

POTENTIAL YIELDS OF WELLS IN THE SAND-AND-GRAVEL AQUIFER OF DUNN COUNTY, WISCONSIN

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1988

This map of potential yields of wells in the sand-and-gravel aquifer is a part of the Dunn County Groundwater Resource Investigation, a joint project of the Wisconsin Geological and Natural History Survey and the Dunn County Board.

The sand-and-gravel aquifer occurs mainly in river valleys and is absent throughout much of the county. However, in any area in which the sand-and-gravel aquifer cannot yield an adequate quantity of water, the sandstone aquifer, which is the most frequently used aquifer in Dunn County, can. Therefore, an abundant quantity of water -- sufficient for household use and for many irrigation and industrial purposes -- is available everywhere in Dunn County.

Potential yields in the sand-and-gravel aquifer can vary greatly over short horizontal distances due to the steepness of many of the river valleys. The general trend is that potential yields increase near rivers and streams and decrease near upland areas. Due to the sparseness of high-capacity wells in the sand-and-gravel aquifer, maximum potential yields are unknown for many of the river valleys. During extended periods of drought, maximum obtainable yields may decrease due to a reduction in the thickness of saturated aquifer.

The sand-and-gravel aquifer overlies bedrock, which in Dunn County consists of Cambrian and Ordovician sandstone and dolomite. In some areas in Dunn County, the sandstone bedrock is deeply weathered and is poorly lithified. This weathered material is considered bedrock for the purpose of this map, although well drillers may commonly report sand when drilling this material. Therefore, some of the well constructor's reports have been reinterpreted, primarily on the basis of the geologic interpretations of the area north of latitude 45° N by Mudrey and others (1987) and south of latitude 45° N by Brown (in preparation).

In areas where both the sand-and-gravel and the sandstone aquifers are present, well owners may wish to consider water quality when choosing which aquifer to use. Natural water quality usually varies from one aquifer to another. Water from the sandstone aquifer may be harder or may contain more iron than water from the sand-and-gravel aquifer. However, the sand-and-gravel aquifer, particularly in river valleys, is usually more susceptible to contamination from the surface.

Explanation

potential yield in gallons of water per minute of fully developed, appropriately constructed wells, dashed where approximately located

Potential yields are based on saturated thickness of aquifer and on yields obtained from existing irrigation and industrial wells. Data have not been field checked.

Aquifer potential categories, in gallons of water per minute

- 0 aquifer is absent
- 0-100 aquifer is thin, or may contain clay or silt
- 100-500 aquifer is often over 50 ft thick
- 500-1000 aquifer is often over 100 ft thick or is composed of coarser or better sorted sand and gravel
- 1000+ extent of this category is based on existing high-capacity wells. Yields of this magnitude are probably available in other portions of the same river valleys, but data are insufficient to permit accurate extrapolation

This map is intended to be a general guide to the aquifer potential of surficial deposits in Dunn County, Wisconsin. Where detailed site-specific information is required, users are advised to verify potential yields with test borings and pumping tests.

Sources of data

- \* Wisconsin Department of Natural Resources well constructor's reports (1936-86).
- \* Wisconsin Geological and Natural History Survey published and unpublished geologic logs (1896-1986).
- \* Depth to Bedrock of Dunn County, Wisconsin, by I.D. Lipfelt and T.E. Fekete, 1988, Wisconsin Geological and Natural History Survey Miscellaneous Map Series, Map 88-4, scale 1:100,000.
- \* Potential Yields of Wells in the Sandstone Aquifer of Dunn County, Wisconsin, by I.D. Lipfelt, 1988, Wisconsin Geological and Natural History Survey Miscellaneous Map Series, Map 88-5, scale 1:100,000.
- \* United States Geological Survey quadrangles (7.5-minute series, topographic; 1972-75).
- \* Bedrock Geology of Wisconsin, Northwest Sheet, by M.G. Mudrey, Jr., G.L. LaBerge, P.E. Myers, and W.S. Cordua, 1987, Wisconsin Geological and Natural History Survey Regional Map Series (Map 87-11), scale 1:250,000.
- \* Bedrock Geology of Wisconsin, West-Central Sheet, by B.A. Brown, in preparation, Wisconsin Geological and Natural History Survey Regional Map Series, scale 1:250,000.
- \* Soils of Dunn County and Their Ability to Attenuate Contaminants, by A.W. Sutherland and F.W. Madison, 1987, Wisconsin Geological and Natural History Survey Map 87-4, scale 1:100,000.
- \* Wisconsin Geological and Natural History Survey Geology of Wisconsin Outcrop Descriptions.

Additional information

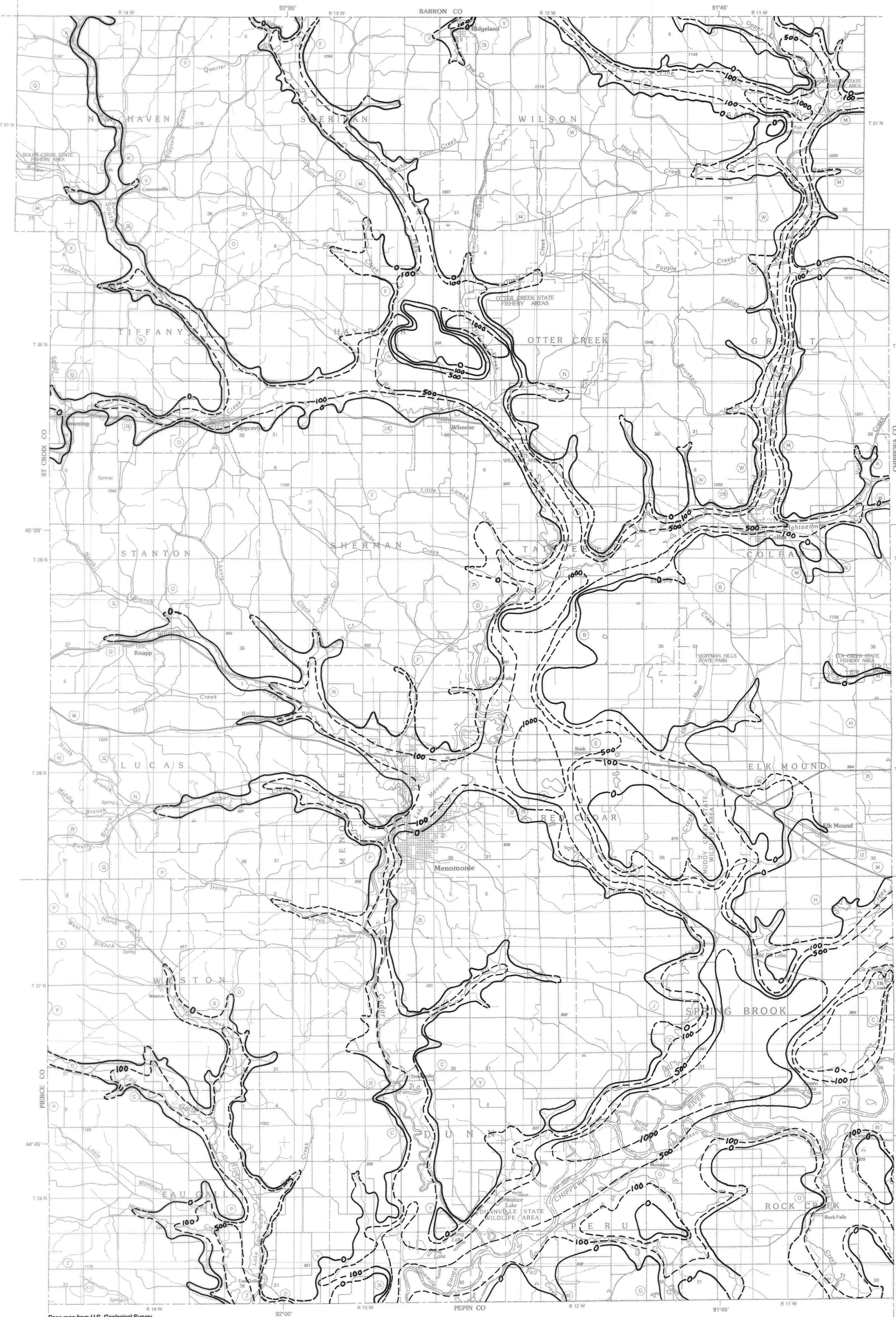
- \* Preliminary report on the irrigation potential of Dunn County, Wisconsin, by P.G. Olcott, F.D. Hole, and G.F. Hanson, 1967, Wisconsin Geological and Natural History Survey Special Report 1.
- \* Availability of ground water for irrigation in the Rice Lake-Eau Claire Area, Wisconsin, by E.A. Bell and S.M. Hindall, United States Geological Survey, 1975, Wisconsin Geological and Natural History Survey Information Circular 31.



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Base map from U.S. Geological Survey  
County Map Series (Topographic), 1985

