

## **“k’wne’ `ulchiyark’wmntsut” (Hangman Creek Relict Channel and Floodplain Reconnection)**

**State(s):** Idaho

**Managing Agency/Organization:** Coeur d’Alene Tribe

**Type of Organization:** Tribal Government

**Project Status:** Underway

**Project type:** WNTI Project

**Project action(s):** Riparian or Instream Habitat Restoration, Instream Flow Acquisition, Monitoring, Outreach/Education

**Trout species benefitted:** Redband Trout

**Population:** Spokane River Basin/Hangman Creek

### **Project summary:**

The Hangman Creek watershed within the Coeur d’Alene Reservation (CDA) is home to native Redband Trout (*Oncorhynchus mykiss gairdneri*). The watershed is the target of a comprehensive restoration effort with the objective of connecting several large-scale, multi-year habitat projects each focused on improving the ecological and hydrologic processes most closely linked to the conservation and recovery of this species. The several actions described in this proposal, for implementation in 2016 and 2017, will significantly increase the amount and quality of connective stream rearing habitat in the upper watershed. Approximately 1.5 miles of relict stream channel will be reactivated to replace one mile of highly entrenched and incised channel that was straightened in the 1940’s. These actions comprise the 3rd phase of a larger project which was initiated in 2013 in order to reconnect the stream and historic floodplain habitats and link isolated subpopulations of Redband Trout to a larger and continuous upstream population, while providing rearing habitat to fluvial individuals.

The first and second phases of this project, which has been given the Coeur d’Alene language name, “k’wne’ `ulchiyark’wmntsut” and translates as, “it will make itself crooked again”, have already been completed. More than 1400 feet of a channelized “ditch” has been replaced by 1.4 miles of meandering relict stream, and two large in-stream structures designed to emulate natural log jams have been constructed. Beaver have re-entered the reach as an active element of the hydrology. Thus far, the project has reactivated more than 2.5 miles of floodplain channels and established a frequent connection for over 160 acres of riparian wetlands to Hangman Creek; reduced stream gradient by 60%; reduced localized stream temperatures during summer rearing periods; and reestablished more than 2000 native, deciduous trees within the riparian zone.

### **Problem the Project Addresses:**

During the late 1940’s and early 1950’s, approximately 2.7 miles of Hangman Creek, a perennial stream, was abandoned and replaced by 1.2 miles of excavated channel to promote agricultural practices and the use of a railway for transporting timber products. The newly excavated channel resulted in a higher gradient stream with little to no sinuosity. This in turn increased stream velocity and promoted head-cutting and stream bank erosion within the new channel and upstream. Over time, the historic floodplain increasingly became disconnected from the stream during floods as large as the 50-year return interval flow, changing the valley bottom from predominantly mixed forest wetland habitat to a combination of forested wetland/scrub-shrub/upland forest habitat. Furthermore, large amounts of overstory canopy were removed from the floodplain, adjacent riparian habitats, and along the stream channel to promote dryland agriculture and ranching practices in this area.

Reactivation of the 2.7 miles of historic Hangman Creek which lies directly downstream of the remaining continuous expanse of suitable fish habitat will facilitate increased dispersal rates into the isolated tributaries which are currently supporting genetically diverging subpopulations of Redband Trout. This reach will also provide additional rearing habitat for fluvial Redband Trout originating from adjacent tributaries throughout the year. Various species of wildlife, including beaver (*Castor Canadensis*), are well-positioned to benefit from this restoration project as well. Beaver were historically prevalent throughout the Hangman watershed, and are essential for proper ecosystem function in this drainage by maintaining streambed elevations and floodplain connection, decreasing erosion rates and sediment transfer, while providing fish and wildlife habitat throughout the stream corridor.

**Objectives:**

1. Reactivate approximately 1.5 miles of relict Hangman Creek to provide rearing habitat and an improved migration corridor for fluvial Redband Trout while deactivating/ abandoning one mile of man-made channelized and incised stream.
2. Reconnect over 100 acres of floodplain to the stream by promoting natural and frequent overbank flows.
3. Maintain and restore over 36 acres of wetland habitat within the adjacent floodplain through the activation of multiple floodplain swales.
4. Restore a natural riparian vegetative community degraded by eight decades of agricultural practices.

**Partners:**

- Coeur d'Alene Tribe Fisheries Program
- Local School Districts (Tribal School and Plummer Worley School District)
- Bonneville Power Administration
- Trout Unlimited: Spokane Falls Chapter
- Avista Utilities

**Project Monitoring:**

Project proponents will monitor fish migration, stream temperature, and ground water levels to evaluate the response of salmonid populations and habitat to the channel re-activation. Long-term status and trend monitoring will continue to examine the movement of fluvial individuals captured in migrant traps located near the mouths of Indian and Nehchen Creek, which bracket the upstream and downstream ends of the project reach. These fish are implanted with HDX PIT tags and passively tracked through fixed interrogation sites located at the mouths of each respective stream and at the upper and lower bounds of the project area. These monitoring sites were established in the summer of 2013 in order to monitor rearing locations of fluvial Redband Trout originating from these two tributaries. In addition to these sites, two other adjacent tributaries, Smith and Sheep Creek, have fixed antennas located near their mouths. These sites were established to monitor dispersal into these tributaries from Indian and Nehchen Creeks. This monitoring component will document seasonal use of the project reach by native Redband Trout and describe changes in behavioral patterns over time relative to conditions measured within restored habitats.

Stream temperature monitoring was initiated in the Hangman watershed in 2003. Stream temperatures are monitored from March-November at 36 separate locations using HOBO loggers. Eight of these monitoring sites are located within and adjacent to this project reach and will continue to log continuous stream temperatures for the foreseeable future, describing the ameliorative effects of restoration actions on water temperature. Finally, twenty-two monitoring wells have been installed within the larger project reach to document the response of shallow ground water to restoration actions. These wells are arranged in transects across the floodplain covering all phases of the project.

**Funding Source(s):** National Fish Habitat Action Plan

**Project cost:** \$38,447.00

**Start Date:** 07/01/2016 **Completion Date:** 9/30/2018

**Project Contact:** Jody Brostrom, Fish Biologist, U.S. Fish and Wildlife Service, Idaho Fishery Resource Office, Salmon, ID, 208-756-5162