



---

## News Release

U.S. Department of the Interior  
U.S. Geological Survey

Address:  
1608 Mt. View Road  
Rapid City, SD 57702

For Release:	Contact:	Phone:	Email:
February 13, 2006	Larry Putnam Janet Carter	605 394-3212 605 394-3215	<a href="mailto:ldputnam@usgs.gov">ldputnam@usgs.gov</a> <a href="mailto:jmcarter@usgs.gov">jmcarter@usgs.gov</a>

---

Editors- Graphs are available at: <http://sd.water.usgs.gov/public/nwisPenn.html>

### **Water levels in Pennington County aquifers are declining: Data available on the Web**

Since 2000, water levels in many wells that penetrate Pennington County aquifers have declined, as much as 90 feet from the high water levels observed in the late 1990s. As reported previously through the Black Hills Hydrology Study, ground-water levels in Pennington County are directly affected by recharge rates and annual precipitation amounts; however, numerous other factors, such as pumping, also can affect ground-water response.

“With below-normal precipitation during the past 5 years, the aquifers haven’t received as much recharge as they typically do,” said Larry Putnam, a hydrologist for the U.S. Geological Survey.

The South Dakota Department of Natural Resources monitors a network of observation wells throughout South Dakota. The U.S. Geological Survey also monitors some observation wells in the Rapid City area. Water-level data from both agencies are presented for 25 observation wells in Pennington County on a Web site developed by the USGS in cooperation with DENR and West Dakota Water Development District (<http://sd.water.usgs.gov/public/nwisPenn.html>). Graphs showing water-level trends for the 25 wells can be viewed.

The periodic measurements of water levels at these observation wells show the long-term trend in ground-water levels and how these aquifers respond to stresses such as drought and pumping. The observation wells are completed in one of the five aquifers monitored in Pennington County. Most of the wells are in the Madison and Minnelusa aquifers, which are used extensively for water supplies in western Pennington County. Some of the largest declines in the Madison and Minnelusa aquifers are observed at a pair of observation wells near Reptile Gardens. In 2000, water levels were sufficiently high enough to allow both wells to flow at the land surface. Since then, the water level in the Madison aquifer dropped about 90 feet and the water level in the Minnelusa aquifer dropped about 50 feet and neither well currently flows. Water levels in another pair of wells located in the northwest corner of the Rapid City area declined about 60 feet in both the Madison and Minnelusa aquifers. For several wells located on the west central part of Rapid City, the water level declines ranged from about 10 to 50 feet.

\*\*\*MORE\*\*\*

Other observation wells monitor water levels in the Deadwood, Precambrian, and Inyan Kara aquifers. Since 2000, water levels in the Deadwood aquifer declined about 80 feet north of Rapid City and about 50 feet south of Rapid City. Water levels in the single observation well in the Precambrian aquifer have not declined substantially; however, declines in other locations could be greater. Water levels in the two observation wells in the Inyan Kara aquifer have not declined substantially. In fact, the water level in one Inyan Kara well north of Rapid City actually has increased 10 feet since 2000.

For wells with water-level data available during the 1990s, the drought of the early 1990s and the above-normal precipitation years of the late 1990s also are evident in the levels. The water levels in the Madison, Minnelusa, and Deadwood observation wells currently are at about the same low level that they were in the early 1990s.

“It’s amazing how quickly the water levels in some observation wells in the western Pennington County area change in response to climatic conditions or other factors,” Janet Carter, a hydrologist with USGS said.

The aquifers receive recharge through infiltration of precipitation in areas where the geologic formations containing these aquifers are at or near land surface. The Madison and Minnelusa aquifers also receive recharge on the eastern flank of the Black Hills where streams lose flow as they cross the Madison and Minnelusa Formations. During years with below-normal precipitation and low streamflows, the Madison and Minnelusa aquifers receive much less recharge than during typical years.

Additional information about the USGS water-resources studies in South Dakota can be obtained by visiting the USGS South Dakota Water Science Center home page at <http://sd.water.usgs.gov/>.

The USGS serves the nation by providing reliable scientific information to: describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.

\*\*\*USGS\*\*\*