

Star Tribune

Water supply can't meet thirst for new industry

Greg Gordon, Star Tribune, December 26, 2005

WASHINGTON - Cargill Inc. made the approach quietly about a year ago -- the kind of inquiry from an agribusiness giant that could set a sleepy southwestern Minnesota town buzzing.

Seizing on soaring demand for alternative fuels, Cargill was exploring prospects for building a plant near Pipestone that could produce 100 million gallons of corn-based ethanol annually. Such a plant would be a boon to farmers and create badly needed jobs.

But Dennis Healy, chief executive officer of the Lincoln-Pipestone Rural Water System, said he had to squelch it: His utility couldn't come close to meeting Cargill's need for more than 350 million gallons of water each year.

It might be hard to imagine a water shortage in the Land of 10,000 Lakes. But in arid southwestern Minnesota, a scarcity of water has forced utilities to distribute water from well fields via thousands of miles of pipelines and to turn away more than a dozen coveted factories that could make fuel and food from local farm products.

"People can see they're running out of water," said Tim Cowdery, a Minnesota-based hydrologist with the U.S. Geological Survey. "They'd like to build more industry. They'd like to build more ethanol plants. They just don't have the water to do it."

Cowdery and other water resource experts said the region's predicament offers an early glimpse of the sorts of water shortage issues expected to be commonplace across the country in decades to come as demand rises. A farming region such as southwestern Minnesota faces a triple whammy:

- Farms need a lot of water for irrigation and livestock.
- Farm pesticide runoff has polluted groundwater, shrinking the available supply.
- Ethanol plants, soybean processing plants and slaughterhouses use hundreds of millions of gallons more water.

The area relies, not on one large underground aquifer, but on many smaller ones, and more than a century of well-drilling has pretty much found what seems to be available. Healy said his water system and three others have "searched for water throughout a fairly large portion of the area. We haven't found anything in large enough quantity to be of any real value."

The thirst of ethanol

Nowhere is the growing clash between economic development and water conservation more evident than in the push to build ethanol plants that typically guzzle 3½ to 6 gallons of water for every gallon of fuel produced. Minnesota's 15 ethanol plants together consume about 2 billion gallons of water per year, and plants in Winthrop, Windom, Marshall and Granite Falls are straining available water resources.

Two other ethanol plants under construction near Heron Lake and Atwater "had to move from their original sites because there wasn't an adequate supply of water," said Jay Trusty, executive director of the Southwest Regional Development Commission.

While Gov. Tim Pawlenty's two-year-old JOBZone initiative offers tax breaks to encourage businesses to locate in depressed areas, some state officials privately question the wisdom of granting further subsidies to ethanol plants that use so much precious water.

Matt Hartwig, a spokesman for the Washington-based Renewable Fuel Association representing the nation's ethanol producers, said they all are "constantly looking at ways to improve their efficiency," and some are installing water treatment facilities so they can "recycle more of the water that they use."

Help also is coming from a \$400 million public works project in South Dakota -- the Lewis & Clark Rural Water System -- that eventually will pipe 3.78 million gallons of Missouri River water each day to southwestern Minnesota and northwestern Iowa. But with shortfalls in congressional funding, the system might not bring water to Minnesota for another 10 to 20 years, and Healy cautions that it won't be enough to support many new water-intensive factories.

The region is dry because of the whim of glaciers -- colossal masses of ice that melted 10,000 years ago, creating lakes and riverbeds in much of the rest of what is now Minnesota.

Because the glaciers didn't reach far to the southwest, that region was left with much smaller sand and gravel deposits that formed underground water basins, or

aquifers. Lower-than-average rainfall and higher temperatures have aggravated the problem.

Minnesota's western arid region extends all the way to the Canadian border, but the geological survey's Cowdery said the southwestern corner faces the worst "stress situation." A complicating factor is the state's policy discouraging transfer of water from one major basin, such as the Mississippi River watershed, to another. That limits southwestern counties to water from the Missouri River basin.

Hydrogeologists from the Minnesota Department of Natural Resources (DNR) closely monitor the rates at which water is pumped from area wells to ensure that aquifers can recharge. They run tests on withdrawal rates before approving proposed plants.

Jay Frischman, a DNR hydrogeologist, describes himself as "the grim reaper" who delivers bad news to local communities trying to add industry.

He recalled advising managers of a farmer-owned soybean processing plant under construction in Brewster in 2003 that the wells they planned to use would not provide a long-term water source.

The owners escaped "what could have been a really big bind," he said, because neighboring Heron Lake had drilled a highly productive well for its yet-to-be-built ethanol plant. Constructing 10 miles of pipeline to Heron Lake, the soybean plant bought enough water to expand into biodiesel manufacturing.

Healy, the head of the Lincoln-Pipestone system that provides water to all or parts of nine southwestern Minnesota counties, said that utility is "getting by just barely today," approving few new hookups. It pumps 1.3 billion gallons of water each year from three sets of underground aquifers, distributing treated drinking water through 3,400 miles of underground pipelines to 3,000 farms and rural homeowners and more than two dozen communities.

Healy said he has told 10 to 12 industrial applicants over the past six years -- three in the past year -- that the system cannot fully meet their water needs. He said Minnetonka-based Cargill requested 1 million gallons of water each day, but he could offer only 100,000 to 200,000 gallons.

Don Habicht, general manager of Worthington's water utilities, said he's turned away about two dozen projects over the past 25 years.

Water got so tight in Marshall that its public utilities system drilled a well field 20 miles to the east and plans to pipe in 700,000 gallons of water each year. Marshall

is home to the Minnesota Corn Processors plant owned by Archer Daniels Midland -- a plant that makes corn sweeteners and 40 million gallons of ethanol each year, and that bought 469 million gallons of water supplied by the city and Lincoln-Pipestone last year, said Brad Roos, general manager of Marshall's public utilities system.

Star Tribune staff writer Robert Franklin contributed to this report. Greg Gordon is a correspondent in the Star Tribune Washington Bureau.

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