FISH RELEASE SITES

Investigators

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Summary

For several years there has been considerable focus and discussion on the performance of fish release sites used by Reclamation and California Department of Water Resources (DWR). Reclamation and DWR each maintain and operate two or three separate fish release sites at different locations on the Sacramento River. The state and federal release sites are similar in concept, yet all release sites contain unique dimensions and operating conditions. Fish survival during release is dependent on both biological and hydraulic parameters associated with the release process.

In 2008 DWR conducted a biological and hydraulic assessment of the California State Water Project fish release sites located at Curtis Landing, (Miranda and Padilla, 2010). The DWR study evaluated fish survival and hydraulic performance of a DWR release site using a physical hydraulic model and a three dimensional computational fluid dynamics (CFD) model of the release facility. The study identified several hydraulic issues associated with design and operation of state water project release sites that resulted in improvement actions. A technical team was put together consisting of engineers and biologists from both the state and federal agencies to determine how to improve fish releases at the Curtis Landing site and during fish releases at other locations. The team focused discussions on what improvements could be made and how both the Tracy and Skinner facilities could meet the needs of the biological opinion (National Marine Fisheries Service, 2009).

Recently the team meetings have focused on the redesign of the Curtis Landing site and the development of two new sites located on Sherman's Island. Currently the Curtis Landing redesign is entering the 95 percent design stage. Reclamation's Technical Service Center (TSC) is involved in both a physical and

numerical model of the 95 percent design to ensure that the designs will safely release fish back to the river. The physical model should be completed in August 2013.

This proposal seeks funding to utilize the information gained during the release site technical team and redesign of the Curtis Landing release site for permanent fixes or replacement of Reclamation's fish release sites that will improve fish survival during each release.

Goals and Hypotheses

Goals:

1. Continue participation on the release site technical team.

2. Assist with the design process of the two new sites being designed by DWR to ensure that they will meet the needs of federal releases (Fish Release Site #1 & #2).

3. Assist in the redesign and repair of the Antioch release site by providing guidance on:

    a. The slope and depth for the redesign
    b. The recommended flushing flow to remove debris
    c. The best operating procedure

4. Assist with the design of a new federal release site (Fish Release Site #3) by providing guidance on:

    a. The slope and depth for the redesign
    b. The recommended flushing flow to remove debris
    c. The best operating procedure

5. Ensure the location of the new fish release site has appropriate velocities, depth and channel properties for successful fish release.

    a. Measure stream velocity

Materials and Methods

Results from the DWR and Reclamation fish release site evaluations will be utilized to complete goals 1-4. Preliminary design practices followed by the TSC will be incorporated including assistance with the design from mechanical and electrical engineers where necessary.

Coordination and Collaboration

The study will be coordinated between the TSC, Mid Pacific Region, TFCF and DWR staffs and the interagency Tracy Technical Advisory Team (TTAT) through regular updates and meetings.

Endangered Species Issues

This study will not require permitting.

Dissemination of Results (Deliverables and Outcomes)

Any outcomes of the release site technical team, Curtis Landing re-design and the design of two new state release sites will be documented and utilized to help re-design the Antioch site and design the new federal release site. Preliminary design of any possible options for redesign of the Antioch and design of the new federal release site will be presented during a TTAT meeting. The preliminary design will include a description of possible design options in a technical memorandum along with feasibility drawings0 of the release site options. Costs will not be provided at this preliminary level. Once a design is selected the process of releasing a specification package with design and constructions drawings will begin but will require additional funding.

Literature Cited

National Marine Fisheries Service. 2009. Biological Opinion and Conference Opinion on the Long-Term Operations of the Central Valley Project and State Water Project. National Marine Fisheries Service, Southwest Region. Long Beach, CA.

Miranda and Padilla. 2010. Evaluation of Mortality and Injury in a Fish Release Pipe Report Released.