

**Walla Walla County Conservation District**

***Gardena Farms Irrigation District #13***

***Upper Canal 2,800 ft. & North Lateral Pipeline***

***Project Completion Report***

***BPA Project 2007-396-00, Contract 58147***

***WA-DOF Water Quality Infrastructure Grant #G0900213***

***BCR Grant R11AP13043***



***BEFORE PIPING***

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## **Mission of the Walla Walla County Conservation District**

WWCCD is dedicated to the conservation and restoration of the natural resources of Walla Walla County, facilitated by working on a voluntary basis with landowners to identify opportunities and create solutions, while consistently providing education, information, and assistance whenever possible.

### **WWCCD Vision:**

WWCCD believes that many complex environmental problems can be solved through voluntary cooperation rather than by regulatory mandates. We will do this by creating and then implementing proactive programs that respect both the needs of the landowners and the natural resources of the County.

# Gardena Farms Irrigation District

Upper Canal 2,800 foot &  
North Lateral Pipeline Construction

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*WA-DOE Water Infrastructure Grant G0900213*

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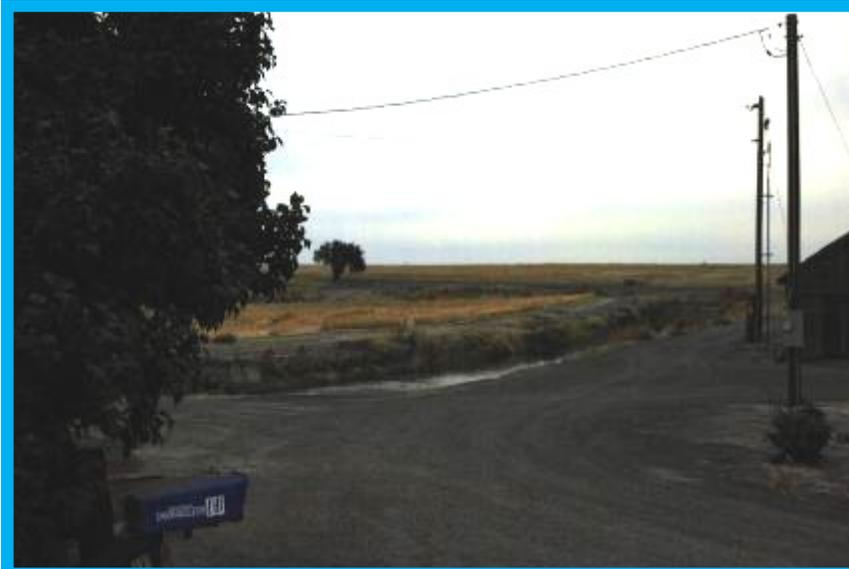
Walla Walla County Conservation District

2010-2013

# Project Overview and Historical Perspective

Gardena Farms Irrigation District #13 (GFID) is one of the oldest such organizations in Washington with construction of the original canal started in 1892. It started as the Walla Walla Irrigation Company and was a privately owned organization. Diverting water from the Walla Walla River at river mile 36.9 to serve approximately 7,000 acres of cropland within its district, GFID was officially incorporated in 1928. The GFID adjudicated water right is the largest WA water right in the Walla Walla Basin and has a priority date of 1892.

In its early history, much of the first engineering was performed by local farmer and engineer E. C. Burlingame – the diversion dam and canal system bear his name to this day. Today, the GFID canal system is still impressive. The main unlined earthen canal which originates at the Burlingame diversion at RM 36.9 on the Walla Walla River flows 11.0 miles to the Pine Creek spillway which is the location of a newly installed concrete structure that intercepts flow, screens out the debris and directs flow into the newly installed buried pipeline. The entire conveyance system downstream of the aforementioned weed screen structure is now piped and pump stations are upgraded accordingly. Prior to the installation of the recently completed pipeline projects, the entire conveyance system which included 12 miles of main ditch, 7.3 miles of North Lateral ditch, and 5.5 miles of South Lateral ditch, was unlined earthen ditches except for the Pine Creek inverted siphon which is 1.44 miles of 1950's vintage buried pipeline that passes under Pine Creek..



## MAINTENANCE ISSUES

For a number of years, managers and irrigators of the GFID have envisioned some needed up-grades to their open canal delivery system. The need for improvement was evident. According to irrigation water delivery efficiency studies conducted by Economic & Engineering Services (EES) in 2004, fully 1/3 of the diverted water was lost to seepage. The study identified piping the delivery system as one of the best alternatives available.

Recurring maintenance needs on the canal and laterals included:

***THE BEGINNING OF THE 2,800 FT. PIPING PROJECT THAT EXTENDS FROM THE INLET OF THE PINE CREEK SIPHON TO THE NEW WEED SCREEN BELOW THE LOWDEN GARDENA ROAD BRIDGE***

- ◆ Annual re-shaping of the canal where needed (reinforce weakened sections of the canal, remove collected bottom debris, etc.)
- ◆ Control of weeds growing along and within the canal
- ◆ Removal of wind blown weeds that accumulate in the canal
- ◆ Maintenance of deteriorating water control structures

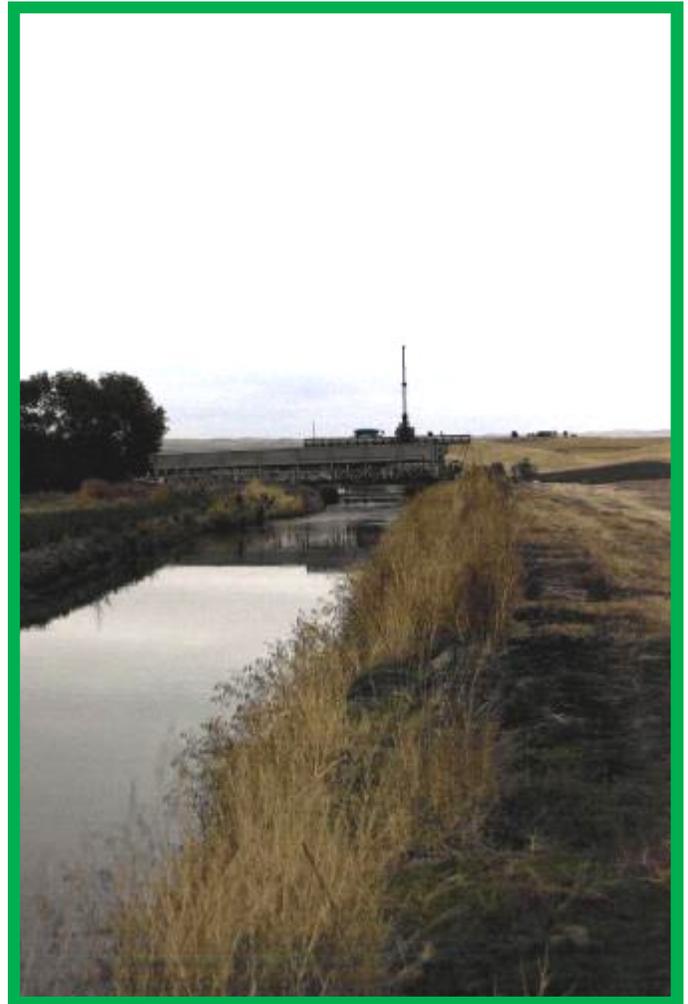
The costs associated with the above maintenance and operation of the system were fully 25% of the total annual operating costs. This did not include staff wages and benefits nor any capital costs.

### **WHY IS THIS PROJECT NEEDED?**

This need for action was finally pushed to the fore-front in 2000 when the Interim Settlement Agreement with the U. S. Fish & Wildlife Service (USFWS) called for increased flows in the Walla Walla River to improve conditions for fish that are listed and provided protection under the Endangered Species Act. The Settlement Agreement, in effect, served notice to all water users that the federal regulatory agencies were prepared to take further action but were willing to finance infrastructure upgrades that would save water and increase instream flows. The WWCCD has been instrumental in the implementation of projects to improve and upgrade private irrigation systems with funding from state and federal agencies.

### **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. The steelhead are 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 the 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. The water savings resulting from this project due to reduced irrigation withdrawals will help maintain stream flows critical to the recovery of these important fish stocks.



***WEED CONTROL, SEDIMENT REMOVAL AND CANAL BANK STABILITY ARE ALL IMPORTANT AND COSTLY MAINTENANCE ISSUES.***

### **SCOPE OF THE GFID #13 UPPER CANAL 2,800 FT. & NORTH LATERAL PIPELINE PROJECT**

The scope of this project called for installation of a piped conveyance system capable of handling 75 cfs (33,660 gpm). The components included:

#### **Upper Canal 2,800 ft. Pipeline**

A. A multi-purpose concrete structure will be installed at Ditch Mile (DM) 11.0 where flow from the

open ditch will enter a new buried pipeline. Flow entering the structure will be filtered by traveling belt screens which will remove weeds and other debris. Water exiting the structure will be guided into dual 42-inch diameter pipes which “Y” into the main 66-inch pipeline a short distance downstream. In the event of an obstruction of flow in the pipeline, excess flow will be directed into an existing overflow channel which will return it to the Walla Walla River via Pine Creek.

- B) 2,800 feet of large diameter (66-inch and dual 42-inch) gravity pipeline will be buried between the multi-purpose structure and an existing buried concrete-clad steel pipe which carries GFID water under the Pine Creek floodplain and then reconnects to the GFID ditch 1.44 miles downstream.
- C) 3,300 feet of secondary small diameter (12-inch and 15-inch) on-farm buried pipeline will be installed.
- D) Four on-farm pumping stations will be upgraded to make them compatible with buried pipelines.

#### North Lateral Pipeline - Stage 1

- E. A “Y” fitting which connects to the outlet of the Pine Creek siphon and immediately splits into a 42-inch outlet that connects to the new North Lateral pipeline and a 36-inch outlet that connects to the head of the existing South Lateral pipeline via a new 1,500 ft. section of mainline will be installed by this project.
- F. Flow control valves will be installed on the two outlets of the “Y” fitting where they will be used to control flows into the North and South Lateral pipelines. Both the 42-inch North Lateral flow control valve and the 36-inch South Lateral flow control valve will be equipped with telemetry controlled electronic actuators which will allow flows to be controlled either manually or remotely from the GFID office.
- G. 14,920 feet of buried gravity pipeline will be installed between the flow control valves and the ends of the pipelines. This includes the 1,500 ft. section that connects to the head of the South Lateral.
- H. 7,280 feet of buried on-farm lateral pipeline will be installed.
- I. 17 on-farm pump stations will be upgraded as necessary to operate with the new piped conveyance system.

#### North Lateral Pipeline - Stage 2

- J. 13,565 feet of buried gravity pipeline will be installed between the flow control valves and the ends of the pipelines.
- K. 6,720 feet of buried on-farm laterals will be installed.
- L. 20 on-farm pump stations will be upgraded as necessary to operate with the new piped conveyance system.

### **PREVIOUS GFID PIPELINE PROJECTS**

2003— The first phase of piping was completed in 2003 when the WWCCD contracted with GFID #13 to design and install the Riggs Road and Bennington-Huesby piping projects. These pipelines saved 1.42 cfs.

2006-07— The next phase was done by GFID #13 in 2006-07 when 2.01 miles (10,591 ft) of mainline and lateral pipeline was installed and 7 pump stations were modified.

2009-10— In 2009 the GFID Board of Directors requested that the Walla Walla County Conservation District (WWCCD) assume responsibility for grants they had received from BPA and the WA Dept. of Ecology and complete the South Lateral piping project. The WWCCD's design team reviewed and verified the mainline design engineering that had been done by IRZ Consulting. The WWCCD design team also designed a state-of-the-art radio telemetry-based system for automatically reporting water use for 21 individual pump stations. This allows GFID management to remotely monitor water use and manage delivery demands throughout the entire South Lateral system from their office. Construction of the South Lateral phase was completed in the winter of 2009-10. The South Lateral pipeline (Phases 2 and 3 combined) saved 3.99 cfs of water.

2012-13— The 2,800 ft. Upper Canal & North Lateral piping project was a continuation of the overall piping plan for the GFID #13 delivery system. The North Lateral pipeline and Upper Canal 2,800 ft. pipeline save 5.95 cfs of water.

### **POTENTIAL U. S. ARMY CORPS OF ENGINEERS / CTUIR WATER EXCHANGE PROJECT**

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 which was originally scheduled to begin in 2018 has been postponed indefinitely.

Former Gov. Gregoire 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 yet to be determined start date for construction of the exchange project.

## THE ROAD TO IMPLEMENTATION

The original plan was to start the North Lateral pipeline at about DM 11.25, immediately upstream of but not directly connected to the inlet of the Pine Creek siphon. The Pine Creek siphon, which was constructed in 1957, is a buried concrete-lined iron pipe that carries ditch water under Pine Creek and the Pine Creek valley between DM 11.55 and DM 12.99. However, in discussion between the WWCCD design team and stakeholders, two issues became apparent that resulted in significant changes in plans. Both issues were associated with the Pine Creek siphon.

Issue 1 — It was recognized that overflow and/or breaching the canal as a result of a flow obstruction in the newly installed pipeline could cause catastrophic damage. To eliminate any risk of overflow a decision was made to relocate the inlet of the pipeline at the existing Pine Creek overflow ditch which is located at about DM 11.0. This decision required WWCCD to develop a design which evolved into the Upper Canal 2800 ft Pipeline project which:

- A. Had to be installed and fully operation prior to installation of the North Lateral Pipeline project.
- B. Required a multi-purpose structure capable of screening weeds and debris, from the entire GFID Upper Canal flow,
- C. Required 66" diameter pipe,
- D. Directs excess flow from the Upper Canal to the existing Pine Creek overflow channel.
- E. Be equipped with automatic emergency power in the event of a power failure.

Issue 2 — The WWCCD design team's initial design intentionally avoided increasing the pressure in the Pine Creek siphon due to its age (constructed in 1957). At the request of the GFID Board of Directors, WWCCD had the siphon inspected and evaluated to assess the risk associated with an increase in pressure. After reviewing the results of the inspection, the GFID Board of Directors requested a change in design which resulted in increased siphon pressure. In a letter to the Chairman of the WWCCD Board of Supervisors, the GFID Board of Directors absolved the WWCCD of any culpability and assumed full responsibility for the design change. As a result, the 2,800 ft. Upper Canal pipeline was connected directly to the upstream



***REMOTE INSPECTION OF THE INTERIOR OF THE PINE CREEK  
INVERTED SIPHON***

of the Pine Creek siphon and the GFID North Lateral pipeline was connected directly to the downstream end of the Pine Creek siphon.

### **THE 2,800 FT. UPPER CANAL PHASE**

Premier Excavation was selected as a result of WWCCD's competitive bidding process and began project installation of the Upper Canal 2,800 ft. pipeline in mid-September of 2012.

Before the project could proceed too far down the road, the integrity of the Pine Creek inverted siphon had to be addressed. This was done by Pipeline Inspection Services using a remote rover camera that could travel down the siphon pipe and record film images of the interior condition. By converting from open air delivery to a closed piped system, additional hydraulic head pressure would be placed on the siphon pipe and engineers wanted some assurance that it would not fail due to added pressure. The inspection found the siphon to be in good condition except for a few spots near the inlet that the pipe. The questionable spots were stabilized with a special grouting material that was applied by Pipeline Inspection Services.

With the siphon questions adequately answered, excavators moved in and began preparing the old canal bed for the laying of the 66-inch diameter pipe beginning at the east (upstream) end of the Pine Creek Siphon. This



***THE REMOTE CONTROLLED CAMERA CAPABLE OF TRAVELING THROUGH THE PIPELINE AND PHOTOGRAPHING THE INTERIOR***



***AN EXAMPLE OF WHERE THE CANAL HAD BEEN CLEANED OUT FOLLOWED BY THE DIGGING OF THE PIPELINE TRENCH BY A TRACK-HOE***

in and of itself was quite a sight with often three or four large track-hoes and several bulldozers all working simultaneously. Even prior to being placed in the trench the pipe staging area was quite remarkable.



***PLACEMENT OF PIPE SECTIONS IN THE STAGING AREA NEAR THE LOWDEN GARDENA ROAD BRIDGE OVER THE CANAL***

The 2,800 ft. piping project was unique in many other ways as well. The special Duro-Maxx conveyance pipe to be used was constructed specifically by Contech Engineering Solutions for the 2,800 ft. project. Each section of steel reinforced high density polyethylene (HDPE) was 48-feet in length and 66-inches in diameter and sections were hauled (one pipe per truckload) from the manufacturing plant in Arizona. Angular sections were manufactured to match the pre-installation survey and presented some unique problems during installation. Each section was joined with a rubber gasket covered by a steel clamp. The interior of the joint was then caulked, overlain with a coating of sealant and electrically fused (welded)



***ONE TRUCKLOAD OF STEEL REINFORCED HDPE PIPE BEING UNLOADED AT THE STAGING AREA. EACH SECTION MEASURED 48-FEET LONG AND 66-INCHES IN DIAMETER***



***ONE OF THE SPECIALLY CONSTRUCTED ANGLE SECTIONS BEING HOISTED INTO PLACE***

together.

Projects of this magnitude often experience a few unplanned for challenges. When the sections planned to be 48-feet in length ended up somewhat shorter by as much as 6-inches, the cumulative impact required on-the-ground modifications during installation that were somewhat time-consuming for the contractor and a source of stress for the project manager. When the dust cleared, however, the 2,800 ft. pipeline was bedded in the footprint of the old canal and ready to operate as designed.

Before water could be turned into the new pipeline, however, a new weed screen had to be designed and installed. System managers certainly didn't want a lot of trash entering the system and potentially creating huge problems. The chore of designing a new automated weed screen fell to the WA Dept. of Fish & Wildlife Screen Shop in Yakima. The screen design was unique, not only for the site, but for the fact that when future planned piping projects extended further up the canal, the screen can be unbolted and moved to a new location. In early October, water was turned into the main canal and the new screen was commissioned on October 4<sup>th</sup>, 2012. Of course, there were a few problems to be worked out but nothing that posed a major



***THE NEW ROTATING BELT SCREEN SITS AT THE INLET TO THE PIPED PORTION OF THE DELIVERY SYSTEM. THE SCREEN AND CONVEYOR CAN BE SEEN FROM THE BRIDGE OVER THE MAIN CANAL ON LOWDEN GARDENA***



***REDESIGNED CONCRETE PAD AROUND WEED SCREEN***

### **UPPER CANAL 2,800 FT. PIPELINE PROJECT SUMMARY**

WWCCD awarded the construction contract for the 2,800 ft. project to Premier Excavation which submitted the lowest of the three bids received. The project was started in July and completed on schedule on October 1, 2012 with a final cost of approximately **\$1,205,262**. Bonneville Power Administration's Fish and Wildlife Program provided **30% (\$357,250)** of the funding all of which was under contract with the WWCCD. WA Dept. of Ecology's Water Resources Program provided **70% (\$848,012)** of the funding .

The following businesses, agencies and their employees contributed to the construction of this project phase:

- **Premier Excavation — contracted by WWCCD as primary contractor**
- **Dunning Irrigation — subcontractor for pipe, fittings, & pump station construction**
- **Contech Engineering Systems, Inc. — supplier of HDPE pipe**
- **Pipeline Inspection Services**
- **Current Electric — electrical subcontractor**
- **Materials Testing and Inspection**
- **WA Dept. of Fish & Wildlife Screen Shop**

## **THE NORTH LATERAL— PINE CREEK SIPHON OUTLET (DM 12.99) TO WATSON LOOP ROAD (DM 16.33)**

WWCCD received five bids in response to a bid request for construction on the entire GFID North Lateral pipeline project between the outlet of the Pine Creek siphon (DM 12.99) and Riggs Road (DM 20.29). Rotschy, Inc. of Vancouver, WA was the lowest bidder and was selected as the contractor as a result of WWCCD's competitive bidding process. Project installation of this phase began in mid-January and the project became operational on March 5, 2013.



***PIPELINES CONTINUE FROM OUTLET OF THE PINE CREEK SIPHON. THE SMALLER 36-INCH PIPE FEEDS THE SOUTH LATERAL WHILE THE 42-INCH PIPE SERVICES THE NORTH LATERAL***

This phase of the piping project had its own set of unique challenges such as coordinating with the Walla Walla County Road Department. Where the old canal went under roads, a crossing had to be excavated and pipe laid. This necessitated flaggers as long as the crossing was open.

Coordination with the members of the GFID was difficult only when the lines of communication failed. This happened when individual farmers had made system changes no one was aware of—or when they wanted last minute changes to a lateral or pump station design for their farm. Through a continuous effort by the contractor, the sub-contractors, the GFID board and manager and the WWCCD field staff, work continued relatively smoothly through completion.

All the subcontractors worked together under the guidance of the general contractor, Rotschy, Inc. and the WWCCD construction management team to do excellent quality work and complete the job in time for GFID irrigators to commence watering on time. The contractor ordinarily had four crews working simultaneously. They included two pipe-laying crews made up of an excavator and operator, a front-end loader and operator, and two pipe fitters, one pump station installation crew made up of a mini-excavator and operator, a backhoe and operator, and two pipe fitters, and a four person fabrication crew which worked primarily in Rotschy's off-site metal shop. The contractor also had ample equipment on-site including four large excavators, two mini-excavators, two front-end loaders, one dozer, one road grader, one scraper and multiple dump trucks including one Euclid and one side-dump semi-trailers. It was not uncommon for the contractor to lay 1,000 to 1,200 feet of pipe per day.

In general, the upstream end of the new pipeline (e.g. between DM 12.99 and DM 16.33) followed the route of the old North Lateral ditch and rerouting was minimal. However, in the more downstream sections, about 1/3 of the pipeline was straightened or otherwise rerouted away from the old ditch alignment. There were more road crossings in the upper section than in the lower section. There were 13 road crossings and two borings underneath the road in the section upstream of DM 16.33 and seven road crossings in the downstream section.

***SAME SHED***



The section of the GFID North Lateral between DM 12.99 and DM 16.33 replaced 18,408 feet of earthen ditch conveyance with buried mainline and 11,551 feet of lateral ditch with buried pipeline. In addition, 19 pump stations serving about 1,580 acres were upgraded to make them compatible with the new piped conveyance system.

The GFID #13 North Lateral—Pine Creek Siphon and Watson Loop Road Phase of the piping project was completed on schedule March 5, 2013 with a final cost of approximately **\$2,960,537** WA Dept. of Ecology's Water Resources Program provided **60% (\$1,781,537)** of the funding, the Bureau of Reclamation provide **34% (\$991,500)** of the funding and Bonneville Power Administration's Fish and Wildlife Program provided **6% (\$187,500)** of the funding .

The following businesses and their employees contributed to the construction of this project phase:

- **Rotschy Inc. – contracted by WWCCD as primary contractor**
- **Walla Walla Electric—electrical subcontractor**
- **A & B Asphalt—provided asphalt for road crossings**
- **Intermountain Testing—provided asphalt testing**
- **Koncrete Industries Inc.—provided concrete**

#### **THE NORTH LATERAL — WATSON LOOP ROAD (DM 16.33) TO RIGGS ROAD (DM 20.29)**

Rotschy, Inc. of Vancouver, WA was selected as the contractor as a result of WWCCD's competitive bidding process for the installation of the North Lateral phase of the piping project that started at Watson Loop Road (DM 16.33) and extended to Riggs Road (DM 20.29). Project installation of this phase began in mid-January, 2013.

This phase, too, had similar challenges with late changes, road crossing issues, and the need to bring in fill for extra pipe cover. Again, through a continuous effort by the contractor, the sub-contractors, the GFID board and manager and the WWCCD field staff, work continued on schedule and relatively smoothly through completion.

This phase was also the smallest and most straight-forward part of the project and it tied in with the Riggs Road piping project completed by WWCCD in 2003.

The total project replaced open inefficient canals with approximately 10,077 feet of delivery pipeline and 2,449 feet of on-farm lateral pipeline. Eighteen pumping stations serving about 1,412 acres were designed and installed.

The GFID #13 North Lateral—Watson Loop (DM 16.33) to Riggs Road (DM 20.29) phase of the piping project was completed on schedule March 5, 2013 with a final cost of approximately **\$500,853**. Bonneville Power Administration’s Fish and Wildlife Program provided **86% (\$432,725)** of the funding, the WA State Conservation Commission provided **9% (\$44,100)** and the GFID irrigators provided **5% (\$24,028)** of the funding.

The following businesses and their employees contributed to the construction of this project phase:

- **Rotschy Inc. – contracted by WWCCD as primary contractor**
- **Walla Walla Electric— electrical subcontractor**
- **A & B Asphalt—provided asphalt for road crossings**
- **Intermountain Testing— provided asphalt testing**
- **Koncrete Industries Inc. —provided concrete**



***BRINGING IN EXTRA COVER TO PROVIDE ADEQUATE SOIL DEPTH OVER NEW PIPELINE***

# SUMMARY OF ACCOMPLISHMENTS & COSTS

In summary, the WWCCD began working with the Gardena Farms Irrigation District #13 2,800 ft. Upper Canal & North Lateral Piping projects in 2011. The purpose of the projects were to help GFID to address the U. S. Fish & Wildlife Service's (USFWS) call for increased flows in the Walla Walla River to improve conditions for fish that are listed and provided protection under the Endangered Species Act. With financial assistance from federal and state government, the project featured infrastructure upgrades to improve delivery canal efficiencies resulting in more reliable delivery of irrigation water to users while at the same time leaving more water in the Walla Walla River for fish. On April 9, 2013 WWCCD completed an application for transfer to Trust of the water saved by the four pipeline projects that WWCCD has constructed on behalf of the GFID — Riggs Rd / Huesby Pipeline (1.42 cfs), South Lateral Pipeline (3.99 cfs), Upper Ditch 2800 ft Pipeline (0.82 cfs), and North Lateral Pipeline (5.13 cfs) for a total of 11.36 cfs.

The following is a summation of accomplishments resulting from the GFID #13 2,800 ft. Upper Canal & North Lateral Piping projects:

**2,800 ft. Upper Canal Pipeline** – The final project cost was approximately **\$1,205,262**. Of this **\$357,250** was funded by Bonneville Power Administration and **\$848,012** funded by Washington Dept. of Ecology. The project consisted of a high-tech automated irrigation water diversion system complete with self-cleaning traveling belt screens to keep trash/debris from entering the downstream pipelines. It also included testing and repairing the Pine Creek inverted siphon pipe that carries irrigation water to the South and North Laterals. The following businesses and their employees contributed to construction of the 2,800 ft. Upper Canal piping project which was completed in 2012:

- **Premier Excavation** — contracted by WWCCD as primary contractor
- **Dunning Irrigation** — subcontractor for pipe, fittings, & pump station construction
- **Contech Engineering Systems, Inc.** — supplier of HDPE pipe
- **Pipeline Inspection Services**
- **Current Electric** — electrical subcontractor
- **Materials Testing and Inspection**
- **WA Dept. of Fish & Wildlife Screen Shop**

**North Lateral Pipeline (Siphon DM 12.99 to Riggs Rd. DM 20.29)** – The final project cost of the entire North Lateral Pipeline project was approximately **\$3,487,362**. This phase of the piping project had five funding partners, two of which were federal agencies, two state agencies, and the local GFID irrigators. The federal agencies (Bureau of Reclamation and Bonneville Power Administration) provided **\$1,611,725 (46.21%)**. The state agencies (WA Dept of Ecology and WA State Conservation Commission) provided **\$1,825,637 (52.35%)**. The GFID irrigators provided **\$50,000 (1.43%)**.

The following businesses and their employees contributed to construction of the North Lateral piping project which was completed in 2013:

- **Rotschy Inc.** – contracted by WWCCD as primary contractor
- **Walla Walla Electric**—electrical subcontractor
- **A & B Asphalt**—provided asphalt for road crossings
- **Intermountain Testing**—provided asphalt testing
- **Koncrete Industries Inc.**—provided concrete

**Total Project Cost and Agency** – Upon completion of all phases, the 2,800 ft. Upper Canal and South Lateral Piping project had a combined cost of approximately **\$4,622,552**. The following agencies and organizations funded the project:

- Washington Department of Ecology \$2,629,549
- Bureau of Reclamation \$991,500
- Bonneville Power Administration \$977,475
- GFID Irrigators \$50,000

***What We Proposed in the WaterSmart Application vs. Actual Results***

	Per WaterSmart Application	Actual Results
Feet of Mainline	14,920	18,408
Feet of on-farm laterals	7,280	11,551
Pump Station Upgrades	17	19
Non-Federal Cost Share	\$1,187,500	\$1,781,537
Saved Water Transferred to Trust	3.74 cfs / 1,468 ac-ft	3.74 cfs / 1,655.7 ac-ft *
Cost Per Acre-Foot	\$64.71	\$60.96 *
Pressure Benefit to Irrigators	Estimated at 70 psi	40 psi

\* These figures were derived from the estimates of water saved by the entire North Lateral Pipeline (5.13 cfs / 2271.1 ac-ft) which were submitted in the draft Dept. of Ecology Trust transfer application. The acre footage increased because we used a longer irrigation season than in the original estimate.