

# South Dakota

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## *Introduction*

The northern terminus of the Ogallala aquifer lies beneath South Dakota and the Rosebud Reservation. Saturated thicknesses range from a few feet to greater than 200 feet. There are eleven production wells in the Ogallala supplying 70% of domestic, municipal and industrial water needs of the population on the Rosebud Reservation. Non-tribal water use is dominated by irrigation, municipal, rural water system, and domestic uses.

## *Science and Data*

The South Dakota Department of Environment and Natural Resources (DENR) has 77 observation wells in the Ogallala aquifer as part of their statewide network of 1,584 observation wells (visit <http://apps.sd.gov/nr69obswell> for more). The DENR observation wells in the Ogallala have been measured since the late 1970's to the early 1980's. The DENR-Water Rights Program relies on the water levels measured in their observation wells along with studies done by the SDGS, the USGS, and others. The DENR observation well data show that average annual withdrawals (i.e.: pumping) from the aquifer have not exceeded average annual recharge. The Rosebud Sioux Tribe (RST) has 28 observation wells in the Ogallala, including seven monitored in real time via satellite data links. The RST have been monitoring since 1984.

A model of the aquifer by the RST in conjunction with USGS using the existing water table data simulated a 30-year drought and 50% increase in pumping over a 30-year period. In general, the simulation showed that recharge and discharge did not change significantly, indicating a long useful life for the aquifer. Hydrographs based on the compiled water

table fluctuation data during the monitoring period show that the water table has fallen only by a few feet in some observation wells near the concentrated center pivot irrigation systems.

Irrigators in South Dakota are required to report their water use annually and limit their total diversion to a maximum of two or three feet of water per acre, depending on when the permit was originally granted. Each of the approximately 2,000 irrigators in South Dakota receives and is required to complete an irrigation questionnaire for each of their permits each year.

## *Policy*

Tribal management of the aquifer is guided by the Tribal Water Conservation Code and managed by the RST Water Resources Office under the supervision of the Land and Natural Resources Committee and Tribal Council. In addition, the RST has developed a Drought Vulnerability Assessment Plan and is working toward development of a Drought Mitigation Plan.

For the Ogallala aquifer in South Dakota outside of the tribal lands, the Water Rights Program is overseen by the Water Management Board and administered by the DENR. The Water Management Board is a committee of seven citizens appointed by the Governor.

To initiate the permit application process, a prospective water user submits a request for a water permit (visit <https://denr.sd.gov/des/wr/watrightsapps.aspx> for more). If the DENR recommends approval and no one contests the application, the Chief Engineer of the Water Rights Program can issue an uncontested permit. If there are objections from neighbors or the public, a contested case hearing is scheduled. The Water Management Board

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conducts any contested case hearing then makes and issues their decision to approve, deny, or defer the application for further study. A decision by the Water Management Board can be appealed to the Circuit Court.

All water uses in South Dakota require a permit except for domestic uses or water distribution systems requiring flow rates of less than 18 gal/min. Water permits in South Dakota are transferable by filing a notice with the Water Management Board. Changes in use (e.g. point of diversion, change in use, or other change) can be made to a permit but an irrigation permit can be changed only to domestic water use or a water distribution system permit. If a water use is changed, neither the pumping rate nor volume can be increased.

The State of South Dakota has a strict no-depletion policy that prevents over-appropriation of any aquifer, including the Ogallala aquifer. Aquifers in two areas in central and north central South Dakota are fully appropriated and the Water Management Board has declared those areas closed to new water permits. There is a waiting list for permits and these aquifers are re-evaluated every five years to determine if unappropriated water is available for new appropriations. This same process of closing areas to further water rights permits could be applied to the Ogallala aquifer in South Dakota if the aquifer were to become fully appropriated in South Dakota.

The combination of current recharge rates, modest current use, water use reporting, and strict legal protection mean that this northernmost part of the Ogallala aquifer is relatively well protected from over pumping.

## *Producer Practice*

Irrigation in this area is via center pivot. Crops are feed grains (corn) and forages, including alfalfa. There are more than 90 center pivot irrigation systems of which 16 are owned by the RST. There are 2,550 acres irrigated by the Tribal center pivots. There are 143 irrigation water rights/permits authorizing the irrigation of 25,900 acres under more than 180

irrigation systems on file with DENR. There are also 29 water right/permits authorizing water use for non-irrigation purposes, primarily for municipal and rural water system use, and four future use permits reserving water from the aquifer for municipal use.

## *Moving Forward*

The checkerboard land ownership by RST or tribal members and non-tribal members (non-Indians) of lands on the Reservation is a challenging factor in the management of water resources including the Ogallala aquifer. Non-Indians are served by the State of South Dakota. On technical issues pertaining to the Ogallala aquifer there is some interaction between the State of South Dakota – DENR and RST – Office of Water Resources.

South Dakota Codified Law (SDCL) 46-6-3.1 states: “Annual withdrawal of groundwater not to exceed recharge...” If it appears the Ogallala aquifer withdrawal volumes are approaching recharge volumes, the Water Rights Program will further analyze the observation well data and any other studies done on the aquifer and determine if the aquifer is fully appropriated. Ultimately, the Water Management Board is charged with making a final determination. The Water Rights Program does not anticipate that the Ogallala aquifer will be closed in South Dakota in the near future.