

## HERMOSA NORTHWEST QUADRANGLE: Groundwater Production by Aquifer

In the 56-square-mile area of the Hermosa Quadrangle, groundwater is produced chiefly from the Cretaceous-age Fall River and Lakota formations (with a maximum flow of 180 gallons per minute). A few wells produce from alluvial deposits or from the Cretaceous shale (3 gallons per minute). Note that for wells drilled where these formations (collectively called the Inyan Kara Group) are exposed at the surface (Figure 1), only the lower part of the aquifer may contain water.

Information given in the following figures is taken from the website of the South Dakota Geological Survey <http://www.sdgs.usd.edu/>. The values for private wells, as reported in Well Drillers Reports of the South Dakota Water Rights Program, indicate the flow rates at the time of completion of the wells.

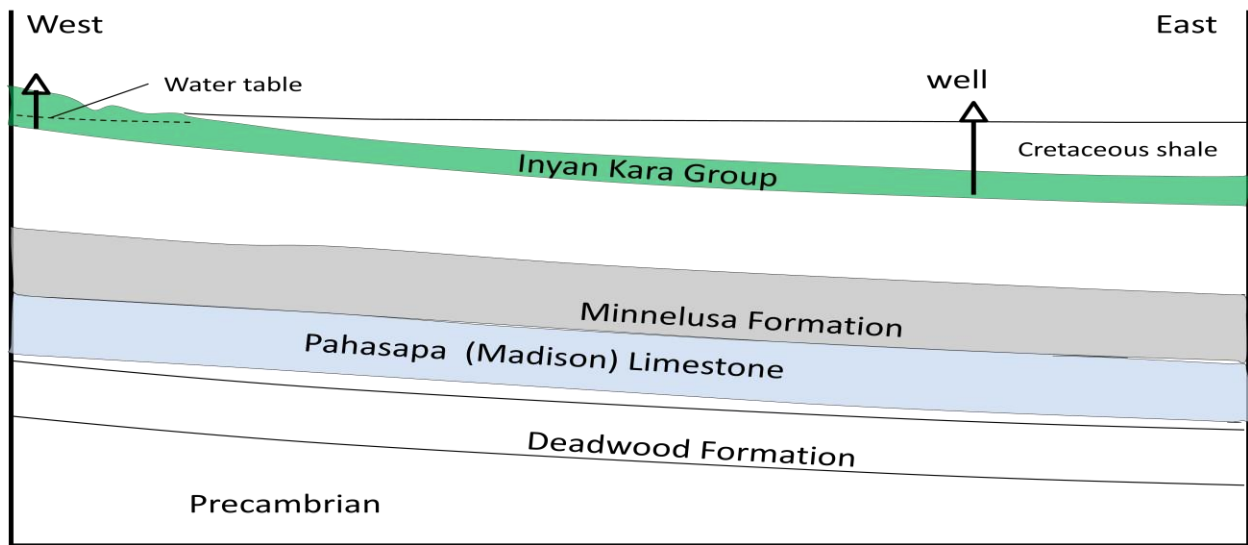


Figure 1. Diagrammatic cross section of aquifers in the Hermosa Northwest Quadrangle. The Inyan Kara Group includes the Fall River (at top) and Lakota (at the base) formations.

### ***INYAN KARA AQUIFER: FALL RIVER FORMATION***

The Fall River sandstone reservoir is the first substantial aquifer encountered in drilling within the quadrangle. Drill depths increase to the east to as much as 1,600 feet: formation thicknesses reported in drillers logs vary from 165 to 260 feet. Water production generally is less than 25 gallons per minute, but can be 180 gallons per minute in rare cases (Figure 2).

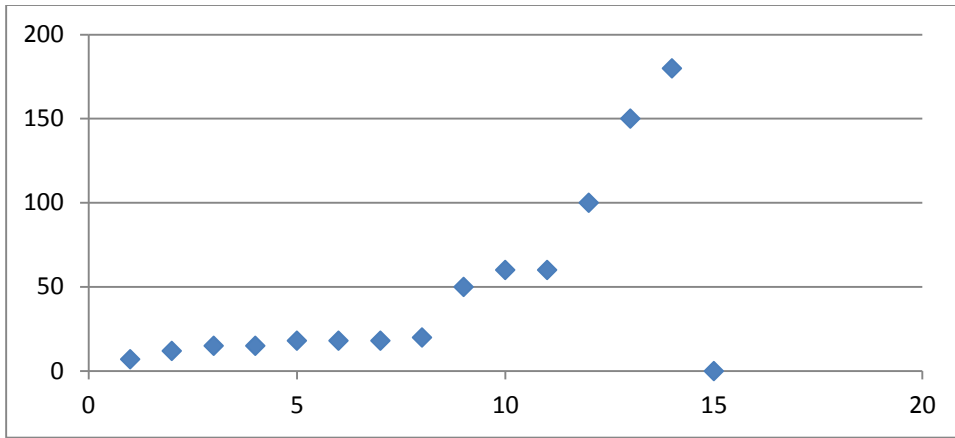


Figure 2. Water production for wells in the Fall River, Hermosa Northwest Quadrangle. The vertical axis shows gallons per minute initial water flow. The horizontal axis shows that information was available from 15 wells. Note that most wells yielded less than 50 gallons per minute.

***INYAN KARA AQUIFER: LAKOTA FORMATION***

The Lakota Formation also has abundant sandstone layers that can contain groundwater. This formation underlies the Fall River Formation and, therefore, excepting along the western margin of the quadrangle, drilling depths will be greater. Such depths increase to the east across the quadrangle from 180 feet to as much as 1,800 feet.

The reported water production varies from 10 to 95 gallons per minute (Figure 3).

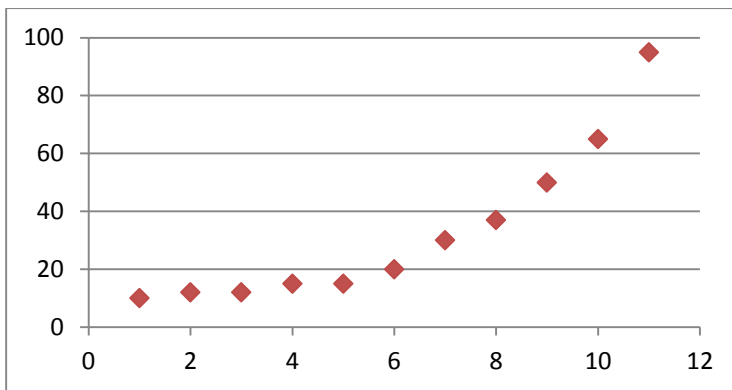


Figure 3. Water production for wells in the Lakota Formation, Hermosa Northwest Quadrangle. The vertical axis shows gallons per minute initial water flow. The horizontal axis shows that information was available from 11 wells. Note that most wells yielded less than 40 gallons per minute.