State of California

# Memorandum

Flex your POWER

To: Files

Date: February 27, 2002

From: Curt Babcock
Northern California-North Coast Region
Department of Fish and Game

Subject: Old Cow Creek, Shasta County

On January 16, 2002, Fisheries Biologist Teri Moore, Environmental Scientist Jennifer Bull, and Staff Environmental Scientist Curt Babcock visited upper Whitmore Falls on Old Cow Creek in Shasta County to assess whether the falls are a barrier to upstream migration of steelhead (*Oncorhynchus mykiss*). On February 21, 2002, Teri Moore and Curt Babcock visited lower Whitmore Falls and revisited upper Whitmore Falls for the same purpose. Upper and lower Whitmore Falls are located in Section 21, Township 32 North, Range 01 West, approximately 1,000 feet and 2,500 feet downstream from the Whitmore Road crossing of Old Cow Creek, respectively.

The flows on January 16 were low (approximately 50 cubic feet/second) and the water temperature was measured at 38 degrees Fahrenheit at 1100. The upper falls consist of a main falls to the left of center where the majority of water flows. The upper falls height was measured in the center from the falls crest to plunge pool water elevation at 9.5 feet. The plunge pool was not measured for depth. The plunge pool and habitat downstream for approximately 300 feet were snorkeled. No fish were observed, which is not uncommon at that water temperature. On February 21 the flows were approximately 2,900 cubic feet/second (U.S. Geographic Survey Millville stream gage data). The water flow at this and higher levels may provide other routes for passage.

The lower falls consist of a clear fall on river left that was approximately 7 to 8 feet in height and a chute/falls on river right that was approximately 6 feet total drop in water elevation and would provide the easiest route for passage. The landowner stated that the plunge pool depth was approximately 10 to 20 feet.

The lower falls are probably not a barrier to steelhead at most flows as the falls height is well within a steelheads vertical leaping capability and the chute/falls to the river right may be an easier route. The upper falls approach a steelheads leaping capability of 11 to 14 vertical feet (Powers and Orsborne 1985). At higher flows, the plunge pool elevation would rise and the falls height consequently decrease, decreasing the effort needed for passage. We concluded that steelhead may be able to ascend the upper falls.

Attachments

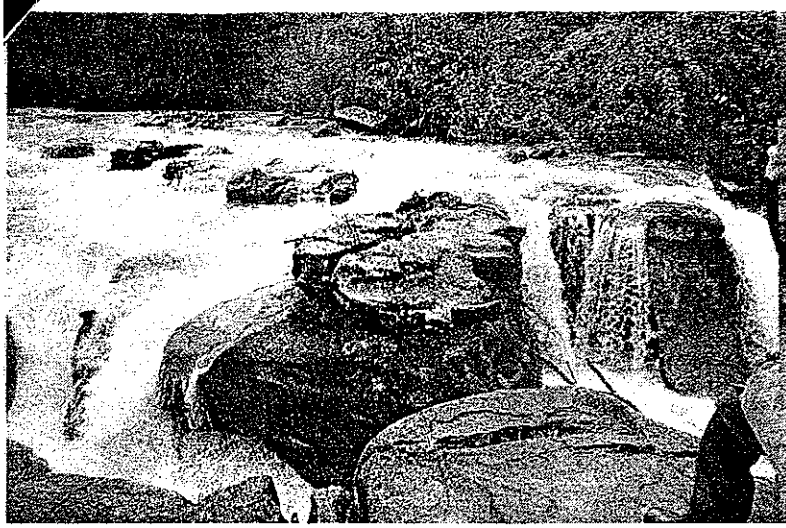
CB:sh

cc: R. Benthin, M. Berry, and A. Manji
Northern California-North Coast Region, Redding

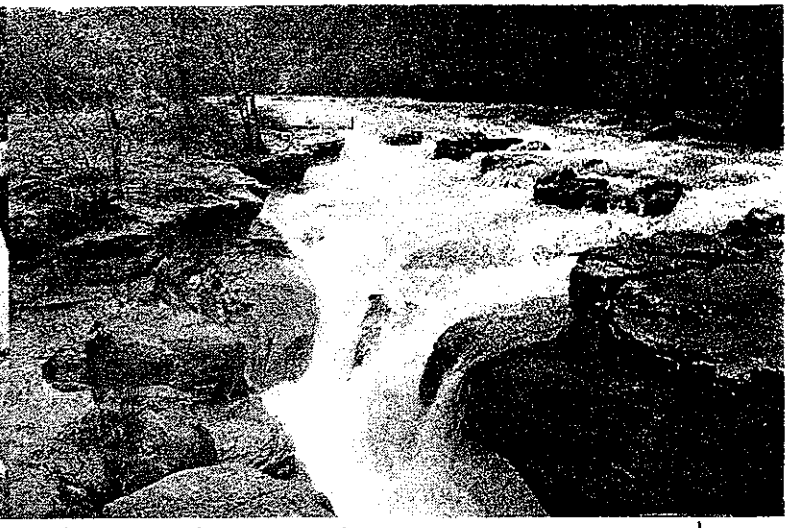
References:

Powers, P.D., and J.F. Orsborne. 1985. Analysis of barriers to upstream fish migration; an investigation of the physical and biological conditions affecting fish passage success at culverts and waterfalls. Albrook Hydraulics Laboratory, Washington State University, Pullman Washington, submitted to: Bonneville Power Administration, Project No. 82-14.

Whitmore Falls - Cow Creek

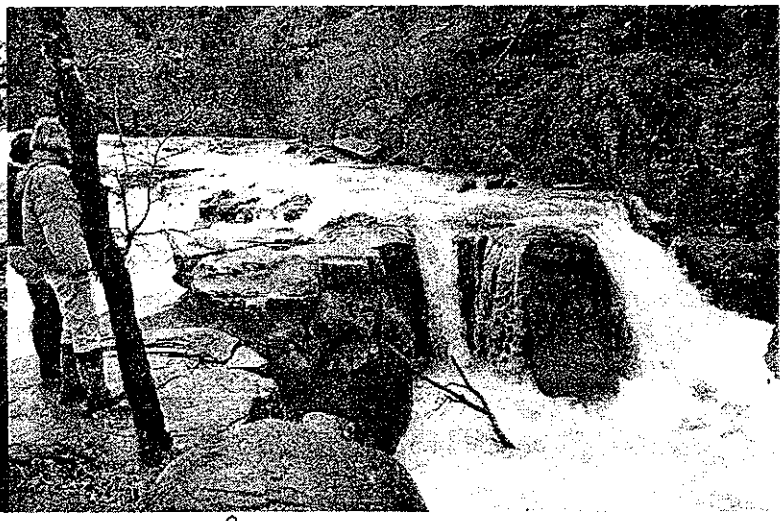


lower falls



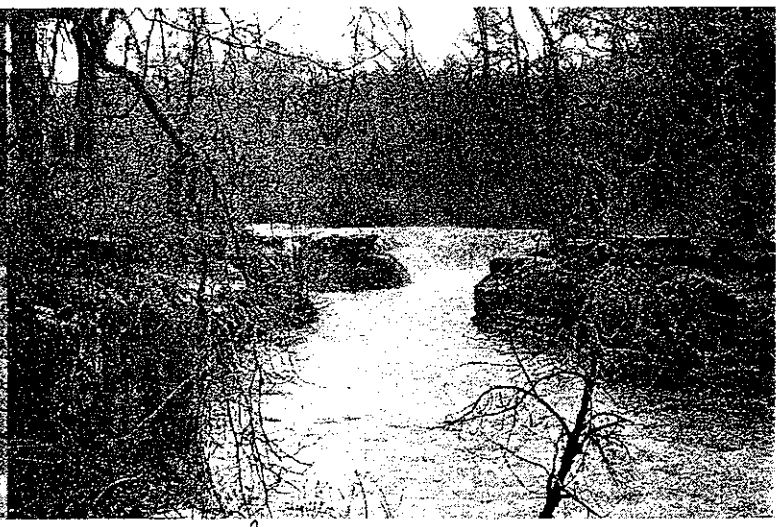
lower falls - chute on river right

lower falls - chute on river right



lower falls - river left

upper falls



upper falls