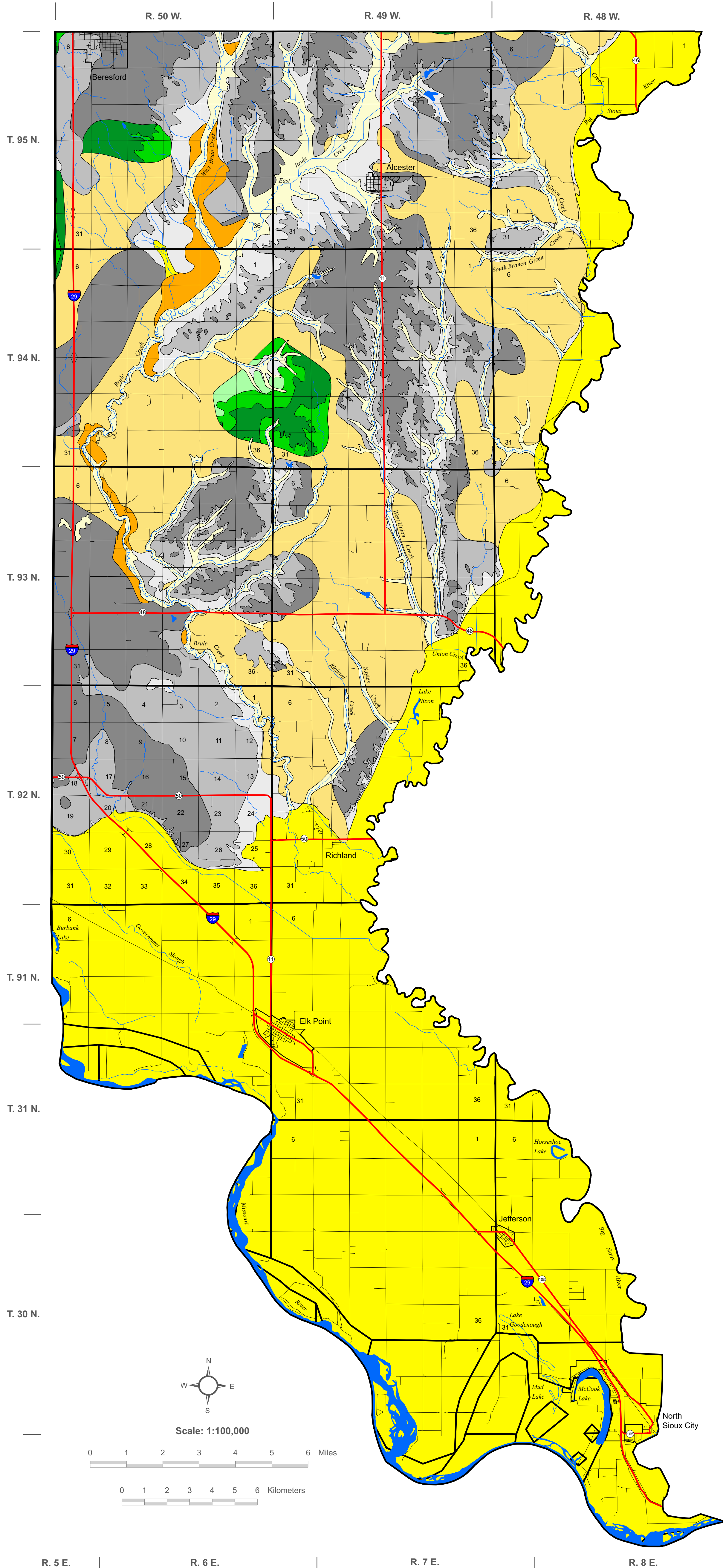


First Occurrence of Aquifer Materials in Union County, South Dakota

Department of Environment and Natural Resources
 Division of Financial and Technical Assistance
 Geological Survey
 Aquifer Materials Map 18
 Kelli A. McCormick, 2004

State of South Dakota
 M. Michael Rounds, Governor

South Dakota Geological Survey
 Derric L. Iles, State Geologist



Explanation

This map is intended for use as a tool to aid in identifying areas underlain by aquifer material. The aquifer materials shown on this map are categorized below. This map does not show individual aquifers. There may be more than one type of aquifer material present in an area. However, only the aquifer material that would be first encountered is shown. Within the boundaries of any given map unit, there may be localized areas where aquifer material is absent. The thickness and permeability of aquifer material may vary significantly. Also, no attempt was made to distinguish between saturated and unsaturated material. Therefore, not all of the areas defined on this map may be an aquifer. Site-specific information should always be examined when making land management or water development decisions.

First occurrence is generally less than or equal to 50 feet below land surface

- Alluvium:** Consists of clay and silt with minor amounts of sand and gravel that, in general, directly overlie a major aquifer
- Alluvium:** Consists of clay and silt with minor amounts of sand and gravel that, in general, do not directly overlie a major aquifer
- Sand and Gravel:** First occurrence is generally at land surface
- Sand and Gravel:** May not be uniform in depth and thickness and may be discontinuous in lateral extent
- Niobrara Formation:** Consists of calcareous marl and chalky limestone

First occurrence is generally greater than 50 feet and less than or equal to 100 feet below land surface

- Sand and Gravel:** May not be uniform in depth and thickness and may be discontinuous in lateral extent
- Niobrara Formation:** Consists of calcareous marl and chalky limestone

First occurrence is generally greater than 100 feet below land surface

- Sand and Gravel:** May not be uniform in depth and thickness and may be discontinuous in lateral extent
- Niobrara Formation:** Consists of calcareous marl and chalky limestone
- Dakota Formation:** Consists of interbedded siltstone, sandstone, and shale

- Major highway
- River or stream
- Road
- Lake
- Township boundary
- Slough or intermittent lake

For township section numbering system, see T. 92 N., R. 50 W.

This map was developed from lithologic logs and published reports. The major sources of information were:

Baird, J.K., 1957, *Geology of the Alcester quadrangle, South Dakota-Iowa*: Vermillion, University of South Dakota, unpublished M.A. Thesis, 136 p.

Frykman, L.J., and Iles, D.L., 1996, *Investigation of nitrate-nitrogen contamination in ground water in the vicinity of Alcester, South Dakota*: South Dakota Geological Survey Open-File Report on Urban and Rural Studies 76, 50 p.

Iles, D.L., 1979, *Ground-water study for southern Union County*: South Dakota Geological Survey Open-File Report on Urban and Rural Studies 28, 63 p.

Jarrett, M.J., 1988, *Sand and gravel resources in Union County, South Dakota*: South Dakota Geological Survey Information Pamphlet 39, 56 p.

Jensen, A.R., 2000, *First occurrence of aquifer materials in Clay County, South Dakota*: South Dakota Geological Survey Aquifer Materials Map 1, 1:100,000 scale.

Jorgensen, D.G., 1960, *Geology of the Elk Point quadrangle, South Dakota-Nebraska-Iowa*: Vermillion, South Dakota, University of South Dakota, unpublished M.S. Thesis, 114 p.

Lawrence, S.J., and Sando, S.K., 1991, *Quality of water from surficial-outwash aquifers in the Big Sioux River basin, eastern South Dakota*: U.S. Geological Survey Water-Resources Investigations Report 89-4170, 81 p.

McCormick, K.A., and Hammond, R.H., 2004, *Geology of Lincoln and Union Counties, South Dakota*: South Dakota Geological Survey Bulletin 39, 43 p.

Nielus, C.A., 1994, *Water resources of Lincoln and Union Counties, South Dakota*: U.S. Geological Survey Water-Resources Investigations Report 93-4195, 57 p.

_____, 1997, *Major aquifers in Lincoln and Union Counties, South Dakota*: South Dakota Geological Survey Information Pamphlet 49, 26 p.

Nielus, C.A., and Thompson, R.F., 1998, *Appraisal of the water resources of the Big Sioux aquifer, Lincoln and Union Counties, South Dakota*: U.S. Geological Survey Water-Resources Investigations Report 97-4161, 37 p.

South Dakota Geological Survey, Lithologic logs database.

The Geological Survey, Department of Environment and Natural Resources, engages in an ongoing data collection and interpretation process. An outcome of that process is to reflect those interpretations on maps such as this one. Reasonable efforts have been made to ensure that this map accurately reflects the source data used in its preparation. This map is date specific. As additional data become available, geologic interpretations may be revised and the map may be updated by the Geological Survey. This map should not be enlarged or otherwise used in an attempt to interpret more detail than can be seen at the 1:100,000 scale.



Index map of South Dakota showing the location of Union County

