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How Bad Is the Ogallala Aquifer's Decline in Texas?

by Kate Galbraith
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Windmill at Buffalo Lake National Wildlife Refuge pumping water from the Ogallala Aquifer.

On the high plains of the Texas Panhandle, farmers owe their livelihoods to a marvel of geology: the cool, gravely waters of the country's largest aquifer, the Ogallala. Stretching across eight states, the amount of water is so vast that, according to one writer, it could fill Lake Erie nine times over. Within Texas, the Ogallala accounts for about 40 percent of all water use.

But the aquifer's levels are declining sharply here. In a dry growing season last year, the High Plains Water District, which includes all or part of 15 Panhandle counties, recorded an average drop of 1.5 feet, the most since 1997. The rains have returned, but the 2007 state water plan projects that the Ogallala's volume will fall a staggering 52 percent between 2010 and 2060, as corn and cotton growers continue to draw from its depths. The consequences for farmers could be severe: The use of big pivot irrigation — the lifeblood of the Panhandle — could be cut back severely in 10 to 20 years if current usage patterns continue, researchers at Texas Tech University estimate.

"The aquifer is reaching a point where it is not going to produce the water that some farmers are going to want to see produced," said Robert Mace, the deputy executive administrator of the Texas Water Development Board, the state's water development planning group. Like other experts, he notes that the aquifer's thickness varies tremendously from place to place — and in a few spots, like parts of Dawson County, the levels are actually increasing. In general, he says, Texans are probably pumping the Ogallala at about six times the rate of recharge.

Rapid depletion of the aquifer has been going on since the 1950s, as new pumping technologies became available and memories of the Dust Bowl lingered. But growing awareness of water constraints has prompted new policy approaches. By Sept. 1, owing to a 2005 law, regional groundwater management groups across the state must declare their how they want their groundwater resources to look 50 years from now and plan accordingly.

Already, Texas's 98 groundwater conservation districts (which do not cover the entire state) are able to provide some conservation regulation. Yet the rules are relatively weak, because Texas views groundwater as essentially a property right and — unlike other states — has few common-law rules that constrain that right, according to Russell Johnson, a water law expert with McGinnis, Lochridge & Kilgore. The groundwater districts require landowners to obtain a permit to drill a well and may stipulate minimum spacing between wells. (Other, ongoing research is looking for ways farmers can use less water when growing crops.)

But the new 50-year plans likely will help water authorities decide how much usage to allow — and, as important, make clearer to the farmers and other users the stresses to the system that would result from using excess water, Johnson said.

The plans with those "desired future conditions" are starting to come in, in some cases with significant variations between counties. Hemphill County announced the highest bar in the Panhandle: In 50 years, local water managers said, 80 percent of the aquifer must remain available in wells underneath county land. Nearby counties, by contrast, are declaring that 40 to 50 percent of the Ogallala must remain in 50 years.

Janet Guthrie, general manager for the Hemphill County Underground Water District, said people in her county value its natural streams and trees — things that could be jeopardized by too much pumping. There is less irrigated farming than in nearby counties, she said, and even ranchers tightly control the amount of water used in oil and gas drilling on their land.

"If there is going to be development, we want to be making sure it's sustainable development," Guthrie said.

But Hemphill County's conservation plans have met resistance from T. Boone Pickens, the billionaire oilman. Mesa Water, a Pickens company, owns substantial water rights in a number of Panhandle counties and seeks to sell the water to big, distant cities like Dallas (so far, no takers have emerged). In March, Mesa Water and a rancher named George Arrington filed a lawsuit in a Travis County court naming the Texas Water Development Board, which approved the Hemphill County plan.

Mesa Water owns about $10 million in water rights in Hemphill County, after buying them from landowners. According to Marty Jones, Pickens' attorney, the 80 percent conservation plan "essentially signals to prospective buyers of our water that we don't really have anything available there. And if that's the case, then the value of the groundwater goes to zero."

Guthrie said that such claims were off-base. "Their project — it can still happen," she said, as can other development projects. She noted that the 80 percent plan still allows for Hemphill County to use water at more than four times its current rate.

Some experts in the water industry expect more lawsuits of this kind, and a landmark case soon to be decided by the Texas Supreme Court could affect the implementation of the 50-year plans as well. That case, Edwards Aquifer Authority v. Day, has the potential to gut the state's ability to regulate groundwater through local districts, by making them more vulnerable to court challenge. If it goes the other way — and the court decides landowners do not have an ownership right in groundwater — then Johnson says that districts would have few limits on their ability to restrict groundwater use.

Another aquifer discussion has surfaced in Andrews County, where a waste-disposal company called Waste Control Services wants to expand a low-level radioactive waste dump. The company insists that it is not over the aquifer and poses no danger to drinking water (and is suing the man behind the website savetheogalla.com, which says that the Ogallala is is "underneath and/or precariously close to" the dump).

Meanwhile, the Ogallala's depletion has caused at least a few cities to evaluate other options. Randy Criswell, the city manager of Canyon, in the Panhandle, says Canyon had purchased rights to another aquifer, the Dockum, in the last three years. (The Dockum is slightly deeper than the Ogallala and in some parts more brackish.) One reason was that the field of Ogallala wells that the city relies on for water — while never the most prolific wells in Texas — do not produce as much as 20, 30 or 40 years ago, he said. "It absolutely, without a doubt, has diminished with its ability to produce water," Criswell said.