Cosumnes River Pre-Wetting Conceptual Project Description

Introduction

In 2005, Central Valley Project (CVP) water was delivered down the Folsom South Canal to the Cosumnes River channel to support salmon passage and groundwater recharge, as part of a Pilot Project conducted by Southeast Sacramento County Agricultural Water Authority (SSCAWA), The Nature Conservancy (TNC), Fishery Foundation, UC Davis, and the Sacramento County Water Agency.

The Cosumnes Coalition (American River Conservancy, Fishery Foundation, Cosumnes Culture and WaterWays, Trout Unlimited, and Landmark Environmental), The Nature Conservancy, SMUD, The Conservation Fund, and Sacramento Valley Conservancy ('Project Proponents') are re-visiting Cosumnes River pre-wetting.

Background

The 2005 Pilot Flow Augmentation/Pre-wetting Project demonstrated that it is possible to mimic historical river channel conditions by releasing water into the Cosumnes River from the Folsom South Canal to support an earlier connection to tidewater and allow fall run Chinook salmon to migrate to upstream spawning areas.

Groundwater pumping in the lower reaches of the Cosumnes River basin over the past 50 years has caused the river channel to become hydrologically disconnected from the underlying groundwater table that once kept the riverbed wet during the dry summer and early fall months. This disconnection from the groundwater aquifer requires a greater volume of natural flow out of the foothills to overcome dry river bed conditions and establish a connection to tidewater. The Pilot Project pre-wetted the Cosumnes River channel in the reach that is typically dry through the summer.

Project Benefits and Community Support

Cosumnes River channel pre-wetting would contribute to the Central Valley Project Improvement Act (CVPIA) Anadromous Fish Restoration Program (AFRP) doubling goals for fall run Chinook by providing access to upstream spawning gravels earlier and preventing fish stranding that occurs when flows increase with a storm, and then quickly soak into the ground.

The Project also provides groundwater recharge benefits, as the water is applied to a dry channel in the fall, extending the period of inundation and increasing the wetted perimeter when fall storms occur. Groundwater recharge provides a benefit to the agricultural and municipal communities north and south of the Cosumnes River, and supports the riparian forest habitat.

The Project has broad support from the community because of its multiple benefits; supporters include environmental organizations, agricultural water districts, groundwater sustainability agencies, the Water Forum, the Regional Water Authority Integrated Regional Water Management Plan, the USFWS Anadromous Fish Restoration Program, and SMUD. SMUD's involvement with the project reflects two of SMUD's priority areas: valuing customers and the community, and embracing a sustainable future.

Proposed Long Term Channel Pre-wetting Program

The project proponents are exploring the feasibility of implementing a long term program for pre-wetting. SMUD has taken the lead in working with USBR to identify a contractual arrangement whereby 500 to 1200 acre feet of water could be delivered down Folsom South Canal to the Cosumnes River channel on October 1st until flows reach the Oneto Denier reach, or storms provide precipitation to connect the river. Pre-wetting would only be implemented when the river is disconnected; in high water years, pre-wetting may not be necessary.

Pre-wetting flows would be managed so that the applied water does not reach the perennially wet tidal zone of the Cosumnes.

Proposed Channel Pre-wetting Program Approach

A contractual arrangement between SSCAWA and SMUD to deliver SMUD Central Valley Project (CVP) water to the Cosumnes River Channel via Folsom South Canal is proposed.

To accomplish the program objectives, SMUD would donate water to the California Valley Improvement Project (CVPIA) b(3) Program through a water transfer; CVPIA would deliver the water to the Cosumnes. SMUD would be compensated for its costs in donating the water to the CVPIA b(3) Program. Funding sources to support SSCAWA in compensating SMUD and implementing the program for the first three year term will be explored by the Cosumnes Coalition and SCCAWA.

The long term program contract would be structured with a three year term, with an option to renew at the end of that term.

Environmental Compliance

The environmental documentation necessary includes an Environmental Assessment conducted by USBR and a California Environmental Quality Assessment conducted by SMUD.

The Environmental Compliance documentation will define program operation required to prevent negative impacts on American River anadromous fish and on the ecosystems of the Cosumnes River. Parameters to be considered include:

- Earliest fall start date

- Window of water delivery
- Maximum diversion/delivery rate
- Minimum flow in American River necessary for diversion (Hodge decision requirements)

Priority considerations include preventing temperature impacts on the American River, preventing scouring in the Cosumnes River channel at Folsom South Canal Turnout, and ensuring water applied is not carried downstream with fall precipitation in amounts that would attract American River fish.

Pre-wetting Program Operations Plan

The Pre-wetting Program is designed to pre-wet the dry river channel between Folsom South Canal and Highway 99, beginning on October 1st and ending when precipitation starts, the wetted front of water reaches Highway 99, or November 30th, whichever comes first. The planned flow release rate is 10 cubic feet per second, for delivery of up to 1200 acre feet of water.

From Robertson Bryan 2005 *Cosumnes River Flow Augmentation Pilot Project Report*

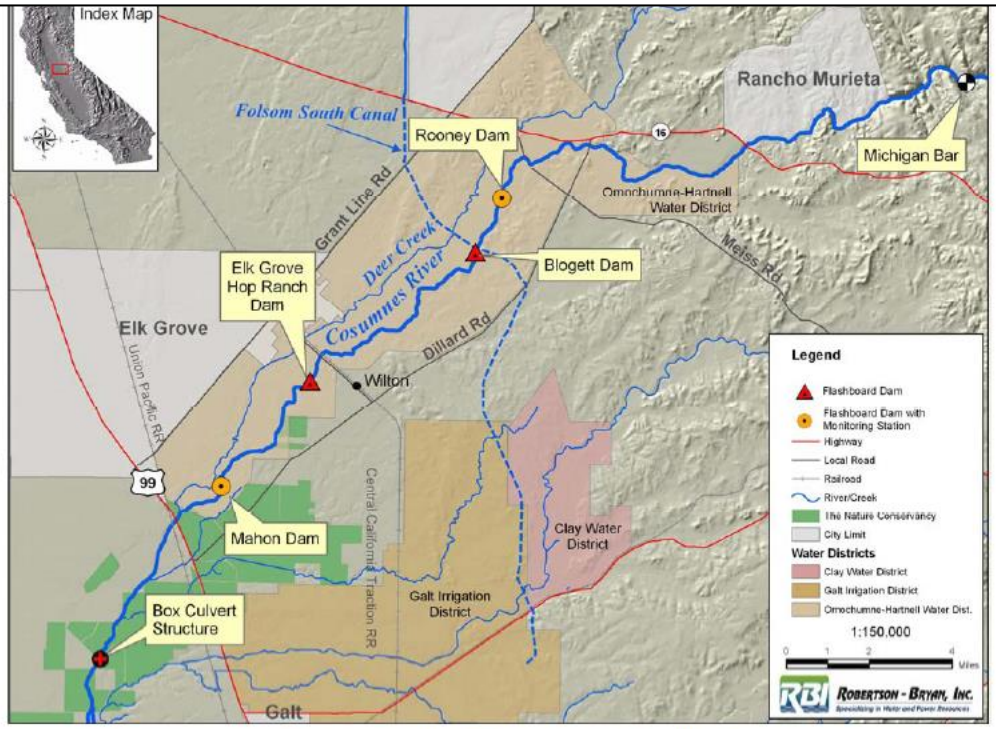

Figure 1. Location map for the Cosumnes River Flow Augmentation Pilot Project.

The flow-release schedule has been developed to meet the following criteria:

1. Manage the diversion rate such that American River temperatures and flow meet the American River Flow Standard (http://www.waterforum.org/wp-

content/uploads/2017/04/WF-Modified-FMS-10_8_final_Single.pdf) during diversion of water at Nimbus Dam to the Folsom South Canal between October 1st and November 30th.

a. *Modeling has demonstrated that at a diversion rate of 10 cfs during American River flows of 810 cfs or above in October and November, temperature impacts are "de minimus"; that is, temperatures do not measurably rise in the American River, and flow is not lowered below 800 cfs.*

2. Prevent scouring of the Cosumnes River channel at the water delivery location at the Folsom South Canal Turnout.

   a. *Scouring will be prevented by starting the release of water at no more than 5 cfs, and raising the rate to 10 cfs only after water pools at the turnout location and acts as an energy dissipater.*

3. Ensure water applied is not carried downstream with fall precipitation in amounts that would attract American River fish.

   a. *Groundwater--surface monitoring by Graham Fogg of UC Davis during the 2005 pilot measured channel losses of of 1 to 3.5 cfs/mile, demonstrating the rapid transfer from the water in the channel into the ground. Additional flow measurements in 2018 by the USFWS Anadromous Fish Restoration Program have demonstrated that even when the river is connected at flows of 68 cfs at Michigan Bar, only 34.5 cfs remains flowing by Highway 99, a channel loss 33.5 cfs. 10 cfs of water delivered will be quickly absorbed into the river channel during pre-wetting.*

   b. *There are 7.5 miles between Highway 99 and confluence with tidewater at Twin Cities Road. The channel losses in this reach measured by Graham Fogg in 2005 are 2.7 cfs/mile. By ceasing water delivery when the wetted front reaches Highway 99, delivered water will not reach the confluence with tidewater.*

Estimated Pre-wetting Program Costs

Task No.	Task Description	Initial (One Time) Cost	Annual Cost
1	USBR Contract Letter	$5000	
2	USBR Environmental Assessment	xx	
3	SMUD CEQA Document	xx	

4	Municipal & Industrial Fee	Waived	
5	SMUD reimbursement ($30 to $50 per acre-foot)		$15,000 to $60,000 (if water is delivered)
6	Project Management, Monitoring & Reporting		$15,000
Total Costs		xxx	$30,000 to $75,000 (per year, if water is delivered)

Conclusion

On December 11th, 2018, SSCAWA gave direction to its General Manager to work with SMUD and the Cosumnes Coalition to define environmental documentation and contract terms required. If funding can be secured, SSCAWA will act as lead agency in implementing the pre-wetting program. SSCAWA and the Cosumnes Coalition will work together to seek funding for the first three years of the program. At the end of three years, SSCAWA will have the option to renew the contract with SMUD and continue the program.