

# Agriculture built these High Plains towns. Now, it might run them dry

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Credit: CC0 Public Domain

Brownie Wilson pulls off a remote dirt road right through a steep ditch and onto a farmer's field.

He hops out of his white Silverado pickup, mud covering nearly all of it except the Kansas Geological Survey logo stuck on the side with electrical tape. Dry corn stalks crunch under his work boots as he makes his way to a decommissioned irrigation well.

He unspools a steel highway tape measure a few feet at a time and feeds it into the well until gravity takes over. He keeps a thumb on it to control the speed.

How much of the tape comes out wet lets him calculate how much water has been lost here.

Wilson crisscrosses western Kansas every January to measure wells and track the rapid decline of the Ogallala Aquifer, which contains the nation's largest underground store of [fresh water](#).

Last year, some wells had dropped 10 feet or more because of the severe 2022 drought. But this year, they stayed about the same or dropped a couple feet. Some of these wells have dropped more than 100 feet since Wilson started working for the agency in 2001, he said.

"Some of our issues looking forward look gargantuan," Wilson said. "But I do think we can peck away at it and make some headway."

The Ogallala Aquifer, the underground rock and sediment formation that spans eight states from South Dakota to the Texas Panhandle, is the only reliable water source for some parts of the region. But for decades, states have allowed farmers to over pump groundwater to irrigate corn and other crops that would otherwise struggle on the arid High Plains.

Now, the disappearing water is threatening more than just agriculture. Rural communities are facing dire futures where water is no longer a certainty. Across the Ogallala, small towns and cities built around

agriculture are facing a twisted threat: The very industry that made their communities might just eradicate them.

Kansas Democratic Gov. Laura Kelly acknowledges some communities are just a generation away from running out of water. But she said there's still time to act.

"If they do nothing, I think they're going to suffer the consequences," Kelly said in an interview.

Today, the aquifer supports 20% of the nation's wheat, corn, cotton and cattle production and represents 30% of all water used for irrigation in the United States.

Depletion is forcing aquifer-dependent communities across the region to dig deeper wells, purchase expensive water rights from farmers, build pipelines and recycle their water supplies in new ways to save every drop possible.

Since the mid-20th century, when large-scale irrigation began, water levels in the stretches of the Ogallala underlying Kansas have dropped an average 28.2 feet farther below the surface, far worse than the eight-state average of 16.8 feet.

Water levels in Texas, where the Ogallala runs under the state's panhandle, have dropped 44 feet. New Mexico has seen a 19.1-foot decline.

In Colorado, Nebraska, Oklahoma and Wyoming, the water level has declined less than the eight-state average, while in South Dakota it has risen.

While the Ogallala Aquifer presents distinct circumstances, tensions

over groundwater are growing across the country, said climate scientist and author Peter Gleick, who founded the Pacific Institute, a global water think tank.

"You're not alone," Gleick told Kansas irrigators and policymakers at the Governor's Conference on Water, held in November in Manhattan, Kansas. "A lot of the issues that you're dealing with in Kansas, they're dealing with in Arizona, and the Colorado [River] basin."

Without drastic measures, some communities may not survive.

"I think, without a doubt, we will see some communities dry up," Gleick said in an interview. "We've seen that historically, where communities outgrow a natural resource or lose a natural resource and people have to move to abandon their homes."

## **'We're running out of water'**

When Micheal Shannon got his start in local government over 40 years ago, water supplies were not top of mind.

Those days are gone.

"We're running out of water," said Shannon, the interim city manager in Guymon, Oklahoma. "We're pumping our maximum. And the water levels keep coming down."

The largest city in the Oklahoma Panhandle, Guymon relies on 18 wells to draw water from the Ogallala. But dropping [water levels](#) have forced the city of about 13,000 to explore new wells outside of town.

The city has already committed some \$4.5 million to study and drill new wells, but there's no guarantee the wells will produce a reliable water

supply.

"There's always that what if," he said. "There could not be any water."

The city's largest water user and employer is a massive pork plant that slaughters and processes more than 20,000 hogs per day. The plant has voluntarily reduced water usage by nearly half during times of shortened supply.

Shannon said the city, industry and agricultural producers must work together.

"We all still want to be here the next 35, 40 years," he said. "We know farmers are going to have to produce ag products. And the citizens of Guymon are going to have to have water."

More than 200 miles away, several New Mexico communities are banking on more drastic measures.

A new pipeline, expected to cost more than \$800 million, will bring water from the Canadian River's Ute Reservoir to four municipalities and Cannon Air Force Base.

"This is our future, no doubt about it," said Orlando Ortega, administrator of the Eastern New Mexico Water Utility Authority. "Without this project, none of these communities could exist for very long."

The pipeline is being funded largely by the federal government, though four participating communities have been paying dues to the water authority for years. Officials aim to have the pipeline operational by the end of the decade.

Even so, communities will still need to get more aggressive about conserving water, said Michael Morris, who leads the water authority board and is mayor of Clovis, one of its member communities.

Morris is active in agricultural efforts to decrease pumping—such as conservation programs in the region that pay producers to stop pumping. And the city is working to expand water recycling efforts.

But he said the situation is even more dire than locals realize. Few know how close Clovis has come to seeing its water demand outpace the underground supply.

"So is there another option?" he said. "No."

## **Decades of state inaction**

In Kansas, the Ogallala Aquifer supplies 70% to 80% of the water residents use each day. But for decades, the state's regulation of water benefited its largest user and its largest industry: agriculture.

The once-abundant water allowed farmers to grow cheap cattle feed, attracting the feedlots, and increasingly, [dairy farms](#), that dot southwest Kansas.

But that feed is cheap, partly because—aside from the fuel costs associated with running a well—the water is free. A report commissioned by the Kansas legislature in 1955 warned of a future without it.

"Ground-water mining is a serious problem," the report says.

After the grave 1955 warning, however, the state legislature only made it easier to pump the water, according to Burke Griggs, a water law

professor at Washburn University in Topeka.

Griggs, formerly a water lawyer for the state, criticized Kansas lawmakers' decades-long posture that depletion would best be solved locally. He said it is a stance held by every governor since the 1980s.

"They want it to be voluntary. And they want it to be cooperative. They want to have local-based solutions," Griggs said. "These are the catchwords you hear. None of them have achieved much."

Kelly follows the same line. The second-term governor recently signed a law mandating more reporting and planning from groundwater management districts and created a new subcabinet to coordinate water issues across agencies. But she hasn't wavered from her position that water conservation efforts are most effective when they are voluntary.

"Things are more likely to work out in the long run and succeed if there is local buy-in, and local commitment and the idea is generated locally—rather than the state wielding that heavy hammer," Kelly said.

But even some farmers want the state to step in, water policy watchers say.

"Many families who are trying to make a living from farming, and who would like to keep farming on their own land, are just waiting for the state to step in and help them fix this. Most people agree that we need fair, enforceable and transparent rules to get this turned around," said Lucas Bessire, a professor of anthropology at the University of Oklahoma who grew up in southwest Kansas.

## **Voluntary efforts in action**

For the first time since their father dug an irrigation well in the dusty

sandhills of southwest Kansas more than 50 years ago, Gina and Marc Gigot's farm isn't growing corn.

The sibling farmers are trying to preserve the precious water below their land outside Garden City.

For decades, the Gigot family has benefited from drawing groundwater to the surface to grow bright green circles of crops where the sandy soil is otherwise so dusty it might blow away.

As Marc's pickup bumps along the farm's private roads, he and Gina point to the electric systems and water pipes laid by their father. Some of the massive center pivot systems use the same parts he installed 50 years ago.

To extend the life of the aquifer, the siblings are opting for fewer water-intensive crops and grazing cattle. The farm has historically been among Kansas' largest water users, irrigating 9,000 acres, but they've cut their usage in recent years and committed to another 10 years of voluntary water conservation.

In exchange, they get more flexibility in how they use the water. As long as they hit their five-year goal, they can pump more water in drought years.

Beyond that, they're partnering with Garden City, the largest city in southwest Kansas and a major agricultural hub. Garden City's municipal water wells sit right next door to the Gigot farm, which can directly impact the city's ability to supply drinking water.

To keep more water underground, Garden City will soon divert treated wastewater to the Gigot farm—rather than continuing to dump it into the bone-dry bed of the Arkansas River. That will allow the farm to turn off



some wells.

"It's not really a situation where either the city gets what they need or the irrigators get what they need. It is way more symbiotic," said Fred Jones, who oversees Garden City's water.

In northwest Kansas, a group of farmers voluntarily cut their water usage by 20% through a five-year conservation program with the state. They switched from corn to wheat or grain sorghum and used irrigation more strategically. Farmers in the area exceeded their goal and cut use, on average, 23.1% over the initial five-year period and slowed the decline of the aquifer from 2 feet per year to less than half a foot.

Still, the Gigots said the state must force other producers to cut back.

Even Kansas Farm Bureau President Joe Newland said he's fearful that voluntary efforts aren't enough.

Newland, a former Kansas Republican legislator, offered an amendment in 2022 that effectively sank a massive bill designed to make the aquifer a higher priority in state government, impose more requirements on local groundwater officials, and give communities a greater voice in decisions over water.

In Kansas, the agricultural industry, led in part by Newland, has largely pushed back against aggressive water restrictions, instead calling for voluntary conservation measures. But Newland worries that those voluntary measures haven't saved enough water, which could eventually push the state to hand down strict mandates.

"I'm always hopeful and prayerful that people realize just how important it is that we're doing this on a voluntary basis and not ever have to go through a mandatory situation," he said. "But that's going to be

determined in the near future how this works, because, as I said, we don't have decades to fix this problem."

## **Kansas towns take the lead**

Few places evoke the Old West like Dodge City, where Wyatt Earp patrolled the lawless streets rife with gambling, saloons and shootouts.

Today, the city proudly displays remnants of those days at the Boot Hill Museum, which contains a reproduction of the legendary Long Branch Saloon and an Old West photo booth for visitors.

But the former frontier outpost has embraced some of the state's most progressive water strategies.

"We were recycling before recycling was cool," said City Manager Nick Hernandez, who highlighted water reuse efforts that began in the 1980s.

Effluent from one of the city's wastewater treatment plants keeps a golf course green. Another plant sends about 1.8 billion gallons of treated wastewater to irrigate 3,000 acres of crops at a nearby farm, reducing the need for aquifer pumping.

Another project aims to directly recharge the aquifer with treated wastewater. That will not only help protect the city's quantity of water, but also prevent contamination from agricultural runoff like nitrates by keeping the hydraulic pressure up in city wells, he said.

That project is expected to cost \$60 million. Dodge City, home to about 28,000 people, is seeking federal and state assistance for the effort. But even without grants, Hernandez said that would prove cheaper than buying water rights and digging new wells.

All those projects are building toward treating the city's sewage directly into drinkable water—still an emerging idea in most parts of the country. That would allow the city to decrease demand on groundwater by continually reusing its water.

"We all have a concern about the stability of the aquifer because that's our lifeline," said Ray Slattery, the city's director of engineering services. "But I feel very good about where the city is, and what we've done in the past to conserve. We knew it was important and so we took steps way before it became a problem."

Communities such as Dodge City offer a glimpse into the future of municipal water supplies in the region, said state Rep. Jim Minnix, a Republican who represents part of western Kansas and leads the House Water Committee.

Minnix, who raises cattle and farms both dryland and irrigated crops, said cities and farms alike must adapt. Cities need to continue embracing water recycling efforts, reduce lawn watering and encourage more efficient appliances. Farmers, he said, should embrace new technologies such as more efficient irrigation systems and drought-resistant crops.

"You'd be amazed at the water quantity that's actually being saved out there from what had been done 40, 50 years ago," he said. "As a farmer myself, I know a lot of little things add up to something that's really worthwhile. And to maintain our aquifer and our economy out here is absolutely worthwhile."

But the way Connie Owen, director of the Kansas Water Office, sees it, change is coming to both agricultural and municipal water users one way or another.

"If we don't adapt to different behaviors, it will run dry," she said. "And

that will cause the economic devastation that everyone fears with restrictions."

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