R2 Resource Consultants, Inc.

15250 NE 95th Street
Redmond, WA 98052-2518
Phone: (425) 556-1288
Fax: (425) 556-1290
e-mail: mail@R2usa.com

Technical Memorandum

Date: October 9, 2007 Project Number: 1582.038/MM102R

To: James Reilly, Stetson

Karen Niiya, California State Water Resources Control Board, Division of Water Rights

From: Paul DeVries and Dudley Reiser

Subject: SWRCB Instream Flow Policy: Summary of Reasoning Used to Propose Size Criterion for Woody Debris Pieces Qualifying Under a Wood Augmentation Plan.

This memorandum describes how specific aspects of the Policy were conceived concerning what size woody debris pieces should qualify for consideration under a wood augmentation plan.

On-stream reservoirs intercept wood that would otherwise be transported downstream to contribute to debris jams that are an important mechanism for pool formation in the Policy area (Opperman 2002). The Task 3 report contains a discussion of the effects of on-stream dams on wood transport and important considerations for mitigation actions involving wood augmentation downstream. One question for implementing the Policy concerns the minimum size of wood pieces that should be augmented downstream of a dam. Opperman (2002) measured wood pieces in a variety of stream channels within the Policy area. He reported various statistics for lengths of hardwood and conifer woody debris pieces found in the channel, with 75% or more of pieces exceeding about 6 ft (1.8 m) in length depending on the species (Table 2, p. 47). In-channel woody debris pieces contributed to significant pool formation for streams with bank-full widths between about 11-18 ft (3.5-5.5 m); the effect declined for wider streams (Table 3, p. 48-50). Absent a more detailed analysis of Opperman's (2002) and other raw data, these results suggest that the minimum size (i.e., length) of woody debris pieces needed to form pools (and thus, by extension, influence instream habitat structure) scales approximately as the smaller of either 6 ft or about ½ the bankfull channel width (where minimum lengths in Opperman's study scale with ~1.8/3.5). This appears to be a reasonable approximation of the minimum length of wood pieces that would need to be augmented downstream of an on-stream dam that traps wood.

Citations

Opperman, J.J. 2002. Anadromous Fish Habitat in California's Mediterranean-climate Watersheds: Influences of Riparian Vegetation, Instream Large Woody Debris, and Watershed-Scale Land Use. Dissertation. University of California, Department of Environmental Science, Policy, and Management, Berkeley, California.