



Tributary Spawning Channels and Fish Passage

North Fork Feather River, California



Condition 10 of the new FERC license for the Rock Creek-Cresta Hydroelectric project outlines required fishery habitat improvements for selected tributary channels of the North Fork Feather River. Opportunities for tributary enhancements were originally identified by R2 founders Dudley Reiser and Mike Ramey in a 1987 report produced by Bechtel. R2 was selected to re-assess the original conceptual proposal based on current state-of-the-art knowledge of spawning channels for resident trout, and to develop feasibility level designs for each of three tributaries (Opapee Creek, Granite Creek, and Milk Ranch Creek). R2 assisted PG&E in developing an overall plan for implementing project objectives into the design alternatives.

After completion of the feasibility study, R2 completed the design of a 1,100 ft long spawning

channel on Milk Ranch Creek. The spawning channel features included an adjustable water supply diverted from Milk Ranch Creek, a sinuous channel carved into an abandoned floodplain surface, and a return channel to the North Fork Feather River engineered to allow passage at a relatively steep gradient (5%). The spawning

channel incorporated sections of varying gradient spawning reaches separated by holding pools. The terrace soils were very porous and the channel required a clay liner to prevent seepage of the flow into the groundwater.

Since flows could be controlled in the channel, the design did not include bank stabilization fabrics often used to maintain bank stability until vegetation can take over this role. The diversion structure from Milk Ranch Creek included a control valve so that PG&E, in coordination with resource agencies, could control and adjust the quantity of flow diverted into the spawning channel and the quantity left in Milk Ranch Creek.

R2 also provided PG&E support in permitting and construction oversight services. For the high gradient portion of the channel, special care was taken in placing large boulders to create a pool/cascade habitat that would facilitate passage by trout.



Project Elements:

- High Gradient Natural Fish Passage Design
- Hydraulic Engineering and Modeling
- Stream Restoration Design
- Sediment Transport Analysis/Geomorphology
- Fish Habitat Project Planning and Permitting
- Construction Management