



**Lower Klickitat Riparian
and
In-channel Habitat Restoration Project**

Annual Report for September 1, 2000 – August 31, 2001

BPA Project # 1997-056-00

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SUMMARY

The overall goal of the Lower Klickitat Riparian and In-Channel Habitat Enhancement Project (LKRICHRP; BPA Project #97-BI-61835) is to restore watershed health to aid recovery of salmonid stocks in the Klickitat River mainstem and tributaries from Trout Creek (RM 43.4) to the confluence with the Columbia River (RM 0.0). An emphasis is placed on restoration and protection of watersheds supporting native anadromous fish production, particularly steelhead (*Oncorhynchus mykiss*) and spring Chinook (*O. tshawytscha*).

Habitat restoration activities in the Klickitat subbasin augment goals and objectives of the Yakima Klickitat Fisheries Project, NPPC Fish and Wildlife Program, Klickitat Subbasin Summary and the NMFS Biological Opinion (All-H paper). Work is conducted to enhance instream and contributing upland habitat to facilitate increased natural production potential for native salmonid stocks. Efforts in the Klickitat Subbasin are primarily oriented toward steelhead (*Oncorhynchus mykiss*) and spring Chinook (*O. tshawytscha*) and fall into two main categories: 1) identification and prioritization of sites for protection and restoration activities, 2) implementation of protection and restoration measures

During the September 2000 –August 2001 reporting period substantial progress was made within the project identification and prioritization elements by:

- development of a relational habitat database
- development and acquisition of GIS data
- filling of streamflow data gaps on two tributaries
- initiation of channel stability assessment on 13 miles of Swale Creek
- participating in the NPPC's Provincial Review process

Implementation-related activities during the reporting period were hampered by contractual delays with BPA that persisted through August 2001. Nonetheless, progress was made associated with:

- planning associated with acquisition of steelhead habitat on Dillacort Creek and the mainstem Klickitat River
- planning removal of a passage obstruction on Logging Camp Creek
- planning for repairs of an off-channel livestock watering system on Swale Creek
- providing materials and technical support for two livestock water developments in the headwaters of Dead Canyon Creek.
- fence construction restricting livestock access to 3000 feet of the Little Klickitat River

INTRODUCTION

The overall goal of the Lower Klickitat Riparian and In-Channel Habitat Enhancement Project (LKRICHRP; BPA Project #97-BI-61835) is to restore watershed health to aid recovery of salmonid stocks in the Klickitat River mainstem and tributaries from Trout Creek (RM 43.4) to the confluence with the Columbia River (RM 0.0). An emphasis is placed on restoration and protection of watersheds supporting native anadromous fish production, particularly steelhead (*Oncorhynchus mykiss*) and spring Chinook (*O. tshawytscha*).

Steelhead in the Klickitat subbasin are part of the Mid-Columbia ESU which is listed as “Threatened” under the Endangered Species Act. Restoration activities are aimed at restoring stream processes by removing or mitigating watershed perturbances and improving habitat conditions and water quality. Protection activities compliment restoration efforts within the subbasin by securing refugia and preventing degradation. In addition to steelhead and spring Chinook, project actions benefit non-target stocks such as fall Chinook and coho (*O. kisutch*) salmon, resident rainbow trout, coastal cutthroat trout (*O. clarki clarki*), bull trout (*Salvelinus confluentus*), and enhance habitat for many terrestrial and amphibian wildlife species. Through these restoration efforts, available habitat is anticipated to increase for spawning, juvenile rearing, velocity refugia, and adult holding. In addition, water quality impacts, such as fine sediment delivery, will be moderated, and overall hydrologic conditions are expected to improve.

The LKRICHRP is a Bonneville Power Administration (BPA) funded watershed project implemented by the Yakama Nation Fisheries Program (YNFP) that is the mechanism for addressing Klickitat subbasin habitat issues as part of the Yakima-Klickitat Fisheries Project (YKFP). The LKRICHRP is the principal ongoing funding mechanism for salmonid habitat restoration in the subbasin and has been integral to securing in-kind matches from the Washington Salmon Recovery Funding Board (SRFB) and Mid-Columbia Regional Fisheries Enhancement Group (MCRFEG). These other sources have augmented BPA monies and distribute the burden of habitat enhancement funding in the Klickitat Subbasin. The project addresses 1994 Columbia Basin Fish & Wildlife Program goals of an ecosystem approach to species recovery through protection and improvement to habitat conditions. Originally recommended by the Northwest Power Planning Council (NPPC) for funding by BPA in 1997, the LKRICHRP was recommended for continued funding by the NPPC as an outcome of the 2000 Provincial Review.

Feedback from the August 2000 Provincial Review process indicated a need for better information management to develop geographic priorities as well as better communication of priorities. Consequently, an emphasis was placed on review of existing information prior to pursuing more extensive implementation during the reporting period. LKRICHRP and YKFP Data Management personnel began development of a relational database to house and manage existing and future habitat data. The initial Ecosystem Diagnosis and Treatment (EDT) analysis for steelhead and spring Chinook was completed in Fall 2000 and will assist prioritization of restoration projects at the basinwide scale. Tributary watersheds known to support steelhead are identified in Table 1. These streams will be prioritized using a combination of EDT, habitat and spawning data, and professional judgment. Priorities will be refined as a watershed assessment scheduled to be contracted under a separate BPA contract is conducted over the next two years, the EDT model is refined, and additional data becomes available.

Activities discussed below are for the September 1, 2000 to August 31, 2001 reporting period. This reporting period straddles two contract cycles. The FY00 work statement governed work through March 31, 2001 while the FY01 work statement governed work through the end of the reporting period. The FY01 work statement, submitted in early March 2001, was not approved until mid-August 2001. This delay resulted in a substantial interruption of field activities originally planned for summer 2001. As a consequence of Provincial Review feedback and BPA contractual delays, project staff focused on information management and planning and design activities during the reporting period.

Table 1. Tributary watersheds in the lower Klickitat subbasin with habitat concerns

Watershed	Habitat Concerns
Dead Canyon Cr.	altered watershed hydrology, insufficient baseflow
Dillacort Cr.	altered watershed hydrology, insufficient baseflow, low LWD frequency
Little Klickitat R.	stream temperature, fine sediment, channel instability, altered watershed hydrology
Logging Camp Cr.	fish passage
Snyder Cr.	fish passage, altered watershed hydrology
Swale Cr.	stream temperature, altered watershed hydrology, channel instability, insufficient baseflows
Summit Cr.	altered watershed hydrology
Trout Cr.	altered watershed hydrology, fine sediment, fish passage
Wheeler Cr.	altered watershed hydrology, insufficient baseflow
White Cr.	altered watershed hydrology, insufficient baseflow; low LWD frequency, fish passage

RESULTS

Habitat Database

Previously, habitat data was housed in individual spreadsheet files by location. A relational database is being developed to increase efficiency and analytical strength by minimizing redundancy and, maximizing querying ability and flexibility. These outcomes will increase the ability to use quantitative data for basinwide prioritization as well as assist EDT inputs and validation. The database is designed to house data collected according to the TFW Ambient Monitoring Protocols. The eventual goal is to link the habitat database with a GIS coverage of monitoring locations to permit display of habitat data through a graphical GIS interface. Significant activities are noted below:

- Tables, forms, and queries for the Reference Point (RP), Habitat Unit (HU), and Large Woody Debris (LWD) modules were developed.
- All existing data was imported into the most current version (3.0) of the database contains for the three modules.
- A menu system was developed to make data management and access for each of the modules more user-friendly.
- Queries and reports were developed to calculate and display selected summary parameters for the RP, HU, and LWD modules.

GIS

Prior to July 2000, the YNFP did not have GIS coverages for the Klickitat Subbasin. Because of the importance of GIS for spatial analyses as well as communication of intentions and results, project staff are compiling a library of relevant GIS layers. The library will include base layers such as digital orthophotos (DOQs), digital elevation models (DEMs), and digital raster graphics (DRGs), layers of

relevant features such as streams and roads, and creation of layers specific to YKFP activities in the project area. Significant activities are noted below:

- 23 DRG files have been acquired at no cost giving us full DRG coverage for the Klickitat subbasin.
- 100% coverage has been obtained cost-free for both 30m and 10m DEMs
- DOQ coverage is approximately 10%. The remainder will need to be purchased.
- Coverages of roads, streams, towns, vegetation, and precipitation were obtained at no-cost
- The following shapefiles were created:
 - current and historic project locations and attributes
 - existing TFW monitoring locations and attributes
 - EDT reach locations and attributes
- Maps were created for the Provincial Review

Swale Creek Assessment

The railroad grade in Swale Canyon has severely channelized the stream in many locations causing, among other things, bank and bed scour that has eliminated spawning gravels and riparian vegetation from extensive portions of this thirteen mile reach. The Project biologist has initiated an assessment to identify and prioritize specific locations for restoration. Results of the assessment will provide the foundation for future restoration work in Swale Canyon. Significant activities are noted below:

- Funding was obtained from the SRFB and MCRFEG
- Planning was conducted, including:
 - A public meeting in Centerville for landowners potentially affected by the project
 - Meeting with several landowners individually to obtain access permission.
 - Preparing and advertising a Request For Proposals for a technical consultant
 - Selection of Interfluve, Inc as the consultant
 - Receipt of permission to conduct survey work from 15 of 31 landowners owning stream frontage in Swale Canyon. Remaining permissions are expected to be obtained during the next reporting period, prior to field data collection.

Champion Road

Though no longer in use for vehicular purposes, the old Champion haul road continues to dissect floodplain habitat by acting as a levee for portions of its length. The Project biologist is in the process of identifying sites to restore floodplain connectivity on the mainstem Klickitat River between river miles 15 and 32. Significant activities are noted below:

- Identified sources of historic aerial photography
- Conducted a site visit on the lower six miles of the road that identified five sections where the road interferes with floodplain connectivity.
- Met on-site with the road engineer representing the owner of the road to discuss potential actions.

Dillacort Creek Acquisition

Dillacort Creek enters the Klickitat River at RM 5.4 and has roughly one mile of habitat accessible to steelhead. Extensive flooding has reduced habitat complexity, scoured spawning gravels, and eliminated riparian vegetation. Potential subdivision of the parcels would compound existing habitat problems. The parcels total 580 acres and include the entire anadromous-accessible portion of the

stream as well as over ¾ mile of mainstem Klickitat River frontage. Additionally, the property is adjacent to roughly 1000 acres of state lands administered by Washington Department of Natural Resources (WDNR) and Washington Department of Fish and Wildlife (WDFW). The landowner of the parcels expressed a willingness to sell for conservation purposes. Subsequently, Columbia Land Trust (CLT) took the lead on acquisition with the Project biologist providing technical assistance.

- Provided data and technical writing assistance for a SRFB grant proposal sponsored by CLT to acquire two parcels on Dillacort Creek
- the SRF Board approved the grant for funding

Little Klickitat River Stabilization (river miles 11.3 – 11.9)

Raw banks and bed scour are mobilizing an excessive quantity of fine sediment along a 3000' reach and insufficient riparian canopy through part of the reach further contributes to thermal problems in the Little Klickitat River. This project will primarily consist of revegetation, though there is 800' of channel that has downcut roughly six vertical feet that will require in-channel treatment. Livestock will be restricted from the immediate channel area and an off-channel watering system will be developed. Significant activities are noted below:

- a Northwest Service Academy (Americorps) team built 1/2 mile of four-strand barbed wire fence. Because of rocky terrain the team had to build a series of figure fours and rock jacks to help stabilize and strengthen the fence.
- Survey work and assessment was conducted including longitudinal survey of 2600', four cross-sections, and one TFW segment
- Uncertainties regarding budget approval delayed further actions. These delays may have reduced landowner interest in the project. Potential implementation is anticipated for summer 2002.

Little Klickitat River Stabilization (river miles 12.7 – 13.2)

Much of the Little Klickitat River is incised with widespread indicators of scour. A 2200' reach of the Little Klickitat River between river miles 12.7 and 13.2 was selected for stabilization activities by Central Klickitat County Conservation District (CKCCD), Natural Resource Conservation Service (NRCS), WDFW, and YNFP. The Klickitat Lead Entity received a Washington State Salmon Recovery Grant to restore this section of the Little Klickitat River. The grant covers materials and labor for in-channel work. The LKRICHRP is assisting the effort by contributing to labor and material costs to install geotextile material and plant materials. The Project biologist is also available to provide technical assistance, though local NRCS officials made it very clear they intend to handle all design issues. Significant activities are noted below:

- Local NRCS officials completed a draft design and are waiting for state-office approval
- A BE was prepared by the local WDFW biologist with assistance from the LKRICHRP biologist
- the LKRICHRP biologist met with the landowner, NRCS District Conservationist, NRCS engineering technician (designer), and District Manager of the CKCCD to express concerns about problems with the design. LKRICHRP staff concerns were not addressed in subsequent designs.
- Permit applications were submitted
- Review by state-level NRCS officials required additional survey work and design revisions.
- Due to delays in finalization of the design, implementation did not occur during the reporting period.

No till

No-till practices have demonstrated benefits for decreasing runoff and fine sediment delivery to stream channels and would be particularly beneficial in the Little Klickitat River and Swale Creek watersheds. As the practice has gained in popularity the availability of required equipment for custom farming is now in high demand. Consequently, it is unavailable to many operators who would like to adopt the practice. Most farmers within the geographic scope of this project farm small plots (<400 ac) and therefore it is not economical for them to purchase the equipment individually (drills can range from \$20-50,000). The LKRICHRP biologist explored the possibility of cost-sharing purchase of a direct-seed (a.k.a. no-till) drill with the CKCCD. Significant activities are noted below:

- the LKRICHRP biologist met with the District Manager of the CKCCD to discuss potential arrangements for purchase and operation of a direct-seed drill
- the CKCCD was tasked with developing equipment specifications suited for prospective users in the area and presenting the idea to the CKCCD Board
- An apparent waning of interest by CKCCD and loss of funds for purchasing equipment from the final BPA budget resulted in reduced effort pursuing this issue though the Project biologist engaged in several conversations with operators hoping to stimulate more grass-roots interest in no-till practices.

Logging Camp Creek Passage

An old railroad bridge on the alluvial fan of Logging Camp Creek (confluence at ~RM 9.5 with mainstem Klickitat) with insufficient head space has backed-up bedload and debris resulting in a fish-passage impediment. The Klickitat Lead Entity has received a Washington State Salmon Recovery Grant to remove the structure. The LKRICHRP biologist has provided technical assistance with assessment, planning, design, and permitting. Significant activities are noted below:

- The LKRICHRP biologist completed the preliminary design in fall 2000
- Communications from the LKRICHRP biologist and local WDFW staff brought the matter to the attention of Washington State Parks (the present owner of the structure) staff
- Though previously unaware of the problem, WSP increased the status of this project on their priority list to use their own funding and staff for removal
- WSP obtained permits for removal (scheduled for October 2001)

Little Klickitat River Revegetation (vicinity of river mile 20.5)

The work area is located along an incised reach of the Little Klickitat River. Work was intended to occur in conjunction with landowner-sponsored actions to preserve the integrity of a bridge abutment. An initial site assessment was conducted, though subsequent planning and design were put on-hold due to the extended absence of the landowner and delayed approval of the BPA contract. The planting window (April and early-May) was missed pushing implementation back to spring 2002. The landowner may have lost interest.

White Creek Meadow Revegetation

This project will restore lost wetland habitat and meadow to diminish high flows and restore low flows to this and downstream reaches. The target area is a 300' reach of incised channel in an alluvial meadow. Activities for the reporting period were to have consisted of revegetation of fine sediment deposits along stream margins and planning for subsequent in-channel work. Because of delays in approval of the BPA contract, plant materials and labor could not be secured for revegetation activities

and the planting window was missed. Given uncertainties regarding the budget, no further actions were taken with regard to planning or design. The site was visited several times through the growing season to assess livestock use and flow conditions.

Diversion Screening

The number of surface-water diversions in streams supporting anadromous production in the Klickitat subbasin is relatively small. However, several pumps on the Little Klickitat River are suspected of being inadequately screened. The project will purchase self-cleaning screens to reduce salmonid mortality associated with pumping. Screens will only be purchased for legal diversions/pumps. Screens were intended to be replaced during the summer 2001 but, BPA contracting delays delayed implementation. Work will now wait until in-channel work associated with two restoration projects on the Little Klickitat are completed, likely in summer 2002.

Watering System Repair

WDFW, NRCS, and the LKRICHRP cooperatively installed a pressurized off-channel livestock watering system on Swale Creek during the previous reporting period. The system sprung 5 leaks during the fall of 2000 and winter of 2001 and plumbing in the well house was damaged by freezing. To ensure proper function of the system the following actions were taken:

- Assessment of repair and maintenance needs
- Development of a bid package and solicited bids
- Conducting a pre-bid walk-through with prospective contractors
- A contractor was selected but work could not be initiated during reporting period because of delay in approval of the BPA contract. The delay forced the landowner to water his stock in the creek and has added tension to our working relationship. Repairs will be conducted during the next reporting period.

Klickitat Mill Passage

A roughly 2600' concrete flume through the defunct Klickitat Mill acts as a velocity barrier under many flow conditions, though adult steelhead are periodically observed in the flume. A dam at the flume inlet has a concrete foundation with a roughly 3' rise and a timber retaining structure is believed to completely prevent adult steelhead passage. Additionally, the flume and two culverts upstream of the dam have perched outlets that are also passage barriers. Work to correct these passage issues is being conducted in association with two SRFB grants awarded to Klickitat County, matching funds from the MCRFEG, and in-kind services from WDFW.

- the previous landowner declared bankruptcy and the property was put up for auction. Two of the parcels were purchased and remain in private ownership. The third (lower) parcel is now in county ownership.
- One of the Potentially Liable Parties (PLP) entered into a voluntary clean-up agreement with Department of Ecology and Klickitat County. The PLP has hired a consultant to develop an assessment plan and conduct a hazardous material investigation, including soil and ground water samples from sites with the greatest probability of contamination.
- Implementation work cannot proceed until the hazards assessment has been completed and a cleanup has occurred to satisfy OSHA requirements. WDOE suggest that summer 2002 is probable.

Monitoring

Monitoring is a critical component to evaluating conditions, guiding priority development, and evaluation of project success. The Klickitat Monitoring and Evaluation (M&E) Project is the principal mechanism for monitoring habitat conditions and fish population parameters in the Klickitat subbasin. To assist M&E project staff, the LKRICHRP biologist has taken on the role of managing habitat data and have initiated streamflow monitoring on several tributaries. Significant activities are noted below:

- One TFW segment completed on the Little Klickitat River
- Stream gages were installed near the mouths of the two largest tributaries in the project area (Little Klickitat River and Swale Creek).
 - Data loggers and sensors for the continuous gages were purchased by the YKFP M&E Project.
 - A continuous-recording streamflow/temperature/turbidity station was installed at the Little Klickitat site. The landowner is currently unwilling to allow metal objects in the stream at Little Klickitat gage, so stage measurements from the pressure transducer will have potential for being compromised due to sensor movement until an agreeable alternative can be worked-out.
 - The Swale Creek staff gage was vandalized. Installation of continuous recording equipment will be delayed until we can be reasonably sure that the vandalism will not continue.
 - Regular flow measurements were initiated at both sites
 - Measurements, maintenance, and development of rating curves will be ongoing tasks for these sites.

Other activities of note:

- The Project biologist moved to White Salmon in October 2001 to decrease travel times and increase opportunity for field work
- The Project biologist participated in the Provincial Review including proposal development, presenting to the ISRP, responding to ISRP and CBFWA comments, and assisting revisions of the Klickitat Subbasin Summary
- The Project biologist attended a “Process-Based Channel Design” training course
- Initiated discussions with BPA and NPPC to expand project boundaries to include entire Klickitat Subbasin. Benefits include continuity of restoration oversight and implementation through the basin and the ability to leverage other funds in areas currently outside the geographic scope
- The project biologist dedicated considerable time to assisting the local SRFB process. Collaboration between project personnel and the state SRFB process has proven to be very beneficial to both projects. LKRICHRP staff provides biological and geomorphologic expertise while the SRFB process provides diversified players with local landowner involvement. Activities of note include:
 - Attended regular CRC and TAG meetings to provide technical support and review
 - Conducted a technical review of grants submitted to the Klickitat Lead Entity for SRF Board funding
- Introduced easement concept to a Swale Creek landowner with whom we have worked in the past. Project personnel provided him with literature and contact information for a land trust we have also worked with. Subsequently, met with owner and Columbia Land Trust on site to discuss technical conservation issues and potential for obtaining grant funding.

- Two water tanks and related materials were purchased for two grazing permittees in the headwaters of Dead Canyon Creek. Their stock had been putting a lot of pressure on a fence constructed in early 2000, presumably to get at a reliable water source (the Klickitat River). The tanks were installed by the permittees at springs in non-fish-bearing drainages to provide reliable water sources high enough in the watersheds to prevent cattle from drifting toward the river.

CONCLUSION

During this reporting period, significant progress was made in the realm of information management. The habitat database has increased the availability and utility of existing data. The library of base GIS layers is nearly complete with coverages developed for project sites, monitoring locations, and EDT reaches. This organization of data will enhance the ability to identify and communicate priorities, thus addressing the primary criticism from the August 2000 Provincial Review. Stream gages were installed on two important tributaries (Little Klickitat River and Swale Creek) to fill gaps in flow data information. The Swale Canyon Channel Stability Assessment will identify and prioritize work sites on the lower 13 miles of Swale Creek for restoration activities.

Despite delays in contract approval by BPA, progress was still made associated with implementation activities. Cooperation with Columbia Land Trust resulted in funding for acquisition of steelhead habitat on Dillacort Creek and the mainstem Klickitat River. Planning activities associated with the removal of a passage obstruction on Logging Camp Creek appear to have resulted in a situation where the owner will remove the structure at no cost to the Project or other conservation funding sources. Planning for repairs of an off-channel livestock watering system on Swale Creek is complete and work is ready to proceed as soon as the BPA contract is finalized. Project staff provided materials and technical support for two livestock water developments in the headwaters of Dead Canyon Creek to reduce livestock pressure along the Klickitat River. Fence construction restricting livestock access to 3000 feet of the Little Klickitat River was completed in January.

The Lower Klickitat Riparian and In-channel Habitat Restoration Project (BPA project # 199705600) is the principal mechanism for salmonid habitat restoration in the subbasin. Project staff have successfully supplemented BPA funding with grants from the Salmon Recovery Funding Board, Mid-Columbia Regional Fisheries Enhancement Group, and cost-shares with conservation districts, Americorps, and private individuals. In the last year, the Washington State Salmon Recovery Board has funded 9 projects in the Klickitat Basin, of which the YNFP has sponsored four and provided in-kind and/or cost-share assistance with the other five, primarily through the LKRICHRP. In-kind contributions from and cost sharing with WDFW, Columbia Land Trust, Northwest Service Academy, NRCS, and conservation districts has further increased the project effectiveness and efficiency.