

Increase Instream Flows to Dewatered Stream Reaches in the Walla Walla Basin

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Increase Instream Flows to Dewatered Stream Reaches in the Walla Walla Basin

Final Report – December 14, 2001 through December 31, 2002

BPA Project 2001-075-00, Contract 0007844

Walla Walla County Conservation District (WWCCD)

Prepared by Rick Jones

Background

WWCCD developed a multifaceted project plan to reduce the quantity of irrigation water diverted from surface flow in the Walla Walla River and its tributaries. The reduction in irrigation withdrawals was intended to restore habitat quality for ESA listed steelhead and bull trout. This plan was developed into a contract application and submitted to BPA for funding. The project plan, as originally submitted, had two objectives. The first objective was to reduce irrigation conveyance loss and the second was to acquire irrigation water rights and transfer them to protected in-stream flow.

Apparently a lack of communication between WWCCD and BPA resulted in a slow start and a misunderstanding as to what was being funded and the level of funding. Ultimately, the contract was funded at roughly 42% of the amount applied for, and water rights acquisition was not funded.

Introduction and Project Location

The Gardena Farms Irrigation District (GFID) is located in southeastern Washington State's Walla Walla River Basin at the foot of the Blue Mountains in Walla Walla County. The Walla Walla River Basin has been a focal point for Endangered Species Act (ESA) compliance strategies since 1999. In 2000, the United States Fish and Wildlife Service (USFWS) charged three local irrigation districts, including GFID, with alleged "take" of threatened bull trout when exercising their water rights and with contributing to the de-watering of reaches of the Walla Walla River. The districts and the Service reached a settlement agreement in June of that year that emphasized development of a basin-wide strategy to address ESA issues and restore flow to the river system. This action by the federal regulatory agencies resulted in the initiation of federal and state locally led remedial planning efforts. The first of these were WDOE funded Watershed Planning (2514) and USFWS funded Habitat Conservation Planning efforts, both of which began in 2000. Several more state and federal planning efforts have since been started and are currently under way in the Walla Walla Basin. These additional efforts include sub-basin planning funded by the Northwest Power Planning Council, development of TMDLs funded by WDOE, development of a Comprehensive Irrigation District Management Plan funded by Washington Department of Agriculture, and development of the Snake River Salmon Recovery Plan funded by WDFW.

The Flows Project

The project began in late December 2001 with the signing of a contract between the WWCCD and Bonneville Power Administration (BPA). BPA agreed to partner with the National Fish and Wildlife Foundation (NFWF) and the Department of Ecology to provide matching funds for the piping project but withheld funding for the water lease portion of flow enhancement. WWCCD agreed to seek a funding source to pay for leased water while

developing a list of possible voluntary participants enrolled in the Conservation Reserve Enhancement Program (CREP) with the aim of leasing water for instream flow.

The original scope of work and budget for the proposal was set on a two-year timeline from October 1, 2001 through October 1, 2003. The final contract timeline was reduced to one year, from December 2001 to December 2002. This left the WWCCD with one irrigation season and two CREP sign-up periods in which to perform the assigned tasks. WWCCD submitted a final NEPA checklist to BPA on December 5, 2001. WWCCD secured matching funds for the project from the National and Wildlife Foundation on March 25, 2002.

The first phase of the plan involved piping three inefficient irrigation water delivery ditches in the GFID in western Walla Walla County. GFID diverts water near river mile 37 and transports it to sixty-three diversions, then back to the Walla Walla River through a twenty-nine mile long open channel delivery system.

In the plan, irrigation district personnel would monitor three ditches with ramp flumes to determine the amount of water lost to open-air delivery. WWCCD would then advertise for bids for the piping project and hire a contractor to perform the construction work. The irrigation ditches would be replaced by closed piped systems with no operational overflow requirements or loss to evaporation or percolation. GFID would then determine the amount of water saved that would be placed in trust for instream flow. WWCCD and GFID would work together with Washington State Department of Ecology (WDOE) staff to locate a river gauging site downstream of the GFID diversion to track water left instream by the irrigation district.

The second phase of the project involved the WWCCD working with the CREP program. This program helps landowners install riparian buffers along streams in the Walla Walla Basin for protection and riparian development of the corridor. Many participants hold irrigation water rights from the river. Lands set aside for CREP would no longer need yearly irrigation, and participants would be asked to place this flow in trust for instream flow enhancement. Instream flow gauges would be placed at strategic locations to monitor additional flow placed instream. The acreage goal set for this phase of the project was three hundred and fifty acres.

Project Implementation

Ramp flumes were purchased (funded by USFWS) to monitor flow and determine losses associated with the delivery of irrigation water through three open channel delivery ditches. Results gathered from ramp flume monitoring were used to determine the amount of water that would be saved through replacement of the open-channel system with enclosed pipelines. The Riggs Road pipeline project yielded 443 gallons per minute of loss, or 0.99 cubic feet per second. The Huesby-Bennington pipeline project was rated at 192 gallons per minute, or 0.43 cubic feet per second of lost water. The combined total saved through the project is 635 gallons per minute, or 1.42 cubic feet per second.

The redesigned diversions incorporate concrete, pipe, and debris screening. Approximately 11,500 feet (6900 feet for Riggs Road and 4600 feet for Huesby-Bennington) of polyvinyl chloride (pvc) pipe ranging from six to twenty-one inches in diameter was used for the project. PVC pipe was chosen because of the low head loss due to smooth inside surfacing and proven longevity when buried. The Riggs Road diversion was enlarged and deepened, and a by-pass was added for water and screened debris to return to the main canal system. The screening medium is 50-mesh stainless steel that strains out larger silt particles to keep the pipeline and pump systems clean. The Huesby-Bennington diversion was modified to incorporate 1/8 inch x 3-inch wedge wire for coarse screening, a new headgate, and to adapt the new pipe to the old structure. Galvanized canister screen filters with 1/16" stainless screening material keep fine debris out of the pumping systems. All pumps were attached to the pipelines through Schedule 40 steel manifolds with valves for flow control, and flow meters were installed downstream of the pump to monitor instantaneous and cumulative flow for each pump diverter. Attaching pumps to buried delivery piping eliminated the need for any operational overflows and eliminated loss due to evaporation and percolation. The only water diverted is the amount needed by pump systems and delivered to the irrigators' fields. One diverter on Riggs Road receives water through the pipeline and will be delivered water across a Cipoletti weir that will measure instantaneous flow. This allows him to maintain the opportunity to use rill irrigation on a small pasture and orchard from time to time, rather than always using his sprinkler system.

WWCCD used the competitive bid process to secure a contractor for final design and installation and in August a contract was awarded. The Riggs Road pipeline was functional by October 15 and was considered ninety-five percent complete by December 31, 2002 with a few minor modifications or repairs to be completed, which the contractor completed by March 1, 2003. The Riggs Road pipeline consists of a redesigned diversion and debris screening structure from the main canal, an enclosed pipeline that serves water to six separate redesigned pump stations, and metering for each individual pump station. The system operates on demand and there are no operational overflows, creating an efficient delivery system. The Huesby-Bennington pipeline project was installed in the months of October and November and was also near complete by December 31, 2002. The contractor had only minor modifications to perform for the individual farmers' pump stations, which were performed by March 1, 2003, completing the project except for minor work that cannot be completed until the abandoned irrigation ditch dries up completely. The Huesby-Bennington project incorporates a rebuild of the diversion and coarse debris screening from the main

canal, an enclosed pipeline that serves two irrigators with no operational overflow, fine water screening at the rebuilt pump stations, and meters to track water delivery.

WWCCD has attended meetings throughout the grant timeline to coordinate efforts with the multiple state and federal planning efforts that are active in the Walla Walla River Basin. We have also attended Walla Walla Basin Technical Work Group and Washington Watershed Planning meetings to further coordinate instream flow efforts and stream gauge placements with WDOE and others as related to the grant. WDOE installed permanent flow monitoring on the Walla Walla River just north of the Oregon border at Pepper's Bridge, just below the GFID diversion, on the Touchet River at the Columbia-Walla Walla County line west of Waitsburg and at Cummins Road Bridge just north of the town of Touchet. Seasonal monitoring for the Walla Walla Basin Total Maximum Daily Load setting process was placed at the mouth of Yellowhawk Creek just above the GFID diversion, on the Touchet River at Bolles Junction west of Waitsburg, and Luckenbill Road north of Touchet. Washington Department of Fish and Wildlife (WDFW) continues to operate steam flow monitoring on upper Yellowhawk Creek, lower Mill Creek, and at the Stateline on the Walla Walla River and at Detour Road. WWCCD worked with the HCP contractor staff to find a partner for WDOE to fund long-term maintenance and operation of the flow gauging stations. WDOE ultimately contracted with Walla Walla County to operate and maintain the stations, and the County subcontracted with the Tri-State Steelheaders to perform the work.

WWCCD began to identify CREP participants for the water lease portion of the grant in January 2002. We worked throughout the past twelve months to identify irrigated lands enrolled in CREP that would be eligible for lease to enhance instream flow. Guidelines were set to determine how water could be protected and what water could be placed into trust. WWCCD recently entered into an agreement with Washington Water Trust (WWT) in which the district agreed to identify irrigators who are interested in leasing water rights and then assemble pertinent water rights and water use data which will be forwarded to WWT. WWT will value the water rights, conduct due diligence and actually provide payment to the irrigator for a lease on their water rights.

WWCCD and GFID staff will continue to work with WDOE to determine the amount of water that can be put in trust as instream flow as a result of the piping projects. We will also work with WDOE and Washington Water Trust to work out an agreement to place the saved water in trust for instream flow enhancement.

Summary

The flow enhancement project replaced three inefficient open-channel irrigation water delivery systems with approximately 11,500 feet of closed piping. This project will save approximately 635 gallons per minute (1.42 cubic feet per second) of live flow to the Walla Walla River. WWCCD and GFID are committed to working with WDOE and WWT to determine the exact amount of water approved for trust and develop a contract for lease and protection of that conserved water. WDOE placed a permanent flow gauge just downstream of the GFID diversion that will be used to monitor the instream contribution from the pipeline project. WDOE installed several flow gauges in Walla Walla County that will be

used to monitor other instream contributions from CREP acreage irrigation water leases. WWCCD is committed to locating a funding source to further the instream flow enhancement project portion that BPA was unable to fund and will continue to work with WDOE and Washington Water Trust to place more water instream and under protection from other uses.



Figure 1. (above) The Riggs Lateral prior to the project. Infiltration and evaporation losses are very high with an open ditch in an arid region



Figure 2. (above) Riggs Diversion site



Figure 3. (above) Riggs Diversion Site during construction



Figure 4. (above) Riggs site being installed



Figure 5. (above) Installation complete, resulting in no transportation loss and less water being pumped from the river