

# Filters show promise in river cleanup

Hayden company's system among those tested to cut phosphorus

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**Tom Daugherty, president of Blue Water Technologies, talks about the company's filtration system at the Hayden plant on Oct. 20.**

## Over the limits

More than 1,000 lakes, streams and rivers in Washington, Idaho and Oregon violate water quality standards for nutrients.

Each day, cities along the Spokane River dump millions of gallons of phosphorus-rich wastewater into its waters.

As the state of Washington embarks on an ambitious plan to reduce the river's phosphorus levels by 90 percent, Spokane officials say they're getting encouraging results from a phosphorus-reduction study at the city's wastewater treatment plant.

Six different filters are being tested as part of a two-year pilot project. In some trials, levels of the algae-producing nutrient are dropping as low as 10 parts per billion, which is one-fourth the limit expected in new discharge permits.

The results are significant, because river dischargers have long argued that existing technology wouldn't allow them to meet the ultra-low limits required within a decade by the Washington Department of Ecology.

"Two years ago, I was questioning whether there was any technology that would achieve even close to the standards," said Dale Arnold, Spokane's director of wastewater management.

Now he's optimistic, though he said he's delaying judgment until the \$9 million pilot program delivers another year of data.

Blue Water Technologies Inc. of Hayden, Idaho, made one of the filters being tested. The company sells filters filled with iron-coated particles of sand, which attract phosphorus. The technology was developed at the University of Idaho.

“It’s simple, easy and affordable,” said Don Baldwin, Blue Water Technologies’ chief executive officer. “I don’t know why this has turned into a big fight, because the technology is there to do this.”

Blue Water Technologies runs a phosphorus-filtering pilot at the Hayden Area Regional Sewer Board’s wastewater treatment plant on the Rathdrum Prairie. Baldwin said the company treats the water to very low phosphorus levels at costs equivalent to \$2 per household per month.

The company has sold units to South Korea and cities in the Midwest and East Coast. The Shaw Group, a Fortune 500 engineering firm based in Baton Rouge, La., owns a 20 percent stake in Blue Water.

Blue Water’s technology also is being installed at the city of Plummer’s new \$7.5 million treatment plant, which will discharge treated wastewater into a tributary creek of Lake Coeur d’Alene. Since the lake’s shallow, southern waters already have nutrient problems, the discharge permit specified phosphorus levels of 50 parts per billion or less to meet the Coeur d’Alene Tribe’s water quality standards.

Baldwin said that despite a solid track record, Blue Water’s technology has had trouble gaining acceptance from Spokane River dischargers and even the permit writers. So did other companies with effective phosphorus filters, he said.

David Ragsdale, an environmental engineer with the U.S. Environmental Protection Agency in Seattle, found similar skepticism when he was working on Spokane River issues.

“What we encountered was a lot of different perspectives about what the state of the science was for phosphorus removal,” Ragsdale said. “Not just from dischargers, but from EPA employees and state officials.”

In a 2007 study, he identified 20 treatment plants scattered across the country that met phosphorus levels comparable to the new Spokane River requirements. The plants used a variety of technologies.

Ragsdale said he wanted to demonstrate that that the low levels were achievable at realistic costs. Residential sewer rates ranged between \$10 and \$46 per month in the communities where the treatment plants were located.

But Ragsdale's study only looked at municipal treatment systems. Two Spokane River dischargers are industries – Kaiser Aluminum and Inland Empire Paper, a newsprint plant owned by Cowles Co., which also owns The Spokesman-Review. Ragsdale said it's unclear whether the filtration systems are as effective at removing phosphorus from industrial wastewater, whose nutrients come from different sources than municipal sewage.

Jani Gilbert, a Department of Ecology spokeswoman, said that's one of the questions her agency has about the current filtration technology. Department officials expect to issue the new permits in late January to dischargers, who will have a decade to meet the new phosphorus limits. They can also use "pollution trading credits" to reduce phosphorus flowing into the river from nonpoint sources if the technology isn't adequate to do the job, Gilbert said. Paying to phase out septic tanks or reduce erosion from farmers' fields are two examples of the credit.

Other communities also are having trouble with phosphorus, Ragsdale said. More than 1,000 lakes, streams and rivers in Washington, Idaho and Oregon violate water quality standards for nutrients. Though the Spokane River's new phosphorus limits are being touted as the nation's toughest, others are sure to follow, Ragsdale said.

Comparable limits were recently enacted for the Wenatchee River. The communities of Moscow and Pullman are facing a similar situation with nutrient loads in the Palouse River, Ragsdale said.

The city of Spokane will decide which phosphorus filtration technology to buy based on long-term performance and operating costs, said Arnold, the wastewater manager. The city also is evaluating how effective the filters are at removing heavy metals and harmful chemical compounds called PCBs.

Idaho dischargers also are on the hook for meeting the Spokane River's new phosphorus limits, although their permits will be issued by the EPA.

The city of Coeur d'Alene will try out three phosphorus-filtering systems in a two-year pilot that begins next year. The test involves Blue Water Technologies' sand filter and two

membrane filters made by another company. The city will spend about \$4 million on the pilot, including new lab space.

“I’m cautiously optimistic that we can get down to some very low levels,” said Sid Frederickson, Coeur d’Alene’s wastewater treatment superintendent. “Whether they’re low enough to meet everyone’s expectations, I don’t know.”

And sewer rates will go up, Frederickson said. That’s a given.

While municipal sewer plant improvements can be expensive projects, Baldwin said the monthly per-household cost amortizes out to small increases in sewer bills over the project’s life.

“I get frustrated that people will pay \$50 per month for cable,” Baldwin said, “but not a (few dollars per month) for a clean river.”

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