

Warden Walter Choate

January 26, 1983

Region 3

Bidwell Creek, Sonoma County

On January 14, 1983, we visited Bidwell Creek, tributary to Franz Creek, tributary to Maacama Creek and an unnamed tributary to Bidwell Creek which may be locally known as Kelly Creek. The area we specifically examined was a roughly rectangular parcel about 300 yards long in an east-west direction and varying from about 50 yards wide at the west end to about 100 yards wide at the east end. The northern boundary of the parcel is Bidwell Creek, the southern boundary is Kelly Creek. These two streams join at west end of the parcel.

The parcel between Bidwell Creek and Kelly Creek has been plowed within the past several months. The land appeared not to have been in cultivation before that, but was either a pasture or an old orchard. Along about 80% of the Kelly Creek frontage and about 15% of the Bidwell Creek frontage, plowing was done to the top of the stream bank. In these areas, virtually all riparian vegetation was destroyed and much of it pushed directly into the stream. Several large stumps were pushed into Kelly Creek--the skid trails made by the stumps and tractor could still be seen leading directly to the top of the bank above the stumps. The banks of Kelly Creek are very steep, nearly vertical in many places; where the riparian vegetation has been removed, the banks are beginning to slump. Tension cracks are visible for several feet back from the stream, indicating that additional slumping of the bank into the stream will occur in the near future. In addition to the bank erosion caused by riparian vegetation removal, erosion is starting on both banks at several places as a result of the stream being deflected against the banks by the stumps dumped into the stream.

Franz Creek and Maacama Creek both support populations of steelhead trout and other non-game fishes downstream from the site under discussion. The fish population of Bidwell Creek is not known except for the western roach, a native minnow. As a fishery biologist with nine years experience in the Sonoma, Mendocino, Napa, Lake and Marin Counties area, I believe that Bidwell Creek as I saw it on January 14 would provide habitat for steelhead spawning. It is hard to predict if Bidwell Creek would provide summer nursery habitat, as I do not know if the stream becomes dry in the summer. If the stream maintains a summer flow, it would provide nursery habitat for steelhead. If it becomes dry, steelhead spawned there could migrate downstream to an area of constant flow. Kelly Creek is unlikely to support any fish population, but it, as well as Bidwell Creek, would support a diverse community of non-fish aquatic life as well as the terrestrial wildlife associated with and dependent upon the riparian vegetation.

Aside from the aquatic life present on-site in Bidwell and Kelly Creeks, these streams would normally contribute to the support of significant steelhead populations downstream in Franz and Maacama Creeks by supplying clean, cool water and food organisms. Removal of the riparian canopy allows increased inflation which increases the water temperature to the detriment of steelhead habitat quality. In most streams of the Sonoma County area, summer water temperatures are marginal at best, often reaching 70°F. or greater. An increase of only a few degrees can cause a significant mortality of fish and aquatic organisms.

The erosion caused by bank slumping and deflection of the stream has resulted in a large quantity of soil entering these streams; even greater quantities will continue to enter the streams until conditions stabilize. The fine sediments that make up the soil will be carried downstream by the water to settle on the stream bottom where they will infiltrate the stream gravels. The gravels will tend to become cemented together and the permeability will be reduced. To be suitable for steelhead spawning, the gravels must be loose and permeable so that the fish can dig a nest and so that abundant water can flow past the incubating eggs to supply oxygen and carry off wastes.

Most streams in this area have a substrate composed of about 15% fines (particles less than 0.85 mm diameter). Research done by McNeil and Ahnell in 1964 and Nell and Lantz in 1969 show that when the fines component exceeds 20%, the incubation, hatching, and fry emergence success of salmonid fishes drops off very rapidly.

With the background level of fines in our streams naturally close to the critical level, the deposition of only small quantities of additional material can cause a significant decline in stream productivity.

Although significant damage has already been done to the stream through the addition of fine sediment, additional damage can be minimized. I recommend that:

1. the stumps be removed from the stream,
2. a buffer zone of at least 15 feet be established between the top of the bank and the cultivated field,
3. the buffer zone and the stream banks be revegetated where possible with grasses and woody shrubs and trees native to the site, and
4. the landowner be required to consult with the U.S. Soil Conservation Service on sound land management practices.

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