

**Ogallala Aquifer Technical Support Study by the Kansas Geological Survey for  
the Kansas Water Plan – Summary of FY 2006 Activities**  
June, 2006

High Plains/Ogallala- Aquifer Information Web Pages

The Kansas Geological Survey (KGS) revised and updated the web pages containing information on the Ogallala-High Plains aquifer. We conducted this effort in conjunction with continued development and integration of the HiPLAIN web site into the KGS web site. The online data and analysis are available through the web site <http://www.kgs.ku.edu/HighPlains/index.htm> of the KGS.

Cimarron Basin Assessment

The KGS prepared and placed the final versions of two reports assessing characteristics of the Cimarron Basin on the Ogallala-High Plains Aquifer Support Studies page (<http://www.kgs.ku.edu/HighPlains/OHP/index.htm>) of the web site for High Plains/Ogallala-Aquifer Information. We prepared the draft versions of the reports at the end of FY 2005; the final versions, which included revisions in response to Kansas Water Office review, were completed in early FY 2006. The first report, *Hydrogeologic Characteristics and Hydrologic Changes in the Cimarron River Basin, Southwestern Kansas*: Kansas Geological Survey Open-File Report 2005-26, included cross sections of the lithology, ground-water levels, and bedrock surface along the Ogallala-High Plains aquifer within the Cimarron basin: The second report, *Water Quality in the High Plains Aquifer and the Cimarron River in Seward and Meade Counties, Kansas*: Kansas Geological Survey Open-File Report 2005-27, described the natural distribution of saline water in the Ogallala-High Plains aquifer in Seward and Meade counties, its intrusion into the Cimarron River, and the impact of aquifer pumping on increasing salinity in the river water. The KGS presented the results of the reports to a meeting of the Cimarron Basin Advisory Committee in Liberal at the request of the Kansas Water Office (KWO).

Volunteer Water-Level Entry Web Page

The KGS met with groundwater management districts (GMDs), the Division of Water Resources (DWR), and the KWO to discuss a new web page for entry of volunteered water-level data. The web page allows depth to ground water measurements to be added into the WIZARD oracle database, KGS' water-level repository, by outside agencies and the participating public. At this time, the site is password protected with the understanding that the primary use of the site will occur through the western GMDs in support of aquifer subunit delineation efforts. The URL for the volunteer web site is [http://hercules.kgs.ku.edu/geohydro/wizard/vol\\_start.cfm](http://hercules.kgs.ku.edu/geohydro/wizard/vol_start.cfm).

Assessment of Quick Response area in Thomas County, GMD4

The KGS worked with Northwest Kansas Groundwater Management District No. 4 (GMD4), the Kansas Water Office, and the Division of Water Resources on an assessment of a

proposed subunit area of the Ogallala/High Plains aquifer in south-central Thomas County. This is one of the “Quick Response” areas proposed by the GMDs, the DWR, and the KWO as a priority area related to Ogallala subunit identification. The KGS met with irrigators, GMD4, the DWR, and the KWO in Salina and then Colby to discuss the approach to the assessment. The assessment work has included an extensive examination of ground-water levels, water use, hydrogeologic characteristics, and climate data, construction of maps and cross sections, and development of an approximate water budget. At the request of the Thomas County group, the KGS developed a web site on which to post the pertinent materials: <http://www.kgs.ku.edu/HighPlains/OHP/thco.htm>. The Quick Response area of Thomas County could be a potential location for an index well site to be constructed as a part of FY 2007 Ogallala aquifer studies.

#### Development of subunit areas in GMD1

The KGS met with the manager of Western Kansas Groundwater Management District No. 1 (GMD1) to discuss approaches to Ogallala subunits. The GMD1 focus is on locations of municipal water supplies obtained from the Ogallala/High Plains aquifer. A preliminary approach is to identify one municipality for each county in GMD1 as a priority for assessment of the aquifer characteristics. For example, some municipal ground-water supplies are located near the fringe of the aquifer where the response to pumping could differ from that in a location within the major part of the aquifer. The KGS will work with GMD1 on characterizing the pumping volume of the municipal wells with time relative to pumping by irrigation and other wells and hydrogeologic properties such as saturated thickness, distance to the edge of the aquifer extent, recharge, and lateral flow. A municipal well field in GMD1 could be a potential location for an index well site to be constructed as a part of FY 2007 Ogallala aquifer studies.

#### Development of subunit areas in GMD3

The KGS provided information to Southwest Kansas Groundwater Management District No. 3 (GMD3) for use by the District in considering approaches to subunit delineation and development. This included, for example, a cluster analysis of water-level change in and water-use density for the aquifer. The KGS met with the manager of GMD3 to discuss approaches to Ogallala subunits. The focus is on locations where impairment claims have been filed and now are in the process of being examined by the DWR and GMD3. Such as location will provide a definitive example of actions being taken related to water-level and saturated thickness declines in the Ogallala/High Plains aquifer. A priority location is in the area of T. 27 S., R. 31 W., Sec. 36 in northeast Haskell County. The site is within the extended area of a current examination of practical saturated thickness as part of a study for GMD3. The DWR plans to install monitoring wells in the area for the impairment study. The impairment site in Haskell County could be a potential location for an index well site to be constructed as a part of FY 2007 Ogallala aquifer studies.

#### General Assistance

The KGS provided general assistance to the GMDs, the KWO, and the DWR on the hydrogeologic characteristics, water use, and water-quality of the Ogallala-High Plains aquifer.

For example, the KGS provided data to GMD1 and GMD4 in response to numerous requests related to water-level and aquifer characteristics. Another example involved information on the general characteristics of the water-level surface and water-quality change in the aquifer along the Arkansas River corridor in response to questions during the KWO and DWR development of the proposed CREP area in the river corridor.