COSUMNES RIVER FLOW AUGMENTATION PROJECT
PROJECT SUMMARY

Introduction

The Cosumnes River Flow Augmentation Project (Project) is being proposed by a Coalition of interests[1] to provide supplemental flows to the Cosumnes River that will provide fish passage improvements for fall-run chinook salmon and for evaluation of groundwater recharge rates from the Cosumnes River channel. This project will be facilitated by releasing supplemental water from the Folsom South Canal into the Cosumnes River to pre-wet the river channel prior to the onset of natural fall flows in the lower reaches of the river. Figure 1 shows the project location and major features. The Project will provide critical information regarding the effectiveness of releasing supplemental water for local groundwater recharge and of supplementing the natural flow regime to restore a historical flow pattern for the improvement of fall-run chinook salmon passage.

The Cosumnes River is a keystone of fishery conservation efforts in the North Delta. The Anadromous Fish Restoration Program (AFRP), The Nature Conservancy (TNC), and the University of California, Davis (UCD), have sponsored numerous research projects on the health of the salmon fishery of the Cosumnes River. AFRP has also identified the Cosumnes as having potential for contributing to the fish doubling goals of the Central Valley Project Improvement Act (CVPIA). The AFRP has also set program objectives specifically directed at the Cosumnes River and the acquisition and restoration of fish habitat, primarily directed at improving passage and spawning habitat for fall-run chinook salmon.

The geologic setting and unregulated nature of the Cosumnes River has also made it a focus of regional water management strategies for Sacramento County, and particularly for the Southeast Sacramento County Agricultural Water Authority (SSCAWA). The SSCAWA, in partnership with the Sacramento County Water Agency (SCWA), the TNC and UCD are sponsoring a number of programs aimed at evaluating and developing a conjunctive use strategy that capitalizes on the natural geology of the region for groundwater recharge and surface water management.

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[1] The Coalition consists of the Sacramento County Water Agency, The Nature Conservancy, the Southeast Sacramento County Agricultural Water Authority (members include Omochumne-Hartnell Water District, Galt Irrigation District, and Clay Water District), the Fisheries Foundation of California, and the UCD Center for Integrated Watershed Science and Management.

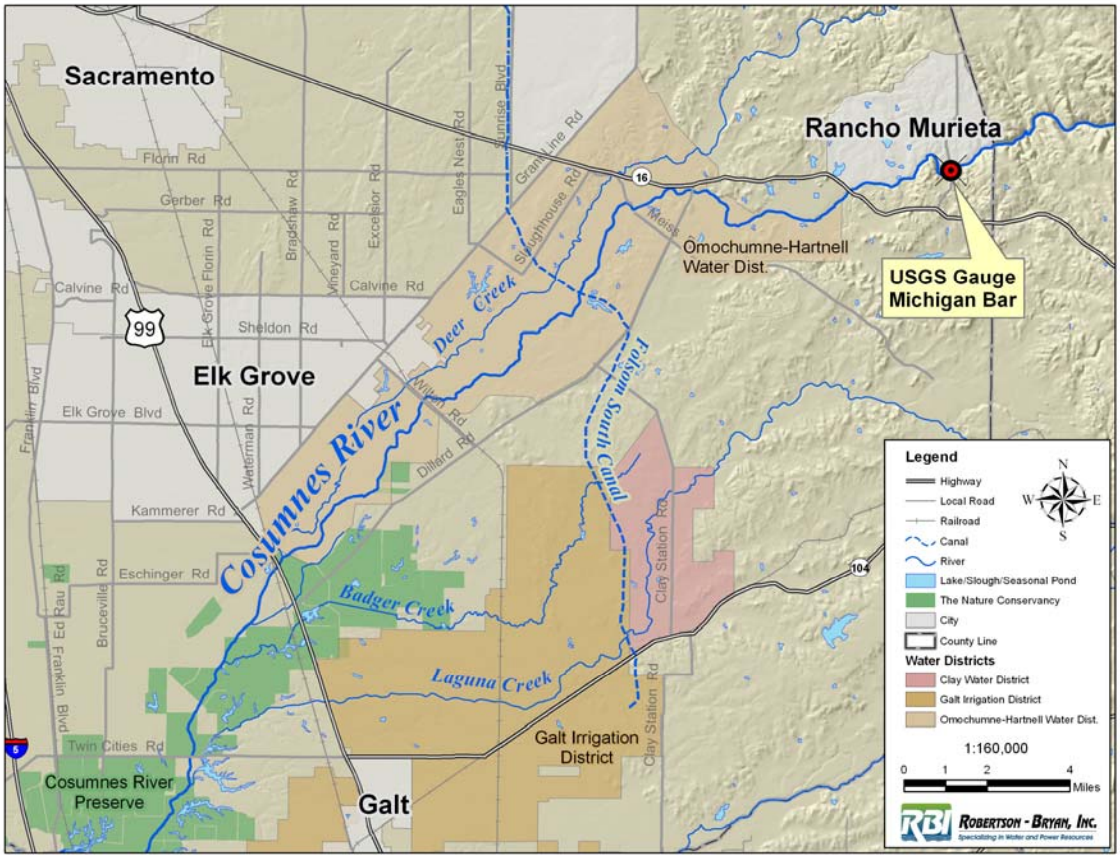

Figure 1. Project Area.

Project Overview

The Project will release up to 5,000 acre-feet (af) of water into the Cosumnes River from an existing turnout of the Folsom South Canal. The objectives are to 1) improve upstream fall migration of salmon, and 2) to evaluate groundwater recharge from the Cosumnes River channel. The first objective will be accomplished by allowing the Cosumnes to connect to tidewater earlier in the fall and sustaining non-barrier flow conditions after initial connection. The second objective will be accomplished by making controlled releases into the river channel and monitoring the surface water–groundwater exchange processes along the length of the channel.

Project Water Supply

The long-term water supply for the Project will be provided by Sacramento County Water Agency (SCWA) using water developed from the Eastern Sacramento County Replacement Water Supply Project (RWSP). The RWSP is intended to provide for the beneficial use of remediated water generated by groundwater extraction and treatment (GET) facilities of the Aerojet / Boeing groundwater cleanup project mandated by the Regional Water Quality Control Board.

Currently, GET facilities are discharging approximately 11,600 acre-feet annually (afa) to Alder Creek, which discharges to Lake Natoma, and 8,600 afa to Buffalo Creek, which discharges to the American River below Lake Natoma. None of the current discharges are being reclaimed for beneficial uses. At full development the RSWP will provide 30,465 afa of water for potable use and 5,000 afa to the CRFAP. Remediated water from the GET facilities will be discharged to the American River via various creeks and drainages and rediverted from the American and Sacramento River at the following locations:

Discharge Points:	**Diversion Points:**
Alder Creek to Lake Natoma(15,951 afa)	Folsom South Canal to American States Water Company (5,000 afa)
Buffalo Creek (6,693 afa)	Folsom South Canal to Cosumnes River (5,000 afa)
Boyd Station Channel (8,798 afa)	Fairbairn Diversion to City of Sacramento (5,000)
Local storm drain (3,709 afa)	Freeport Diversion to SCWA (20,465 afa)
Cordova Drainage Channel (323 afa)	

Project Operations

The Project is designed to create river conditions similar to what might have been experienced prior to the reduction of groundwater levels underlying the Cosumnes River between Highway 16 and the Cosumnes River Preserve (downstream of Twin Cities Road). The Project is not intended to create a hydraulic connection with the tidewater area of the Cosumnes River and the Delta before it naturally occurs from run-off generated by fall precipitation in the Sierra Nevada foothills.

A preliminary flow-release schedule (Figure 2) has been develop that meets the following criteria: (1) pre-wet the greatest length of channel possible, and (2) maintain sufficient water in reserve for augmenting river flow to sustain the connection with tidewater during the optimal salmon migration period of November 1 to December 31.

Channel pre-wetting flows will begin on October 15 and continue through December 31. By beginning flow releases on October 15, the Cosumnes River channel would receive approximately 2,000 af of water before the river typically connects with tidewater (mid-November).

Water not used for channel pre-wetting will be held in reserve and used to supplement natural flows through December 31 to eliminate stranding conditions during the migration period. Flow augmentation releases will be made when Cosumnes River flows fall below that required to maintain upstream migration conditions, estimated to be 65–70 cubic feet per second (cfs), measured at the U.S. Geological Survey (USGS), Michigan Bar gauging station. Historical flow record for the Cosumnes River, with consideration

of today's groundwater conditions, indicates that supplement releases to maintain migration conditions would be needed in about 93% of the years.

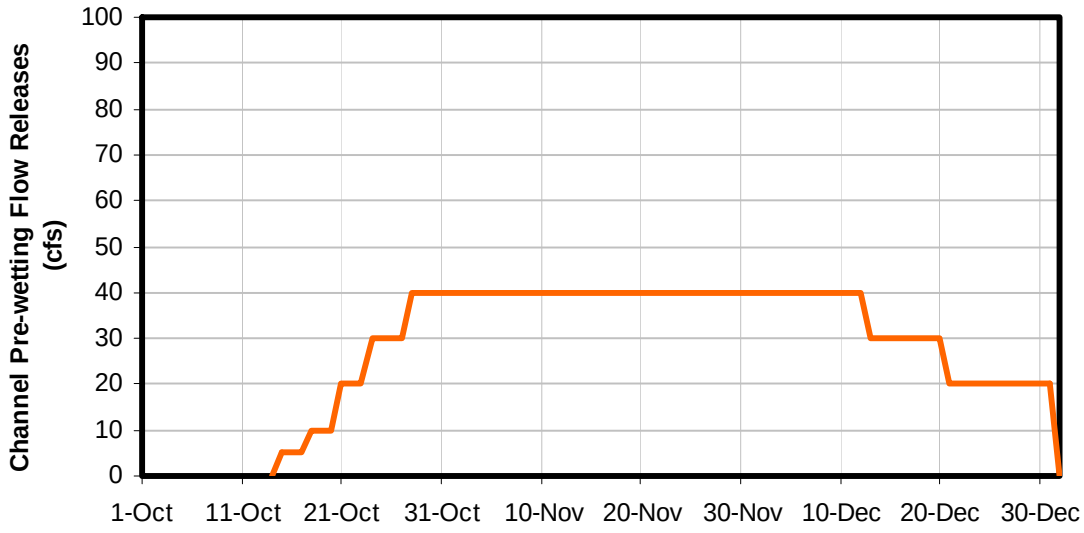

Figure 2. Cosumnes River channel pre-wetting releases from the Folsom South Canal.

Monitoring Program

Escapement and Out-Migration Monitoring

The Fisheries Foundation of California (FFC) will conduct Escapement and Out-Migration Monitoring. The FFC will either be funded through the SSCAWA, if the SSCAWA and Coalition partners develop the funding for this task, or the FFC may fund this task directly.

This task will evaluate the adequacy of flows for salmon passage by life stage. Flow needs will focus on the lower critical passage reach, below Folsom South Canal, to above tidewater (Twin Cities Road crossing) where passage presents the biggest problem. The duration and rate of flow needed to allow the run to proceed upstream and successfully reach spawning grounds will be a focused evaluation building on information gathered in previous years. The duration and rate of flow needed to maintain a successful migration pattern will be determined through adaptive management of flow releases from the Folsom South Canal. The FFC will also conduct out-migration surveys to provide information on the success of fall spawning in the Cosumnes River.

Groundwater-Surface Water Interaction Monitoring

Professor Graham Fogg, Ph.D., of the Land, Air, and Water Resources and Geology Department at UCD, will lead the Groundwater–Surface Water Interaction Monitoring

Task. UCD will either be funded through the SSCAWA, if the SSCAWA and Coalition partners develop the funding for this task, or UCD may fund this task directly.

Ongoing work on hydrogeology of the Cosumnes River aquifer system has shown that the river is the major source of recharge to the local groundwater system and that most of this recharge probably occurs over a small percentage of the channel between Michigan Bar and Twin Cities Road. Successful management of river flows to sustain salmon migration in the fall requires more detailed information on river–aquifer water exchange along this entire reach. This more detailed information can be obtained through careful hydrologic monitoring before and after a controlled flow release experiment, wherein a known amount of water is diverted into the channel near Folsom South Canal. Instrumentation deployed for such an experiment will also be useful for studying interaction between groundwater and surface water in the system on a continuous basis.