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HYDROLOGIC ATLAS OF THE BLACK HILLS, PENNINGTON
COUNTY, SOUTH DAKOTA
PACTOLA DAM QUADRANGLE

Depth-to-Aquifer Map

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The depth-to-the-Deadwood aquifer map presented here uses 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

The map is 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.

Deadwood Aquifer (see map)

The Deadwood Formation, present only in the northeast quarter of the quadrangle, is the only sedimentary unit comprising an aquifer in this quadrangle. It extends from the north-center to the east-center of the map area and comprises tree-covered hills crossed by east-trending canyons. Although the Pahasapa Limestone (Madison aquifer) present, it caps ridges in the northeast, and is above the water table there.

The depth to the top of the Deadwood aquifer increases in a continuous fashion from the recharge area eastward. As shown by color bands on the map, the **greatest depth is approximately 800 feet** at the northeast corner of the quadrangle along ridges there.

Precambrian Aquifer (white area on quadrangle map)

Metamorphic rocks (e.g., schist, quartzite, metabasalt) of the Precambrian aquifer contain water only in fractures. The drill depths to such fractures are highly variable and production generally only a few gallons per minute, even from depths as great as several hundred feet.

Sand and Gravel Aquifers: (not shown separately on map)

Along streams, e.g., Rapid Creek, deposits of sand and gravel are generally less than 50 feet thick, but may contain abundant water. In areas with numerous home-site septic tanks, wells in such deposits are susceptible to contamination.

BIBLIOGRAPHY

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