

**Flows and Habitat Subgroup
Alameda Creek Fisheries Restoration Workgroup**

**Report Following the Meeting on
December 12, 2003**

Attendees:

Pete Alexander, EBRPD
Kristine Atkinson, DFG
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Eric Cartwright, ACWD
Erika Cleugh, DFG
Dan Corcoran, ENTRIX
Jeff Hagar, Hagar Environmental Science
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Laura Kilgour, ACFCWCD
Jeff Miller, Alameda Creek Alliance
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Jim Salerno, SFPUC
Bill Snider, ENTRIX
Gary Stern, NOAA Fisheries
Tom Taylor, ENTRIX

Introduction

Migration barrier mitigation projects in the lower Alameda Creek channel may be completed within about five years, leading to urgency in developing a “flows” component of the overall steelhead restoration program. The Flows and Habitat Subgroup held a meeting to discuss the role of water management in restoring steelhead to the Alameda Creek watershed. The group addressed primarily the following questions:

- What are the target areas to be restored to support the steelhead life cycle?
- What is the flow regime that will support the various steelhead life stages in these areas?
- What changes to existing water management practices are necessary to support a restored steelhead population?
- What additional studies should be performed to inform the restoration process?

Current *Oncorhynchus mykiss* habitat availability

The group first discussed the portions of the Alameda Creek watershed most likely to provide habitat suitable for steelhead. Such areas included some “wetted channel” areas upstream of the Alameda Creek Diversion Dam (ACDD), portions of Stonybrook and Sinbad creeks, and the mainstem Alameda Creek between Little Yosemite and the upstream end of the Sunol Valley. Less important habitat areas could include parts of Arroyo de la Laguna, a reach of Arroyo Valle downstream from del Valle Reservoir, portions of Arroyo Mocho, and portions of such Alameda Creek tributaries as Welch and Pirate creeks, particularly in their most downstream reaches. The potential suitability of Niles Canyon habitat for spawning and rearing currently is not well understood. Future SFPUC studies are planned that will further characterize available habitat in upper Alameda Creek.

Water resources and fisheries management issues

Of the water management opportunities available in the watershed, re-operating ACDD and Calaveras Dam appears to offer the greatest benefit to a possible re-established steelhead run. However, the presence of alluvial materials in channel reaches downstream from both facilities complicate the use of local runoff for restoration purposes. The question of the effect of ACDD operations on areas downstream, particularly in the Sunol Valley, was raised but not answered due to a lack of information concerning upper watershed hydrology. The group agreed that ACDD represents an important management concern as it is a total passage barrier and would be difficult to screen if used to provide “fish flows.” The Workgroup’s steelhead restoration strategy should include either planning for ACDD decommissioning, or developing provision for fish passage and a release schedule.

In preparation for future releases from Calaveras Reservoir, the facility’s intake is being screened with the intent of minimizing harm to the existing *Oncorhynchus mykiss* population. Under a 1997 SFPUC/DFG MOU, Calaveras releases are to be used to supplement local runoff to maintain temperatures suitable for *O. mykiss* in the reach downstream from the Alameda Creek/Calaveras Creek confluence. If a steelhead population is successfully re-introduced into the watershed, it will be necessary to manage water supply operations to allow for in- and out-migration through the Sunol Valley. Existing information concerning channel water losses in the Sunol Valley suggests that repairing damage created by quarrying operations is essential to the efficient use of flows for fish passage through Sunol.

Requirements for in-stream flows during steelhead migration periods, particularly flows in the Sunol Valley reach, need to be developed. It is possible that decommissioning ACDD could lead to suitable passage conditions in Sunol Valley, although channel losses could exceed available local flows. Additional variables to be considered include possible channel re-configuration to minimize channel losses and the use of “pulse flows” rather than unconstrained flows. On-going research on the SFPUC reservoir *O. mykiss* populations indicates that substantial variability exists in the timing of migration. This finding and negative experiences of fisheries managers with using “pulse flows” may argue against the adoption of this practice in the Alameda Creek watershed.

Spawning by Calaveras reservoir *O. mykiss* is believed to occur in an approximately one mile reach of Arroyo Hondo immediately upstream of the reservoir’s shoreline (when normally operated). Depending on the size of the future reconstructed Calaveras Dam, the project may involve additional fisheries impacts as the spawning area could be drowned by an expanded reservoir. Restoration planning should include provision for trapping and relocating the reservoir population in the event that an enlarged reservoir is pursued.

Researchers presently are developing a population estimate for the Calaveras Reservoir *O. mykiss*, which is expected to be between 100 and 200 individuals. San Antonio Reservoir tributaries also have proven suitable for supporting a reservoir population expected to number between 100 and 200 individuals. Refining these estimates and determining likely smolt production from the populations will allow the Alameda Creek watershed steelhead restoration strategy to include a supplementation component least likely to conflict with the goal of sustainably managing the reservoir *O. mykiss*.

Next Steps

An initial goal of the flows component of the restoration program is to provide adequate flows for spawning, rearing, and migration in the most suitable habitat areas. The subgroup discussed the likely effectiveness of defining “tiers” of potential habitat that reflect our understanding of their importance to the overall restoration effort as a first step to establishing flows regimes for Alameda Creek watershed tributaries. First tier (primary concern) areas would include mainstem Alameda Creek between Little Yosemite and the upstream end of the Sunol Valley, and Stonybrook Creek.

Second tier (secondary concern) areas would consist of portions of mainstem Alameda Creek upstream of Little Yosemite, Arroyo Mocho and Arroyo Valle, and Sinbad, Pirate and Welch creeks. Niles Canyon habitat would comprise a third tier, reflecting current lack of evidence of habitat suitability.

Various flows related activities would be conducted for each tier (and for the flood control channel portion of Alameda Creek), possibly structured as follows:

Tier 1

1. Estimate minimum flow requirements for habitat areas that would provide for successful steelhead spawning and rearing.
2. Select options for changing existing water management practices to create the desired flow conditions for first tier areas. Options discussed at the flows and habitat subgroup meeting include decommissioning ACDD, re-operating ACDD, providing Calaveras releases, and combinations of these efforts. For operational diversion facilities, determine proportion of inflow to be released to re-establish natural hydrograph influence on habitat (*i.e.*, for channel maintenance, flushing flows, migration cues).¹
3. Estimate threshold discharge near Alameda Creek/Calaveras Creek confluence at which surface flows in Sunol Valley allow for steelhead migration.
4. Select options for providing fish passage when unimpaired local runoff would allow for migration. Options discussed at the flows and habitat subgroup meeting include creating an engineered channel through the Sunol Valley, providing Calaveras and/or ACDD releases, and combinations of these efforts. Channel losses to quarrying operations should be addressed in this step.
5. Identify monitoring provisions that assure that flow goals will be attained.

Tier 2

1. Estimate threshold discharge near Arroyo de la Laguna at which steelhead migration can occur.
2. Select options for contributing to flows between upper Niles Canyon and the San Francisco Estuary during periods suitable for migration.
3. Assess suitable habitat in Tier 2 areas.

Tier 3

1. Establish effect of water management practices on the temperature of Alameda Creek flows in Niles Canyon.

Flood Control Channel

1. For periods when unimpaired local runoff would allow steelhead access to upper watershed areas, select options for providing fish passage. Options discussed in previous Workgroup and subgroup meetings include lowering inflatable dams, passing flows through fishways, constructing an engineered channel through the flood control channel reach of Alameda Creek, and combinations of these efforts.

The steps listed above would comprise the flows component of the first phase of the steelhead restoration program. Additional activities or revised flow schedules would be suggested in the future based on the results of monitoring efforts, particularly regarding habitat use by steelhead.

¹ Natural hydrograph protection is discussed in the reference, *Guidelines for maintaining instream flows to protect fisheries resources downstream of water diversions in mid-California coastal streams*, California Department of Fish and Game and the National Marine Fisheries Service, draft dated June 17, 2002.