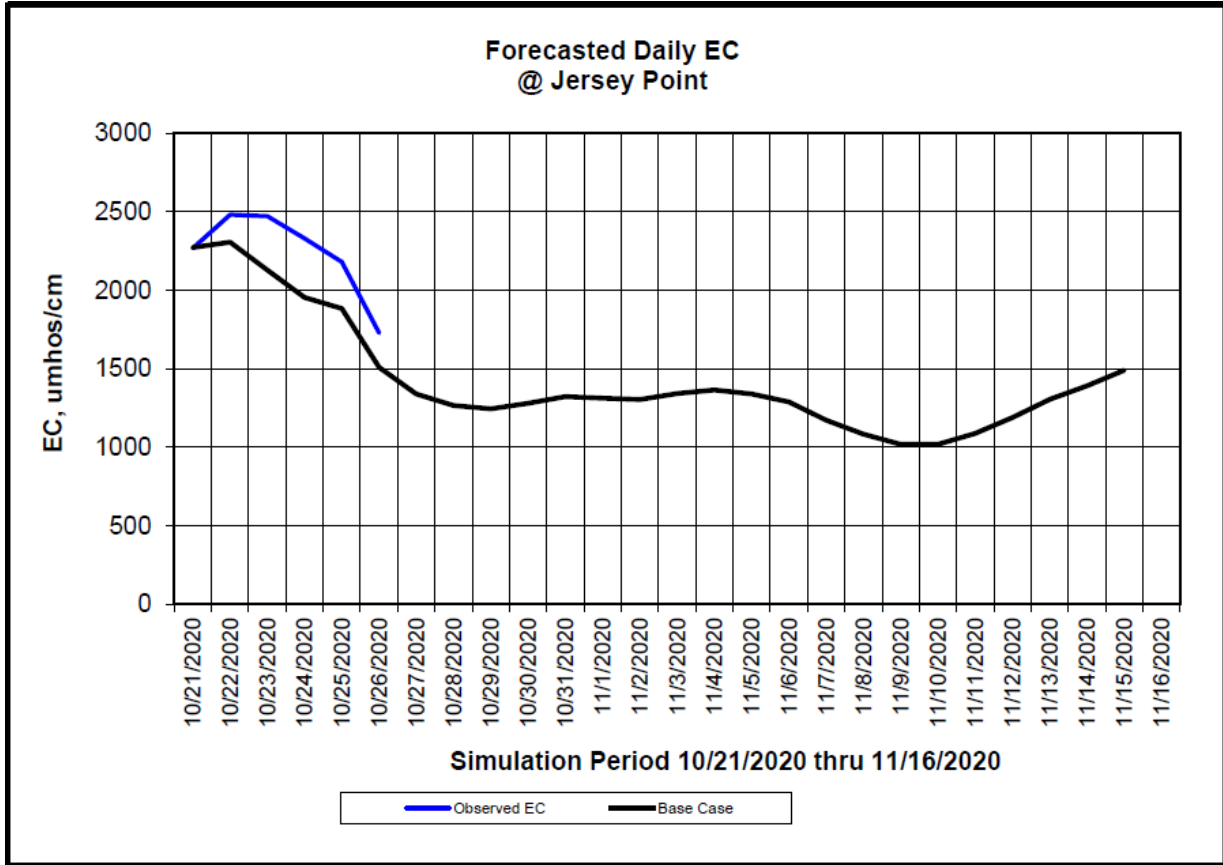
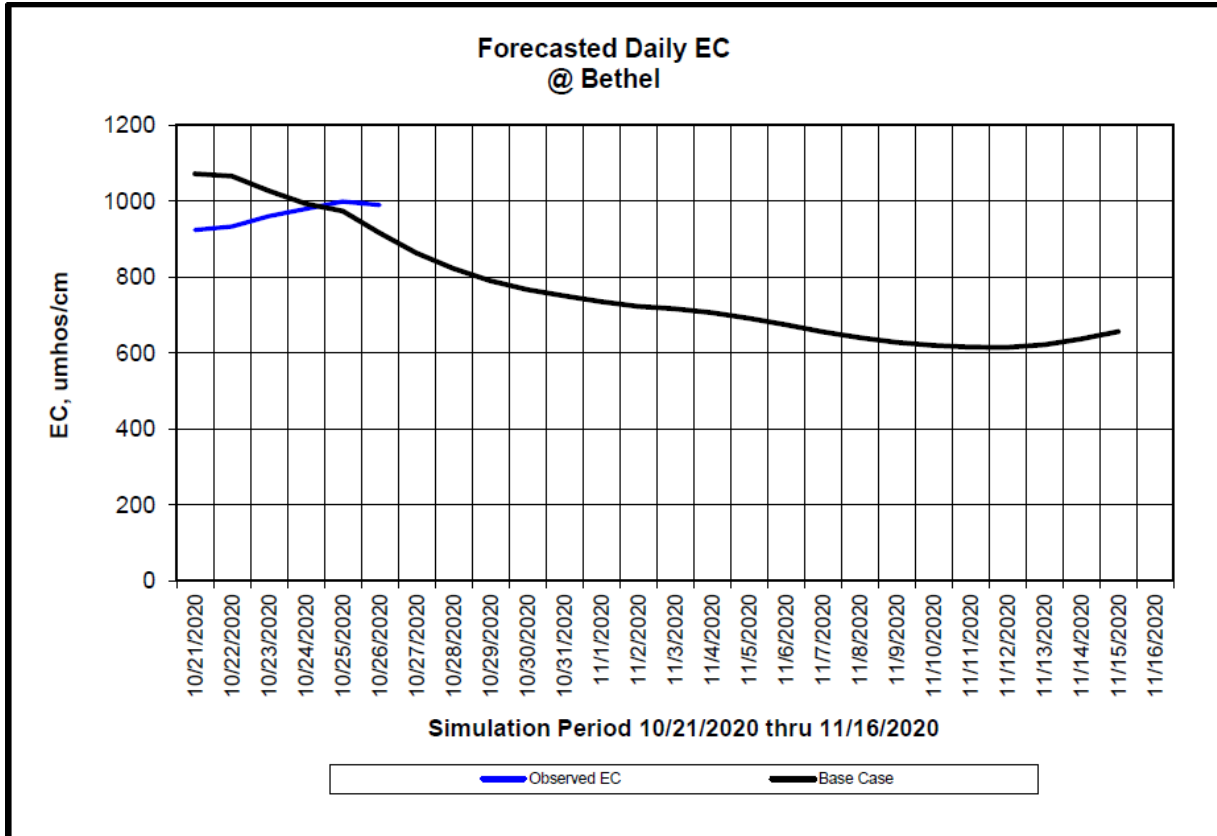


Figure A2. Water quality modeling Bethel Island conducted on 10/27/20. Neither modelled alternatives (DCC gates open versus closed) indicate an exceedance of the electrical conductivity standard of 1000 umhos/cm. Observed EC values have exceeded the concern



level.

Figure A3. Water quality modeling at Holland Cut conducted on 10/27/20. Neither modelled alternatives (DCC gates open versus closed) indicate an exceedance of the electrical conductivity standard of 800 umhos/cm.

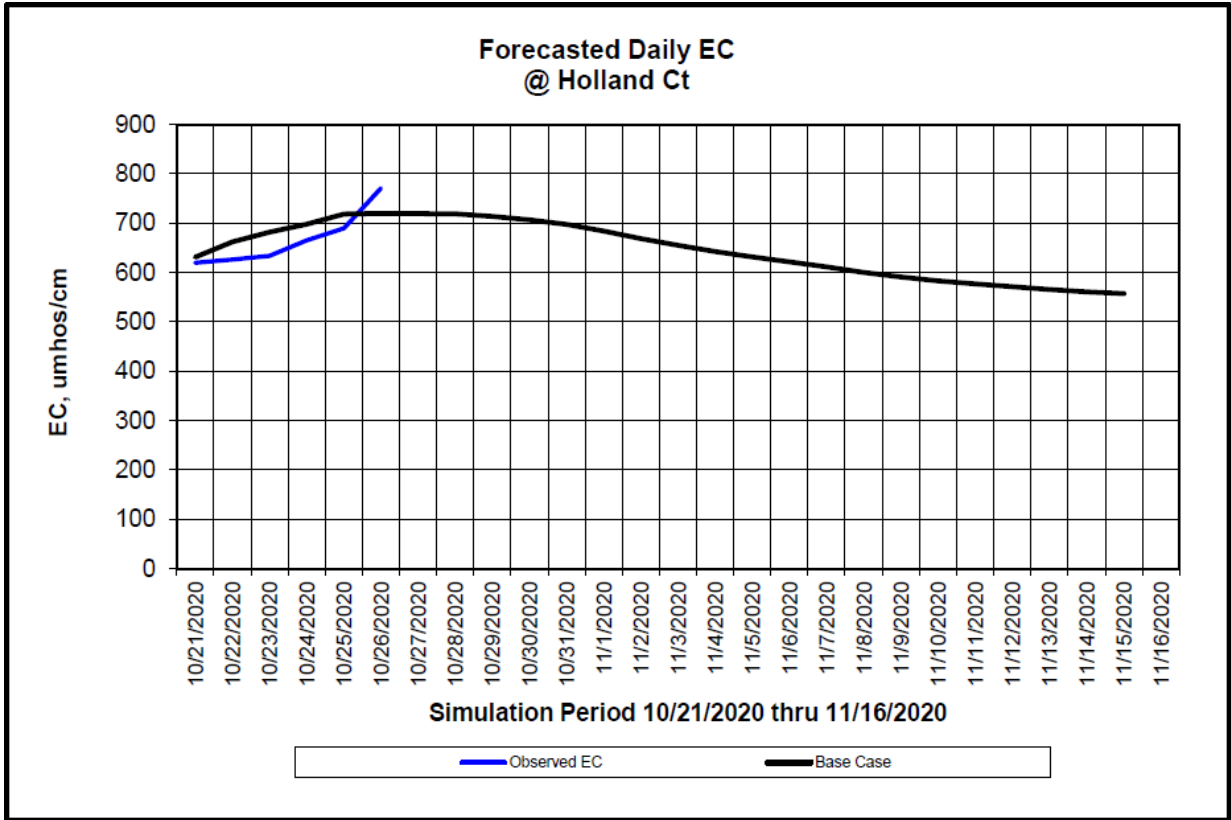
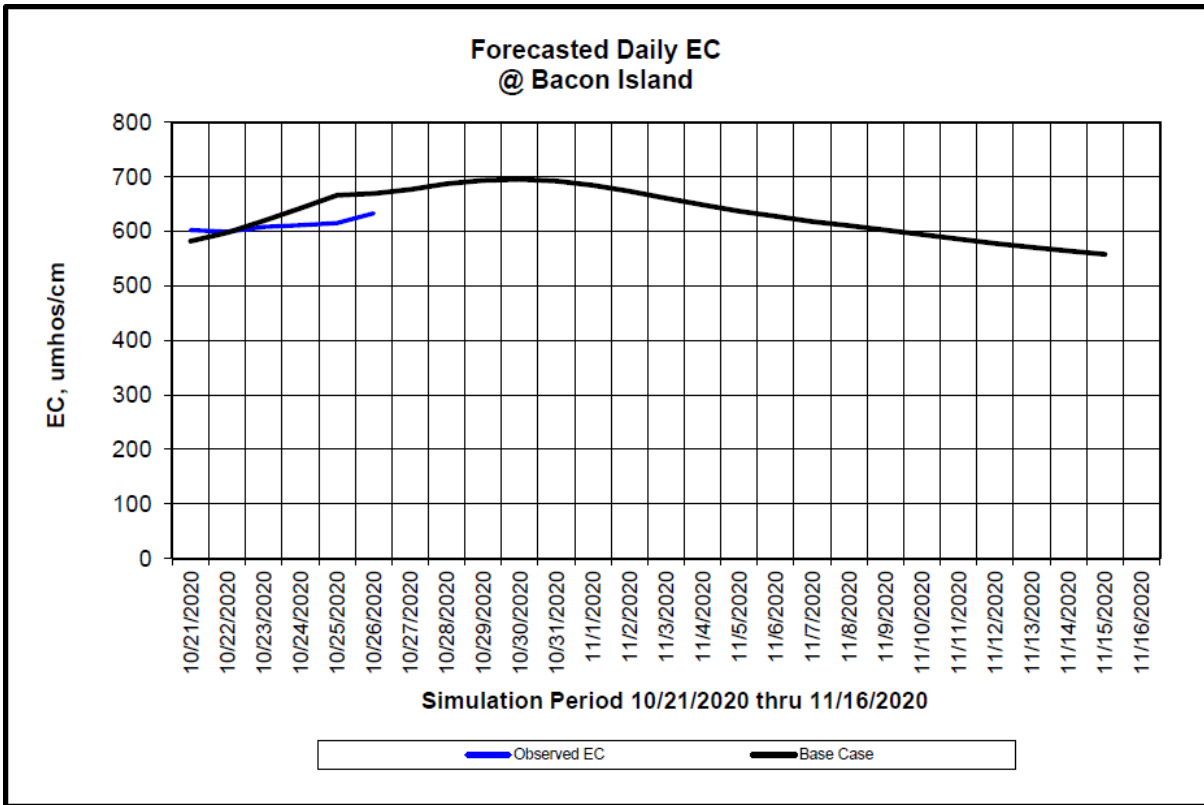


Figure A4. Water quality modeling at Bacon Island conducted on 10/27/20. Neither modelled alternatives (DCC gates open versus closed) indicate an exceedance of the electrical conductivity standard of 700 umhos/cm.



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

Monitoring Survey	Status (as of 11/03/20)
Delta	
SWP regular counts, CWT reading, and larval sampling	Ongoing
CVP regular counts, CWT reading, and larval sampling	Ongoing
Smelt Larval Survey	Begins 12/7 (south and central Delta in early Dec)
20mm Survey	Begins in March
Bay Study	
DJFMP- Chipps and Sacramento Trawls	Ongoing
DJFMP- Seines	Ongoing (sporadically miss a few sites)
EDSM	Ongoing
EMP	
Mossdale	Ongoing (sporadically miss a few sites)
USGS Flow monitoring	Continuous monitoring continues
Sacramento River	
Red Bluff Diversion Dam screw trap	Ongoing
Knights Landing screw trap	Ongoing through modified staffing
Tisdale screw trap	Ongoing through modified staffing
Redd dewatering and stranding surveys	Ongoing
Sacramento Carcass and Redd Surveys	Continuing
Spring Kodiak Trawl	Typically sample in Dec but starting in Jan this year
San Joaquin River	
SJRRP CDFW Field Monitoring	Start 10/6/20
SJRRP USFWS and USBR Field Monitoring	Since 8/31 with some interruption due to air quality