WALLA WALLA RIVER BASIN
FISH HABITAT ENHANCEMENT PROJECT
ANNUAL REPORT OF PROGRESS

February 1, 2010-January 31, 2012

Prepared by:

Jed Volkman – Fish Habitat Biologist
Fisheries Program
Department of Natural Resources
Confederated Tribes of the Umatilla Indian Reservation
Pendleton, OR

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ABSTRACT

In 2010, the project initiated an assessment and restoration design effort on .75 miles of the South Fork of the Walla Walla River. The design work is ongoing and construction is planned for 2014. In cooperation with the Blue Mountain Land Trust and funding from the Snake River Recover Board, 99 acres of land was put into a permanent conservation easement at the confluence of the Wolf Fork and North Fork Touchet River. A subcontract was developed in each of the reporting years with a qualified chemical treatment company to treat noxious weeds within 100 acres of project areas. In 2011, the project secured all necessary environmental permits and completed habitat restoration on .5 miles of the mainstem Walla Walla River. This work included the construction of a new 1000' side channel designed to convey 10% of the base flow, placement of 400 whole conifer trees, and excavation of 35,000 cubic yards of levee and floodplain material. Completed all necessary status reports, herbicide reports, and various other BPA administrative tasks.

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ACKNOWLEDGEMENTS

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Finally, we wish to thank the many landowners in the Walla Walla River Basin committed to improving habitat conditions for native Fish and Wildlife.

Introduction

This report provides a summary of results for the Walla Walla Basin Fish Habitat Enhancement Project as a contract deliverable to Bonneville Power Administration (BPA) for the reporting period of February 1, 2010 through January 31, 2012.

The First Foods are considered by the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Department of Natural Resources (DNR) to constitute the minimum ecological products necessary to sustain CTUIR culture. The CTUIR DNR has a mission to protect First Foods and a long-term goal of restoring related foods in the order to provide a diverse table setting of native foods for the Tribal community. The mission was developed in response to long-standing and continuing community expressions of First Foods traditions, and community member requests that all First Foods be protected and restored for their respectful use now and in the future.

In January of 2007, the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Department of Natural Resources (DNR) adopted the following mission:

To protect, restore, and enhance the First Foods - water, salmon, deer, cous, and huckleberry - for the perpetual cultural, economic, and sovereign benefit of the CTUIR. We will accomplish this utilizing traditional ecological and cultural knowledge and science to inform: 1) population and habitat management goals and actions; and 2) natural resource policies and regulatory mechanisms.

Project Purpose:

With funding primarily provided by the Bonneville Power Administration, this project protects, and restores habitat critical to native salmonid fish in the Walla Walla Basin. Focal species include ESA-listed summer steelhead (*Oncorhynchus mykiss*), spring chinook (*Oncorhynchus tshawytscha*) and resident bull trout (*Salvelinus confluentus*). Geographic emphasis is currently focused on the mainstem Walla Walla River and Forks above Milton Freewater, Oregon, and on the South Fork of the Touchet River above Dayton, Washington. The primary cooperators include the Washington Department of Fish and Wildlife, the Oregon Department of Fish and Wildlife, the Walla Walla Watershed Council, and the County Conservation Districts. The project objectives are designed to meet limiting factors specific to each individual site and those listed in the Walla Walla Subbasin Plan (NPPC, 2004), the NOAA Fisheries Middle Columbia Steelhead Recovery Plan, and components of the CTUIR River Vision (2008).

Project Goal:

To protect, enhance and restore functional, healthy and sustainable floodplain, channel and watershed process for the purpose of restoring fisheries, aquatic species, and Tribal First Foods in the Walla Walla Basin.

Project Objectives:

1. Identify priority actions and geographic areas based on factors limiting anadromous salmonids and other important aquatic species populations.

2. Improve watershed function and fisheries habitat.

3. Ensure project success through the maintenance of project sites.

4. Measure the effectiveness of fisheries habitat projects through monitoring and apply learned lessons to future planning efforts.

5. Develop coordinated partnerships with other key agencies and stakeholders in order to maximize project efficiency and success.

PROJECT AREA

The Walla Walla River Basin originates in the Blue Mountains at an elevation of nearly 6,500 feet. The Walla Walla River and its major tributaries the Touchet River and Mill Creek comprise a subbasin of 1,758 square miles and 2,454 stream miles (Mendel, et al, 2005) in northeast Oregon and southeastern Washington (Figure 1). Of this area, 73 percent is located in Washington and 27 percent in Oregon. The basin is bordered by the Snake River Basin on the north, the Tucannon and Grande Ronde Basins to the east, and the Umatilla Basin to the south (US Army Corps of Engineers, 1997). Approximately 15 percent of the subbasin is comprised of forestland, and 82 percent is used for cropland and grazing. Over 90 percent of the subbasin in

Washington is privately owned.

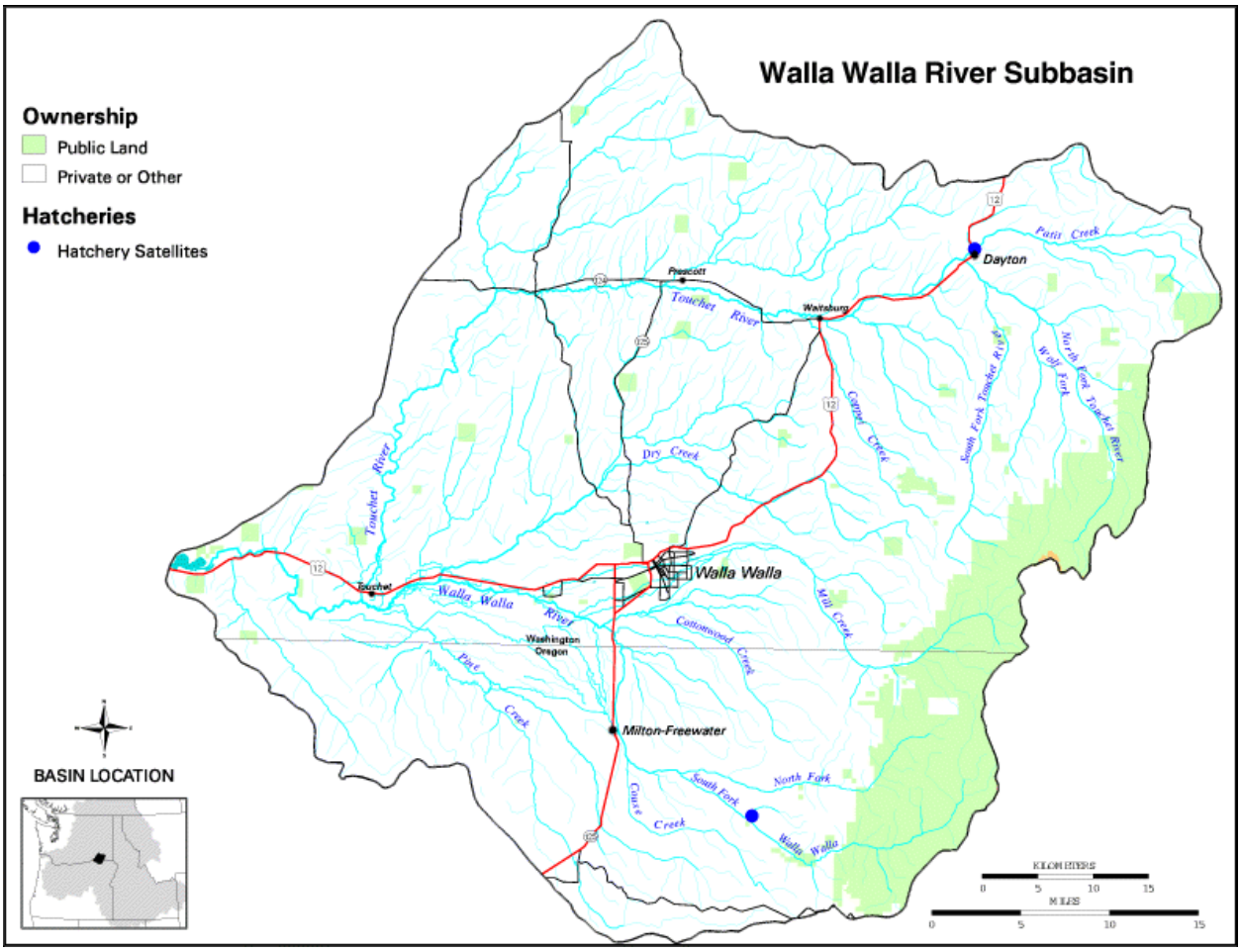

Figure 1: Map of the Walla Walla River Basin.

Annual precipitation in the middle and lower reaches of the basin averages 10-16 inches with more than 40 inches accumulating in higher elevations (Corps of Engineers, 1997).

Cultivation, domestic livestock grazing, and flood control activities have affected riparian vegetation throughout much of the mid-lower elevation reaches. The loss of stream channel complexity is significant throughout the basin as a result of extensive levees and destruction of riparian, wetland, and forest areas.

Irrigation is the principal water use in the basin. Stream flows characteristically peak in April, dropping sharply in May as high elevation runoff subsides and low elevation irrigation diversions increase (CTUIR, et al.). These conditions annually lead to unacceptable habitat for salmonid fishes in the mid-lower portions of the basin.

Current Fish Habitat Conditions:

Habitat conditions are typically favorable for salmonid fish in the upper portions of the Walla Walla Basin. The North and South Forks of the Walla Walla River, North Fork of the Touchet

River, Wolf Fork, Mill Creek, and various smaller tributaries support strong populations of salmonid fish. Much of the South Fork of the Walla Walla River is in near pristine forest condition and provides stable flows for native fish. Similar habitat conditions are found in the Mill Creek Watershed providing both good habitat for salmonid fish and a consistent water supply for the city of Walla Walla.

As the Walla Walla Valley drains out of the Blue Mountains toward the Columbia River and into private lands to the west, stream habitat conditions become far less suitable for salmonid fish. Water extractions, diversion structures, upland land practices, roads, farm practices, flood control structures, livestock grazing, and urban development have all severely influenced native fish habitat in the lower river. Most of the stream sections within private properties are lacking adequate riparian corridors and have been straightened and disconnected from the floodplain. Several large irrigation districts near Milton Frewater, Oregon divert most of the surface flow during the summer and fall months of the year and small push-up irrigation diversions and pumps are found throughout the basin. Limited summer flow and resulting high water temperatures in the mid to lower portions of the basin provide ideal conditions for pisciverous bass, catfish and other non-native fish species.

Native Fish:

Historical accounts clearly validate the presence of several now extinct species of salmon in the Walla Walla River. Runs of spring and fall chinook, chum, coho, and sockeye salmon are reported to have been present at some level (Swindell, 1941). Several historical journals remark that the Touchet, Mill Creek, mainstem Walla Walla, and various other tributaries contained healthy populations of spring chinook salmon at one time. The last spring chinook salmon run of any significance was reported in 1925 (Van Cleve and Ting, 1960). By 1955, only 18 spring Chinook salmon were reported to have been captured in the sport fishery (Oregon Game Commission, 1956 and 1957).

Today, bull trout, summer steelhead, red band trout (*O. mykiss*), mountain whitefish (*Prosopium williamsoni*) and reintroduced spring chinook are currently present in the upper Walla Walla, Mill Creek and Touchet drainages. Other native species include dace, sculpin, bridgelip and mountain suckers, red side shiners, northern pikeminnows, western brook lamprey, chiselmouth, and peamouth. For a more complete discussion of anadromous fish use in the basin please see the annual report of progress for the Walla Walla Subbasin Salmonid Monitoring and Evaluation Project, BPA Project Number 2000-039-00.

METHODS

Landowner Conservation Easements:

Habitat restoration and protection projects implemented on private lands begin with long-term (minimum 15 years) conservation easements. Landowner easements are legal documents designed to protect the resource, the landowner, the CTUIR, and all funding sources. Easements are very descriptive, clearly defining the project boundaries, livestock fence placement if any, various land use restrictions, and the expectations and goals of all parties.

Once signed by both CTUIR and the landowner, easements are notarized and filed at the

County Courthouse and transfer to new landowners in the event that the property ownership changes. Ongoing coordination with the landowner is an essential part of the restoration process and flexibility on the part of both parties is an integral part of project success.

Environmental Clearances:

Habitat projects require a variety of environmental clearances depending on the restoration action. Passive actions such as the construction of livestock exclusion fences and riparian plantings typically fall under the BPA programmatic process. More aggressive restoration actions such as in-water stream work (various instream structures, large wood additions, etc.) require Fill and Removal Permits from the applicable State, Federal, and Local regulatory agencies prior to implementation.

As required under the Federal National Historic Preservation Act (NHPA), the project also coordinates as necessary with the CTUIR Cultural Resource Protection Program (CRPP) at proposed habitat enhancement sites involving ground disturbance. CRPP staff conducts file and literature searches, pedestrian surveys and/or archeological excavations to determine if cultural resources potentially eligible for inclusion to the National Register of Historic Places are present at proposed enhancement sites. Final reports documenting their findings are prepared and submitted to the State Historic Preservation Office.

Project Implementation:

Restoration actions implemented by the project include various types of adult and juvenile passage improvements, riparian and upland enhancements, and stream channel modifications. Projects requiring the use of heavy equipment (dozers, excavators, large trucks, etc.) are subcontracted to qualified independent contractors selected through a competitive bidding process.

Livestock fence construction is generally contracted out to private contractors. The fence design follows USDA specifications in an effort to protect livestock and migrating wildlife. Small fencing projects, routine maintenance, and livestock water gaps are completed by project technicians.

Riparian planting remains an integral part of all stream habitat improvements. Only plants native to the region are used for restoration of riparian and upland project areas. Potted plants and tublings are obtained through the CTUIR Native Plant Nursery. Newly planted trees and shrubs are irrigated by the project technicians through the drought months of July through September in the first year of planting with a truck-mounted 300-gallon water tank and sprayer.

Reestablishment of native grasses is often the first management step taken within upland areas. Grass seed is obtained from area suppliers and includes a mix of site appropriate species. Once established, grasses provide excellent cover for wildlife species, control of soil erosion and management of competitive noxious weeds.

If left uncontrolled, noxious weeds will generally out-compete native trees and shrubs. For this reason the project annually contracts with a licensed herbicide/pesticide applicator to treat noxious weeds within project areas. Additional chemical treatments and mechanical measures such as mowing are done throughout the year as needed by project technicians. All chemical weed applications are consistent with state and federal regulations and reported annually

through the BPA.

RESULTS AND DISCUSSION

Landowner Conservation Easements:

Approximately seven miles of stream corridor habitat is protected in long-term (15-years) conservation easements between private landowners and the CTUIR under this project. Project areas are located within Blue Creek, Couse Creek, Patit Creek, the mainstem Walla Walla, and the South Fork of the Walla Walla (Figure 2). Several of the conservation easements are nearing the end of the contract period and its unknown at this time if the project/landowner will choose to extend them.

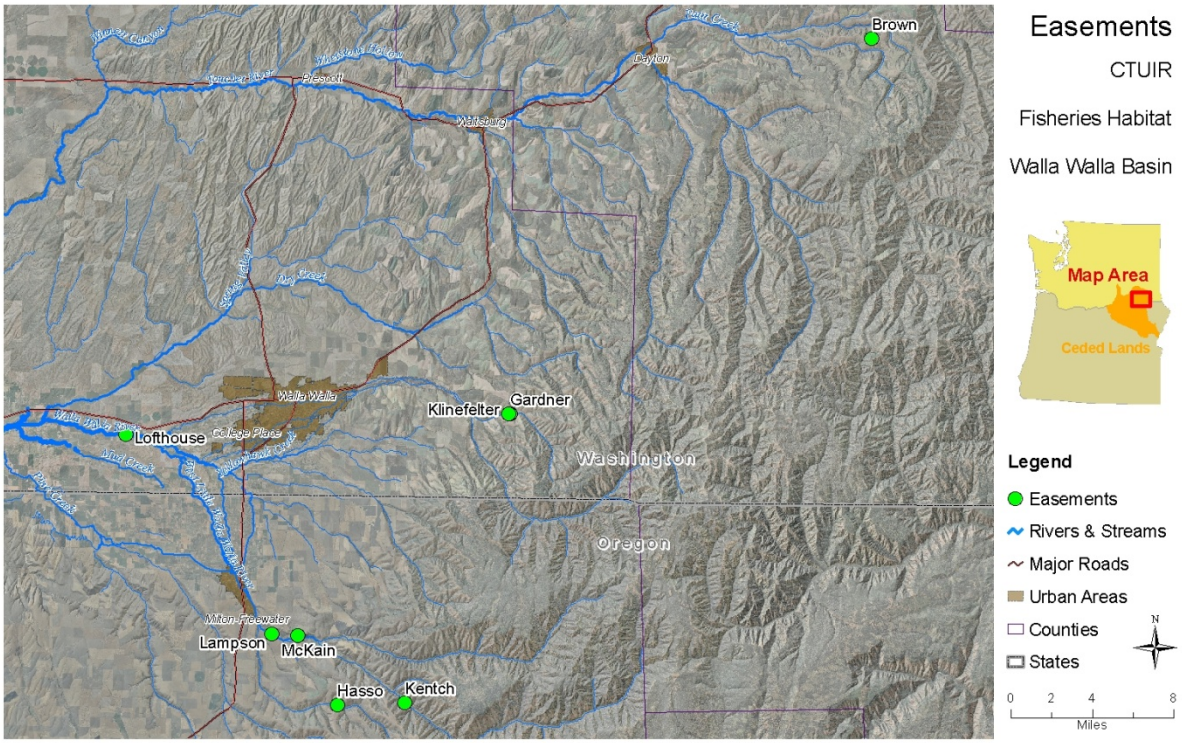

Figure 2: Long-term habitat conservation easements between the CTUIR and private landowners in the Walla Walla River Basin.

Additional project site descriptions and accomplishments are available in the 2007-2008 Walla Walla River Basin Fish Habitat Enhancement Annual Report of Progress (BPA Project Number 199604601) found at http://efw.bpa.gov/searchpublications.

A summary of accomplishments completed within the two-year reporting period for each project area signed into a conservation easement with the CTUIR is provided below:
Blue Creek (Warriner and Gardner):

The 15-year conservation easement between the CTUIR and landowner for this property will expire in September of 2012. The current owner of the property is not interested in extending the easement. No further restoration work is planned for the property at this time.

Mainstem Walla Walla River (Lampson):

The Lampson Project Site is located just east of Milton Freewater, Oregon on the mainstem Walla Walla River at River Mile 49 at an elevation of approximately 1,245 feet. The project site includes approximately 600 meters of stream and 10 acres of floodplain habitat, all of which falls within the Flood Control District Boundary. A 15-year conservation easement between the CTUIR and landowners was signed in April of 1998. The conservation area includes approximately 0.5 miles of the mainstem Walla Walla River and 25 acres of riparian and floodplain habitat.

Water quality within the project reach remains cold and capable of supporting all life stages of salmonids throughout the year. Forested headwater reaches approximately 10 miles upstream provide a consistent and high quality source of water. Stream temperatures at the project site remain below the DEQ temperature criterion for salmon and trout rearing and migration of 18ºC (64.4ºF) throughout the year. Bull trout, spring chinook, redband trout, summer steelhead and various other native fish species are present in good numbers. Fish surveys done in 2010 found salmonid fish densities of 0.5 salmonid fish per square meter.

The stream channel within the project reach has been straightened, leveed, simplified and disconnected from the historic floodplain. A large rock levee along the right bank and a steep ascending slope along the left bank confine the stream along its entire length. In this altered form, the stream is incapable of migrating laterally, incorporating and sorting gravels, capturing wood, forming bars, or natural pools.

Virtually no large wood of any habitat forming significance is present within the bankfull boundaries. Stream surveys done by the project in 2010 found five pieces of large woody debris in approximately 600 meters. A large percentage of the riparian vegetation is comprised of shrub species including willow, elderberry, and alder, which although beneficial will ultimately provide no future contribution to large wood in the system. Under current conditions, if a piece of large wood were to naturally fall into the stream, it would quickly be moved through the reach because of the high stream velocities and lack of stream sinuosity.

GeoEngineers, a consulting firm with headquarters in Seattle, Washington completed a final restoration design for the project site in 2010. The overall vision for the project is to enhance habitat for native fish and wildlife, particularly ESA listed summer steelhead, bull trout, and reintroduced spring Chinook salmon. The proposed design is intended to diversify in-stream structure, enhance low-velocity refugia particularly important to juvenile fish, increase habitat complexity, and improve floodplain function and riparian conditions.

Principle components of the restoration work include:

1. Removal, disposal, and transplanting of existing select trees and shrubs
2. Excavation and removal of existing rock levees along most of the right bank
3. Excavation of approximately five feet of floodplain material to an elevation at or near bankfull
4. Excavation and construction of a new 300 meter side-channel, small spring channel, and

associated floodplains
5. Creation and enhancement of in-stream fish habitat through the installation of wood and rock habitat structures along the main river and side channel banks
6. Reuse of riprap and rock from existing levees to increase and enhance in-stream fish habitat
7. Placement of large trees throughout the newly excavated floodplain as roughness features
8. Revegetate the floodplain with a mixed compliment of native trees, shrubs, and grasses

All of the necessary state, federal, and local environmental permits were secured by the project in 2010 and 2011. Anderson Perry and Associates of Walla Walla, Washington was contracted to complete the construction survey and staking. Partney Construction Inc. of LaGrande, Oregon was contracted to do the construction work.

Construction work commenced in the second week of July 2011 and concluded on the last day of September 2011. Heavy equipment included two Komatsu track driven excavators (78,000 lbs.), one Caterpillar D6H with ripper and one Caterpillar D5H with a ripper. Other equipment included a water truck, a road grader, and multiple large dump trucks all owned and operated by Partney Construction.

The work began with some minor clearing and grubbing followed by the removal of approximately 450 meters of constructed rock levee along the right bank. Trees and rocks of adequate size excavated during the removal of the levees were salvaged and stockpiled for later use. Once the levee was removed, approximately 1.5 vertical meters (approximately 35,000 cubic yards) of floodplain material over approximately five surface acres behind the levees was excavated. Excavated material was transported a short distance off-site to an abandoned rock pit owned by the landowner. A secondary side channel approximately 300 meters in length and 3 meters wide was then constructed in the new floodplain (Figure 3). Flows were prevented from entering the side channel until all of associated shaping and instream structures had been completed.

Instream construction sites along the main river channel were first isolated using a series of coffer dams constructed with eco-blocks and sealed with plastic sheeting. Fish within the isolated areas were removed through electrofishing by staff of the CTUIR Walla Walla Basin Collaborative Salmonid Monitoring and Evaluation Project (project number 20003900). All captured fish were released outside of the work area.

Approximately 400 whole conifer trees were moved in by the contractor and stockpiled on site. The trees were placed as instream habitat at key locations throughout the main river channel and newly constructed side-channel. The trees were generally placed with the tree bole buried deep into the stream bank and the rootwad portion of the tree exposed to the river flow. The trees were further secured by attaching (with heavy chain) the tree bole to eco-blocks and pre-cast concrete anchors. Where the trees overlapped, heavy rebar was used to pin the pieces together.

A large number of trees including those salvaged from the levee were used to enhance floodplain roughness. The trees were typically placed in small clusters and buried 2-5 meters below the soil surface with 1-3 meters remaining above the ground.

Figure 3: Restoration plan view for the Lampson project site on the mainstem Walla Walla River. The design includes levee removal along most of the right bank, the construction of a 600 meter side channel designed to convey 10% of the flow, the placement of more than 400 whole conifer trees, reconstructed floodplain, and improved riparian width and function.

Figure 4: Work area along the right bank of the main channel isolated with eco-blocks. The excavator working in the background is working on the entrance to the side channel.

Figure 5: Looking downstream near the entrance of the newly constructed floodplain and side-channel. Large wood can be seen along the channel margin and within the floodplain along the left bank. Following construction, all disturbed areas of the project area were planted with several thousand native trees and shrubs.

Figure 6: A series of before (on the left) and after (on the right) photos of the construction site. The side channel entrance is shown in the center photo on the right.

A detailed planting plan was developed as part of the design process. All native trees and shrubs were obtained from the CTUIR Native Plant Nursery. Planting began post-construction in October of 2011. All disturbed areas were seeded with a mixture of native grasses including Mountain Brome, Sandberg Bluegrass, Blue Wild Rye, Bluebunch Wheatgrass, and Idaho Fescue. A list of plant species and quantities is provided in Table 1. The planting and maintenance, which included irrigation throughout the summer of 2012, was subcontracted to Botanical Developments of Bend, Oregon.

Table 1: Summary of tree and shrub species planted into Lampson Project site post construction, October 2011.

Tree/Shrub	Container Size/Unit	Quantity
Ponderosa Pine	2 gallon	13
Snowberry	1 gallon	533
Blue Elderberry	1 gallon	34
Woodsii Rose	1 gallon	220
Serviceberry	1 gallon	64

Chokecherry	1 gallon	173
Wax Currant	1 gallon	32
Golden Currant	1 gallon	78
Black Cottonwood	Cutting	1602
Thin Leaf Mtn Alder	40 Cu. Inch Plugs	92
Red Osier Dogwood	cutting	179

Couse Creek (Hasso):

A licensed chemical applicator treated noxious weeds within the project site in May of 2010 and 2011. The project technicians treated additional problem areas as needed. The livestock exclusion fence and water gaps were repaired as needed throughout the reporting period. Additional planting and large wood placement is planned for the site in 2013.

Walla Walla River (Lofthouse):

A licensed chemical applicator was hired to treat noxious weeds within the project site in May of 2010 and 2011. Recently reintroduced native plants were hand-watered by the project technicians during the months of July through October.

Walla Walla River (McCain):

The project contracted with a licensed chemical applicator to treat noxious weeds within the project site in May of each reporting year. Two additional chemical treatments were applied by the project in June and July of the same year. The livestock exclusion boundary fence was repaired as needed.

South Fork Walla Walla River (Kentch):

A final construction design for this project site is scheduled for completion in 2013. The design will include the removal of the levee along the right bank, the addition of one or more side channels, addition of channel roughness features (LWD), additional access to the floodplain, and enhanced stream sinuosity in the main channel. Construction is currently planned for 2014.

Project Effectiveness Monitoring:

Lampsons:

Physical habitat parameters were collected in 2010 and 2011 as part of the project assessment and design process at the Lampson Project Site. The project was implemented in the fall of 2011. An analysis and discussion of pre and post-project monitoring will be provided in the 2013 annual report of progress.

ADDITIONAL ACCOMPLISHMENTS

- Coordinated with various local, state, and federal agencies in the prioritization and selection of habitat restoration sites;

- Conducted on-site visits with landowners;
- The project leader and assistant attended the Northwest River Restoration Conference in Stevenson Washington for three days in February;
- Implemented noxious weed subcontracts on all project sites;
- Maintained all field equipment including the tractor, various implements, and hand tools;
- Completed contracts for the Kentch and Lampson assessment and design work
- Provided written/verbal comments to ODFW, WDFW, and Walla Walla County regarding various proposed instream/upland activities impacting salmonid habitat;
- Coordinated with participating landowners in meeting their concerns, project objectives, future tasks, etc.;
- Attended basin strategy, planning, and funding meetings including the Mill Creek Working Group, the Priority Projects Group, Oregon Solutions, and the Snake River Salmon Recovery technical team;
- Provided tours of project restoration areas to the NWPPC, BPA, and others as needed;
- Purchased a new flatbed trailer to be used for hauling a small tractor and various other field equipment;
- Completed an upper Walla Walla River Restoration Plan.

CONCLUSION

A multitude of factors has led to the extinction of salmon and severe reduction of summer steelhead in the Walla Walla River Basin. Irrigation withdrawals, inadequate passage, and habitat destruction on private lands have been particularly damaging. In recent years, particularly since the listing of summer steelhead and bull trout under the Endangered Species Act, we have begun to take the first steps toward protection and restoration of habitat needed by salmonid fish in the Walla Walla Basin. With time, education, and continued funding, many of the obstacles now facing salmon in the basin may be eliminated. Stream buffers and zoning laws that protect riparian areas from further development are desperately needed. We are rapidly losing floodplain areas in the Walla Walla Valley to development. Once floodplain areas are developed, natural stream form and processes and the associated benefits for native fish and wildlife become impossible. City and county land management plans have established stream buffers but most are inadequate and poorly enforced. Minimum stream flows and water conservation measures must be established to protect critical spawning, rearing, and migration periods. Finally, with ever-increasing amounts of dollars invested by state and federal agencies, it is imperative that funding aimed at helping native fish be directed toward projects that will provide the greatest science-based benefit.

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