

Final Report

Gardena Farms Irrigation District #13

Piping Project

Riggs Road & Bennington-Huesby
Pipelines

BPA Project 2001-075-00, Contract 0007844

Walla Walla County Conservation District

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Project Introduction and Project Location

Gardena Farms Irrigation District #13 (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 & 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 dewatering of reaches of the Walla Walla River. The districts and the Service reached a settlement agreement in June of that year that emphasized the 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 Washington Department of Ecology (WA-DOE) funded Watershed Planning (using 2514 funding) and USFWS funded Habitat Conservation Planning efforts, both of which began in 2000. Several more state and federal planning efforts were subsequently started in the Walla Walla Basin. These additional efforts included sub-basin planning funded by the Northwest Power Planning Council, development of Total Maximum Daily Loads (TMDLs) funded by WA-DOE, development of a Comprehensive Irrigation District Management Plan (CIDMP) funded by the Washington Department of Agriculture (WA-DOA), and development of the Snake River Salmon Recovery Plan funded by the Washington Department of Fish & Wildlife (WDFW).

BACKGROUND

To address the need to enhance stream flows, the 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 Bonneville Power Administration (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.

SCOPE OF THE FLOWS PROJECT

The project began in late December 2001 with the signing a contract between the WWCCD and BPA. BPA agreed to partner with the National Fish & Wildlife Foundation (NFWF) and the WA-DOE 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 NFWF on March 25, 2002.

The first phase of the plan involved the piping of three inefficient GFID irrigation water delivery ditches 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.



The Riggs Lateral prior to the project. Infiltration and evaporation losses were very high with an open ditch in an arid region.

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 WA-DOE 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.

TARGET SPECIES

The target species for the Walla Walla River from which GFID water is diverted are Mid-Columbia Basin Steelhead and Bull Trout which are listed as “Threatened” under the Endangered Species Act as well as reintroduced Spring Chinook salmon. Steelhead is the primary target species with adult summer steelhead migrating upstream from September through March and juvenile steelhead out-migrating between March and July. There are increasing numbers of Spring Chinook also found in the Walla Walla River; most of the spawning adults are thought to be recruits from hatchery production from other river systems. In 2000, the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) started planting pre-spawning adult Spring Chinook in the Walla Walla Basin. Spring Chinook adult migration occurs between mid-April and end of June. Bull Trout are not generally found in the lower reaches of the basin during the warmer months; however, adfluvial populations migrate downstream and forage in the river below the GFID diversion when temperatures permit. Reductions in irrigation withdrawals associated with water savings resulting from this project will help maintain stream flows critical to the recovery of these important fish stocks.

TIE-IN WITH U. S. ARMY CORPS OF ENGINEER’S (USACE) OVER-ARCHING PLAN (WATER EXCHANGE PROJECT) TO BE CONSTRUCTED IN 2018

In a related effort also triggered by the threat of federal regulatory actions the Corps of Engineers (Corps) with support and encouragement from the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) is working on a feasibility study to define concepts available for a Columbia River water exchange project whereby water would be pumped from the Columbia River to serve irrigators in the Walla Walla Basin. In early 2009, the Corps completed a conceptual design for a pipeline that would convey water from the Columbia River near the mouth of the Walla Walla River to connections that would feed water to the three largest irrigation districts on the Walla Walla River in Oregon and Washington. In return, irrigators would agree to not divert their water right and leave flow in the Walla Walla River during periods when flows are critical to fish. Construction of the proposed exchange project is due to begin in 2018.

Gov. Gregoire has expressed full support of the Columbia River exchange and has committed \$40M to the project. This project has been proposed by the CTUIR as the key to final settlement of water rights granted to the CTUIR by way of their treaty which dates back to 1855. If not resolved the potential exists for the CTUIR to seek resolution through the judicial system which could have dire consequences for the agricultural economy of the Walla Walla Basin. The WWCCD design team is designing the GFID pipeline to operate as a gravity system to convey water diverted at their existing diversion works or to convey Columbia River water received from the Corps pipeline project. If the GFID is to cooperate on the Corps / CTUIR project it is essential that the entire Gardena conveyance system is piped by 2018 which is the proposed start date for construction of the exchange project.

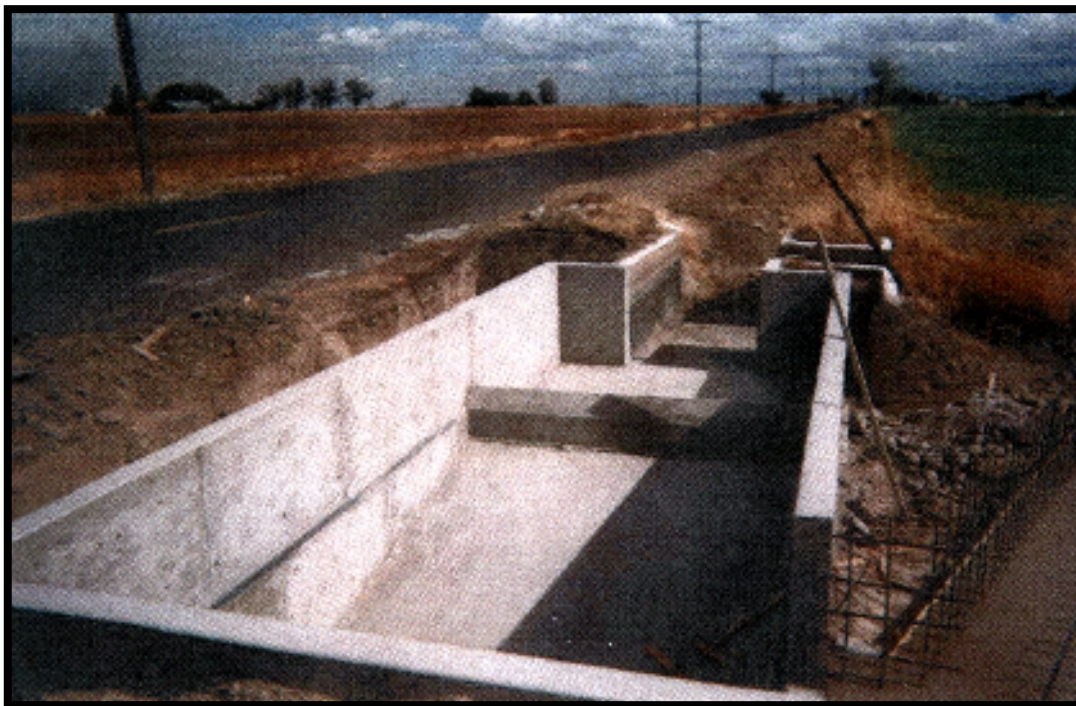
THE ROAD TO IMPLEMENTATION

There were two sites proposed for conveyance piping. They were:

- Riggs Road Site: Located in Sections 4, 5, 6, 7, 8 & 9, T6N, R33E along Riggs Road
- Huesby-Bennington Site: Located in Sections 11, 14 & 15, T6N, R34E in the vicinity of the Stateline Road/Fredrickson Road intersection.

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 the replacement of the open-channel system with enclosed pipelines. The Riggs Road pipeline project yielded 443 gallons per minute (gpm) loss, or 0.99 cubic feet per second (cfs). The Huesby-Bennington pipeline project was rated at 192 gpm, or 0.43 cfs of lost water. The combined total saved water through the project was 635 gpm or 1.42 cfs.

The redesigned diversions incorporated concrete, pipe, and debris screening. Approximately 11,500 feet (6,900 feet for Riggs Road and 4,600 feet for Huesby-Bennington) of polyvinyl chloride (PVC) pipe ranging from six to twenty-one inches in diameter were 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 was 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 by 3-inch wedge wire for coarse screening, a new head gate, 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 pump 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 pumps 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 irrigator's 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.



The Riggs Diversion Site during construction.



The Riggs Diversion Site after construction and operating

WWCCD used the competitive bid process to secure a contractor for final design and installation and in August a contract was awarded to Dunning Irrigation Supply. 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 consisted 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 completion 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 could not be completed until the abandoned irrigation ditch dried up completely. The Huesby-Bennington project incorporated 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.



The Riggs Lateral pipeline being installed.



The Riggs Lateral pipeline after installation. The pipeline lies about 6-feet inside the alfalfa field edge. Note the lack of weeds.

WWCCD attended meetings throughout the grant timeline to coordinate efforts with the multiple state and federal planning efforts that were active in the Walla Walla River Basin. District representatives also attended Walla Walla Basin Technical Work Group and Washington Watershed Planning meetings to further coordinate instream flow efforts and stream gauge placements with WA-DOE and others as related to the grant. WA-DOE 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 east of Waitsburg and at Cummins Road Bridge just north of the town of Touchet. Seasonal monitoring for the Walla Walla Basin TMDL 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. WDFW continues to operate stream flow monitoring on upper Yellowhawk Creek, lower Mill Creek, and at the Stateline on the Walla Walla River and Detour Road. WWCCD worked with the HCP contractor staff to find a partner for WA-DOE to fund long-term maintenance and operation of the flow gauging stations. WA-DOE ultimately contracted with Walla Walla County to operate and maintain the stations, and the County subcontracted with the Tri-State Steelheaders (TSS) to perform the work.

WWCCD began to identify CREP participants for the water lease portion of the grant in January 2002. The District worked throughout the next 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 entered into an agreement with Washington Water Trust (WWT) in which the District agreed to identify irrigators who were interested in leasing water rights and then assembled pertinent water rights

and water use data which would be forwarded to WTT. WTT 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 WA-DOE to determine the amount of water that can be put in trust as instream flow as a result of the piping projects. The District will also work with WA-DOE and WTT to work out an agreement to place the saved water in trust for instream flow enhancement.

PROJECT SUMMARY

The flow enhancement project replaced three inefficient open-channel irrigation water delivery systems with approximately 11,500 feet of closed piping. This project saves approximately 635 gpm (1.42 cfs) of live flow to the Walla Walla River. WWCCD and GFID are committed to working with WA-DOE and WTT to determine the exact amount of water approved for trust and develop a contract for lease and protection of that conserved water. WA-DOE has placed a permanent flow gauge just downstream of the GFID diversion that will be used to monitor the instream flow contribution from the pipeline project. WA-DOE 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 WA-DOE and WTT to place more water instream and under protection from other uses.

Partners included:

- WWCCD – proposed and designed the project, supervised project implementation and administered the contract. (The contract with Dunning was for \$102,871.64)
- BPA – provided a flows grant of **\$162,352**
- USFWS – purchased ramp flumes 2 @ \$750 = **\$1,500**
- WA-DOE – assisted in determining the amount of saved water that could be trusted, helped site gauging stations and provided challenge funds through the Washington State Conservation Commission equaling **\$38,000**
- WDFW – provided stream flow monitoring
- TSS – provided maintenance of gauging stations
- NFWF – provided project matching funds of **\$35,563.16**
- WWT – placed values on saved water and put into trust
- GFID #13 - worked with WWCCD to determine inefficient delivery ditch reaches to be piped and determined water losses in selected reaches
- Total Project Cost = **\$236,415.16**