Endangered Species Act
Section 7 Consultation

# BIOLOGICAL OPINION

for

Water Supply, Flood Control Operations, and Channel Maintenance conducted by the U.S. Army Corps of Engineers, the Sonoma County Water Agency, and the Mendocino County Russian River Flood Control and Water Conservation Improvement District in the Russian River watershed

PCTS Tracking Number: F/SWR/2006/07316

Action Agency: U.S. Army Corps of Engineers, San Francisco District

Consultation Conducted By: National Marine Fisheries Service, Southwest Region

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## A. Project Modifications and New Project Elements of the Reasonable and Prudent Alternative

*1. Pursue Changes to D1610 Flows*

*Purpose*:
As described in this opinion, the proposed continuation of elevated flows in Dry Creek, the mainstem Russian River, and the estuary is likely to negatively affect the ability of salmon and steelhead populations to survive and recover in the Russian River watershed. High water velocities associated with the project's artificially elevated summer flows and stream channelization greatly limit the quantity and quality of juvenile salmon and steelhead rearing habitat in Dry Creek and the upper Russian River. Relatively high discharge also disrupts the normal processes of lagoon formation in the Russian River estuary, thereby exacerbating the potential for flooding of low-lying properties, and increasing the frequency of mechanical sandbar breaching.

SCWA's water right to operate the Russian River Project is permitted by SWRCB Decision 1610 (D1610). Changes to the D1610 flow minimum requirements will enable alternative flow management scenarios that would increase available rearing habitat in Dry Creek and the upper Russian River, and it would provide a lower, closer to natural inflow to the estuary between late spring and early fall, thereby enhancing the potential for maintaining a seasonal, freshwater lagoon that would likely support increased production of juvenile steelhead and salmon.

*Objective*:
Changing the minimum flow requirements mandated under D1610 will require an action by the SWRCB. The Corps and SCWA do not have the authority to change these minimum flow requirements; however, SCWA does have the ability to petition the SWRCB to change minimum flow requirements identified in D1610, and it has the ability to complete needed environmental and engineering documentation to support the petition to change flow requirements specified in D1610. The objective of this RPA element is to require all activities within the authority of the SCWA and the Corps to change minimum instream flow requirements in the Russian River and Dry Creek via the water rights petitioning process of the SWRCB. D1610 specifies that further fisheries investigations should be done in the Russian River and that such studies may assist in refining minimum instream flows. The SWRCB maintained jurisdiction to amend the Agency's water right permits if fisheries studies demonstrated that a flow schedule different from that outlined in D1610 would be beneficial. As described in the preceding biological opinion, data indicate that proposed Corps and SCWA operations maintain minimum instream flows that are excessive and limit conservation of listed salmonids. Reducing minimum flows mandated by D1610 could substantially augment usable rearing habitats for older (age 1+ and late summer age 0+) juvenile coho salmon and steelhead. Such modifications would likely favorably affect salmonid population growth rates and beneficially affect spatial structure of the populations.

*Methods and Schedule*:

Changing D1610 will require a Petition to Change D1610 minimum flow requirement to the SWRCB, Public Notice of this Petition, completion of a multiyear EIR for compliance with California Environmental Quality Act (CEQA), and a hearing process before the SWRCB. This

process will require 6 to 8 years to complete. Before completing this process, SCWA will be obligated to maintain minimum flows stipulated under D1610 with resulting impacts to listed salmonids for up to eight years, unless temporary relief is provided. Temporary variance from D1610 is possible. Therefore, SCWA will seek both long term and interim changes to minimum flow requirements stipulated by D1610.

*Permanent Changes to D1610*

SCWA will begin the process of changing minimum instream flows by submitting a petition to change D1610 to the SWRCB within one year of the date of issuance of this final Biological Opinion. That petition will request that the SWRCB change stream flow requirements for the Russian River Basin such that minimum stream flows at certain locations will be reduced in the mainstem Russian River and Dry Creek between late spring and early fall during normal and dry water years as defined by water year criteria specified in D1610. Requested revised minimum flow criteria will promote goals of enhancing salmonid rearing habitat in the upper Russian River mainstem, the lower river in the vicinity of the estuary, and Dry Creek downstream of WSD. The revised minimum flows should promote water conservation and seek to limit effects on in-stream river recreation. Observations during the 2001 interagency flow-habitat study and during the 2007 low flow season, when flows at the Guerneville gage ranged from about 60 to 100 cfs, indicate that the following changes may achieve these goals:

During Normal Years:

1. Reduce the minimum flow requirement between the mouth of Dry Creek and the mouth of the Russian River from 125 cfs to 70 cfs.
2. Reduce the minimum flow requirement in the Russian River from the East Fork to Dry Creek from 185 cfs to 125 cfs between June 1 and August 31; and from 150 cfs to 125 cfs between September 1 and October 31.
3. Reduce the minimum flow requirement in Dry Creek from Warm Springs Dam to the Russian River from 80 cfs to 40 cfs from May 1 to October 31.

During Dry Years:

1. Reduce the minimum flow requirement between the mouth of Dry Creek and the mouth of the Russian River from 85 cfs to 70 cfs.

The rationale for these suggested changes in minimum flow requirements is as follows:

As explained in Sections V.A.1 and VI.G.1b of this biological opinion, estuarine hydraulics and estuarine water quality dynamics are dependent on the magnitude of freshwater inflow, sediment supply, and wave action that promotes formation of a barrier beach (commonly referred to as a sandbar) at the river's mouth. Artificially high inflows during summer months interfere with normal processes that discharge river flow through or over the barrier beach to the ocean. Corps and SCWA (2004) estimate that predevelopment mainstem flows to the estuary often dropped to 25 cfs or less, and that prior to the Potter Valley Project, the estuary likely remained closed to the ocean for weeks or months at a time. The D1610 minimum requirement of 125 cfs at Guerneville during normal water years is much higher than the unregulated conditions that existed prior to construction of Lake Pillsbury and Lake Mendocino. Because the dynamics of

lagoon formation are dependent on several variables, including freshwater inflow, wave conditions, the quantity and quality of available sediment supply, and underlying geologic structure at the river's mouth, it is not possible to specify any one single inflow requirement that will promote lagoon formation. However, a lower flow requirement would promote long-term closure of the lagoon (*i.e.*, a barrier beach across the mouth that isolates the lagoon from the ocean) or maintenance of a perched lagoon in which the river flows over the barrier beach, increasing lagoon depths and disconnecting the estuary from the ocean (eliminating the influx of saltwater) except for occasional wave overwash. A new minimum flow requirement of approximately 70 cfs at Guerneville would reduce the minimum flow requirement at Guerneville by 44%. Because SCWA maintains a 10 to 15 cfs buffer to avoid non-compliance of the minimum standard, a 70 cfs requirement would likely result in an inflow of about 80 to 85 cfs to the estuary. In the considerably smaller Carmel River estuary, a perched freshwater lagoon was maintained in 2005 at an inflow of about 60 to 70 cfs, and the Carmel River lagoon would likely accommodate higher inflows if the outlet stream over the barrier beach was moved to the northern side of the river's mouth (J. McKeon, NMFS, personal communication 2007). Informal observations and reports concerning recreational boating in the lower Russian River during summer 2007 indicate that flows of 80 to 100 cfs accommodate recreational canoeing and kayaking. Thus a minimum flow requirement of 70 cfs at Guerneville, with a 10 to 15 cfs buffer would appreciably enhance the prospects for achieving a closed or perched lagoon that would likely enhance salmonid estuarine rearing habitat, while conserving water and minimizing impacts to other river resources.

Reduction of the minimum flow requirement at the Healdsburg gage during normal years would enhance the quantity and quality of rearing habitat for steelhead in the river between the mouth of the East Fork and Cloverdale, the segment that typically supports suitable summer water temperatures for rearing juvenile steelhead. The 2001 flow-habitat assessment indicated that flows of about 125 cfs provided considerably more rearing habitat for steelhead in this segment than higher flows (190 and 275 cfs). In order for SCWA to comply with D1610 and maintain flows of 185 cfs between the East Fork and the mouth of Dry Creek, it is necessary for them to release approximately 250 to 300 cfs at CVD during summer months. Reducing this minimum requirement to 125 cfs would ensure that adequate flow is provided in the segment between the East Fork and Cloverdale (as documented in the 2001 flow habitat assessment). Moreover, it would likely enhance the quantity and quality of steelhead rearing habitat throughout this segment, while conserving the coldwater pool in Lake Mendocino. Conservation of that coldwater pool would increase the likelihood that waters released from that reservoir would remain suitably cool for rearing steelhead throughout the summer. It would also help ensure that sufficient flow could be released to facilitate upstream migration of fall run Chinook salmon.

Reduction of the minimum flow requirement for Dry Creek below WSD would allow SCWA to release lower flows at WSD during summer months. The 2001 flow-habitat assessment indicated that flows of about 50 cfs provided more rearing habitat for steelhead and coho salmon in this segment than higher flows (90 and 130 cfs).

In pursuing CEQA/NEPA compliance, SCWA may find alternative minimum flow requirements that meet the goals of restoring functional salmonid rearing habitat in Dry Creek, the upper

mainstem, and the estuary, thereby increasing population abundance and growth rates, while promoting water conservation and limiting adverse effects on other in-stream resources.

Within 6 months after the SWRCB's public notice that SCWA has petitioned for a change to terms and conditions of D1610, SCWA will begin the CEQA/NEPA process by issuing a Notice of Preparation/Notice of Intent. The SCWA's Board of Directors shall certify a final CEQA/NEPA document within four (4) years of filing the petition to change D1610. This would be five years after the issuance of this biological opinion. Upon filing the petition to change D1610, SCWA will conduct outreach with the support of NMFS staff to affected parties in the Russian River watershed. The SWRCB will very likely complete required staff review, public hearings, and issue an order to change flows following a one to two year period (seven to eight years after the issuance of this biological opinion).

The change of minimum required stream flows in the Russian River mainstem and Dry Creek is an essential RPA element for avoiding jeopardizing the continued existence of CCC steelhead and CCC coho salmon. Although the establishment and change of stream flow requirements is done under the authority of the SWRCB and not the SCWA nor the Corps, the likelihood that such changes can and will be accomplished within an eight year time frame is near certain because:

1. D1610 provides SWRCB with "*jurisdiction to amend SCWA's permit if a fishery study is conducted which shows that a different flow schedule would be better, or if further evidence otherwise becomes available which may affect the minimum flows*".
2. This biological opinion and referenced studies and reports strongly support reducing minimum stream flow requirements to protect and recover several important fish species in the Russian River and Dry Creek.
3. The fish species benefited by reductions in required minimum flows are both commercially important and listed under the Federal ESA. One of the species, coho salmon, is listed under CESA.
4. Throughout California, water supply is highly limited during summer and early fall. The Russian River is the only river in California where regulated flows that greatly exceed historic, unregulated levels are discharged to the Pacific Ocean during summer and early fall. Therefore, municipalities and other water supply interests will very likely support changes that help to avoid jeopardizing listed salmonids and at the same time reduce the amount of water that must be allowed to reach the Pacific Ocean.
5. This RPA element seeks to conserve the value of critical habitat for rearing steelhead and coho salmon in Dry Creek, the upper mainstem, and the estuary, while at the same time promoting water conservation and limiting adverse effects on other in-stream resources. Therefore, with few exceptions, the public-at-large will very likely support such changes.
6. During summer 2007 when stream flows were in the vicinity of 80 to 100 cfs, depths and velocities in shallow riffles were lower than when flows are between 140 and 180 cfs (more typical, recent summer flows in the lower Russian River). Nevertheless, during summer 2007, observations by NMFS staff indicate that recreational canoeing and kayaking was feasible and viable throughout the lower river (W. Hearn, NMFS, personal communication). Effects of the lowered minimum flows in 2007 on recreational boating were negligible in the several miles of river impounded by county summer dams (*i.e.*,

Vacation Beach dam, Johnson Beach dam, and the SCWA dam at Mirabel). Therefore, although recreational boating may be affected by reduced summer flows, the effect is likely minor and insufficient to cause SWRCB to reject a change in the minimum flow requirements currently stipulated by D1610.

7. SCWA has maintained vertical arrays of continuously recording water quality meters at several sites in the Russian River estuary since 2004. A multi-year comparison of dissolved oxygen and water temperature in the freshwater portion of the water column at two sites showed no differences that were attributable to the quantity of freshwater inflow (river discharge) to the estuary. For example, despite flows in the vicinity of 80 to 100 cfs during summer 2007, peak surface water temperatures at the middle estuary water quality monitoring site were lower than in 2006, a year with normal discharge (J.Church, SCWA, personal communication, July 2008).
8. In response to limited winter rainfall, dwindling water supply in Lake Mendocino, and anticipated impacts to fisheries, the SWRCB temporarily lowered minimum flows in the Russian River during summer months in 2004 and 2007. The SWRCB's support of lowered minimum flow requirements during these years demonstrates that agency's openness and willingness to modify D1610 flow requirements when provided defensible, supporting technical information.

In summary, with documented benefits to both fisheries and water supply from decreased minimum stream flow requirements in the Russian River, and the absence of significant water quality impacts of reduced flow requirements during 2004 and 2007, and past support of SWRCB in temporarily modifying (reducing) stream flow requirements in 2004 and 2007, it is highly likely that the SWRCB will act favorably towards SCWA's petition to reduce summer flow requirements in the Russian River and Dry Creek to address adverse effects of flow releases identified in this opinion. The SWRCB will have authority to change D1610 flow requirements following issuance of CEQA documentation and a public hearing process. We anticipate this will be accomplished between 2014 and 2016.

*Temporary Urgency Changes*

To help restore freshwater habitats for listed salmon and steelhead in the Russian River estuary, SCWA will pursue interim relief from D1610 minimum flow requirements by petitioning the SWRCB for changes to D1610 beginning in 2010 and for each year prior to the permanent change to D1610. These petitions will request that minimum bypass flows of 70 cfs be implemented at the USGS gage at the Hacienda Bridge between May 1 and October 15, with the understanding that for compliance purposes SCWA will typically maintain about 85 cfs at the Hacienda gage. For purposes of enhancing steelhead rearing habitats between the East Branch and Hopland, these petitions will request a minimum bypass flow of 125 cfs at the Healdsburg gage between May 1 and October 15. NMFS will support SCWA's petitions for these changes to D1610 in presentations before the SWRCB. Given the reservation of authority in D1610 and the fact that this BO constitutes substantial new information on fisheries in the Russian River that was not available to the SWRCB at the time D1610 was issued, and that the changes of flows outlined in this RPA are necessary to avoid jeopardizing the continued existence of the listed species, NMFS expects that the temporary urgency change petitions will be approved by the SWRCB on an expedited basis.