

https://www.omaha.com/news/state_and_regional/nebraska-towns-pay-millions-to-fight-nitrates-as-water-bills-go-up/article_5a810bb0-1437-5538-aab9-e50546672f60.html

Nebraska towns pay millions to fight nitrates as water bills go up

By Jessica Fargen Walsh Special to The World-Herald
May 1, 2020

Nebraska 3D printers step up to help medical community

Residents in Nebraska towns as big as Hastings and as small as Glenvil have one thing in common these days: higher water bills.

That's because a growing number of communities, most of them small, are spending collectively millions of dollars to build water pipelines to other towns or drill test wells or permanent wells because nitrate contamination has made their water unsafe to drink under federal standards.

In one of many examples, Edgar, with a population of about 400, is building a water line to Fairfield, about 12 miles away, at a cost of \$2.98 million. While federal grant and loan money is covering the costs, residents face higher water bills.

Nearly 33,000 Nebraskans are affected by nitrates in their drinking water. Nitrates are seen as a public health danger because excessive amounts can cause blue baby syndrome, which reduces the amount of oxygen in the blood. Some researchers believe nitrates in the groundwater also have a link to some types of cancer. Nebraska's age-adjusted pediatric cancer rate is the highest in the Midwest and seventh-highest in the country.

Bruce Dvorak, an environmental infrastructure engineer and extension specialist at the University of Nebraska-Lincoln, says nitrates in Nebraska's drinking water constitute a major public health concern brought on by decades of farmers overapplying fertilizer. Now, despite changes in farming practices, nitrate levels in some areas keep increasing as fertilizer applied decades ago moves to the groundwater and public water supply, he said.

This is problematic because about 88% of Nebraskans get their drinking water from the ground.

"If you are a community of 500, this is just devastatingly expensive," said Dvorak, who studies water quality issues. "You've got small communities who have these problems. They are shrinking in size. They have a lot of retirees. The household income is decreasing. Those are the ones that really worry me. That's a problem that is becoming more challenging. They are least capable of addressing it."



Water from this spring-fed spigot runs constantly in downtown Steele City, according to Margo D'Angelo, who owns a bar across the street. She says residents fill up water jugs from the spigot every day. Steele City, with a population of 58, has been under a state order to find a clean water source since 2007.

JESSICA FARGEN WALSH

Small communities are not equipped to deal with the problem, which makes it more urgent, said State Sen. Tim Gragert of Creighton, which built an expensive water treatment plant in the 1990s because of high nitrates. Gragert sponsored a 2019 bill that created a healthy soils task force to study why practices that can protect the groundwater haven't been more widely adopted.

“In Nebraska, fortunately, we’ve got a good supply of a quantity of water,” he said. “It continues to be contaminated by nitrates and other chemicals. It’s something I feel can’t wait anymore. Water is our most valuable natural resource in this world.”

Since 2003, more than 50 communities have started or finished drinking water improvement projects such as new wells or pipelines because of nitrates, said Steve McNulty, an environmental engineer who coordinates the state drinking water revolving fund, which lends and grants money to communities for water infrastructure projects.

The state will have \$13 million this budget year for drinking water improvement projects, which includes \$11 million from the federal government and a \$2 million state match. That's enough to cover community requests to fix nitrate problems, McNulty said. The bigger need now in Nebraska, he said, is fixing aging water pipes and infrastructure.

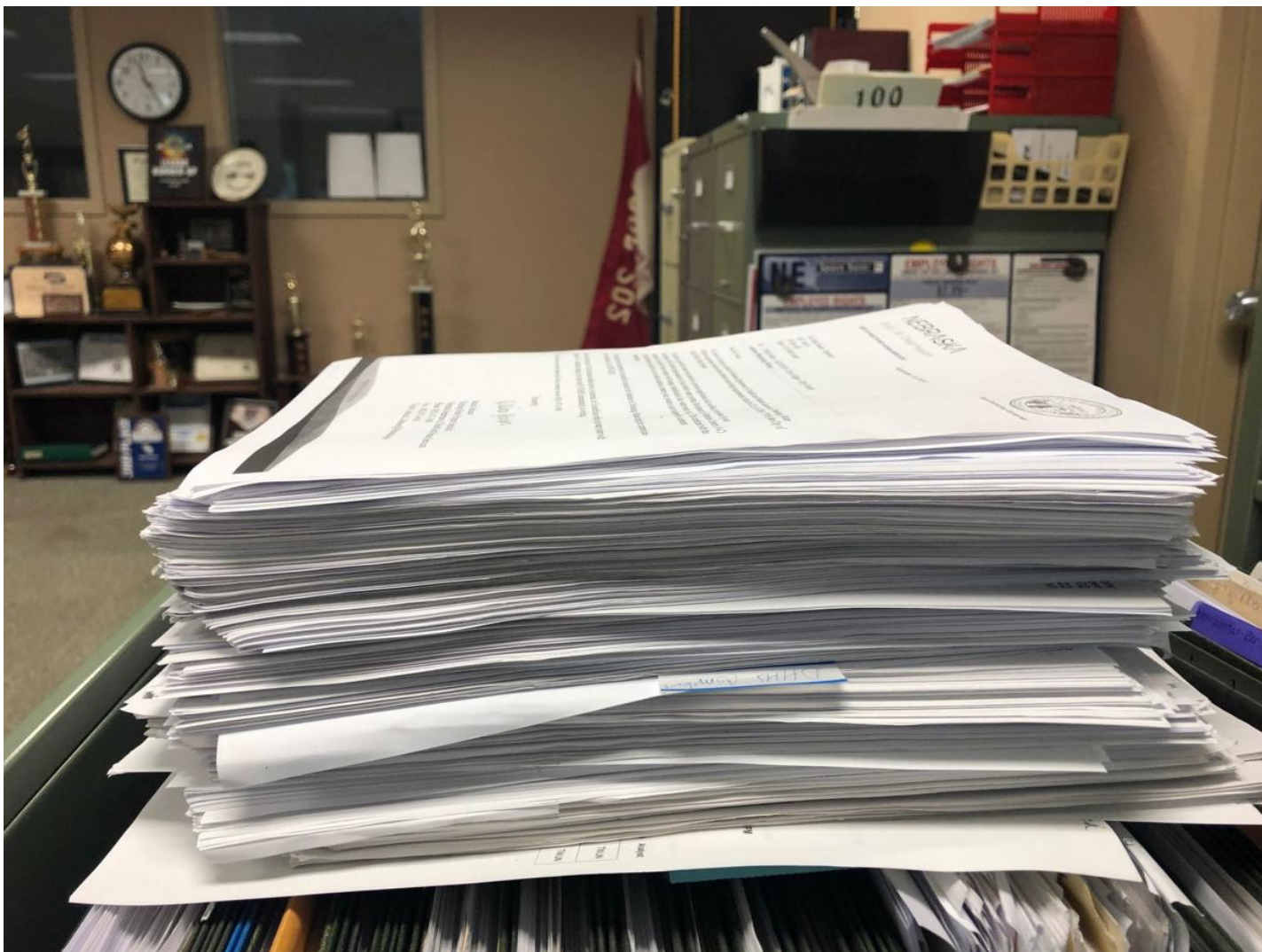
Since 2010, the USDA's rural development program has provided \$21 million in grants or low-interest loans to 16 communities to fix drinking water problems caused by high nitrates.

Other communities have self-funded fixes to their nitrate problems, raising water bills for new wells because the old ones pumped nitrate-laden water into homes.

Karen Griffin, a geologist and vice president of Olsson engineering in Lincoln, said it's difficult these days for communities to find clean sources of water.

"Over the last 15 years, it just gets harder and harder to find locations for a new well that isn't already contaminated," she said.

The biggest source of nitrate contamination in Nebraska is from decades of fertilizer use on irrigated corn and soybean fields. And despite reduced irrigation and fertilizer use and better soil management techniques including crop rotation and cover crops, nitrate levels in and around some rural communities keep rising.



A stack of water quality reports in the Edgar, Nebraska, city offices. Edgar, with a population of about 400, is under an administrative order to fix contaminated drinking water. Nearly 33,000 Nebraskans are affected by nitrates in their drinking water; nitrates are seen as a public health danger.

JESSICA FARGEN WALSH

In McCool Junction, a small town just south of York, nitrate levels increased from 3.3 parts per million of nitrate in 1998 to 9 parts per million in 2019. Anything more than 10 parts per million is considered unsafe, and the state requires that the community find a new water source.

The state is charged with providing all residents clean drinking water and with complying with the federal Safe Drinking Water Act, enacted in 1974. In Nebraska, all community water supply systems must be tested for nitrates once a year. If nitrate levels are above 5 parts per million, a community must start testing quarterly. If the levels are more than 10 parts per million of nitrate, the state will put the community under an administrative order to fix its water supply.

Of the nearly 550 groundwater-based community public water supply systems in the state that supply their own water, 99 of those — mostly small villages and towns — are required to test their drinking water wells for nitrate four times a year, according to a 2019 Department of Environment and Energy report. Those numbers don't include the many private drinking water wells in Nebraska, which are unregulated.

It's a costly problem.

Edgar water rates will go up \$10 to \$12 a month because of the \$3 million pipeline to Fairfield.

Steele City, with a population of 58, has been under a state order to find a clean water source since 2007. It is using \$900,000 in loans and grants to build a waterline to Endicott. Construction has started but is not complete.

Steele City's only drinking water well measures between 11 parts per million of nitrate and 13 parts per million.

Dorothy Cassell, who is in her 80s, has lived in Steele City for 19 years. She drinks water straight from the tap, even though she knows the nitrate levels are high.

"I guess I haven't concentrated on what it means if I don't do anything about it," she said.



Dorothy Cassell, who is in her 80s, drinks a glass of water in her kitchen in Steele City, which is building a pipeline to another town because nitrate levels in the village's drinking water exceed the federal limit for what's considered safe.

JESSICA FARGEN WALSH

Attitudes in Steele City range from indifference to anger to relief.

Tammy Katz, a retired nurse and village board chairwoman, has accepted that things have changed and residents must do the same. For example, every home and business now has a water meter.

“We’ve had really cheap water for a long time,” she said. “The water system was never run like a business. It was just run the old way. They charged enough to keep things going.”

Katz said that while she drinks water from her tap in Steele City, she’s glad a fix is coming.

“I don’t like it, that it’s in there,” she said of nitrates. “We shouldn’t have it in there. And the government says we can’t have it in there.”

Bill Scheele, the part-time postmaster, doesn’t understand why the village must spend so much money on its water problems. He worries whether older residents can afford higher water bills. He estimates water rates will increase from about \$24 a month to \$36 a month.

“It’s just another way for the state, I think, to be too damn bossy,” Scheele said.

Sue Dempsey, the administrator of the drinking water division at the State Department of Health and Human Services, said it’s the state’s job to protect drinking water.

“Prioritizing public health is my job, and I don’t look at it as enforcement,” Dempsey said. “I look at it as protection of the most vulnerable, who are children and impacted by high nitrates.”

Nebraska is not alone in its battle against nitrates. In Ohio, toxic algae blooms caused by nitrogen in agricultural run-off have threatened Toledo’s drinking water supply. Fertilizer and excessive manure run-off in the Mississippi River are the culprits for the dead zone in the Gulf of Mexico.

In Iowa, a fight between the Des Moines water utility and farmers over surface water regulations led to a lawsuit. That lawsuit was over the federal Clean Water Act.

In Nebraska, the state's farm bureau, which mobilized with other agricultural groups over controversial federal changes in the federal Clean Water Act, supports the Safe Drinking Water Act. Farmers want clean water for their families and communities, said Jay Rempe, senior economist at the Nebraska Farm Bureau.

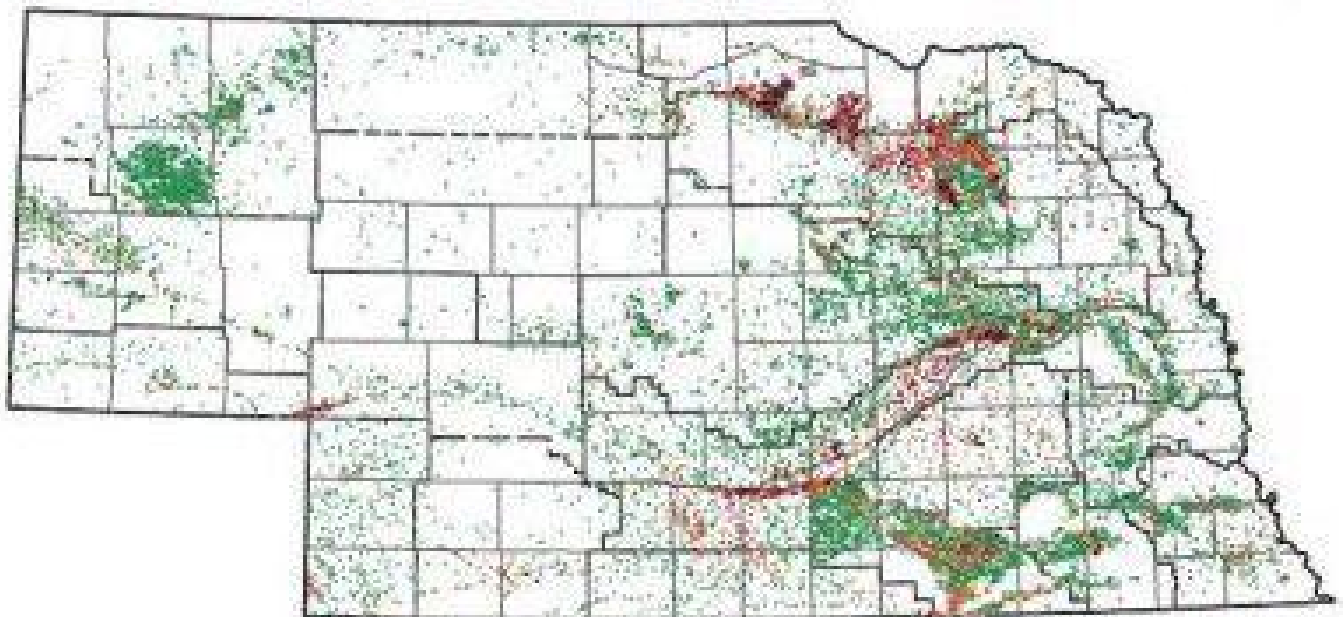
"They care about their local community, and they care about the future of agriculture in rural Nebraska," he said. "They always say, 'I want to leave my land and operation in better shape than when I took it over from my dad or grandfather.' They want to address this issue."

NITRATE-N CONCENTRATIONS IN NEBRASKA

Most recent recorded concentrations of 18,299 wells from 1999-2018

Nitrate Levels

■ 0.01 to 7.49 mg/L
 ■ 7.5 - 9.99 mg/L
 ■ 10 - 20 mg/L
 ■ More than 20 mg/L



NOTE: Empty areas indicate no data reported, not the absence of nitrate in groundwater.

SOURCE: Quality-Assessed Agricultural Database for Nebraska Groundwater, 2019 THE WORLD-HERALD

Nebraska is doing a good job fighting the nitrate problem, but its groundwater still has some of the highest nitrate levels in the country, said Jamie Konopacky, the Midwest director at the Environmental Working Group. Between 1974 and 2018, 91% of the nearly 130,000 shallow and deep well samples taken in Nebraska had some measurable nitrate level, according to the state's annual Groundwater Quality Monitoring Report.

But it's difficult to gauge nitrate trends in groundwater because wells are sampled at different depths and because the problem is worse in some parts of the state. The median level of nitrates in the groundwater decreased in Nebraska from 2017 to 2018, but the number and location of those samples varied.

For those areas that are worst-hit, the cost to fix nitrate problems is high.

Most communities raise water rates to help pay for fixes, but that doesn't cover all the cost. Some communities balk at a requirement to install water meters in order to get state or federal loans and grants so they self-fund water quality projects.

Glenvil, with about 300 people, just built a \$350,000 well and rates are expected to rise \$8 a month. In Ong, the village drilled a new \$160,000 well last month because the only drinking water well in the village has nitrate levels that are deemed unsafe.

The village of Prosser got a low-interest loan to dig a new well because of high nitrate levels, but nitrate levels in that well — the only source of water for the village — crept up to 16 parts per million so they dug the well deeper, said Michelle Matthews, the village chairwoman.

Instead of drilling a new well or connecting to another water source, the village used \$77,961 from the USDA to install reverse osmosis systems for all 39 water customers. Four times a year, water operator Michael Matthews tests water from each of the systems and sends results to the state. Now, he says the state is letting him run a test to see if he can start sampling water from a single source. Eventually, the village will be responsible for replacing the systems.

“We are responsible for every RO system. The village owns it, not the customer. We are responsible for maintaining it, changing the filters and everything,” said Michelle Matthews, Michael Matthews' wife. “And all that cost has to be absorbed in their water bill.”

Edgar, which is building the 12-mile pipeline to Fairfield, is required to provide bottled water to residents, particularly pregnant women and families with young children. Nitrate contamination can cause blue baby syndrome, which affects oxygen transportation in the blood.

Edgar mom Megan Schaefer said she doesn't worry too much about nitrates in her drinking water.

Schaefer runs an in-home day care and fills bottles from her sink, which has a reverse osmosis system. Or she gets bottled water from the town.

"It's just inconvenient because you have to go somewhere to get water," she said.



Megan Schaefer, who was pregnant at the time of this photo, fills a bottle from a reverse osmosis system at her home daycare in Edgar. High nitrates in the drinking water in Edgar pose a threat to pregnant women and children.

JESSICA FARGEN WALSH

The city of Aurora, with about 4,500 people, has six working wells. It built a new drinking well in 2016 at a cost of \$415,00 and another in 2019 at a cost of \$684,000, both funded through the state. They were built for quality and quantity purposes and

constructed in an area with low nitrate levels in the groundwater, said Adam Darbro, the city's utilities superintendent, zoning administrator and floodplain manager.

Darbro said it was still more cost-effective to dig new wells than to build a treatment plant.

"We still pump straight from the ground to tap," Darbro said.

In August 2017, the state issued the city an acute nitrate violation because a drinking water well reached more than 10 parts per million of nitrate. The state requires public drinking water systems to notify residents within 24 hours when this happens.

"We had to hand-deliver notifications to every (water customer) in town," Darbro said. "We took our whole public works staff, and we marked off a part of town. We walked."

Larger cities are not immune.

In Hastings, population 25,000, an expensive reverse osmosis system is designed to remove nitrate from the groundwater and can process 706 gallons a minute from two extraction wells. This "clean" water is then placed back into the aquifer to be captured by the municipal wells, thus lowering the nitrate levels so the water is safe to drink, said Marty Stange, environmental supervisor at the Hastings utilities department.

At the end of the process, the nitrate-laden water is pumped into a lagoon the size of 660 Olympic swimming pools before it is sent to a center pivot at a nearby farm or to a wastewater treatment center.

The city has spent \$15 million of the \$46 million it is authorized to spend to rid nitrate from drinking water, Stange said. Water rates went up every year for the last seven years but are not going up this budget year.

Hastings has a solution, but Stange wonders how smaller communities will handle their nitrate problems. More than 60% of Nebraska's community water systems serve fewer than 500 people, according to the state's annual public water system supply program report.

Stange thinks Nebraska is moving toward a rural regional water supply system.

“It’s just been slowly moving out this way,” he said. “We see that that’s the move that will have to take place, but the distance between communities is, it’s just a problem. How do you deal with that?”

Editor’s note: *Jessica Fargen Walsh is an assistant professor in the College of Journalism and Mass Communications at the University of Nebraska-Lincoln. This article is part of her full project, which is online at nitratesinnebraska.com. Walsh interviewed more than 60 people including farmers, townspeople, village water operators, mayors, business owners, researchers, natural resource managers and a mother of a child who had cancer. She drove more than 1,600 miles around Nebraska from March to November 2019.*

April photos: Nebraska faces coronavirus

1 of 67



A pedestrian wears a mask while crossing the Dodge Street bridge on Tuesday, April 28, 2020.

CHRIS MACHIAN/THE WORLD-HERALD

Eloise, 11, Neal, 5, and Edie Sutto kids around Regency Park in Omaha to thank essential workers during

MORE INFORMATION



Lincoln mayor says she may not ease coronavirus restrictions on governor's timeline

- Report says late Lincoln priest made sexual advances toward college students, seminarians
- More masks, more pay, more protections needed for meatpackers, Nebraska groups say
- Gov. Ricketts, Trump vow to keep nation's meat processing plants open
- Knowledge of Spencer Dam's history could have prevented 2019 disaster, investigator says