



DEPARTMENT OF FISH AND GAME

Central Region
1234 East Shaw Avenue
Fresno, California 93710
(559) 243-4005
<http://www.dfg.ca.gov>

DONALD KOCH, Director



July 22, 2009

Betty Yee
Senior Water Resource Control Engineer
Regional Water Quality Control Board
Central Valley Region
11020 Sun Center Drive, Suite 200
Rancho Cordova, California 95670

Subject: Comments Regarding the Central Valley Regional Water Quality Control Board (Regional Board) 2009 Triennial Review of the Sacramento River and San Joaquin River Basin Plan

Dear Ms. Yee:

The Department of Fish and Game respectfully submits comments for consideration by the Regional Board during its triennial review of the Sacramento/San Joaquin River Basin Plan (Basin Plan). The Basin Plan review is intended to identify issues and assess priorities, which may result in amendments at a future date. We offer these comments as statement of reason stressing the importance for COLD beneficial use to remain in the Basin Plan for many Central Valley streams, and also to recommend a priority be given to establish a numeric water quality objective for temperature to protect COLD in the upper and lower San Joaquin River.

Trustee Agency Authority: The Department, as a Trustee Agency, has the responsibility under CEQA for commenting on projects that could impact public trust resources, and habitat necessary for biologically sustainable populations of plant, fish and wildlife species. Certain fish and wildlife are reliant upon aquatic ecosystems, which in turn are reliant upon adequate flows of water. The Department therefore has a material interest in assuring that adequate water flows within streams for the protection, maintenance and proper stewardship of those resources. The Department provides, as available, biological expertise to review and comment on environmental documents and impacts arising from project actions and activities.

Of particular concern in this case is protecting habitat for migrating, spawning, juvenile rearing and outmigrating Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead (*Oncorhynchus mykiss*) in the San Joaquin River. Fall-run Chinook salmon and steelhead are afforded special protection status by the State of California as Species of Special Concern. Fall-run Chinook are also Federal species of concern, while Central

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Valley steelhead are afforded the additional protection status of threatened under the Federal Endangered Species Act (ESA). The San Joaquin River and its tributaries (i.e., Stanislaus, Tuolumne, Merced) from the Delta upstream to the Merced River are designated as critical habitat for Central Valley steelhead. The San Joaquin River's importance for salmon and steelhead habitat has also been recognized by the Regional Board. The Basin Plan designates as a beneficial use salmonid freshwater habitat and migration in the San Joaquin River and its tributaries from Friant Dam to Vernalis, and spawning habitat from Friant Dam to the mouth of the Merced River.

Historically, spring-run, late summer-run, fall-run and winter-run Chinook salmon, and steelhead all inhabited the San Joaquin River basin, including the mainstem above the present location of Friant Dam. However, since the construction of Friant Dam in 1942, only fall-run Chinook and steelhead have persisted, in much reduced numbers, and within a fraction of their former range below the Merced River confluence. In the San Joaquin River and its tributaries, historical production was estimated to be 300,000 adults¹. The four-year average on the San Joaquin River between 1944 and 1947 was 24,250 with a peak during 1945 of more than 56,000². By 1948, the upper San Joaquin River salmon population was extirpated, and the remaining salmon runs were restricted to the lower river and its major tributaries. More recently, these populations have declined substantially. In 2006, 2007, and 2008, the total spawning populations were 4,209, 1,252, and 2,286 respectively. This decline also represents a shortfall of the State Board's salmon population objectives³.

COLD Designation for Salmonid Habitat in the San Joaquin River: It is imperative the COLD beneficial use designation remains for the San Joaquin River, especially the mainstem above the mouth of the Merced River to Friant Dam. At present, migrating salmonids are excluded from entering the San Joaquin River upstream of the mouth of the Merced River by an artificial barrier. The intentional exclusion is necessary due to the lack of suitable habitat and elevated temperatures in reaches of the upper San Joaquin River. However, that may change in the near future as the Friant Restoration Settlement Parties begin implementing the proposed San Joaquin River Restoration Program. The Program has the primary goal of restoring naturally reproducing, self-sustaining spring-run and fall-run salmon populations and other native fish

¹ Reynolds, F.L., T. Mills, R. Benthin, and A. Low. 1993. Central Valley anadromous fisheries and associated riparian and wetlands areas protection and restoration action plan. Draft. California Department of Fish and Game, Inland Fisheries Division. Sacramento, California.

² Fry, D.H. Jr. 1961, King Salmon spawning stocks of the California Central Valley, 1940-1959. California Department of Fish and Game 47: 55-71.

³ State Water Resources Control Board - San Francisco Bay/Sacramento-San Joaquin River Delta Estuary Water Quality Control Plan

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(including steelhead) on the river mainstem, upstream of the mouth of the Merced River to Friant Dam. The Program's guidance document is the Draft Fisheries Management Plan: A Framework for Adaptive Management in the San Joaquin River Restoration Program⁴. The Management Plan identifies temperature among the most important manageable factors for salmonid survival.

During each life stage of salmonid development, temperature affects: growth and feeding rates; metabolism; embryonic and juvenile development; timing of life history events such as migration, spawning, freshwater rearing, and food availability. Biological processes occur within a range of suitable temperatures. Outside of this suitable range the organism may be able to survive, but with harmful physiological and behavioral effects. These effects may be of the acute (short-term) or chronic (long-term) variety, with acute effects occurring almost instantaneously at temperatures near the upper range of tolerance, with a potentially lethal response; and chronic effects occurring at the lower range of elevated temperature tolerance, over a prolonged period of time. Exposure to the upper range of tolerated temperatures may result in direct mortality, or may impart physiological and behavioral modifications that indirectly cause mortality. Chronic effects may not be immediately detectable, but may reduce population viability over the long term by decreasing reproductive success and recruitment. Clearly, success of the restoration plan will depend on the extent temperature can be maintained in the river system.

Establishment of Numeric Water Quality Objectives Protecting COLD: In order to protect the COLD designation for beneficial uses in the San Joaquin River, a Basin Plan amendment is needed to establish a numeric water quality objective for temperature. While the Sacramento River has numeric objectives for temperature, the San Joaquin River only has a narrative objective. Narrative objectives allow for less protection of water quality parameters as they are only generally defined, and not as strictly enforced in Regional Board decisions. Numeric objectives, on the other hand, are precisely defined and more likely to remain unaltered by Regional Board actions.

Numeric objectives for temperature should be at least as stringent to protect the most sensitive fish and wildlife resource protected under the COLD designated beneficial use. In this case, the most sensitive to elevated temperatures would be the basin's salmonid fishery. In June 2009, the Regional Board approved listing the San Joaquin River under CWA 303(d) as impaired for temperature. The January 2009 Staff Report, which recommended the listing, cited temperature needs of salmonids during various life

⁴ FMWG, 2009b. Fisheries management Plan: a framework for adaptive management in the San Joaquin River Restoration Program. 147 pages plus appendices. June 2009

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stages. The following numeric objectives are expected to be applied to specified reaches of the San Joaquin River and its major tributaries based on salmonid habitat and temperature requirements for each life stage⁵.

Salmonid Life History Phase Terminology	EPA-based Recommended Temperature Thresholds to Protect Chinook Salmon and Rainbow Trout (Criteria are based on the 7-day average of the daily maximum values)
Adult migration	<64°F (<18°C) for salmon and trout migration <68°F (<20°C) for salmon and trout migration - generally in the lower part of river basins that likely reach this temperature naturally, <u>if</u> there are cold-water refugia available [but no evidence of such refugia are available for the Stanislaus River]
Incubation	<55°F (<13°C) for salmon and trout spawning, egg incubation, and fry emergence
Juvenile rearing (early year)	<61°F (<16°C) for salmon "core" juvenile rearing - generally in the mid- to upper part of river basins
Smoltification	<59°F (<15°C) for salmon smoltification <57°F (<14°C) for steelhead smoltification (for composite criteria steelhead conditions are applied)
Juvenile rearing (late year)	<64°F (<18°C) for juvenile salmon and steelhead migration plus non-Core Juvenile Rearing - generally in the lower part of river basins

The EPA-published temperature standards in the above table are based on a seven-day average of daily maximum temperatures. For the purposes of restoring a spring-run population in the upper San Joaquin River, and improving the declining population numbers of fall-run in the river's major tributaries, temperature standards are needed for the San Joaquin Valley rivers. The Department developed a duration-of-exposure analysis for each affected salmon and steelhead life stage. The analysis identified the actual percent of time, within particular Julian weeks, in which various temperature ranges are exceeded. The Department believes this will demonstrate the stress placed on salmonids by elevated water temperatures, and provide an improved standard for proper implementation of the numeric objective.

⁵ Water temperature thresholds taken from: United States Environmental Protection Agency (EPA). 2003. EPA Region 10 Guidance for Pacific Northwest State and Tribal Temperature Water Quality Standards. EPA 910-B-03-002. 49 pp. April. The EPA identified temperature unit is: Seven day average of the daily maximum water temperature (7DADM).

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The 303(d) listing identified the need for a Total Maximum Daily Load (TMDL) for the water quality constituent causing the impairment. However, the TMDL for temperature is not expected to be completed until 2021, and even then it will only be applied to the lower San Joaquin River and the Merced, Stanislaus and Tuolumne rivers. There will be no such protection for the upper San Joaquin River. Therefore, a numeric water quality objective needs to be established to protect Chinook salmon and steelhead in the entire San Joaquin River system, from the Delta to Friant Dam, as soon as practicable. It is vital during this triennial review that development of a numeric water quality objective for temperature be made a priority and recommended for amendment to the Basin Plan.

We cannot stress enough the importance of establishing protective temperature requirements in advance of the planned restoration of spring-run and fall-run salmon on the upper San Joaquin River; and also improving the existing populations of fall-run Chinook salmon and steelhead in the river's major tributaries. The Department looks forward to partnering with the Regional Board in this endeavor of maintaining water quality standards for salmonids by establishing and applying effective numeric objectives for temperature, implementing a plan to achieve those objectives, and helping to restore this region's valued public trust resources.

If you have any questions regarding this letter, please contact Brian Erlandsen, Environmental Scientist, at the address provided on this letterhead or by telephone at (559) 243-4014, extension 220.

Sincerely,



for Jeffrey R. Single, Ph.D.
Regional Manager

cc: See Page Six

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cc: Carl Wilcox
Department of Fish and Game
Water Branch

Craig Wilson
Department of Fish and Game
Water Branch

Chad Dibble
Department of Fish and Game
Water Branch

Gerald Hatler
Department of Fish and Game
Central Region

Tim Heyne
Department of Fish and Game
Central Region

Patricia Brantley
Department of Fish and Game
Central Region

Andy Gordus
Department of Fish and Game
Central Region

John Shelton
Department of Fish and Game
Central Region

Brian Erlandsen
Department of Fish and Game
Central Region