



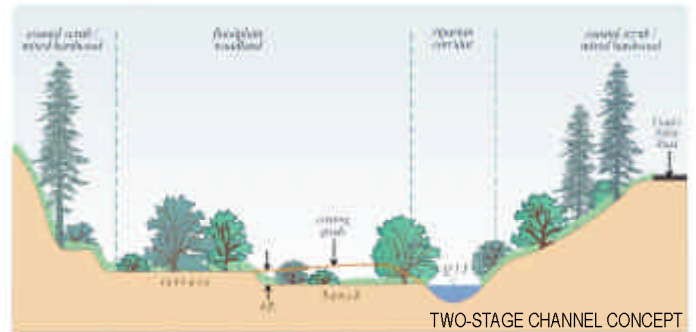
REDWOOD CREEK RESTORATION

Summary: PWA led the planning and design effort for the channel/floodplain restoration of a 33-acre site in the lower reaches of Redwood Creek in Marin County, California.

Date: 2000-Present

Location: Marin County, CA

Client: National Park Service,
Golden Gate National Recreation Area



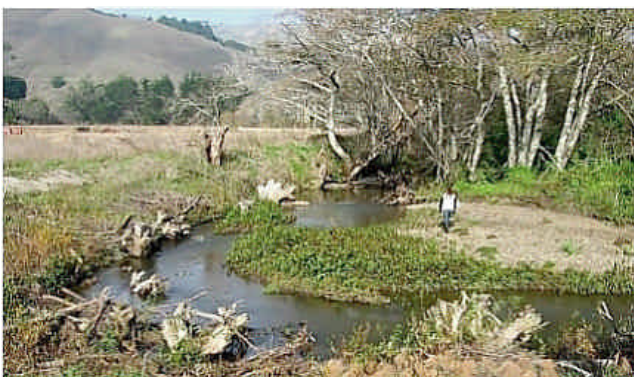
PWA led the planning and design effort for the channel/floodplain restoration of a 33-acre site in the lower reaches of Redwood Creek in Marin County, California. Redwood Creek drains a 7-square mile watershed; this includes the Muir Woods National Monument and provides a critical spawning and rearing habitat for threatened coho salmon and steelhead trout. Decades of agricultural activity, channel straightening and levee construction resulted in the loss or degradation of large areas of floodplain woodland, riparian vegetation and in-channel complexity. The restoration project focused on the enhancement of salmonid passage and refuge habitat. It reintroduced dynamic channel/floodplain processes and improved and expanded riparian habitat for nesting songbirds at the site.

To improve the in-stream habitat, the innovative project plan included several elements:

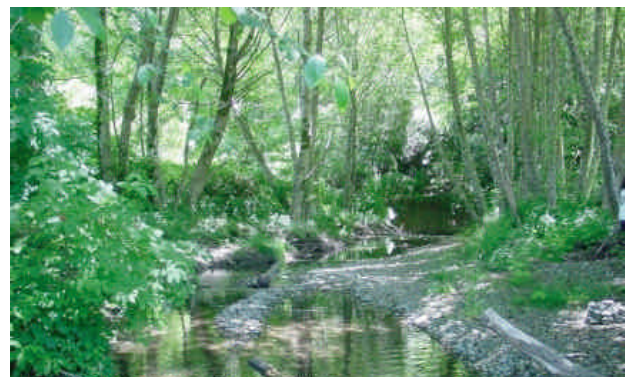
- Construction of multiple naturally-anchored engineered log structures
- Floodplain reconnection was established by removing existing levees
- Comprehensive terrace grading included the restoration of historic floodplain tributaries and backchannels.

These project elements enhanced the natural recovery potential of the reach and promoted in-stream complexity for fish habitat. The regeneration of floodplain woodland vegetation was encouraged through active floodplain recruitment processes and supported by revegetation efforts. The healthy and mature woodland provides the necessary long-term supply of woody debris and detritus to the creek channel. An added benefit is the reduction of downstream flood risk in the community of Muir Beach resulting from increased storage capacity with the reconnection of the creek to the historic floodplain; and reduced flow velocities generated by in-stream structures and introduced riparian vegetation.

PWA staff worked closely and collaboratively with National Park Service restoration ecologists, fisheries biologists and geomorphologists. PWA was involved throughout the project process. Work included a feasibility analysis, conceptual and final design, preparation of construction documents and construction period support. The first phase of the project was constructed in summer, 2003.



ROOTWAD BANK PROTECTION AND WEIR STRUCTURES



REDWOOD CREEK BOWLING ALLEY