

## Mapping out water progress

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The U.S. Geological Survey recently produced a multi-color map that has an important story to tell about the Great Plains.

On the map, stretches of orange and pink swerve over parts of several states. Some areas — the Texas panhandle, southwestern Kansas — are covered by ominous-looking red blobs.

The orange and pink colors indicate where average groundwater levels have declined since the 1950s. The red areas over parts of Texas and Kansas show the region's most severe depletions.

The map is part of a comprehensive, long-term analysis of aquifer data by the U.S. Geological Survey.

Texas has seen the worst declines of any Plains state since the 1950s, with an average water-level decrease of 41.2 feet. Kansas has suffered a major average decline, too, of 25.5 feet.

What about Nebraska? Here, the number was equally dramatic — but in the opposite way.

Since the 1950s, the average water level in Nebraska is virtually unchanged: a decline of only 0.3 feet, the lowest of any of the Plains states.

Indeed, the Geological Survey found, since the Eisenhower era the amount of water in underground storage in Nebraska has fallen by only 0.1 percent.

These numbers don't mean that Nebraska can relax and take its precious water resources for granted. The state's need for responsible stewardship is an abiding obligation.

"Overall, we are in an enviable situation in Nebraska," says James Goeke, a University of Nebraska-Lincoln hydrogeologist who has spent decades mapping and measuring Nebraska's aquifer system. "But we do have areas of decline that we need to be concerned about, as well as areas where water quality concerns are present. Our areas of decline can affect adjacent stream flows."

How has Nebraska managed overall to avoid the drastic water depletions seen in some Plains states? Goeke and other experts interviewed by The World-Herald point to three key factors.

First, they say, precipitation is always fundamental. On the whole, the rainfall amount in Nebraska over the past 30 years has been above-normal, Goeke notes.

Second, beginning in the 1970s, Nebraska has done a generally good job of prioritizing and managing its water needs. A series of state laws has set sound policy and, above all, established a system of natural resources districts that work in cooperation with local, state and federal partners.

Nebraska, the only state with an NRD system, is considered a leader on this score.

"For years I have called the NRDs Nebraska's 'secret weapon' on water issues," says Mike Linder, a former director of the Nebraska Department of Environmental Quality now practicing law in Omaha. "For all of the struggles and tension that go into Nebraska's water policy, we have the best out there."

Third, a growing number of Nebraska irrigators and vendors have embraced technologies promoting greater efficiency in water use.

"We have unbelievable technological advances in how water is managed from irrigation and other farm practices," Linder says, "and we have a generation of agricultural producers who embrace the technology."

Roric Paulman, a Lincoln County irrigator who has served on a variety of boards on agricultural and water issues, says he's encouraged by Nebraskans' embrace of innovative irrigation practices.

An illustration came in February, he says, with a well-attended irrigation workshop at the University of Nebraska College of Technical Agriculture in Curtis. A dozen companies and vendors explained sophisticated soil probes and computer software for water management.

"The producers came to that saying, what are the next [technological] steps?" Paulman says.

During 2014, these three factors — significant precipitation, the NRD system, use of efficient technologies — came together to produce an impressive 30 percent decrease in the amount of water used by Nebraska ag producers compared to a year earlier.

Nebraskans can take pride in the state's progress on water, but we mustn't rest on our laurels. It's crucial that Nebraska continue using sound, collaborative water strategies.

When the feds draw their next map on aquifer depletion, we don't want to wind up looking like Texas and Kansas.