Restoration of the Jocko River Near Arlee

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The Jocko River is a major tributary to the Flathead River that provides important habitat for bull trout and westslope cutthroat trout. An interdisciplinary restoration team including technical staff from the Confederated Salish and Kootenai Tribes and consultants from Geum Environmental Consulting, Inc., River Design Group, Inc., and WestWater Consultants, Inc., prepared the Jocko River Master Plan, as a planning document designed to guide restoration activities in the lower 22 miles of the Jocko River. Following completion of the Master Plan, initial restoration efforts focused on restoring two miles of the Jocko River affected by channel straightening, vegetation removal and levee construction undertaken to achieve flood control objectives in the 1950s. Over time, these actions resulted in simplification of habitat, significant channel incision and sediment delivery from failing earthen levees. A two-phased demonstration project addressed the loss of floodplain connection and altered aquatic habitat conditions.

All photos courtesy of Les Evarts

Before restoration: *Historical impacts to the Jocko River channel and floodplain resulted in impaired aquatic habitat conditions and loss of riparian and wetland functions.*

Phase 1 of the project was completed in autumn of 2004 and included one mile of river and floodplain restoration. A 25-year flood event in the project area during spring 2005 provided the opportunity to collect valuable monitoring data and gain insight into how improvements could be made on channel design and construction techniques for Phase 2. Phase 2 was implemented in 2008 and included one mile of river and floodplain restoration. Adaptive management measures undertaken prior to and during implementation of Phase 2 resulted in significantly less maintenance and improved project performance.

Project elements included levee removal, nearly 2 miles of channel reconstruction, floodplain reconnection that elevated the river bed 1 to 6 ft above existing erosive conditions, 4,400 ft of side channel enhancement, and conversion of 2,000 ft of the existing channel into floodplain wetlands. The design and channel dimensions were based on properly functioning "reference reaches" of the Jocko River. Large wood structures, and vegetated soil lifts were the primary structures used for temporary bank stabilization while the near-bank and floodplain vegetation recovers. Project benefits include the abatement of approximately 12 tons of sediment annually entering the stream and a healthy dynamic channel and floodplain system once again providing quality habitat for native trout.

Ongoing monitoring continues to provide insights on the techniques used in restoration and this information is shared at www.jockoriver.net

After Restoration: Efforts re-established hydrologic connection with the Jocko River floodplain and re-activated disconnected meanders. The restored channel plan form and connected side channels emulate the pre-disturbance condition of the Jocko River, improving habitat for bull trout and other aquatic species.

Jocko Angler: The use of large wood habitat structures and a variety of bioengineering techniques have increased the frequency and depth of pool habitats on the Jocko River. Important habitat components of Montana rivers, large wood, pools, and riparian vegetation function to diversify riverine ecosystems while providing recreational opportunities