Document ID #P121727
Report covers work performed under BPA contract #32726
Report was completed under BPA contract #53046

WALLA WALLA RIVER BASIN
FISH HABITAT ENHANCEMENT PROJECT
ANNUAL REPORT OF PROGRESS
2009

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Project No. 96-046-01
Contract Number: 32726

SUMMARY

This project is funded by the Bonneville Power Administration to restore and protect stream and upland habitat critical to the survival of salmonid fish in the Walla Walla River Basin.

Major accomplishments during the 2009 reporting period include approximately 1000 ft. of meander reconstruction on Couse Creek. This effort also included the planting of 1000 willow cuttings and placement of 50 whole conifer trees.

Fifty acres of upland habitat was seeded to native grass and 800 native trees and shrubs were planted into two separate treatment areas on the mainstem Walla Walla River. Treatment of noxious weeds and maintenance of livestock exclusion fencing was completed for all long-term conservation easement areas.

A qualified consulting agency was contracted to complete an analysis and conceptual design for two project areas on the upper Walla Walla River. The completed plans will focus on levee removal, reconnection to the floodplain, and improving instream channel complexity and juvenile rearing habitat.

A habitat survey was completed on Couse Creek within a treatment reach and repeated for comparison on an undisturbed (reference) reach immediately upstream. The bankfull width is 17.9 ft in the reference reach and 28 ft in the treatment reach. Pools are spaced at an average of 63 ft. in the reference reach and 150 ft. in the project area. Average riffle length was 85 ft. in the treated reach and 24 ft. in the reference. Pool length was on average 44 ft. in the treated reach and 18 ft. in the reference section and wood counts were more than five times higher in the reference section.

An upper Walla Walla River Restoration Action Plan was developed under contract with a qualified consultant. This document includes among other things a definition of current habitat conditions, goals and objectives, and specific restoration actions by project reach. The document will be used to guide the project in out-year restoration efforts.

The project continued to participate in various technical working groups and community outreach efforts including the Mill Creek Working Group, Snake River Salmon Recovery Board, the Priority Projects Group, and others.

TABLE OF CONTENTS

HISTORICAL BACKGROUND

The earliest inhabitants of the Walla Walla River Basin included three Native American Tribes: the Cayuse, Walla Walla, and Umatilla. The Tribes ceded all of the land within the Walla Walla Basin to the United States in an 1855 treaty (CTUIR, 2001).

In 1805, the now infamous Corps of Discover led by Lewis and Clark came into the valley. On the Touchet River near its mouth they wrote “The hills of this creek are generally abrupt and rocky, but the narrow bottom is very fertile, and both possess 20 times as much timber as the Columbia itself; indeed, we now find, for the first time since leaving Rock fort (the Dalles), an abundance of firewood. The growth consists of cottonwood, birch, crimson haw, red and sweet willow, choke-cherry, yellow currants, gooseberry, and sumac together with some corn-grass and rushes (Lewis and Clark, 1805-1806)”.

The large influx of Euro-Americans to the basin began in the mid-1800's. At this time, timber and brush mixed with grass and forbs were found in the Blue Mountains, bunch grasses in the middle portions of the watershed, and wild rye and sagebrush in the valleys (U.S. Dept of Agriculture, 1941). In 1858, Charles Dickerson, the son of an early settler on Pine Creek (near the city of Milton Freewater, OR), remembered the raw farm land of his childhood as being fertile but covered thickly with clumps of tall rye grass (Caverhill,1971). In 1839, an early explorer near Whitman Mission on the Walla Walla River wrote, "The plain about the waters of this river is about thirty miles square. A great part of this surface is more or less covered with bunch grass" (Farnham, 1839). Further downstream near the mouth of the river, Lewis and Clark in 1806, and David Douglas in 1826, noted the surrounding country as being predominated by sagebrush just as it is today.

Horses were introduced into the Walla Walla Valley from New Mexico in the 1730's and Native American Indians began to make use of them soon afterward. In the mid-1800’s, large numbers of domestic cattle, sheep, and draft horses were introduced to the area (United States Dept. of Agriculture, 1941). Ultimately, the rangelands were overgrazed which, not surprisingly, led to native plant populations being replaced by more competitive introduced plant species and widespread soil erosion.

The earliest noted agriculture in the valley occurred in about 1825 at Fort Nez Perce, near the mouth of the Walla Walla River (Walt Gary, personal communication). In 1839, the area around Whitman Mission was primarily wheat, corn, onions, melons, and various other crops (Farnham, 1839). Prior to the establishment of Whitman Mission in 1836, the grass-covered hills were thought to be suited only for grazing. However, by 1850, small amounts of cropland were situated along the river bottoms including some irrigation. In the fall of 1863, a farmer sowed 50 acres of wheat on the upland near Weston, Oregon and the following summer collected an average of 35 bushels to the acre. From this point forward, land was broken out at an accelerated rate and by the late 1870's, Walla Walla County was considered one of the nation’s leaders in cultivated grains (United States Dept. of Agriculture, 1941).
As agriculture in the Walla Walla Valley continued to expand, so too did the availability of large machinery capable of manipulating the landscape. Harper et al. (1938) indicates that steam-powered tractors were available in Umatilla County (Oregon) in 1904 and 1905, caterpillar-type gasoline-powered tractors were introduced from 1907 to 1909, and diesel oil-burning caterpillar type tractors could be purchased in 1932. Heavy machinery allowed riparian areas to be cleared for farming and grazing, and extensive stream channel straightening to begin (Figure 1).

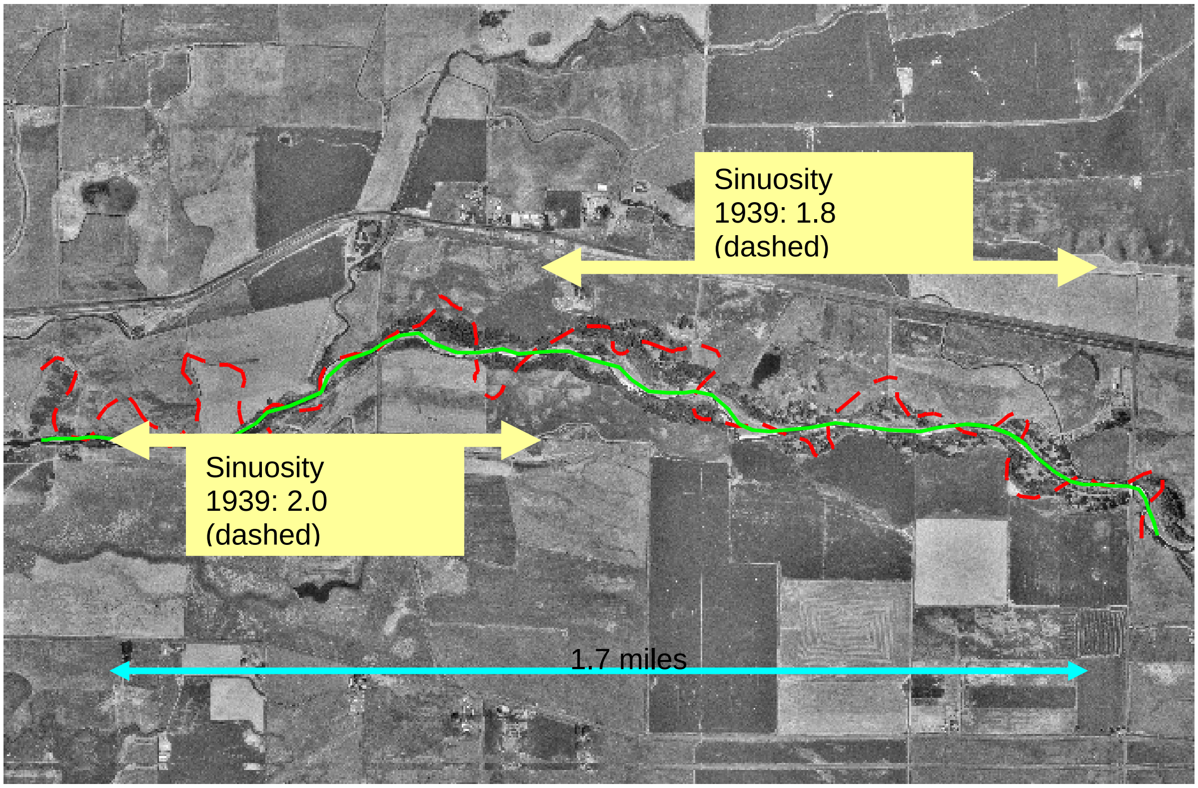

Figure 1: Aerial view of Walla Walla River near Lowden Washington depicting stream channel in 1939 (dashed line) and stream channel in 1996 (solid line) (Walla Walla Subbasin Temperature TMDL, 2005-page 58). .

A scientist named Dice conducted vertebrate studies in the Touchet River Basin from 1904 to 1914 (Kuttel, 2001). He wrote, "The animal habitats of southeastern Washington have been greatly altered by the work of man. Farming is extensively carried on and in the prairie area a very large percentage of the land is under cultivation. Irrigation is also practiced in valleys of both prairie and sagebrush areas. All of the land not under direct cultivation has been heavily grazed by cattle and stock. Part of the timber along the streams has been cut down and much of the brush has been cleared away. These changes in the environment have caused great changes in the abundance of the different species of vertebrates" (Dice, 1916 cited in Mudd, 1975).

Historical accounts clearly validate the presence of several now extinct species of salmon in the Walla Walla River. Some species, particularly fall chinook and chum, were likely spillover from the Columbia River, essentially of Columbia River origin but occupying the lower portions of the Walla Walla River during spawning periods. Nevertheless, runs of spring and fall chinook, chum, coho, and sockeye salmon are reported to have been present at some level (Swindell, 1942). 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, the remaining native fish include summer steelhead at severely depressed levels, bull trout, resident redband trout, reintroduced spring chinook salmon and various other non-game species. Summer steelhead and bull trout are presently listed as threatened under the Federal Endangered Species Act (ESA).

It is also important to recognize the impact that over-appropriation of water and inadequate passage conditions have had on the once abundant populations of salmon and steelhead. In 1950, Nielson reported a total of 130 points of irrigation diversion in the basin of which 123 had no protective fish device of any kind. Numerous historical journals report "sacks of smolts" being collected from the cropland fields in the spring out-migration months. Early accounts by local people note that annual returns of spring chinook salmon reduced dramatically following the construction of Nine-Mile Dam at Reese Washington in 1905 (Nielsen, 1950; Van Cleve and Ting, 1960, Figure 2). In addition, Van Cleve and Ting (1960), while summarizing data for the period of 1935-36, wrote that it would be “practically impossible for spring chinook salmon to ascend the river under the present system of water use”.

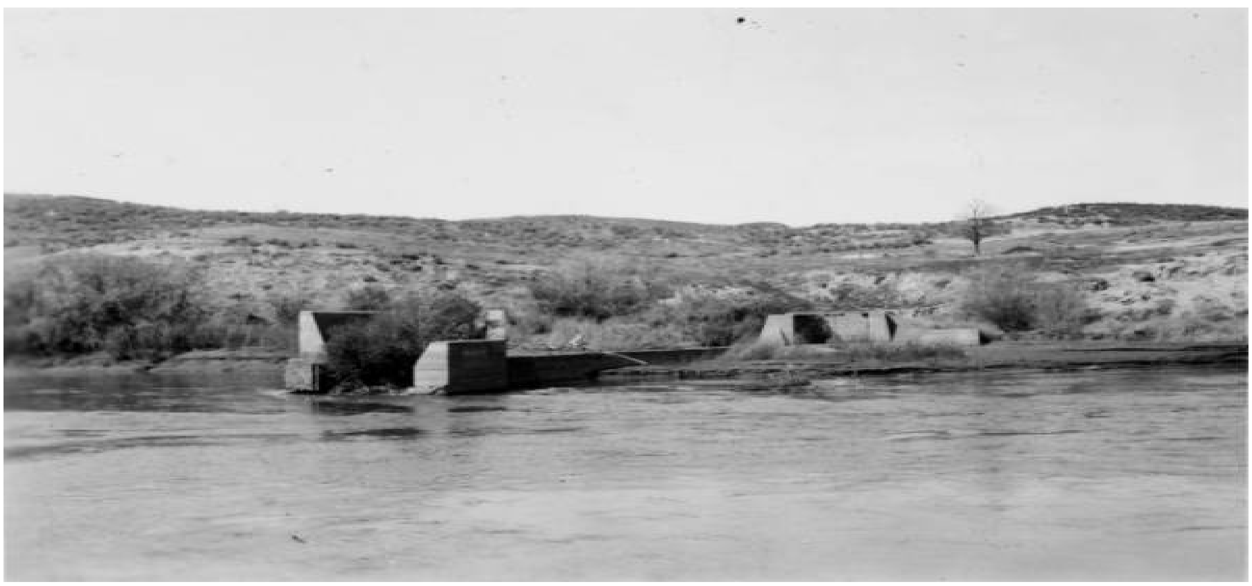

Figure 2: A portion of Nine Mile Dam near Reese Washington can be seen in this undated photo on the mainstem Walla Walla River. This dam was reportedly built in 1905 and eventually removed.

INTRODUCTION

This project was initiated in 1996 and is funded by the Bonneville Power Administration through its Fish and Wildlife Program. The Department of Natural Resources (DNR) of the Confederated Tribes of the Umatilla Indian Reservation has adopted a mission based on First Foods ritualistically served at tribal meals. This framework for natural resource management seeks to reflect tribal values associated with natural resources. (Umatilla River Vision, Jones et al., 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 3). 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.

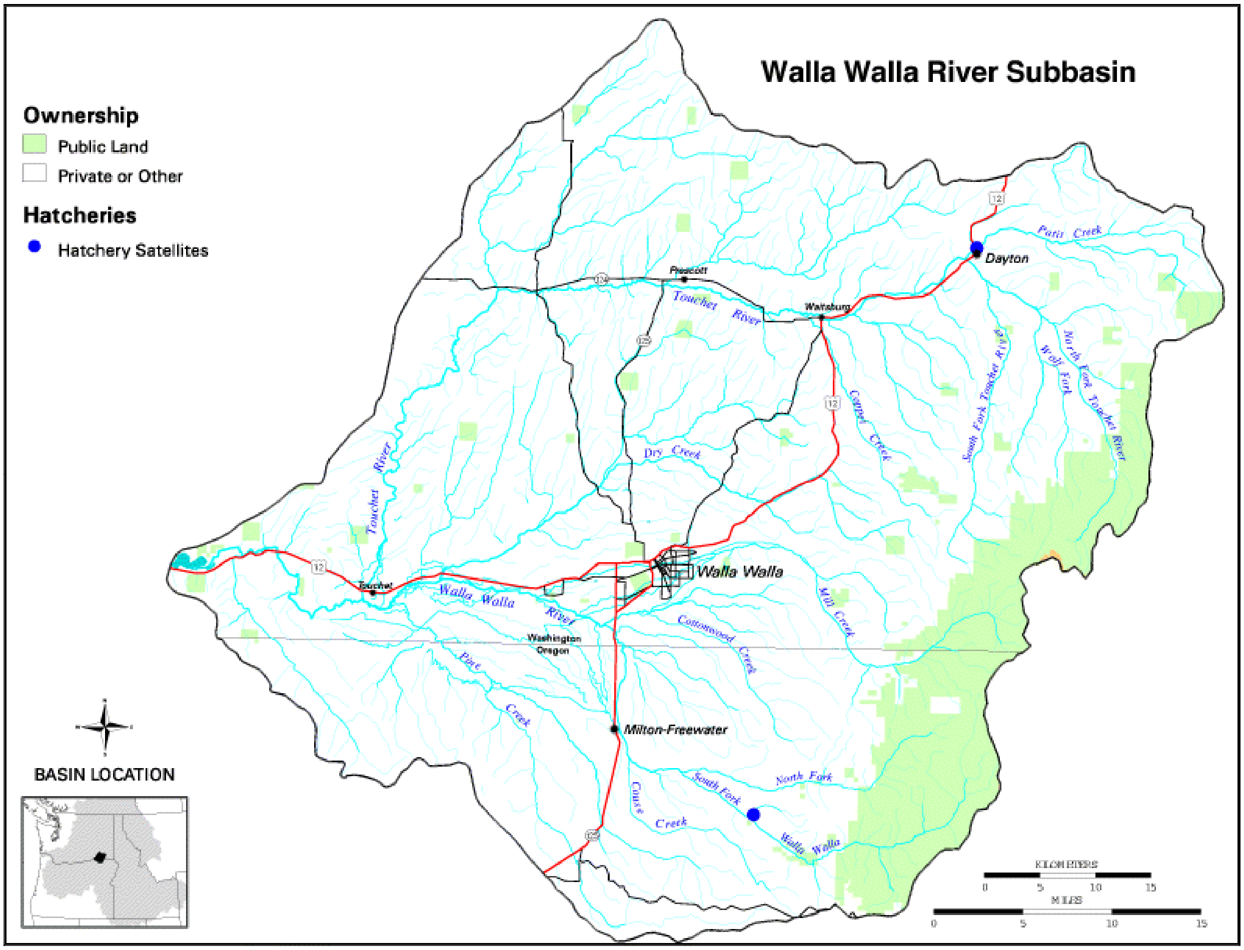

Figure 3: Map of the Walla Walla River Basin.

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 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 and several irrigation districts further downstream. Similar habitat conditions are found above the city of Walla Walla in the Mill Creek Watershed. This area provides excellent 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. Most of the stream sections within private properties are straightened and disconnected from the floodplain for the benefit of farms, livestock, road systems, homes, and various other contemporary interests. 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 provide ideal conditions for pisciverous bass, catfish and other non-native species in the lower portions of the river.

Conservation easements in the basin:

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 4).

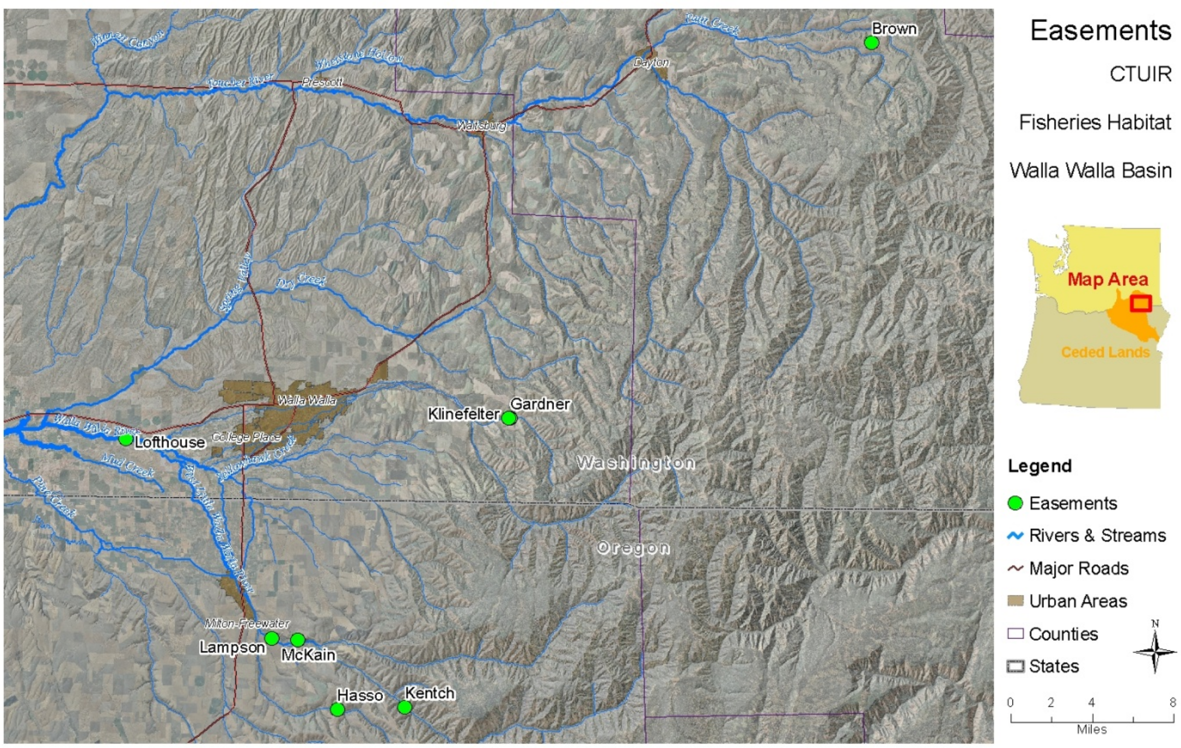

Figure 4: Long-term habitat conservation easements between the CTUIR and private landowners in the Walla Walla River Basin.

METHODS

Landowner Conservation Easements:

Habitat restoration and protection projects implemented on private lands begin with long-term (minimum 15 years) or perpetual 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 (rock weirs, 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, livestock exclusion fencing, riparian/upland planting, and stream channel enhancements. 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 contracted out to private contractors meeting all license, insurance, and qualifications. The fence construction design follows specifications provided by the USDA in an effort to protect livestock and migrating wildlife. Small fencing projects, routine maintenance, and livestock water gaps are completed by project technicians.

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 generally irrigated through the drought months of July through

September in the first year after planting with a 300-gallon water tank and truck-mounted 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. The project+ annually contracts with a licensed herbicide/pesticide applicator to treat noxious weeds within project areas. Additional mechanical/chemical weed control measures 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.

Project Effectiveness Monitoring:

Representative portions of project areas are monitored in an effort to reduce the considerable cost associated with this task. Most of the monitoring methods used are modified from protocols developed by Oregon Department of Fish and Wildlife in 1993 (Moore et al., 1993). Other sources include *Monitoring Stream and Watershed Restoration* by Roni 2005, Stream Channel Reference Sites, a USFS publication by Harrelson et al. 1994 (www.stream.fs.fed.us), and an AFS publication entitled Aquatic Habitat Assessment by Bain and Stevenson, 1999.

Parameters monitored over time generally shade and large wood measurements, cross sections, longitudinal profile, vegetation grids, and salmonid densities. For some of the projects a detailed topographical field survey is done with equipment manufactured by Trimble of Sunnyvale, California which using global positioning (GPS) plots the horizontal and vertical location of the stream and associated habitat types (pools, riffles, glides, etc.). Lidar and low elevation photography is increasing being used for long-term monitoring of vegetation and project design.

Pre and post project salmonid population estimates are determined with a mark-recapture method with assistance from the CTUIR Natural Production Research Monitoring and Evaluation Project. A representative portion of the treatment area is selected for sampling and block nets are placed at the top and bottom of the sampling reach. Fish are collected using one or more electrofishers (depending on stream size) while moving in an upstream direction. Captured fish are anesthetized, given an identifying mark such as a small caudal fin clip, measured to length, weighed, and returned to the sampled stream reach. After the marked fish are allowed to move freely in the sampled reach for a period of 24 hours, the reach is sampled again using the same methods. Further details regarding the applied mark and recapture methods (assumptions, calculations, etc.) are available upon request.

RESULTS AND DISCUSSION

Landowner Conservation Easements

For a complete site description and list of accomplishments for each project area, please refer to 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.

Blue Creek (Warriner and Gardner):

In 1997, a 15-year conservation easement was signed with two separate but adjacent landowners on Blue Creek. One of the two private property project sites has been sold four times since the original 15-year agreement was signed. The current landowner has expressed no interest in extending the easement once it expires in September of 2012. We are hoping that the current landowner will choose to protect the considerable investment made by the BPA and CTUIR once the easement expires but there is no guarantee that this will occur. This turn of events demonstrates the importance of securing permanent conservation easements whenever possible.

Couse Creek (Banks):

The project leader and CTUIR hydrologist visited the Banks property in early 2009 to evaluate current stream and riparian conditions and then develop a restoration strategy to be implemented in the fall.

This effort resulted in the following objectives:

1. Improve bank stability, channel narrowing, and stream shade with additional riparian plantings.

2. Promote pool habitat, hiding cover, channel meander, and stream complexity with the addition of large wood.

3. Reduce channel braiding, instability, and bank erosion by improving channel geometry and introducing additional channel roughness.

4. Reduce erosion at a stream ford important to the private landowner

All necessary state federal and local environmental clearances were obtained during the months of February through June of 2009. In October of 2009, Partney Construction Inc. of La Grande, Oregon was hired to:

1. Reshape approximately 200' of stream channel in two meander bends

2. Provide and install 25 whole conifer trees throughout 1000' of the stream channel

3. Install 1000 native willow cuttings.

The conifer trees were specifically placed within the stream and active floodplain to encourage meander, collect bed materials on point-bars during high flow events, and discourage channel braiding. The willow cuttings were placed by digging a deep trench with the excavator, laying the live cuttings into the trench in a vertical position and back-filling. The cuttings were placed in long trenches parallel to the stream channel but also at various angles on point-bars in an effort to catch sediment.

Mainstem Walla Walla River (Lampson):

In 2009, the project hired GeoEngineers of Spokane, Washington to complete an assessment of current site conditions and provide restoration recommendations. A final design option will be completed in 2010 and construction is planned for 2011. A plan view of the draft preferred alternative design is provided in Figure 5 below.

Figure 5: Restoration alternative (draft) 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 an 800' side channel designed to convey 10% of the flow, the placement of more than 200 whole conifer trees, placement of several hundred boulders, and improved shoreline slope.

Couse Creek (Hasso):

A licensed chemical applicator was hired to treat noxious weeds within the project site in May of 2009. A project technician applied one additional herbicide application in June of the same year. The livestock exclusion boundary fence and water gaps were repaired as needed throughout the reporting period.

Walla Walla River-Lofthouse Landowner:

A licensed chemical applicator was hired to treat noxious weeds within the project site in May of the reporting period. In February, approximately 20 weed barrier tarps were installed by the project technicians on 12 acres of the project area and planted with 800 native plants of mixed species obtained from the CTUIR Native Plant Nursery. The plants were hand-watered by the project technicians during the months of July through October.

Walla Walla River-McCain Landowner:

The project contracted with a licensed chemical applicator to treat noxious weeds within the project site in May of 2009. The project technician applied two additional chemical treatments in June of the same year. The livestock exclusion boundary fence and water gaps were repaired as needed throughout the reporting period.

South Fork Walla Walla River-CTUIR:

In 2009, the project contracted with GeoEngineers of Spokane, Washington to complete an assessment of current site conditions and provide restoration recommendations. The project is currently considering three restoration alternatives ranging from the addition of instream structures to a more aggressive approach that includes levee removal and the construction of several side channels to benefit juvenile fish. The project will complete the final design in 2011 and construction is tentatively planned for 2013.

Project Effectiveness Monitoring:

Couse Creek:

Physical habitat surveys were completed within the project area (Banks) and repeated on an undisturbed (reference) reach approximately 0.25 miles upstream on June 4, 2009 and July 15, 2009 respectively. A comparison of the various data values is presented in Tables 1 and 2 below.

The “reference” section is not a wilderness area but has been relatively undisturbed for several decades and contains a healthy riparian corridor with a mix of native trees and shrub age classes and species, an active floodplain, and limited encroachment. The reference stream has a bankfull width of 17.9 ft. versus 28 ft. in the project reach. Virtually every bend in the reference section has multiple pieces of large wood, some in the water and some bridging the stream. Lateral pools are found at each bend with smaller pools and undercut banks found throughout the active channel. Pools are spaced at an average of 63 ft. in the reference reach and 150 ft. in the project area. The difference in riparian vegetation is the most dramatic difference between the two reaches. The reference section includes all age classes and a wide variety of native species including willow, wild rose, sumac, hawthorne, and black cottonwood. By comparison, the project reach has mostly young recently introduced riparian vegetation providing little shade, inadequate bank protection, and no immediate riparian source for additional wood loading.

The project began aggressively reintroducing large wood into 1200 ft. of the project area in 2008. A total of 25 whole conifer trees were added in 2008 and another 25 trees in 2009. The large wood has improved channel sinuosity and point-bars are collecting bed materials during high flow events. The project is also focusing on the reintroduction of riparian vegetation. Several hundred willow cuttings were trenched into the project area in 2008 and again in 2009. Additional planting is planned for 2010 and beyond if necessary. Survival of the willow cuttings has provided mixed results but overall the riparian vegetation is slowly recovering.

Table 1: Physical habitat data collected within the Banks Project Area and an undisturbed reach just upstream. The data was collected on June 4, 2009 and July 15, 2009 respectively. Project located at Lattitude 45.85739, longitude 118.35207, Umatilla County, Oregon.

Project Reach	Typical	Min	Max	**Reference Reach**	Typical	Min	Max
Pattern				Pattern			
survey length	821.6			survey length	355.4		
valley length	557.3			valley length	270.4		
meander length	300			meander length	214.2		
belt width	85.5			belt width	71		
amplitude	46.5			amplitude	78.6		
radius	35			radius	48.9		
sinuosity	1.5			sinuosity	1.3		
Riffle				Riffle			
Bankfull width	28			Bankfull width	17.9	15.3	20.4
mean depth	1.42			mean depth	1.53		
max depth	1.5			max depth	2.1		
Pool				Pool			
max pool depth	1.5			max pool depth	2.8		
Ratios				Ratios			
entrenchment ratio	2.7			entrenchment ratio	1.2	1.1	1.3
width to depth ratio	19.7			width to depth ratio	11.7	9.6	13.8
Hydraulics				Hydraulics			
discharge rate (BF)	184.2			discharge rate (BF)	173.7		
Profile				Profile			
pool spacing	150.4	97.2	241.5	pool spacing	63.2	29.6	114.9
riffle length	85.9	69	115.5	riffle length	24.8	6.2	77.8
pool length	44.5	30	64.5	pool length	18.8	4.5	36.3
run length	5.7	3.5	9	run length			
glide length	77.3	48	106.5	glide length	20.7	10	31.3
channel slope (%)	1.8			channel slope (%)	2		

Table 2: Bed materials collected at riffles within the Banks Project Area on Couse Creek and

again on an undisturbed reach just upstream. Surveys done in July of 2009.

Project Reach			Reference Reach		
Channel Materials	Bed Surface	Bankfull Channel	Channel Materials	Bed Surface	Bankfull Channel
D16 (mm)	24	20	D16 (mm)	29	12
D35 (mm)	36	31	D35 (mm)	48	29
D50 (mm)	49	42	D50 (mm)	64	43
D65 (mm)	63	53	D65 (mm)	79	59
D84 (mm)	86	73	D84 (mm)	110	84
D95 (mm)	130	100	D95 (mm)	160	120
mean (mm)	45.4	38.2	mean (mm)	56.5	31.7
% Silt/Clay	0%	0%	% Silt/Clay	0%	0%
% Sand	2%	2%	% Sand	8%	12%
% Gravel	64%	76%	% Gravel	42%	58%
% Cobble	34%	22%	% Cobble	50%	31%
% Boulder	0%	0%	% Boulder	0%	0%

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;
- Attended the Northwest River Restoration Conference in Stevenson Washington for three days in February;
- Hired an assistant Project Leader;
- Developed noxious weed subcontracts and oversight on all project sites;
- Maintained all field equipment including tractor, various implements, and hand tools;
- Completed contracts for the Kentch and Lampson assessment and design work
- Completed all necessary status reports, herbicide reports, and various other administrative tasks;
- 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

Multitudes of factors have 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 will be eliminated.

We must strive to protect and enhance all salmonid habitat and enforce existing laws structured to protect the salmon life cycle. Forest and agricultural practices can coexist with the needs of salmon but must always take into consideration the fragile connection between habitat types and the needs of native fish. We must continue to learn, always striving to improve our methods of restoration and protection while working within a political system that is fair to all participants including native fish and wildlife. 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 the associated benefits for native fish and wildlife become impossible. County land management plans have established stream buffers but most are inadequate and poorly enforced. Minimum stream flows 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.

ACKNOWLEDGEMENTS

Accomplishments made by this project were funded primarily by the Bonneville Power Administration. We wish to specifically thank BPA employees Sarah Branum, Peter Lofy, and Lisa MacLellan for all of their patience and assistance in project activities.

The authors would also like to thank several CTUIR employees for their dedicated contributions to the project:

James Webster for assistance in hydraulic design and project supervision.
James Bill, (Habitat Technician) for his dedicated work in completing all necessary field tasks.

Gary James (Fisheries Program Manager), for project management and administrative assistance. Michelle Thompson and Julie Burke for contract administration and administrative support; and Celeste Reeves for secretarial assistance.

We also appreciate the technical expertise and coordination of Dave Karl, Glen Mendel, and Mark Grandstaff of WDFW, Brian Wolcott (Walla Walla Watershed Council), Brian Burns of the Tri-State Steelheaders, Rick Jones and Mike Denny of the Walla Walla County Conservation District, and Steve Martin and Kris Buelow of the Snake River Salmon Recovery Board.

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

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