Updated 10-21-2015

HYDROLOGIC ATLAS OF THE BLACK HILLS, PENNINGTON COUNTY, SOUTH DAKOTA

HERMOSA NW QUADRANGLE

Depth-to-Aquifer Maps

Depth-to-Aquifer Map

The depth-to-aquifer maps presented here use a color spectrum to indicate the approximate depths expected for drilling at any location underlain by the aquifer. Each color represents a depth range of 100 feet. Accuracy is expected to be within 50 feet closer to the recharge area and could be greater to the east where the depths are greater and there are fewer water wells to use as control points.

The maps are constructed in a Geographic Informational System (GIS) program by subtracting the structure contour values for the top of the aquifer from the surface topographic contour lines. The drill depth is dependent upon both topography and folds of the aquifer surface. Drill depths are greater along ridges and less in adjacent valleys.

Inyan Kara Group: (see map)

The one to three mile wide aquifer recharge area of the Inyan Kara aquifer comprises tree-covered hills present from the west side of the Hermosa NW quadrangle. Across most of the Inyan Kara is the first aquifer to be penetrated by a bore hole drilling for water.

The depth to the top of this aquifer increases in a continuous fashion from the edge of the hills on the west to the northeast eastern margin of the map area. As shown by color bands on the map, the **greatest depth is approximately 1,600** feet at a ridge in the east center of the quadrangle.

Minnelusa Formation

The Minnelusa aquifer recharge area is not present within the quadrangle. Based upon the thicknesses of rock units present in two water wells located within the quadrangle, the Minnelusa aquifer is approximately 1,600 feet beneath the elevations of the Inyan Kara aquifer.

In general, therefore, the depth depths for the Minnelusa increase from a **minimum of about 1,600 feet** below the surface on the west at the Fall River outcrop **to 2,800 feet** on the northeastern edge of the quadrangle.

Madison aquifer (Pahasapa Limestone)

The Madison aquifer recharge area is not present within the quadrangle. Based upon the thicknesses of rock units present in two water wells located within the quadrangle, the Madison aquifer is approximately 2,200 feet beneath the elevations of the Inyan Kara aquifer.

In general, therefore, the depth depths for the Madison aquifer increase from a **minimum of about 2,200 feet** below the surface on the west at the Fall River outcrop **to 3,400 feet** on the northeastern edge of the quadrangle.