

## SUMMARY

Krammes, J. S., and David M. Burns.

1973. Road construction on Caspar Creek watersheds . . . 10-year report on impact. Pacific Southwest Forest and Range Exp. Stn., Berkeley, Calif. 10 p., illus. (USDA Forest Serv. Res. Paper PSW-93)

*Oxford:* 383:116.38:(794).

*Retrieval Terms:* bridge building; road construction; logging operations; environmental impact; streamflow; sedimentation; fish habitat; Caspar Creek; California.

In 1960, Federal and State agencies jointly started a long-term study of the effects of logging and road building on streamflow, sedimentation, aquatic habitat, and fish populations on two watersheds of Caspar Creek, in northern California. The experimental watersheds are the North and South Forks of the Creek. The data being collected consist of continuous streamflow measurements, suspended sediment measured at weirs, changes in sediment deposition in debris basins behind the weirs, and rainfall. Effects of roads built in summer 1967 were monitored between 1967 and 1971.

This paper summarizes data from 10 years of streamflow calibration and 4 years of recording effects of road construction and use.

Generally, the immediate impact of right-of-way clearing, road building, and bridge construction was best reflected in the suspended sediment yield. Turbidity levels were high during the road building period, but did not extend far downstream nor persist for extended periods during summer. Suspended sediment yields the first winter were more than four times the preconstruction levels; subsequent winter levels, while still above preconstruction, were not excessive.

There was a small increase in sediment deposited in the basin behind the weir during the first 3 winters after road construction, and a major increase the fourth winter. An old splash dam located more than 2 miles upstream from the weir failed during the first winter and added over 900 cubic yards of sediment to the channel. This surge may have been responsible for the fourth winter increase.

Water temperatures were raised slightly, increasing the production of bacteria, algae, and the insects upon which fish feed. Dissolved oxygen concentrations were not adversely affected by construction activities or by removal of stream-side vegetative

cover. Road construction did not significantly effect the volume of living space for fish populations.

Young-of-the-year fish populations decreased immediately after road construction. Some of the change in population census was the result of migration and of population adjustment to stream carrying capacity. The combined populations of steelhead and salmon smolts decreased 20 percent, but this decline is estimated to be within the range of natural fluctuation reported for other California streams.

Streambed particle size composition changed during the period of observation following road construction, but with no deleterious effect on fish habitat.

The long-term effects of road building and logging remain to be established.

