



OREGON Clean Water State Revolving Fund

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This issue of DEQ's Clean Water State Revolving Fund newsletter highlights irrigation modernization — critical infrastructure upgrades that ensure a reliable water source for farmers and fish. These multi-year, multi-million dollar projects require intensive analysis, strategic planning and diverse funding partnerships. With agriculture consuming an estimated 80 percent of water diverted from streams, the Farmers Conservation Alliance calls irrigation modernization “one of the greatest agricultural, conservation and economic development opportunities of our time.”

The Challenge

Since the 1800s, farmers in Oregon have used rivers to irrigate crops by diverting water into canals for agriculture. In some ways this approach hasn't changed substantially since then. What has changed is a greater awareness of the problems with open canals, including water loss through seepage and evaporation,

contaminated runoff, low stream flows and increased temperatures, which threaten migratory fish. Depending on the canal, up to 50 percent of the water may be lost before reaching a farm or ranch.

The water loss is particularly concerning given the increasing frequency of droughts. The Pacific Northwest's [warming trend](#) means a [lower snowpack](#) in the mountains that in turn reduces flow in



State of Oregon
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Quality



A Willamette Valley irrigation ditch, circa 1911. Photo courtesy of the Oregon Historical Society.

snow-fed rivers. This is especially problematic during the summer when demand is highest. Farms and fish require a consistent source of water, so efficiency and reliability will become ever more critical as a response to climate change.

Modern Solutions

Irrigation modernization is a comprehensive approach to helping irrigators repair and replace aging infrastructure, improve district operations and identify on-farm management improvement opportunities. This entails converting miles of open-ditch canals to underground, pressurized pipes, along with on-site sensors that determine when and how much to irrigate.



Tumalo Irrigation District is modernizing its canals. Photo credit: Oregon DEQ

These updates can also include hydroelectric power and more effective fish screens. The benefits are significant water conservation to sustain local agriculture while keeping water in-stream to support fish and wildlife habitat.

Hydroelectric power generates energy and provides a revenue source that can be used to pay down project loans.

The Process

[The Farmers Conservation Alliance](#), or FCA, in partnership with Energy Trust of Oregon, is leading much of this work. Historically, irrigation district updates were made in a piecemeal fashion. A more comprehensive effort enables progress to happen on a larger scale and at a faster pace. FCA recommends a multi-step approach:

- Engage with stakeholders across the environmental and farming communities
- Determine short-and long-term goals for modernization
- Comprehensive review of past irrigation, water and basin studies
- Develop scope and work plan

- Assessment of system wide water loss, resource reliability evaluation and on-farm water reliability
- Identification of potential barriers and opportunities
- Pursuit of financing opportunities and required permits

Statewide, more than 20 irrigation districts are assessing the benefits of modernization. Combined, these represent approximately 20 percent of Oregon's irrigated acres. In the Deschutes Basin alone, eight districts are working on modernization projects.

Financing usually entails a combination of sources, with the bulk of funds coming from grants. DEQ's Clean Water State Revolving Fund can provide a grant match or make up a shortfall. As with loans

for wastewater and stormwater projects, the revolving fund offers below-market interest rates for irrigation district projects. DEQ has provided \$57 million in loans to eight irrigation districts in Central and Eastern Oregon since 2004.

"We'd like to support more projects like this across the state. Irrigation modernization projects improve water quality and promote energy efficiency."

- Lee Ann Lawrence, Clean Water State Revolving Fund program coordinator

Partnering for Success

Many projects financed by the CWSRF include partnerships but few are as diverse as those involved with irrigation district modernization. Farmers, local government, Tribes, environmentalists, utilities, state and federal agencies all have a stake in the efficient use of water. These projects take a decade or more to complete and cost millions of dollars, making long-term partnerships essential.

Margi Hoffmann, Community Relations Director for FCA, sees partnerships as critical to successful projects. "Irrigation modernization in the West would not be progressing as efficiently or as quickly without the committed cooperation of multiple public and private entities," she said. "Success requires a larger common vision that, in partnership with irrigators, unites policymakers with private, philanthropic and public stakeholders and communities."

DEQ intends to provide more than \$20 million in low-interest

loans to Tumalo, Dee and Central Oregon Irrigation Districts for their proposed modernization projects. In addition to DEQ and other state agencies, support comes from FCA, Oregon Water Resources Congress, the Oregon Watershed Enhancement Board, U.S. Bureau of Reclamation, Oregon Regional Solutions Program, USDA Natural Resources Conservation Service and individual patrons. Some projects also work with Energy Trust of Oregon to include small-scale hydropower systems that generate renewable energy with the irrigation flow.

With significant support from U.S. Sen. Jeff Merkley (D-Ore.), as well as the Family Farm Alliance, ongoing assistance for modernization is expected. "The potential exists over the next decade for irrigation districts across the state to upgrade to more modern infrastructure, saving water, restoring streams and generating green, renewable

energy," Merkley said in a press release. "These investments in irrigation systems are also investments in the future resiliency, competitiveness and livability of Oregon's rural economies."

"CWSRF is a critical element to district irrigation modernization efforts, helping leverage other funding sources, supporting innovative projects that provide immediate and long-term benefits to irrigators, local communities, and the environment."

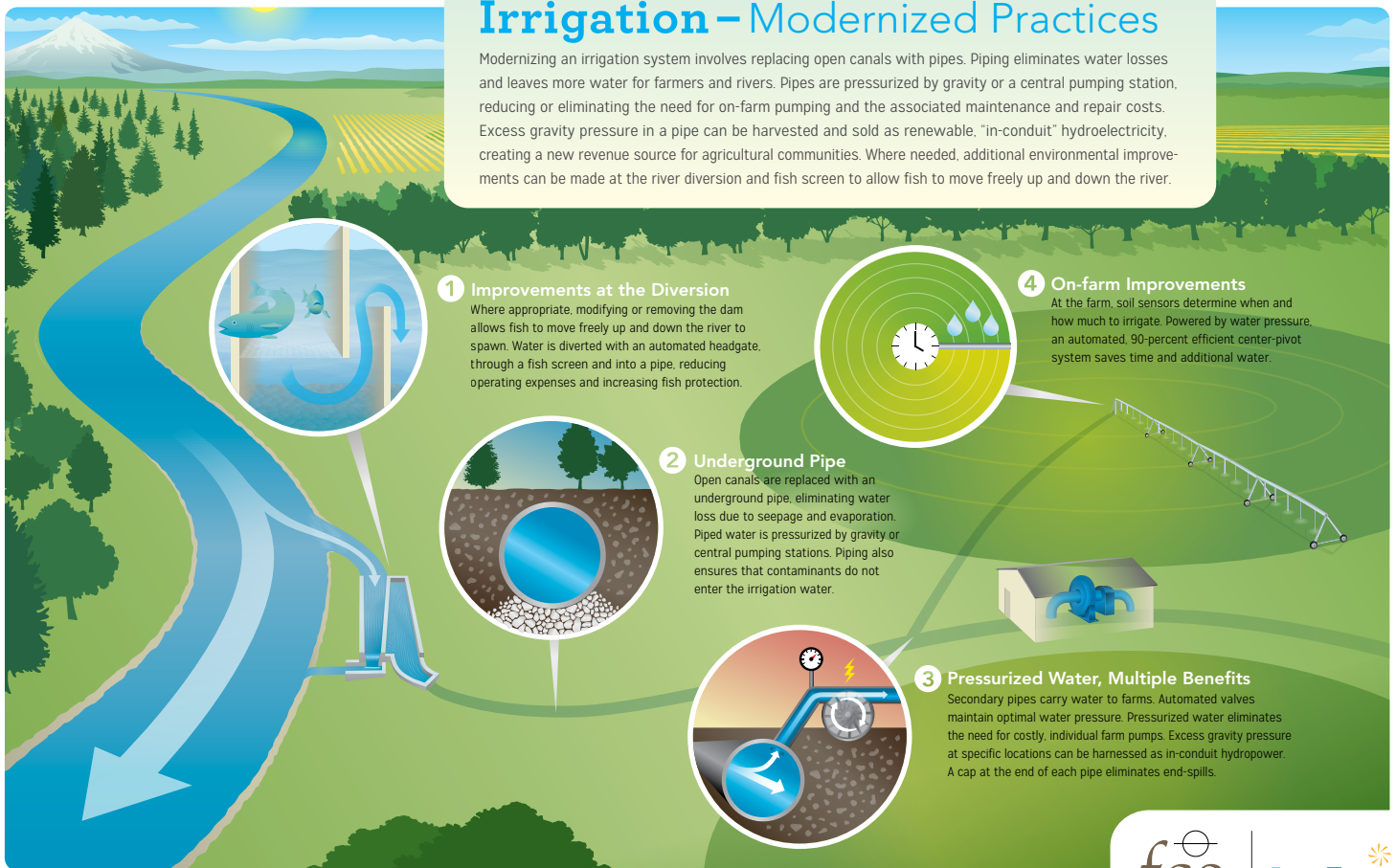
- April Snell,
Executive Director,
Oregon Water
Resources Congress



Sisters, Oregon. Photo Credit: Aaron Hewitt

Irrigation – Modernized Practices

Modernizing an irrigation system involves replacing open canals with pipes. Piping eliminates water losses and leaves more water for farmers and rivers. Pipes are pressurized by gravity or a central pumping station, reducing or eliminating the need for on-farm pumping and the associated maintenance and repair costs. Excess gravity pressure in a pipe can be harvested and sold as renewable, “in-conduit” hydroelectricity, creating a new revenue source for agricultural communities. Where needed, additional environmental improvements can be made at the river diversion and fish screen to allow fish to move freely up and down the river.



fca

EnergyTrust
of Oregon

Measurable Results

As with other irrigators, Farmers Irrigation District knew it was losing water through open canals and damaged pipes, as well as risking contamination from runoff and other sources. In fall 2016, the district began replacing more than two miles of old, leaking pipes with fused high-density polyethylene. This type of pipe is considered durable enough to last hundreds of years.

Financed in part by the [Clean Water State Revolving Fund](#), the project created more reliable infrastructure for farmers, improved habitat for fish and wildlife and

conserved an estimated six billion gallons of water. By incorporating modern hydroelectric equipment, the district began generating about two million kilowatt hours a year, the sale of which allowed them to pay down their loan faster. These upgrades were essential as farmers in this area produce almost \$300 million dollars worth of crops and other products.

The water savings for Tumalo Irrigation District's planned projects are just as significant. The district anticipates a 25 percent increase in available water, benefiting more than 650 farmers and ranchers, and

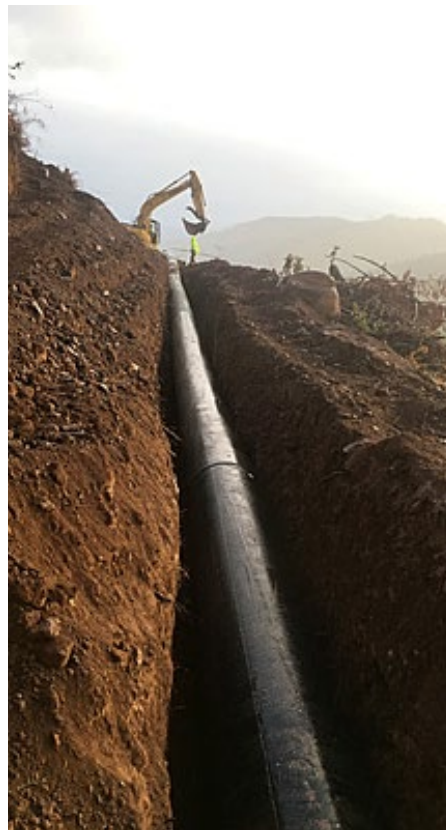
improving to 169 miles of streams for fish and wildlife.

In early 2019, Three Sisters Irrigation District, partnering with Energy Trust of Oregon, completed piping of 85 percent of its canals. Thanks to these efforts, for the first time since the late 1800s, summertime flow has been restored in Whychus Creek for salmon and steelhead.

In addition to significant water conservation and cost savings, FCA expects statewide modernization projects to prevent 93,000 tons of carbon emissions.



Before



After

Photo credit: Farmers Irrigation District

“Investments in irrigation modernization mean farmers can assist in restoring and enhancing water quality, create clean, renewable energy, improve river habitat and recreational opportunities and grow the foods we love.

We’re encouraged by the efforts of Oregon’s Clean Water State Revolving Fund to support this important work.”

- Julie O’Shea, Executive Director, Farmers Conservation Alliance

FCA and Energy Trust anticipate the cumulative impact of irrigation modernization from just the Deschutes Basin projects could include:

- Conserving nearly 250,000 gallons of water per minute during the irrigation season
- 22,000 short-term jobs supported through these projects
- \$903 million in economic development for rural communities
- Adding 38 megawatts of new hydropower using irrigation water
- Nearly 60,000 megawatt hours per year of energy saved
- Nearly 200 stream miles improved

“Investments in irrigation modernization mean farmers can assist in restoring and enhancing water quality, create clean, renewable energy, improve river habitat and recreational opportunities and grow the foods we love,” said FCA Executive Director, Julie O’Shae. “We’re encouraged by the efforts of Oregon’s Clean Water State Revolving Fund to support this important work.”

To learn more about how DEQ can help your community protect water quality, whether for irrigation districts, stormwater or wastewater, [request Clean Water Project Assistance](#) online or call 503-229-6312.

To learn more about irrigation modernization, contact [Farmers Conservation Alliance](#).





Clean Water State Revolving Fund

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MISSION STATEMENT

Oregon's Clean Water State Revolving Fund program supports communities by funding projects that improve water quality and environmental outcomes for the State of Oregon. The program is dedicated to working with small communities and on projects that increase financial and environmental sustainability, climate resiliency and water and energy efficiency.

- Program Charter

Clean Water State Revolving Fund Contacts

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Multnomah, Washington and
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Upcoming Events

MAY 15-16

Oregon Association of Water Utilities
[4th Annual OAWU Expo](#)

JUNE 19

Managing Stormwater in Oregon
[The Business of Stormwater
Regulation and Compliance
Conference](#)

AUGUST 19-22

Oregon Association of Water Utilities
[Summer Classic Conference](#)

Clean Water State Revolving Fund

Next [loan application](#) deadlines are by 5 p.m. on:

AUGUST 9, 2019

DECEMBER 13, 2019

Only hard copies will be accepted. Visit the program website for [applications and more information](#).

Environmental Protection Agency

EPA offers ongoing webinars on how revolving loan funds can help communities.

www.epa.gov/cwsrf

Accessibility

DEQ can provide documents in an alternate format or in a language other than English upon request. Call DEQ at 800-452-4011 or email deqinfo@deq.state.or.us.