

Kansas Geological Survey Releases Book on Groundwater Resource in Western Kansas

Just a small percentage of the groundwater used for irrigation, industry, and municipalities in western Kansas comes from the Dakota aquifer, but more users may look to it in the future as other water resources dwindle, according to a new publication from the Kansas Geological Survey (KGS) at the University of Kansas.

Most of the water supply in western Kansas comes from the High Plains aquifer, an underground water-bearing formation that includes the expansive Ogallala aquifer. Because the Dakota aquifer mainly underlies the High Plains aquifer and is less commonly tapped, its potential as a source of fresh water is unclear.

“An improved understanding of the movement, distribution, and quality of water in the Dakota aquifer is essential for determining where it could be further developed, how currently developed areas could best be managed, and how to protect the water from contamination,” said Don Whittemore, KGS Senior Scientific Fellow and co-author of the publication.

In “Water Resources of the Dakota Aquifer in Kansas,” Whittemore and co-authors Al Macfarlane and Brownie Wilson have compiled data about water use, water quality, and potential contaminants in the aquifer. They also report on current guidelines for development of the aquifer, water-level declines since development began, and the potential for future development.

“We are providing an overview of the location of supply wells with water-right permits in the aquifer and the amount of use from the aquifer,” Whittemore said. “Particularly notable are the new data on wells that draw from more than one aquifer, such as the Dakota and the High Plains aquifers.

The publication includes the most comprehensive description available of the aquifer’s water quality and distribution of major chemical characteristics, he said.

So far, the Dakota aquifer has been used as a water resource only in areas where the groundwater is known to be fresh or slightly saline and where more easily obtained groundwater is not available.

The aquifer underlies all or parts of 60 counties, but only 36 counties have wells with rights to pump from the aquifer. In the other 24 counties the groundwater is too saline or the aquifer is too tight or thin to produce large quantities of water.

There is potential for additional development in southwest, west-central, central, and north-central Kansas in areas where water quality in the Dakota is good and the High Plains aquifer or shallow aquifers adjacent to streams are not present, Whittemore said.

In southwest Kansas, where the High Plains aquifer has dropped an average of 34 feet just since 1996, some wells in the High Plains aquifer are being deepened into the Dakota aquifer. Most of the water from the Dakota is used for irrigation.

“One of the most important pieces of information we need is water-level data for the Dakota where it is directly overlain by the High Plains aquifer and wells produce from both aquifers,” Whittemore said. “Very few wells are completed only in the Dakota aquifer in that area, and the water-level change in the Dakota aquifer relative to that in the overlying High Plains aquifer is largely unknown.”

Continuous monitoring of a select group of wells that extend into the Dakota aquifer will be needed to provide a better understanding of the relationship between it and the High Plains aquifer, he said.

“Water Resources of the Dakota Aquifer in Kansas” including an online-only appendix is available online at <http://www.kgs.ku.edu/Publications/Bulletins/260/index.html>.

Printed copies are available from the Kansas Geological Survey at 1930 Constant Ave., Lawrence, KS 66047-3724 (phone 785-864-3965, pubsales@kgs.ku.edu) and at 4150 W. Monroe St., Wichita, KS 67209-2640 (phone 316-943-2343, wwsl@kgs.ku.edu). The cost is \$20 plus shipping and handling. Inquire about shipping and handling charges and, for Kansas residents, sales tax. More information about this book and other KGS products is available at the Survey’s web site (www.kgs.ku.edu).

(Story by Cathy Evans)