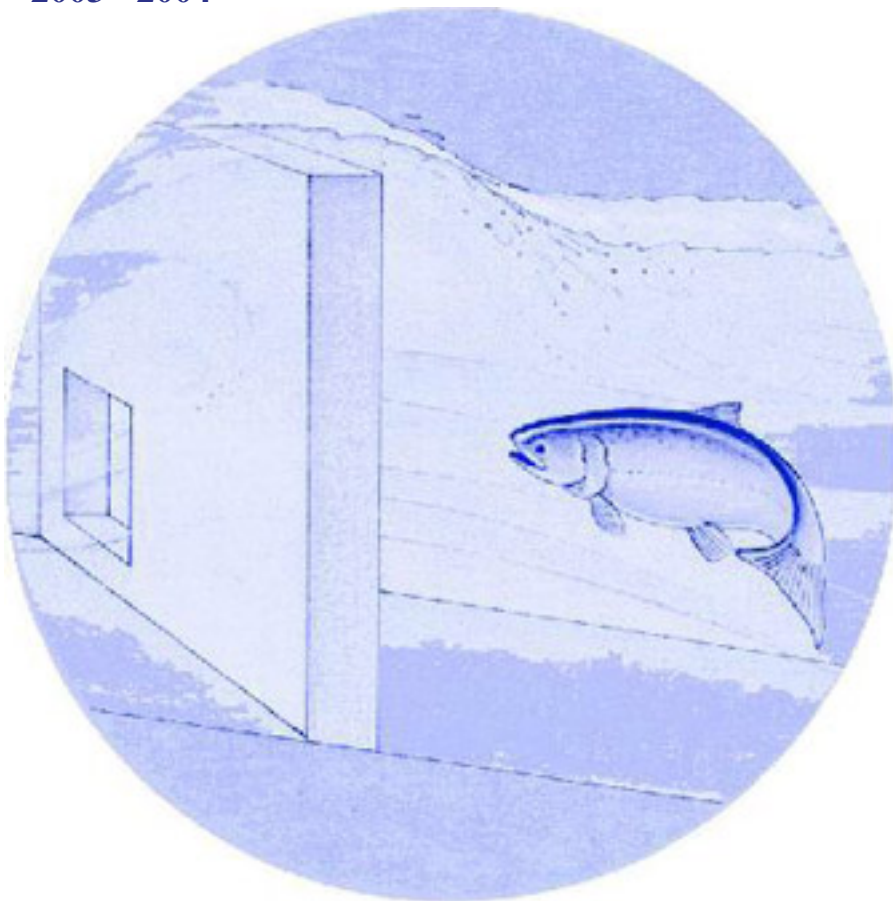


Satus Creek Watershed Restoration



**Annual Report
2003 - 2004**



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Satus Creek Watershed Restoration Project
Project No. 199603501

ANNUAL REPORT
Project Fiscal Year 2004

Yakama Nation
Division of Natural Resources
Fisheries Resource Management Program

Submitted To: Jay Marcotte, COTR
Fish and Wildlife Program
Bonneville Power Administration
December, 2004

Construction and Implementation Phase

Goal 1: Restore natural riparian and upland vegetation patterns

Project staff will replant appropriate indigenous vegetation in areas where its absence is having a deleterious affect on watershed processes. This includes both woody and herbaceous species.

We will also use project expertise and resources to assure that present land management actions influencing vegetation (e.g. road construction, fire suppression, timber harvest, grazing,) have a positive influence on cultural and natural resources.

Objective 1a. Restore grass and woody vegetation in areas critical to watershed function.

Task 1a-1: Revegetation

From November 2003 thru March of 2004 staff reseeded dozer lines from previous summer wildfires. Preliminary results are encouraging due to a wet spring. Sites are marked by GPS to determine success of the seeding.

Our technicians have also planted several thousand willow cuttings in the Satus Watershed. Success of willow planting will be monitored using photo points and GPS.

Revegetation began again in October of 2004.

Task 1a-2: Enhance beaver habitat by propagating riparian hardwoods

The hardwood planting described on task 1a-1 also serves to enhance beaver habitat. Also, a proposal from the Yakama Nation Fuels Management department has a plan to implement prescribed burning in the Riparian areas within the Satus Creek Watershed for 2005.

Prescribed burning will aid in the regeneration of Aspen and Cottonwood. Aspen and Cottonwood populations are no longer as prevalent since fire suppression began in the watershed. Instead, riparian areas are being invaded by a forest cover type. Staff have recognized that beaver are more active and likely to build dams in riparian areas containing healthy stands of Aspen and Cottonwood, and have been involved in planning prescribed burns (see Task 1b-3 below).

Objective 1b. Influence land management to enhance or restore natural vegetative patterns

Task 1b-1: Continue the patrol and maintenance of range fences in the Satus Creek watershed

We hired a new range rider in March of 2004. He has done an excellent job of keeping cattle out of the stream and mountain wetlands. He communicates with range permittees, who willingly work with him to remove cattle found outside their designated Range unit. He also patrols the area to assure that grazing management objectives (mainly exclusion from designated areas) are being met (Figure 1). The range rider also uses a GPS to record downed fence lines that need to be repaired.



Figure 1. Well distributed grazing in managed pasture – Mule Dry Creek watershed.

During this year alone the Satus project has built or repaired 16 miles of fence within the Satus Watershed. Most of these fences are built in areas to protect mountain wetlands and riparian areas. Permittees have been cooperative and eager to work with YN and BIA staff to improve grazing management across the watershed. In this interactive fashion, we will continue to refine grazing strategies to better suit the YN's resource management goals as well as those of the permittees.

The resources, both human and monetary, made available by this project have changed the course of grazing management in this area. With help provided by

the Satus project, individual permittees are now able to effect range improvements (e.g. water developments and fence maintenance) that would be otherwise unachievable.

Task 1b-2: Continue leasing grazing permits throughout the watershed

Grazing permits on approximately 140,000 acres throughout the Satus Creek watershed are currently held by this project.

As in years past, the Satus Project has continued leasing the grazing permits for non-use through the 2004 grazing season. This task has been an effective means to mitigate the potentially detrimental influence of livestock grazing throughout most of the Logy and Satus Creek sub-watersheds. Also, our range rider has been successfully excluding cattle from our range unit.

Task 1b-3: Reintegrate fire as a landscape process

The BIA Fuels Management Program has recently been contracted into the Yakama Nation's Division of Natural Resources under the P.L. 93-638 self-governance process. This change is substantially improving our ability to bring this task to fruition.

The Yakama Nation Fuels Management Program has taken measures to develop a prescribed burn plan for 2005, proposing six sites to be treated for 2005. Out of the six proposed sites, three are within the Satus Watershed, containing approximately 3,368 acres of riparian area to be treated. These three treatments were developed with major input from Project staff. If weather conditions permit, these treatments will be implemented in the spring of 2005, again with the cooperation of project staff.

Goal 2: Reduce erosion.

Objective 2a: Restore natural erosion patterns critical to watershed function

Task 2a-1. Rehabilitate incised ephemeral and intermittent channels

Project staff have built rock structures in the upper portion of Dry Creek called Starvation Flats. This area is heavily impacted by wild horse and cattle trails. Project staff placed a number of rock structures to stabilize headcuts to prevent further incision to the creek (See Figure 2). The task was successful but needs to be expanded into the downstream portion of Starvation Flats. Plans are being developed to utilize larger rock structures in the creek to be more effective in building the channel draining Starvation Flats back up to its original level in communication with the floodplain (See Figure 3.) Construction would take place in 2006.



Figure 2. Headcut in cattle trail stabilized with rock structure.



Figure 3. Small rock check structure.

Project staff also built a number of straw-bale structures to arrest headcuts in a mountain wetland known as Renssler's Meadow. Cattle have used this area and have caused drainage channels to degrade. Project staff repaired a down fence that will eliminate cattle from entering this area in the future.

Task 2a-2: Reestablish access to floodplains.

The major activity under this task could not be completed in the FY 2004 due to other tribal programs not completing an engineering subcontract in a timely manner. The engineer is under contract now and a scope of work has been developed for restoring floodplain function in a critical reach of Satus Creek just downstream from the High Bridge (mile 32.4). Construction is planned to begin during the next instream work window in the late summer of 2005. We have also requested that 2004 funds be rescheduled for this particular project.

Task 2a-3: Improve road drainage.

The project continues to identify problem road drainages. When funding permits, project staff intend to address them.

Task 2a-4: Enhance beaver habitat by propagating riparian hardwoods

See task 1a-2 and 1b-3.

Objective 2b: Influence land management to restore natural erosion processes and patterns

Task 2b-1: Continue participating in land management planning processes.

Project staff have assisted BIA Range Management in finishing a 1¼ mile pipeline to provide water to grazing permittees. Satus project staff has made added efforts to communicate with grazing permittees to keep cattle in their designated range unit. This is critical to the success of our project to assist cattlemen to stay out of culturally sensitive and riparian areas. Grazing permittees' open communication with Satus Project staff has positively influenced the success of our project.

In addition, in the spring of 2004 we contracted Frontier Natural Resources to write a grant proposal to the Administration for Native Americans (ANA). This grant was designed to get funding to assist in the management of the culturally sensitive topic of managing the Yakama Nation horse population. The YN Wildlife Program has pursued this grant for the past 5 plus years and with our help they finally received the grant for 2005. Wild horse populations are extremely high on the Yakama Reservation and have a negative affect on rangeland and riparian areas. Bringing the horse population idown to a manageable level will build on the recent success of cattle management and further help us restore the Satus Watershed.

Goal 3: Moderate flow regime

Natural stream channel geometry is shaped to a large degree by the flow regime. Hence, a change in the long term flow regime will elicit a response in the geometry of a stream. Findings of the Satus Creek Watershed Analysis suggest that modern land use, as well as other factors, have modified the flow regime of Satus Creek. The following objective and tasks endeavor to return Satus Creek to both peak and base flows within the natural range of variability.

Because of the interconnectedness of soil, water, and vegetation within a stream system, tasks listed under Goal 3 are similar to those listed above.

Objective 3a. Slow the movement of water through the watershed.

Task 3a: The tasks listed under Goals 1 and 2 will also serve to slow the movement of water through the watershed, hence moderating the flow regime.

See tasks: 1a-1 through 2b-1.

Goal 4: Improve fish and wildlife habitat quality

Task 4a: As with Goal 3, the tasks listed under Goals 1 and 2 will also serve to improve fish and wildlife habitat throughout the watershed.

See tasks: 1a-1 through 2b-1.

Monitoring and Evaluation Phase

Goal 5: Monitor results

With respect to vegetation, streamflow, channel morphology, climate, and fish habitat/populations, The Satus Creek watershed is one of the most intensely monitored watersheds of its size in the western United States. This network gives the Satus Project the unique opportunity to precisely monitor changes to watershed function and anadromous fish habitat/populations at both the site and watershed scales.

The information collected in the course of our monitoring program has been used extensively in the recently-completed Yakima Subbasin planning effort.

Objective 5a: Monitor anadromous fish populations and habitat

Task 5a-1. Annual spawning ground surveys

Spawning ground surveys in Satus Creek and its tributaries began in March and was completed in early June. Project staff completed three successful passes, in

which water conditions were excellent for surveying. However the total redd count for 2004 was only 93. This is lower than most recent years, as shown in Chart 1. There are no obvious reasons for this single-year decrease, but it illustrates the need to focus steelhead recovery efforts on multiple watersheds, as the YN has been doing. Staff have recorded all redd locations with a GPS unit, for entry into a GIS database.

Satus Creek Redd Survey Results

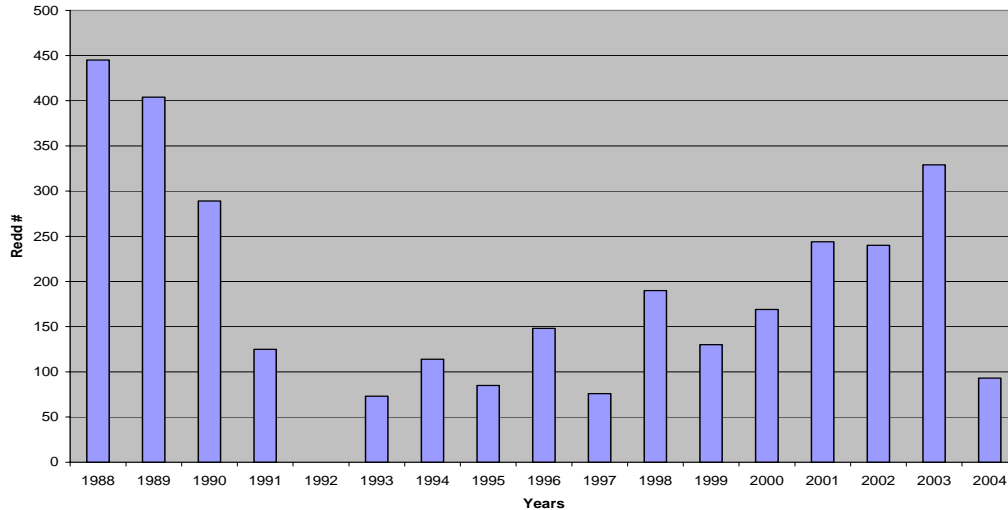


Chart 1.

Spawning ground survey results for Satus Creek and its tributaries.

Task 5a-2. Repeat fish habitat surveys at 5-year intervals.

Project staff continued to do woody debris surveys and snorkeling in habitat segments in the summer of 2004. Data is put into a GIS database for analysis.

Task 5a-3. Smolt Trapping.

The Satus Smolt trap was deployed in November of 2003 and fished until the first week of June of 2004. The total catch in the trap was 204 steelhead. Although the trap was deployed a total of 192 days, it was fishing for only 96 days. Staff have taken a conservative approach to monitoring, lifting the cone when a risk of high flows and debris poses a mortality threat to juvenile steelhead. PIT tagging was limited in 2004, but can still be useful in making comparisons with other years and other tagging locations.

Objective 5b. Monitor watershed processes

Task 5b-1. Monitor streamflow

Wading discharge measurements are taken weekly or sometimes bi-weekly if conditions permit. The continuous recording stream gages were also maintained. Discharge data are entered into the project database on the day of collection and are available for immediate use.

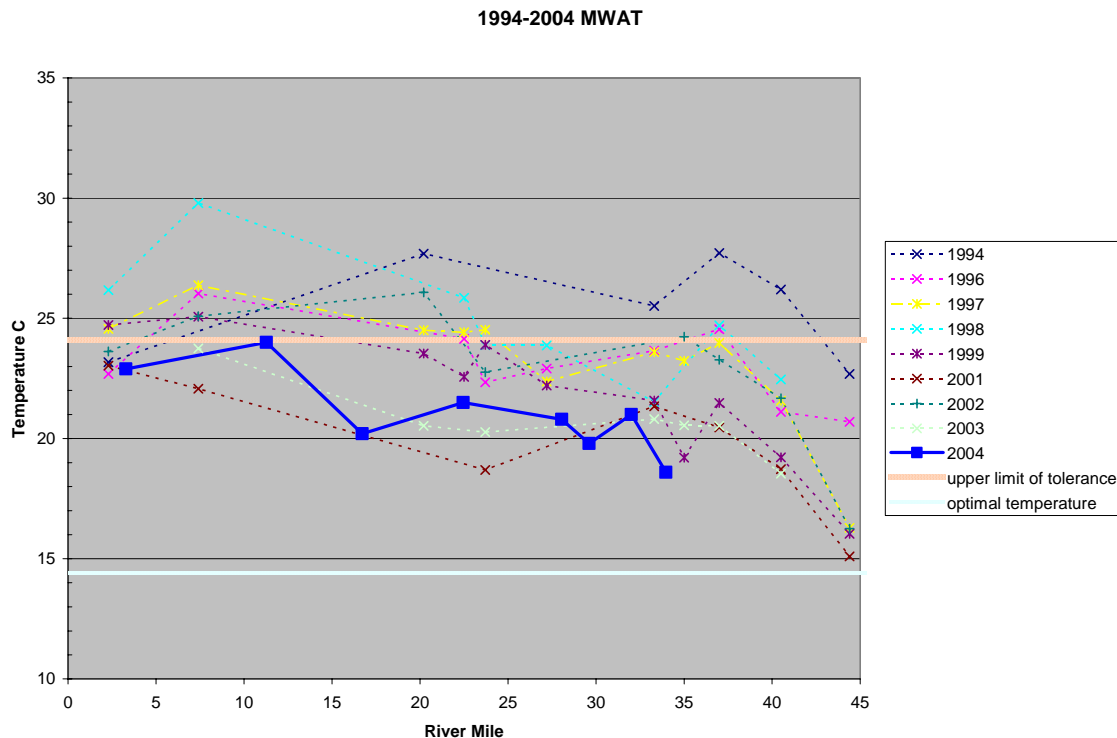
Task 5b-2. Monitor climate

Climate monitoring stations were maintained throughout this reporting period without incident. Project staff expects to summarize the data and report on it in 2005.

Task 5b-3. Temperature Monitoring.

The Satus project has continuously monitored temperature in the stream. Despite a dry summer, Satus Creek has shown some improvements in temperature throughout the years (See Figure 4.).

Figure 4. Satus Creek Temperature history from 1994 to 2004.



Temperature data is based on a 7-day maximum average. At all monitoring locations, summer temperature stayed slightly lower than the upper limit of tolerance.

Objective 5c: Monitor restoration treatments

Task 5c-1. Monitor revegetation success

An extensive set of photo points were developed in the course of implementing rehabilitation treatments. We have also scanned most of the film-based photos and slides accumulated during the life of this project, and moved completely to digital photography.

Task 5c-2. Evaluate effectiveness of sediment-trapping structures.

Numerous photo points were developed in the course of installing sediment retention structures (Figure 8). Over the past winter we found that erosion pins are too susceptible to ice, debris, etc., to reliably measure sediment deposition. If time is available we will begin surveying sediment accumulation this summer.



Figure 8. Sediment captured behind a bale structure on headwaters of Mule Creek.

We were also able to develop a GIS layer of nearly all of the sediment retention structures installed over the past six months.

We will begin surveying sediment deposition as soon as the spring runoff recedes and the intermittent channels dry up.