



**UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration**

NATIONAL MARINE FISHERIES SERVICE

Sacramento Area Office  
650 Capitol Mall, Suite 8-300  
Sacramento, California 95814-4706

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COPY

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Debbie Irvin  
Clerk of the Board  
State Water Resources Control Board  
P.O. Box 100  
Sacramento, California 95812

Dear Mrs Irvin:

This letter provides comments from the National Marine Fisheries Service (NOAA Fisheries) concerning periodic review of the 1995 Water Quality Control Plan for the San Francisco Bay/Sacramento-San Joaquin Delta Estuary. NOAA Fisheries intends to provide feedback regarding a variety of workshop topics, each under separate cover during the 2004 review. This letter addresses the Delta Cross Channel Gate Closure Objective in the Water Quality Objectives for Fish and Wildlife Beneficial uses.

The NOAA Fisheries Protected Resources Division Sacramento Area Office is responsible for the administration of programs, laws, and acts that promote and support conservation, protection, and recovery of salmonid resources in central California. The office's primary emphasis is the administration of the Endangered Species Act (ESA) of 1973, as amended [16 U.S.C. 1531 et seq.] with a specific emphasis on listed salmonids. Listed salmonids inhabiting the Sacramento-San Joaquin Delta Estuary include endangered Sacramento River winter-run Chinook salmon (*Oncorhynchus tshawytscha*), threatened Central Valley spring-run Chinook salmon (*O. tshawytscha*), and threatened Central Valley steelhead (*O. mykiss*). Critical habitat for Sacramento winter-run Chinook salmon was designated in 1993 and consists of the Sacramento River from Keswick Dam to Chipps Island at the westward margin of the Sacramento-San Joaquin Delta, and all of the north San Francisco, San Pablo, and Suisun Bays. In addition, Protected Resource Division staff administer the Magnuson-Stevens Fishery Conservation and Management Act (MSA) with emphasis on Essential Fish Habitat (EFH) for Pacific Salmon. The Sacramento-San Joaquin Delta Estuary is designated EFH for Central Valley fall-/late fall-run Chinook salmon (*O. tshawytscha*).

Recent scientific studies concerning the effects of Delta Cross Channel (DCC) gate operations on listed salmonids have emerged since issuance of the 1995 Water Quality Control Plan. The California Bay-Delta Program and Interagency Ecological Program embarked upon a three-year study of the operation of the DCC gates and its effects on juvenile and adult Chinook



salmon in the fall of 2000. Peer reviewed literature summarizing the findings are in process and several informal publications and professional presentations have been issued summarizing the results of these studies (CALFED Bay-Delta Program, 2001; McLain and Mueller, 2001; McLain, 2002; McLaughlin and McLain, 2004). We have included selected copies of these documents on CD with this letter in an effort to assist the Board with its review of this objective. These preliminary studies indicate that migrating juvenile salmon enter the DCC when the gates are open, primarily during flood tides when velocities are strongest at the entrance to the gates. Additionally, flows originating from the Sacramento River enter the DCC during flood tides, and it is at this time when water quality benefits in the Central Delta are realized. Salmon entrainment during ebb tides appears to be minimal, and water quality impacts are not realized as flows do not enter the DCC at this tidal stage. In addition, adult migration studies found that upstream migrating adult salmon primarily used the Sacramento River and appeared to use the DCC less frequently. No correlation was found between adult salmon abundance in the DCC and gate operation; however, by letting Sacramento origin water into the DCC, an attractant flow is provided that could draw Sacramento origin fish into the Mokelumne system, thus drawing adult salmon into the DCC. If gates are opened and closed alternatively, adult salmon could be trapped behind the DCC gates, resulting in blocked and/or delayed migration. These tidal cycle and entrainment dynamics appear to prevent the option of tidally operating the gates for fish protection and water quality. Brandes and McLain (2001) indicated that increased opening of the DCC gates would allow more listed salmonids to be exposed to indirect mortality in the central Delta. The effects of DCC gate operations on listed salmonids were also analyzed in the recently issued NOAA Fisheries biological opinion for the Central Valley Project and State Water Project long-term Operations Criteria and Plan (OCAP).

Recent publications regarding the spatial and temporal distribution of migrating juvenile Chinook salmon in the vicinity of the DCC gates relative to gate operations have also been completed (U.S. Fish and Wildlife Service, 2000a; U.S. Fish and Wildlife Service, 2000b; Brandes and McLain, 2001). These studies determined that juvenile spring and winter-run Chinook salmon were present in the Delta between October and March. Spring and winter-run Chinook salmon show a high amount of variability of life-history strategies across all stages of development (Lindley, et al., 2004). This is particularly important with regard to habitat needs in the Delta and San Francisco Bay, as these fish have a diversity of juvenile life-history strategies requiring a variety of habitat types for survival. Recent monitoring studies in the Sacramento Basin have found highly variable migration timing characteristics of spring-run Chinook salmon (Lindley et al., 2004). Depending on flow conditions, yearlings can enter the Delta as early as October and as late as March or April, and fry and fingerlings can enter the Delta as early as January and as late as June (CDFG, 1998; USFWS, 2001a; USFWS, 2001b; Brandes and McLain, 2001). These early migrants could be diverted from the Sacramento River at a higher rate between October and January 31 if the gates are open, and the importance of these early migrants may be overlooked.

NOAA Fisheries staff participate on the Data Assessment, Water Operations Management, and the CALFED Operations teams which applies the "salmon decision process" as a means of determining gate closures in accordance with the OCAP, and find the existing DCC Gate

Closure Objective of the 1995 Water Quality Control Plan to be an important and effective tool for protecting winter-run Chinook salmon, spring-run Chinook salmon, and Central Valley steelhead. **NOAA Fisheries does not recommend changing the DCC Gate Closure Objective at this time, and encourages the Board to consider new science regarding listed fish in support of existing closure criteria. In addition, NOAA Fisheries recommends the Board help develop more enhanced protection measures for the listed salmonids migrating past the DCC between October and January 31.** The DCC Gate Closure Objective is important to NOAA Fisheries and we would like to be involved in future discussions concerning effects to Federally listed salmonids in an effort to fully evaluate this objective.

If you have any questions regarding this correspondence or if NOAA Fisheries can provide further assistance, please contact Mr. Jeff McLain in our Sacramento Area Office, 650 Capitol Mall, Suite 8-300, Sacramento, CA 95814. Mr. McLain may be reached by telephone at (916) 930-5648, or by Fax at (916) 930-3629.

Sincerely,

ORIGINAL SIGNED BY  
MICHAEL ACEITUNO FOR

Michael E. Aceituno  
Supervisor, Sacramento Area Office

cc: NOAA Fisheries-PRD, Long Beach CA

Enclosures:

CALFED Bay-Delta Program. 2001. Scrutinizing the Delta Cross Channel. Science in Action, June 2001.

Brandes, P.L, and J.S. McLain. 2001. Juvenile Chinook salmon abundance, distribution, and survival in the Sacramento-San Joaquin Estuary. In: Brown RL, editor. Contributions to the Biology of Central Valley Salmonids. Fish Bulletin 179. Volume 2. Sacramento (CA): California Department of Fish and Game. p 39-136.

California Department of Fish and Game. 1998. A status review of the spring-run Chinook salmon (*Oncorhynchus tshawytscha*) in the Sacramento River drainage. Candidate Species Status Report 98-01. Sacramento, CA.

Lindley, S.T. et al. 2004. Population structure of threatened and endangered Chinook salmon ESUs in California's Central Valley Basin. NOAA Technical Memorandum. NOAA-TM-NMFS-SWFSC-370.

McLaughlin, L., and J. McLain. 2004. Comparison of relative abundance of adult Chinook salmon (*Oncorhynchus tshawytscha*) in the Delta Cross Channel, Georgiana Slough, and Sacramento River, California 2001. Technical Report for the CALFED Bay-Delta Program.

McLain, J., and G. Mueller. 2001. Adult anadromous fish acoustic investigations in the Delta Cross Channel during 2000. Presentation for Interagency Ecological Program Annual Meeting. Pacific Grove, California. February, 2001.

McLain, J. 2002. Delta Cross Channel Adult salmon fyke trapping during 2001. Presentation for Interagency Ecological Program Annual Meeting. Pacific Grove, California. February, 2002.

U.S. Fish and Wildlife Service. 2000a. 1999 annual progress report: "Abundance and survival of juvenile Chinook salmon in the Sacramento-San Joaquin Estuary". Stockton, California.

U.S. Fish and Wildlife Service. 2000a. 1997/98 annual progress report: "Abundance and survival of juvenile Chinook salmon in the Sacramento-San Joaquin Estuary". Stockton, California.