

Drilling could sap water supply

Use projections don't include industry need

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By Peggy Heinkel-Wolfe / Staff Writer

Despite problems locally with water wells gone dry, hydrologists anticipate the Trinity Aquifer can remain a viable source of water for the long term, even after the Texas Water Development Board released new estimates of the area's future groundwater use as anticipated in early January.

Bob Harden, whose Austin-based hydrology firm Harden and Associates is leading the 16-county North Texas study, said more research was needed to better understand the current clash between residential, municipal and industrial water wells, including the millions of gallons of water sold to or pumped by gas well operators to fracture and release natural gas from the Barnett Shale.

However, with nearly a century of data on the Trinity and its use, Harden said that tapping the aquifer is likely to remain economical for decades. About 60 percent of Texas' drinking water still comes from underground.

The Texas Water Development Board released its 50-year plan for the state last month without accounting for the billions of gallons likely needed for the gas-drilling industry in the area. Officially, the board estimated that in 2010 alone Denton County will need about 66 million gallons of water for mining and Wise County will need about 1.5 billion gallons for mining — having counted only the water needed by local quarries for their operations.

Steps to formulate the latest statewide water plan started before the drilling boom, according to Tom Gooch, a Freese & Nichols engineer, who helped gather information for North Texas in early 2002.

"The boom was just taking off then," Gooch said. "It was not something we saw coming."

Bill Mullican, the TWDB's deputy executive administrator for planning, agreed that the amount of groundwater usage changed in a very short period of time, and that's why the agency hired Harden and Associates to conduct the \$50,000 study in May.

Although the agency anticipates releasing results from the Harden and Associates study in early January, Mullican would not say whether they thought the findings would force changes in the area's long-range plan.

"It might be a pretty good surge [of water use] right now, but it may not have a long-term impact," he said.

Part of the problem is getting good information from gas well operators, especially in predicting how much water might be needed to keep a gas well producing, Harden said. Each gas well needs about 1 million to 5 million gallons of water to start with. Estimates vary on how many

times a gas well must be fractured again to keep the gas flowing — from zero to once every several years over the 20- to 30-year life of the gas well.

“It’s questionable — whether the industry doesn’t know, or is delaying and avoiding the question,” Harden said. “Or maybe you don’t have to do it [re-fracture] at all.”

According to the Texas Railroad Commission, drillers fracture a gas well by pumping sand and chemical-treated freshwater into the well hole. The sand holds the fractures open to release the gas, while the water helps push the sand as far as possible into the shale. Sometimes, the shale closes again around the sand, slowing the gas flow and requiring the fracturing operation be repeated in order to keep a viable yield from the gas well.

Sometimes drillers will buy water from local utilities. Krum Mayor Larry Lamonica said the city has sold its excess bulk water to drillers, stating that he prefers they get it from a regulated source rather than drill a water well themselves. But many drillers will dig their own water well or buy from a private water supplier at a discount rate rather than pay local utility rates for millions of gallons, according to several area water officials.

Gas well operators also need the water flowing in large volumes, much more than the 5 to 10 gallons per minute used by homes and ranches.

“Oil and gas operators aren’t going to fiddle with less than a 50 gallons per minute, minimum,” Harden said.

Therefore, a big water well typically doesn’t prevent a smaller, shallower water well nearby from working, because they are tapped into different layers of the aquifer, he said.

However, if a water well operator is pumping water out faster than it flows through aquifer, that operator can affect surrounding wells tapped into the same layer.

“A Barnett Shale [water] well pumping 50 gallons per minute could affect a municipal well or any other large capacity well nearby,” Harden said.

In order to avoid creating those “cones of depression” and causing neighboring water wells to fail, multiple wells drawing from the same layer should be set as low as possible in the aquifer, he said, acknowledging that method costs more money and requires more planning on the part of everyone involved.

While the agency’s study is focused on groundwater usage, officials there also are trying to determine how much surface water drillers are buying, so that they can accurately model how much water is being used, Mullican said.

Once their report is complete, they’ll know whether water suppliers in North Texas will have to go back to the drawing board for their long-range plans, which includes four new major reservoirs to meet the thirst of a fast-growing population.

“It just depends on the magnitude of the [industry’s] use,” Mullican said. “And whether it’s a significant amount in comparison of the grand scheme of things.”

Bruce Arledge, a longtime board member with Mustang Special Utility District, which supplies water to northeastern Denton County, said that for many local utilities reliable access to water

from both wells and lakes is paramount. He likens surface water to a checking account, which is flush when times are good.

“But the groundwater — that’s your savings account,” he said.

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