

Finding new water, and places to store it, a difficult process

By ERIC MORTENSON
Capital Press

SILVERTON, Ore. — The watermaster called Duane Eder the first week of July and told him to shut down a pump pulling irrigation water from the Pudding River. His other diversion pumps, operating under more senior water rights, were likely to follow.

In 40 years of farming, it was the earliest Eder has received a shutoff order. Usually it comes in August, and lasts for only a couple weeks. This year, as drought again grips most of California and the Pacific Northwest, he's not so sure he'll be able to start pumping again or rely on his diminished wells to nurse his crops to harvest.

Eder is a board member of the East Valley Water District, which hopes to build a new reservoir that would provide supplemental irrigation water in conditions such as this. The proposed project, on Drift Creek about six miles southeast of Silverton, is opposed by some conservationists and by some neighbors who would lose land to flooding as the reservoir filled or might be forced to sell in an eminent domain process.

It's a situation that illustrates the complicated search not only for more water, but for more places to store it.

Dealing with change

Water wouldn't seem to be much of a worry in Oregon's Willamette Valley, with its rainy reputation, but city and industrial growth, changing weather patterns and fish and wildlife management policies are clouding the picture for agriculture.

The biggest issue underway is the pending re-allocation of water stored in the 13 Willamette Basin dams and reservoirs operated by the U.S. Army Corps of Engineers. The projects were built primarily for flood control, but the stor-



Willamette Valley farmer Duane Eder sits by a pump he was ordered to turn off in July. He uses water from the Pudding River and from wells, but favors building a reservoir to store irrigation water.

age behind them is "viewed as the last remaining supply of water for meeting future needs," as a 2013 Oregon Water Resources Department report described it.

As such, cities, industrial users, recreation and fisheries interests, farmers and others have a stake in the outcome.

"Those users, when you talk about re-allocation, will all be sitting at table wanting their piece of the pie," said Brent Stevenson, manager of the Santiam Water Control District.

The three-year process will revise a curious and misleading system.

The Willamette Basin projects contain conservation storage for 1.6 million acre-feet of water. The federal Bureau of Reclamation holds the sole water right certificate on that storage, and it is deemed for irrigation.

But the bureau contracts out only 75,000 to 80,000 acre-feet annually, a fraction of the irrigation water supply that exists on paper.

The reallocation process most likely will result in each user — ag, cities and industry, recreation, fisheries and so on — receiving a set amount of the

stored water, said Laurie Nicholas, water management chief for the Corps of Engineers' Portland district.

For that reason, it's critical that users assess how much water they'll need in the future, Nicholas said. The Oregon Department of Agriculture is in the process of doing that now. One of the questions to consider, department officials have said, is what crops farmers might grow if they had access to more irrigation water.

Climate change is part of the discussion.

According to the Water Resources' report, scientific models say the Willamette Basin is headed for warmer, wetter winters and hotter, drier summers. The average temperature is projected to increase by 2 to 7 degrees Celsius over the next century, and the Cascades snowpack will decrease by 60 percent, according to the report.

Melting snow traditionally provides up to 80 percent of the Willamette River's flow in late summer, but that flow is expected to decrease by 20 to 50 percent as the mountain snowpacks diminish, according to the report.

"The area's reliance on

Photos by Eric Mortenson/Capital Press

high-elevation water during summer months highlights the vulnerability of the Willamette Basin to the influences of a warming climate," the report concludes.

Nicholas acknowledged the corps' reservoir operations may need revision. The corps follows a "rule curve" that keeps water levels low in December and January in order to maintain room for flood control storage. Historically, reservoirs fill from February to mid-May and release water in the summer months.

But traditional spring rains came and went, and the meager snowpack had largely melted by June. It won't be available to give a late-season "bump" of water for streamflows. The basin's reservoirs in mid-July sat at about 40 percent full.

Nicholas said some critics believe the corps should begin filling reservoirs earlier in the year to reflect changing climate patterns. But she said the agency must retain its flood control capability, and changing the operating rules might be risky.

One proposal

It's in this uncertain re-allocation atmosphere that the



Laurie Nicholas, Portland district water management chief for the U.S. Army Corps of Engineers, said water stored in Willamette Basin reservoirs is intended for multiple uses.

East Valley Water District has decided to go its own way and build a storage reservoir.

It would be located on Drift Creek about six miles southeast of Silverton and would require construction of an earthen dam about 70 feet high. The reservoir would store about 12,000 acre-feet of water.

The conservation group WaterWatch opposes the project, calling the Water Resources Department's preliminary approval "a decision that might seem more appropriate in 1914, not 2014."

The group believes the reservoir would inundate habitat for winter steelhead and Pacific lamprey in addition to flooding some neighboring farmland.

Eder, the East Valley board member, says the district carefully considered other sites for the reservoir and believes the Drift Creek location is the best. He hopes the district can work things out with opposing landowners, some of whom he considers friends.

Like other farmers in the area, Eder has wells with which to water his onions, beans, peas, cauliflower and other crops when he can't pump from the Pudding River. He said his wells are not holding up this year.

"They're dropping like it's

the middle of August," he said.

Two-thirds of the district is in a state-declared groundwater limited area, meaning additional wells aren't likely to be approved, and new surface withdrawals from the Pudding aren't allowed.

The project will be expensive, \$40 million to \$60 million, but Eder and others believe it's the only way to sustain high-value crops in the area. The district hopes for funding help from state and federal sources.

A bill passed in the 2013 Oregon Legislature established a \$10 million water supply development fund for such projects, but rules for the program were just completed in July.

Elizabeth Howard, a Portland attorney who specializes in water law issues, said funding, regulatory compliance and guiding projects through feasibility analysis and public review are difficult.

Drought and climate change have brought water issues to the forefront, however. The Legislature's action in 2013 was a step in the right direction, she said.

"There's definitely a sense of urgency right now to look for water availability," Howard said. "It is a long and expensive process, with a lot of hurdles to get through."

States emphasizing aquifer recharge

By JOHN O'CONNELL
Capital Press

As water becomes more scarce, states are increasingly bolstering their groundwater supplies through managed aquifer recharge — intentionally allowing surplus surface water to seep into an underlying aquifer for later use.

In some states, such as Oregon and Washington, the emphasis of recharge programs is on "aquifer storage and recovery," which utilizes the supplemental groundwater essentially as an extra storage reservoir for users who hold the rights.

In Idaho and California, however, state leaders consider recharge to be an essential tool to address declining aquifer levels and potential shortages.

John Izbicki, research hydrologist with the U.S. Geological Survey in San Diego, said California has been conducting recharge since the late 1880s, and many of the facilities that are still being used to inject surface water into aquifers date back at least a century. The Golden State has invested billions in recharge infrastructure throughout the years, Izbicki said.

"This is not the first drought that the state has lived through," Izbicki said. "The whole state water project is a response to



Courtesy of Brian Olmstead

Winter recharge water bound for Idaho's Murtaugh Lake flows past a weir for measurement in early November. States including Idaho are increasingly relying on managed aquifer recharge to bolster their groundwater supplies, in preparation for drought years.

droughts that occurred in the late 1960s, basically engineering our way out of the problem, and groundwater recharge was one of the solutions."

The major recharge project is conducted mostly for urban use by the Metropolitan Water District of Southern California, which recharges up to 750,000 acre-feet per year. The entity serves 26 member agencies and about 19 million people. Izbicki said United Water Conservation District in Ventura is an agricultural entity that "puts huge amounts of water from the Santa Clara River underground."

Oregon operates a dozen aquifer storage and recovery projects, three of which benefit agriculture, including within the Umatilla Basin, according to Ivan Gall, manager with the Oregon Water Resources Department's groundwater

section. For the past 25 years, Gall said the department has also operated a recharge canal to divert water from the Umatilla River.

In 2003, Washington state established its permitting process for injecting surface water into the aquifer, usually through owners' wells, in exchange for a water right similar to reservoir storage.

Washington cities such as Walla Walla, Kennewick and Seattle currently recharge water, and other cities are exploring the option. In northcentral Washington's Douglas County, the state has led a project near the Columbia River to determine if the area is well suited for storing groundwater. Wells are being dug to characterize that aquifer.

"It's an area where not a whole lot of water use is going

on and potentially there's a lot of storage underground," said Dave Nazy, a hydrogeologist with the Washington State Department of Ecology's Office of Columbia River.

Nazy said the project would accommodate several uses, including agriculture.

In Idaho, the state recently committed to average 250,000 acre-feet of recharge per year within the Eastern Snake Plain Aquifer as part of an aquifer-stabilization agreement to potentially resolve a water call between groundwater and surface water irrigators.

The state holds a 1,200 cubic feet per second water right with a 1980 priority date for managed aquifer recharge. Idaho Department of Water Resources Planning Bureau Chief Brian Patton explained the state had been conducting recharge on "pilot-scale mode" and commenced with its first full-scale effort last winter and spring. Partnering with canal companies and irrigation districts willing to run recharge water in their systems in exchange for state payments, the state recharged 75,000 acre-feet below Milner Dam this winter and proved the feasibility of winter recharge. Patton said there's ample room to expand the project, as another 320,000 acre-feet that could be recharged under the state's right was allowed to pass below Milner Dam unutilized.

The state recharged another 17,000 acre-feet in February above American Falls Reservoir, utilizing flood-control releases from reservoirs.

The Legislature has allocated \$5 million annually toward aquifer stabilization, with the Eastern Snake Plain Aquifer as the priority. Funding will be used to build new infrastructure for conducting recharge, with work on shovel-ready projects commencing this fall.

Patton's projections show the state has a lot of work ahead to hit the 250,000-acre-foot goal. By 2019, he predicts sufficient infrastructure will be in place to recharge 200,000 acre-feet. The state is poised to hit 250,000 acre-feet by 2025, Patton said.

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