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How Ethanol Is Making The Farm Belt Thirsty

**More Cornfields, Distilleries
Heighten Irrigation Worries;
A Water Cop Cracks Down**

By **JOE BARRETT**

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ALMA, Neb. -- Mike Clements stood near the railing of a low bridge on a dusty country road and pointed to a clump of green amid the rippling waters of the Republican River.

"There it is," he said ominously. Anyone else might have seen a reed-like grass swaying in the breeze. But Mr. Clements, head of the Lower Republican Natural Resources District, saw phragmites, a fast-growing invasive species that is slowing the flow of the river and sucking up precious water. The stuff had to go, he said.

Mr. Clements, 55 years old, is the water cop in this dry corner of the Farm Belt and lately, he has had to make every drop count -- even if it means whacking weeds.



Joe Barrett

Mike Clements polices water use near the Republican River


With ethanol plants moving into his slice of southern Nebraska, he'd love to be able to allow farmers to use all the water they want to satisfy the growing demand for corn. But a big settlement with Kansas over the effects of underground water wells on the Republican River has forced him to put in place some of the toughest water rules in the state. Now, with Kansas complaining that it's still not getting the water it's owed, he's likely to have to tighten the rules even further.

Everywhere farmers grow corn, water is becoming a major concern as ethanol plants ramp up production at a startling rate and the threat of drought is ever-present. Rushing to help meet President Bush's call to cut gasoline use by 20% over the next 10 years, the ethanol industry has projects under way that would nearly double capacity from the current 6.8 billion gallons of ethanol a year.

A 50-million gallon ethanol plant might use about 150 million gallons of water to make fuel. That's more water than some small towns use, raising some local battles over placement of the plants. But farmers in Mr. Clements's district alone pumped 62.6 billion gallons of water from underground in 2005. That's why many water experts are more concerned about farmers growing more thirsty corn to meet the extra demand from ethanol than they are about the water used by the distilleries themselves.

Nowhere is the mix of water and ethanol more volatile than in Nebraska. It is the nation's No. 3 corn producer after Iowa and Illinois -- even though the state is in the so-called rain shadow of the Rocky

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Mountains, depriving the state of moisture from the Pacific Ocean. Large-scale agriculture is possible here chiefly because farmers have learned to tap the Ogallala Aquifer -- an enormous complex of underground water formations, some dating to the last ice age -- that stretches beneath parts of eight states. In some areas, overpumping has lowered the level of the Ogallala, something the state has vowed to stop.

Kansas has complained for years that pumping near the Republican River lowers the water table, leaching water from the stream and robbing the state of river water it is owed under a 1943 compact. In 2000, a special master appointed by the Supreme Court sided with Kansas.

Underground water is so plentiful in Nebraska that farmers "historically have seen it as an inexhaustible resource," says David Barfield, acting chief engineer of the Kansas Division of Water Resources. "It's vast, but it's not inexhaustible. The Republican is the first place where that conflict has occurred."

Despite the looming water questions, Mr. Clements and other Nebraskans welcome the ethanol industry with open arms as a means to stimulate farm-town economies. In Mr. Clements's district, one ethanol plant is under construction, one is close to breaking ground and two more are in the planning stages.

An ethanol plant "complicates" the local water picture, says Ann Bleed, director of Nebraska's Department of Natural Resources, which oversees surface water. In tight-water districts such as Mr. Clements's, local officials must offset the water used by ethanol plants by either reducing farmers' yearly water allocations or restricting the use of some existing nearby wells.

"We're not going to allow the use of our aquifers to become unsustainable," she says.

That leaves Mr. Clements, a former project manager at Lucent Technologies, in a tough spot. When he arrived here six years ago, the area was just entering a record, years-long drought.

At the time, there were no restrictions on water use and the district didn't even monitor all of its wells. Mr. Clements accelerated efforts to put meters on all nearly 3,800 irrigation wells in the district and stepped up the monitoring of groundwater levels.

Then in 2002, Nebraska reached a settlement with Kansas over the Republican, throwing him a curve. Suddenly, Mr. Clements had to tell his farmers, even those miles away from the river, that they would have to curtail their pumping to try to send more water to Kansas.

"It'd be a lot easier for [farmers] to understand if they went out to their wells and the water wasn't there. The supply is there," said Mr. Clements.

Mr. Clements and his board halted the drilling of new wells and the addition of new acres of irrigated cropland. They also capped how much water farmers could use each year: an average of 11 inches to 12 inches per acre under the current three-year allocation.

Farms trimmed their use to an average of 7.5 inches in 2004 and 2005, down from about 12 before the allocation system took effect. Mr. Clements's staff now checks the meters on farmers' wells after harvest each fall. Recalcitrant farmers can lose water under the next allocation or face fines for overuse.

Farmers say they've cut back about as far as they can and that additional cuts in allocations would make



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Water pumped from the Ogallala Aquifer irrigates a field near Alma, Neb.

irrigation uneconomical. If much of the land in the area were taken out of irrigation, property values would drop and tax receipts would tumble. "It'd be devastating to the economy around here," says Nelson Trambly, a local farmer and chairman of the resource district.

Mr. Clements and his board have proposed lowering farmers' allocations to 11 inches a year across the board for the next five years. To make that work, the board, in cooperation with the state and other natural-resource districts in the Republican basin, has been buying surface water from reservoirs and other sources to send through the river to Kansas.

Mr. Clements is also working with other officials to plan an extensive effort to eliminate invasive plants such as phragmites and trees that suck up additional water. They have even proposed using some wells to feed water directly into the river.

Kansas remains skeptical that these steps will be enough. In a recent meeting between the states, all parties agreed that Nebraska is still using more than its share of the river's water under the complex computer model set up to monitor the agreement. Kansas Attorney General Paul Morrison said he would soon take action to force Nebraska to move more aggressively.

Now, the pressure on Mr. Clements has ramped up another notch, as ethanol plants arrive in the area.

One recent morning, a team developing an ethanol plant outside Alma dropped by Mr. Clements's brightly lit office in a converted lumberyard. They discussed various options for securing water for the plant. But a bigger issue loomed.

"I guess my question is, will the farmers get enough water?" asked Justin Kent, president of Olympus Energy Group, developer of the planned 55-million-gallon plant. "I know we'll get enough water for our one plant, but if farmers don't get enough water that's a big problem."

"That's the million-dollar question," Mr. Clements said.

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