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HYDROLOGIC ATLAS OF THE BLACK HILLS, PENNINGTON  
COUNTY, SOUTH DAKOTA  
PIEDMONT 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 depths are greater and there are fewer water wells to use as control points.

The maps are constructed in a Geographic Information System (GIS) program by subtracting the structure contour values for the top of the aquifer from the surface topographic contour lines.

*Deadwood Formation: (see map)*

The Deadwood Formation can be encountered in drill holes across much of the map area. In general, the depth increases to the east and reaches **a maximum of 2,000 feet** at the northeast margin of the quadrangle. Drill depths to the aquifer are generally less than 500 feet for much of the central portion of the quadrangle (shown in brown), but only in the eastern half of this area, however, is the formation likely to be water saturated and to form a producing well.

*Madison Aquifer (Pahasapa Limestone): (see map)*

The Madison aquifer is restricted as to location with the Piedmont quadrangle. It may be encountered in drill holes in the area around Piedmont, in the northeast, and in the extremes southeastern part of the quadrangle along the northern side of Boxelder Creek, but only in the eastern portion is it likely water saturated. *In the Piedmont area*, the **maximum depth varies from about 500 feet west of the village to about 1,600 feet** at the northeast margin of the quadrangle. *In the southeast* the **maximum depth is 250 feet**.

*Minnelusa Formation (see map)*

Although the Minnelusa Formation (also an aquifer), is exposed along much of the eastern margin of the Piedmont quadrangle, only in the northeast, and possibly in the southeastern-most corner of the quadrangle, may it be productive of water. In the Piedmont area drill depths vary **from 100 feet west of the village to as much as 1,100 feet** along the ridge at the northeast corner of the quadrangle.

**BIBLIOGRAPHY**

Redden, J. A., 2009, Geologic Map of the Piedmont Quadrangle, South Dakota Geological Survey, 7.5 Minute Series Geologic Quadrangle Map 10, 1:24,000 scale.