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## A thirsty fuel

**With several plants coming, Minnesota could quadruple its ethanol output. But producing the alternative fuel requires a lot of water — not always available in the corn-rich southern part of the state.**

BY DENNIS LIEN  
Pioneer Press

Open less than a year, the Granite Falls, Minn., ethanol plant already is looking for help to quench its thirst for water.

So far, it has been pulling all it needs from an underground aquifer. But with supply dwindling, the plant wants to pipe its water from the nearby Minnesota River.



Photo courtesy Granite Falls Energy  
Granite Falls Community Ethanol Plant

That the Granite Falls Energy plant could run short of groundwater so soon illustrates a problem faced by a flurry of new and proposed ethanol plants that could quadruple annual ethanol production in Minnesota.

Most have been built or are being proposed for south-central and southwestern Minnesota. While rich in the corn used to make the clean-burning, alternative fuel, those areas are short on another key ingredient — water. Moreover, that water isn't evenly distributed.

With so many plants on the horizon and water shortages possible, the state is ramping up warnings to companies to be extra careful about choosing where to build. Preventing future groundwater depletion ensures water for homes and businesses.

"We want to make sure people address their water supply before they locate the plant," said Jim Japs, assistant director of the Minnesota Department of Natural Resources' division of waters. "If they don't have enough water, they are not going to be able to operate."

The push to build these ethanol plants has exploded in the past year.

After gasoline prices skyrocketed last fall, Congress passed an energy bill that set minimum levels of ethanol, which is used primarily as an additive to blend with gasoline, driving the demand for the fuel.

The state has 16 plants producing 550 million gallons of ethanol a year. Four of those plants are expanding, adding 167 million gallons of capacity. A plant under construction in Heron Lake will produce 55

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million gallons.

In addition, another six plants, slated to produce 585 million gallons a year, are seeking permits from the Minnesota Pollution Control Agency.

But that's not all. Four more plants are probable and rumors are circulating about another four, according to agency officials. The projected ethanol production at those eight plants is 700 million gallons a year.

Put all of those together and the volume of ethanol produced in Minnesota each year could quadruple, from 550 million gallons to more than 2 billion gallons. Because it takes 4 to 5 gallons of water to produce a gallon of ethanol, ethanol-related demand for water could increase from 2.5 billion gallons to 10 billion gallons a year.

That's almost enough water to supply every home in Washington County for a year.

In just the past month, plans for ethanol plants have been announced for Springfield and Lamberton, both in southwestern Minnesota.

The MPCA, which handles environmental review and air- and water-discharge permits for these plants, has assembled an internal team to deal with this new order. Besides coordinating its own regulatory efforts, the agency wants to make its expectations clear to developers.

"The number (of new plant proposals) seems to be expanding faster than even we anticipated," said Roger Bjork, an MPCA strategic-planning director.

"We want to move nimbly but not so fast we're not taking care of business here," he added.

In Minnesota, ethanol plants get water from aquifers, porous layers of rock or sand where wells can be sunk. But like oil deposits, some aquifers are more productive than others.

The region east of a line from the Twin Cities south to Mankato and the Iowa border has plenty of underground water, but the fractured bedrock there has led to discharge problems. West of that line, rainfall decreases and aquifers are fewer and less productive.

Officials know a lot about the groundwater capacity in the Twin Cities metropolitan area. But the picture is sketchier in rural areas, where they must rely on a patchwork of already-drilled wells for most of their information.

"In some places, there just isn't the density of wells for us to accurately map the boundaries of these aquifers," said Dale Setterholm, assistant to the director of the Minnesota Geological Survey.

Last year, the DNR sought money for a groundwater-sustainability study, but legislators didn't provide any. Now, at places like the Environmental Quality Board and the U.S. Geological Survey, there's

talk of updating that information base.

"It's important to start thinking about quantity of water again," said John Wells, strategic-planning director for the Environmental Quality Board, which is looking into how much water the state will need in 2030.

In retrospect, the Granite Falls plant's water problems aren't that big of a surprise.

When it was proposed, the plant and the state knew the aquifer below it had limited potential as a long-term source of water. But the DNR gave the plant a temporary permit, knowing it eventually would need other sources of water.

Problems emerged sooner than anyone guessed.

"It looks like the aquifer is even less able to handle pumping than I felt, and I was very conservative," said Jay Frischman, a hydrogeologist for the DNR's waters division. "The reality is this: Granite Falls was a unique situation. If they had not had other sources available nearby, I would not have recommended a permit for them."

Peter Bullene, a spokesman for Granite Falls Energy, declined to comment.

If state regulators eventually approve the plant's proposal to use more water but to pipe it from the river, Granite Falls would be the first plant in Minnesota to rely on surface water to make ethanol.

This isn't the first time manufacturers in southern Minnesota have run into water-supply problems.

A couple of years ago, a large company wanted to build an ethanol plant south of Pipestone but had to look elsewhere when it couldn't secure enough water there.

"They couldn't have picked a worse place as far as water supply is concerned," Frischman said.

Just before construction was to begin on a soybean-processing plant in Brewster, officials learned its long-term water supply wasn't good enough. They found a supply 10 miles away at the Heron Lake plant and are piping water from there.

"There will be places in Minnesota that folks are going to propose as groundwater-based ethanol locations that are not going to be viable," Frischman said. "I may be the guy who gets to say, 'You will have to find someplace else.' "

Janette Brimmer, legal director for the Minnesota Center for Environmental Advocacy, said that the pace to build plants is too fast and that developers and regulatory agencies aren't taking the time they need to ensure things are done correctly.

"It's 'Push, push, push. Let's get it done,' " Brimmer said.

To accommodate them, she said, the state seems too willing to bend rules and allow plants to build before adequate groundwater tests are undertaken.

"It's kind of a runaway train," she said. "We need to know what the problems are, and not just trade one problem for another."

Brimmer recently criticized a proposal to build an ethanol plant near Fairmont. On Tuesday, the MPCA citizens' board will again consider whether to require a full environmental review for that plant. Agency staff members say one isn't needed.

Brimmer contended that there still isn't enough information about the proposed plant's water supply. She also questioned whether the well water will be too salty for wildlife once it's discharged into an area ditch and creek.

Frischman, meanwhile, said the state would be quick to respond if groundwater supplies are drawn down at any plants.

If water levels drop to predetermined points, for example, he said permit holders would be forced to adopt water-conservation restrictions. If water levels drop beyond that, they would have to look for another source of water, cut back or shut down.

Setterholm underscored the uncertainty that exists as regulators try to balance the economic importance of the plants with the need to build them where they won't deplete aquifers.

"I don't think anyone would be so bold as to say, 'We're definitely sure there's a problem with every one of these sites they have chosen or proposed,' " Setterholm said. "I think what most would say is, 'We don't have enough information to say for sure whether this will be a problem or not.' "

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