

Appendix B. Barker Slough Pumping Plant Sediment and Aquatic Weed Removal Annual Report for Water Year 2020, for ITP Condition 7.7

Contents

Summary	B-3
Project Description	B-3
Project Observations	B-4
Conclusions and Recommendations	B-5
References	B-6

Tables

Table B-1 Number of weed removal events and fish salvage, April–September 2020	B-5
Table B-2 Ambient water temperature and fish catch recorded during monitored BSPP fish screen weed removal events	B-5

Barker Slough Pumping Plant Sediment and Aquatic Weed Removal

ITP Annual Report for Water Year 2020

California Department of Water Resources (DWR) has completed this Annual Report for sediment and weed removal activities at Barker Slough Pumping Plant (BSPP) for compliance with the Incidental Take Permit (ITP) for Long Term Operation of the State Water Project in the Sacramento-San Joaquin Delta (2081-2019-066-00). This report includes a description of weed removal activities, biological monitoring results, and an assessment of the potential for listed species presence at BSPP during the reporting period of April 1 through September 30, 2020.

Summary

A total of 39 weed removal and screen cleaning events occurred during the April 1, 2020, through September 30, 2020, reporting period. Water temperatures did not exceed 25 degrees Celsius during any of the weed removal events. No Delta Smelt (DSM) or Longfin Smelt (LFS) were identified during BSPP weed removal events. No sediment removal activities occurred during the reporting period.

Project Description

The BSPP diverts water from Barker Slough into the North Bay Aqueduct (NBA) to serve communities in Napa County, Vallejo, Benicia and Travis Air Force Base. Aquatic weeds were present in Barker Slough during the reporting period. DWR removed aquatic weeds, as needed, from in front of the fish screens at BSPP. The accumulation of vegetation on the front of the fish screens diminished the performance of the screens, altered approach velocities, impeded flow, caused head loss, and caused the pumps to automatically shut off and not deliver water through the NBA to downstream municipalities.

The aquatic weed removal system consisted of grappling hooks attached by chains to an aluminum frame. A boom truck, staged on the platform in front of the BSPP pumps, slowly lowered the grappling system into the water to retrieve the accumulated aquatic vegetation from in front of the fish screens.

All work occurred immediately in front of the fish screens and on top of the concrete apron that extends out into the forebay. No weed removal activities occurred outside of the embayment created by the floating booms. The removed aquatic weeds were deposited on the deck above the screens, then transported to two aggregate base spoil sites located near the pumping plant. During September, a biological monitor was on site to monitor for fish presence in the removed aquatic weeds.

Project Observations

Weed removal and screen cleaning occurred at BSPP a total of 39 times during the reporting period of April 1, 2020, through September 30, 2020. The number of cleaning events per month is listed in Table 1.

In early September, DWR became aware that the water temperature in Barker Slough had been below 25 degrees Celsius, so a biological monitor was required during BSPP weed removal activities (Table 1). DWR informed the California Department of Fish and Wildlife CDFW of being out of compliance during an interagency Water Operations Management Team (WOMT) meeting on September 9, 2020. Weed removal activities were temporarily suspended until CDFW-approved Designated Biologists were chosen to be biological monitors. In September, there were four aquatic weed removal events that occurred on the 11th, 17th, 27th, and the 30th. A Designated Biologist was on site to monitor activities before, during, and after each event. The biological monitor recorded two water temperature measurements for each event, before and during aquatic vegetation removal. The removed aquatic weeds were examined thoroughly for any fish species that may have become entangled in the aquatic weeds upon removal. No fish were present in the removed vegetation. Table 2 displays the information gathered by the biological monitor for each removal event.

Table B-1 Number of weed removal events and fish salvage, April–September 2020

Month	Number of Weed Removal Events	Monthly Average Water Temp. (°C)*	Maximum Daily Average Water Temp. (°C)*	Monitoring Occurred	Listed Species Salvaged	Non-listed Species Salvaged
April	3	16.22	19.9	No	—	—
May	9	19.58	23.2	No	—	—
June	13	22.10	23.4	No	—	—
July	7	21.98	23.3	No	—	—
August	3	22.54	24.2	No	—	—
September	4	21.51	22.5	Yes	0	0

Note: * Water temperature recorded at the Barker Slough Pumping Plant water quality monitoring station

Table B-2 Ambient water temperature and fish catch recorded during monitored BSPP fish screen weed removal events

Date	Temperature (°C) Before	Temperature (°C) During	Number of Fish	Species
9/11/2020	19.6	19.5	0	N/A
9/17/2020	20.4	20.8	0	N/A
9/27/2020	21.9	21.8	0	N/A
9/30/2020	20.8	21.1	0	N/A

Conclusions and Recommendations

No Delta Smelt (DSM) or Longfin Smelt (LFS) were identified during BSPP weed removal events. DWR will ensure biological monitors are present for each weed and/or sediment removal activity undertaken at BSPP in the 2021 reporting year. Barker Slough water temperature remained below 25 degrees Celsius during the reporting period, but it is unlikely that DSM and LFS were present during these activities, because DSM and LFS are generally not associated with dense aquatic vegetation and nearshore habitats (Sommer and Mejia 2013). During the fall period, the center of distribution for DSM and LFS is typically farther downstream into the low salinity zone of the San Francisco Estuary (Rosenfield and Baxter 2007, Sommer et al. 2011). For individuals that may reside in the north Sacramento-San Joaquin Delta, namely DSM, their preferred habitat would be more open water habitats away from dense weed beds, such as the Sacramento Deepwater Ship Channel (DWSC).

For comparative purposes, CDFW and the US Fish and Wildlife Service fish monitoring surveys did not detect DSM or LFS in the Cache Slough Complex, which encompasses Barker Slough, during the reporting period. Larval sampling conducted by the Enhanced Delta Smelt Monitoring Program collected approximately 35 young of year DSM in the DWSC from April through June 2020. In July, the nearest collection of DSM was in the DWSC, approximately 7 miles north of the confluence with Cache Slough. In August, the nearest collection was in the DWSC, approximately 6 miles north of the confluence with Cache Slough. No smelts were collected in September in the north Sacramento-San Joaquin Delta.

References

- Rosenfield J and R Baxter. 2007. Population Dynamics and Distribution Patterns of Longfin Smelt in the San Francisco Estuary, Transactions of the American Fisheries Society, 136:6, 1577-1592, DOI: 10.1577/T06-148.1
- Sommer T and F Mejia. 2013. A Place to Call Home: A Synthesis of Delta Smelt Habitat in the Upper San Francisco Estuary. San Francisco Estuary and Watershed Science [Internet]. Available from: <https://doi.org/10.15447/sfews.2013v11iss2art4>.
- Sommer T, F Mejia, M Nobriga, F Feyrer, and L Grimaldo. 2011. The Spawning Migration of Delta Smelt in the Upper San Francisco Estuary. San Francisco Estuary and Watershed Science [Internet]. Available from: <http://www.escholarship.org/uc/item/86m0g5sz>.

