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Mr. Frank Barron
Crane Mills
P.O. Box 318
Corning, California 96021

RE: Survey of Anadromous Fish Migration Barrier, Thomes Creek, California

Dear Mr. Barron:

At your request, I accompanied you to conduct a field reconnaissance of a potential barrier to anadromous fish migration on Thomes Creek above Paskenta. We understand that various regulatory requirements may be imposed on Crane Mills' timber harvest operations in the Thomes Creek watershed depending on the definition of the barrier as passable or impassable to upstream migratory salmonids.

I examined the potential barrier and Thomes Creek immediately upstream and downstream for approximately two hours on Friday, July 13, 2001. The site is located about 400 yards upstream of Horse Trough Creek. Streamflow at the time was estimated to be in the range of 5 cubic feet per second. The area is a narrow gorge bounded by bedrock outcrops which experiences intense hydrologic scouring, judging by the lack of riparian vegetation, abrasion marks high above the low water level, and large substrate particle size. Most of the stream channel was composed of bedrock and boulders ranging from 3 feet to greater than 20 feet in diameter, extending over the entire quarter-mile stream length observed. The barrier itself is created by several 20-foot boulders lodged against a bedrock outcrop, behind which considerable bedload has accumulated (Figure 1). Rise and run between downstream and upstream pools were measured at 18 and 47 feet, respectively, for a local gradient of 38.3%.

The barrier is not a single fall, but is comprised of three 5- to 6-foot drops and intermediate chutes (Figure 2). The drops angle through the barrier between narrow openings, and would require a leaping fish to make a very precise jump to reach a 2- to 3-foot landing area. Their swimming reaction upon landing must be instantaneous to avoid being swept back. A small, shallow pool between the second and third drop provides minimal staging depth for the final jump. At high flows, all three drops would contain high velocities and very poor leaping platforms.

The portion of the barrier to the west of the drops is a jumble of large rocks that contained little water at the time of my observation (Figure 3). When water might be flowing there, I tried to visualize the physical conditions to be encountered by a migrating fish, particularly steelhead, the best jumpers among anadromous salmonids. There would unlikely be jumping pools or individual drops; more likely tumultuous white water throughout. Narrow openings through the boulder jumble and small pockets of quieter water among the rocks, however, could conceivably allow a strong, determined fish to navigate through, with considerable effort and luck at finding the right path at the right time.

In summary, the barrier presents a nearly insurmountable obstacle to migrating fish, but I cannot describe it as patently impassable. The physical character of the multiple drops, narrow landing spots, poor jump pools, high velocity chutes, and abundant white water combine to make the barrier very difficult passage for any fish. It is located near the upper end of an estimated four miles of similar boulder/bedrock gorge (Figure 4), over which a fish would spend considerable energy and arrive tired. According to the literature survey information you summarized, anadromous fish have never been observed or otherwise reported in Thomes Creek upstream of the barrier. All of these factors together lead me to conclude that the barrier is functionally impassable. Imposing stricter land management rules based on the minute potential for fish to navigate upstream would require an agency to disregard all available physical evidence.

Other studies could be conducted to discern the presence of anadromous fish above the barrier, including winter spawning surveys, spring electrofishing to locate smolting (pre-migration) juveniles, and juvenile fish otolith (ear bone) isotope ratios. Positive results would end any debate, but negative results would not be useful, since you can never prove absence.

Please let me know if you have any questions regarding this brief survey and conclusions.

Sincerely,

Thomas R. Payne
Principal Associate

Figure 1. Thomes Creek barrier looking upstream – flow on right center.

Figure 2. Thomes Creek barrier looking down into narrow falls and chutes.

Figure 3. Thomes Creek barrier looking upstream at western rock jumble.

Figure 4. Thomes Creek looking downstream from top of barrier.