WEST FALSE RIVER DROUGHT SALINITY BARRIER PROJECT

Delta Plan Certification of Consistency

Protect Floodways

RR P3 (Cal. Code Regs., tit. 23, § 5014) Protect Floodways

a) *No encroachment shall be allowed or constructed in a floodway, unless it can be demonstrated by appropriate analysis that the encroachment will not unduly impede the free flow of water in the floodway or jeopardize public safety.*

b) *For purposes of Water Code section 85057.5(a)(3) and section 5001(j)(1)(E) of this Chapter, this policy covers a proposed action that would encroach in a floodway that is not either a designated floodway or regulated stream.*

Summary

The California Department of Water Resources (DWR) has determined that the West False River Drought Salinity Barrier Project (WFRDSB; proposed project) is consistent with this policy. The proposed project merely would redistribute tidal flows (and velocities) in West False River to adjacent channels (e.g., Fisherman's Cut, Dutch Slough, and the mouth of Old River). The following summarizes the detailed analysis that was conducted to determine that the presence of the drought salinity barrier would not jeopardize public safety.

Flood Conveyance Capacity

The following discussion is presented in case an extremely unlikely high-flow event in the Sacramento–San Joaquin Delta (Delta) were to occur before November 30—an event that has never occurred in recorded history (more than 150 years).

Installation of the barrier would be triggered by drought conditions and would take place no earlier than April 1. Depending on the chosen installment scenario, the barrier would be removed by November 30 of either the same year in which it is installed (8 months; Installation Scenario 3) or of the following year (20 months; Installation Scenarios 1 and 2). Because of low Sierra Nevada snowpack and excess storage capacity in upstream reservoirs during drought conditions, and the lack of historic flooding from high flows before November 30 under such conditions, the chance that flood flows would occur in the Delta before removal of the proposed barrier would be minimal.

During significant flood events, about one-third of the San Joaquin River's maximum flood flow entering the Delta (60,000 cubic feet per second [cfs] in January 1997) moves down the river channel past Stockton. About two-thirds flows into the South Delta to the Grant Line and Victoria canals and moves down the Middle River channel (15,000 cfs) to the San Joaquin River and subsequently down the Old River channel (25,000 cfs) to Franks Tract. Modeling of such a flood event performed with the Delta Simulation Model II (DSM2) shows that the portion of the San Joaquin River flood flow that moves from Franks Tract through False River is about 10,000 cfs (California Department of Water Resources 2019). If a major flood flow were to occur in the San Joaquin River while the barrier was in place, this portion of the flood flow would be redirected to the mouth of Old River, Fisherman's Cut, and Dutch Slough.

Under major flood conditions, the barrier could be inundated such that flows would not pass through the barrier, and rather would overtop the barrier and/or the barrier could be washed downstream. However, West False River is a wide channel capable of dispersing flows, with minimal damage to the barrier itself anticipated. West False River is a tidal channel, and its water elevation changes predominantly with tides rather than large storm and inflow events (California Department of Water Resources 2021). Thus, downstream tidal cycling, storm surges, and sea level rise may be more influential than flooding from upstream riverine inflows. Therefore, the change to water surface elevations in False River would be minor, and the impact would be less than significant.

Impacts on Levees

DWR has determined that the proposed project's impact on levees would not threaten public safety or impede the free flow of water in any floodway. Bathymetric surveys used to review impacts of the 2015 emergency drought barrier (EDB) indicate that scour near the barrier was not an issue and undercut levees did not show significant changes between pre- and post-project implementation of the 2015 EDB (California Department of Water Resources 2019). Data collected by DWR during the notching of the 2021–2022 EDB indicate that the notch caused scouring of the West False River streambed on the western side of the barrier, along the northern edge of the notch. DWR conducted bathymetric surveys of the riverbed to monitor progression of the scour after it appeared, collected inclinometer measurements on Bradford Island to monitor any potential movement, and tracked velocity measurements. Based on this information, DWR's Geotechnical Engineering Section determined that there does not appear to be an immediate threat of internal erosion, new seepage, or slope instability of the north or south river levees due to the scour. As stated in Draft Environmental Impact Report (DEIR) Section 2.4.1, "Barrier Installation," in preparation for the potential installation of the barrier, DWR engineers would conduct a design review and would adjust the design as needed based on experiences from prior installations (e.g., not implementing a barrier notch in the future).

Levees on Bradford Island and Jersey Island, located adjacent to the proposed West False River barrier, have been strengthened in recent years and have sufficient height to contain anticipated floodwater surface elevations, suggesting that less erosion is likely. These include two levee strengthening projects conducted in 2014–2015 on Bradford and Jersey islands adjacent to the project site by Reclamation Districts (RDs) 2059 and 830, respectively. In addition, implementation of the 2015 EDB included the placement of rock fill along the Jersey Island and Bradford Island levee toes approximately 225 feet upstream and downstream of the barrier's centerline to strengthen the levees for barrier installation. For that project, 300 feet of sheet piles were installed parallel to the channel through the levees on both islands to a depth of approximately 35 feet, to prevent water piping beneath the levees from the river. These measures also limit the flood hazard risks associated with the proposed project.

The increase in tidal velocities in Fisherman's Cut after installation of the 2015 and 2021–2022 EDBs resulted in erosion around the northern remnant Little Franks Tract levee but did not cause any immediate damage. Therefore, the increased velocities resulting from previous EDB installations observed near the northern remnant Little Franks Tract levee would likely also occur after installation of the proposed West False River drought salinity barrier (under all three installation scenarios), without causing any damage. Immediate damage to the northern remnant Little Franks Tract levees has not occurred. DWR is proposing **Mitigation Measure HYDRO-1** in the DEIR to monitor tidal velocities in Fisherman's Cut and the Little Franks Tract remnant levee if the drought salinity barrier is installed at West False River in the future as described in the DEIR. The mitigation measure is as follows:

Mitigation Measure HYDRO-1: Monitor Water Velocity near Existing Levees and the Stability of Levees, and Monitor Scour in the Vicinity of the Barrier with the Notch in Place.

DWR shall monitor tidal velocities in West False River, Fisherman's Cut, and Franks Tract, and the levees around Bradford Island (RD 2059) and Jersey Island (RD 830) while the West False River drought salinity barrier is in place (under all three installation scenarios). Should DWR discover levee scouring of concern that is a result of the drought salinity barrier, DWR shall consult with RD 2059 and/or RD 830 as expeditiously as possible, as necessary, to develop a plan on corrective measures.

Under Installation Scenario 2, DWR shall regularly conduct bathymetric surveys to monitor for potential scour at the riverbed, collect inclinometer measurements on Bradford Island to ensure there is no observed movement of the adjacent levee, and monitor velocity measurements around the barrier while the notch is in place. Corrective measures, such as early filling of the notch, shall be implemented as expeditiously as possible if the stability of the barrier or levees may be compromised by the scour.

Measured maximum tidal velocities in Fisherman's Cut in 2015 increased from about 0.5 to 1.0 foot per second with no EDB to about 3 to 3.5 feet per second with the EDB in place. These increased velocities, however, may be slightly greater than the range of tidal velocities typically observed in Delta channels, as the increase in channel velocity with the 2015 EDB adversely affected operation of the Delta Ferry Authority's *Victory II* ferry between Jersey Island and Webb Tract and Bradford Island. DWR entered into a damage agreement that included further mitigation for the *Victory II* ferry, repowering the ferry with replacement engines and propellers such that it could fully operate for the remainder of the 2015 EDB installation as well as future installations (California Department of Water Resources 2019).

Given the above analysis, DWR determined that the proposed project would not jeopardize public safety.

References

California Department of Water Resources. 2019. *Efficacy Report: 2015 Emergency Drought Barrier Project.* Sacramento (CA): Bay-Delta Office. June 2019. Viewed online at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Water-Basics/Drought/Files/Publications-and-Reports/EDB-Efficacy-Report_June-2019_ay11.pdf.

———. 2021. "Velocity Considerations in the Design of a Notch in the 2021 Emergency Drought Barrier at False River—Version 2." Memorandum from Eli Ateljevich and Kijin Nam, DWR Modeling Support Office, to Jacob McQuirk and Robert Trang, DWR. September 24, 2021.