

Project Summary—Todd County Geologic Atlas



The Geology and Ground-Water Resources in Todd County

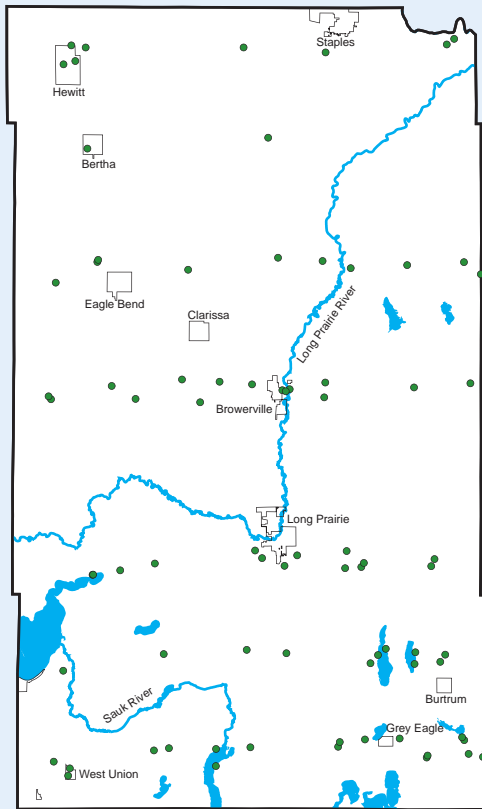
The Todd County Geologic Atlas is a systematic study of the county's geology and ground water. Geologic studies (Part A) were published by the Minnesota Geological Survey (MGS) in 2007. Ground-water studies (Part B) by the Minnesota Department of Natural Resources, Division of Waters (DNR Waters), will be published in summer 2009. See page 2 for more information.

What Are the Results to Date in Todd County?

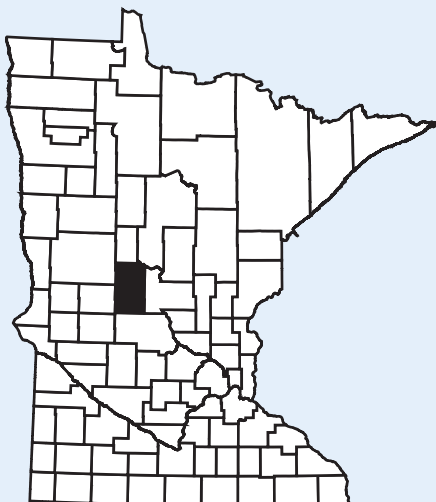
The Part A report defined the extent of surficial sand and gravel deposits and seven buried sand units. Some of the buried units are mapped to a depth in excess of 200 feet below land surface. These subsurface units were mapped using information from well logs and other sources to construct 33 east-west digital geologic cross sections across the county. Seven of these cross sections were included in the Part A report.

Water samples were collected from 79 domestic wells in Todd County during 2007 and 2008. All of the wells were sampled for cations, anions, and trace metals, and 77 of the wells were sampled for tritium. The sampled wells were selected based on the geologic cross sections in Part A. The goal was to sample as many of the buried sand aquifers as possible along the seven cross sections to evaluate the hydrogeologic connections between aquifers.

The tritium data showed that 33 water samples (43 percent) were vintage age, where water entered the ground before 1953; 12 samples (16 percent) were recent age, where water entered the ground since 1953; and the remaining 32 samples (41 percent) contained a mixture of older and younger waters. Recent age waters were generally found less than 160 feet from the land surface. Seventeen samples (22 percent) had arsenic concentrations greater than or equal to 10 micrograms per liter, which is the federal Maximum Contaminant Level for drinking water.



The dark green dots show locations of ground-water samples collected for general chemistry and tritium from 79 wells. The samples were selected from wells pumping from different aquifers along seven geologic cross sections from Part A.



Location map of Todd County.



Titration tests of alkalinity were performed on water samples in Todd County.

UPDATE
Todd County Geologic Atlas
Part B—Hydrogeology and Sensitivity to Pollution
Minnesota Department of Natural Resources
January 2009

SUMMARY

Minnesota Department of Natural Resources staff began work in August 2007 to prepare Part B, Hydrogeology and Pollution Sensitivity of the Todd County Geologic Atlas. The report will be published in summer 2009. Part A, Geology, was published by the Minnesota Geological Survey in 2007.

WORK REMAINING

Data Collection

- Sampling of selected wells
- Water-level measurements in sampled wells
- Carbon-14 sample collection

Report: Four map sheets compiled at 1:100,000 scale

1. Water-table hydrogeology
2. Buried aquifer hydrogeology (seven buried aquifers)
3. Hydrogeologic cross sections (seven cross sections)
4. Sensitivity to pollution of surficial and buried aquifers

Publication

- Printed report (1000 copies to county)
- Data CD
- Map and data files to county

Training Workshop

CONTACTS

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PURPOSE OF THE ATLAS

The maps, databases, and other information in an atlas are used by counties and other levels of government in planning and environmental protection efforts. Atlases support good decision making for permit applications, land management planning, and the use and protection of natural resources. Atlases are used by businesses and the public.

OBTAINING A REPORT OR MORE INFORMATION

Part A—Geology
Minnesota Geological Survey
2642 University Avenue
St. Paul, MN 55114-1057
(612) 627-4780
<http://www.geo.umn.edu/mgs>

Todd County
Gloria Stevenson, GIS & Land Services Coordinator
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Long Prairie, MN 56347
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Part B—Ground Water and Pollution Sensitivity
DNR Waters
500 Lafayette Road
St. Paul, MN 55155-4032
(651) 259-5700
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Todd County SWCD
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TENTATIVE SCHEDULE

79 wells sampled
Completed
Eight wells sampled

Summer 2009

Summer 2009
Summer 2009
Fall 2009

Fall 2009 (tentative)