

THE MINNESOTA GEOLOGICAL SURVEY

- The Minnesota Geological Survey (MGS) is a research and service arm of the Newton Horace Winchell School of Earth Sciences at the University of Minnesota.
- It investigates the geology of Minnesota and provides basic public information on the geology of the state. The Survey works with state, county, and regional partners to create comprehensive geologic mapping and associated databases useful to water resource planning, land management and mineral exploration policy, energy system development, and other planning and resource management activities.
- The MGS was established in 1872 by the State of Minnesota as part of the University of Minnesota. The MGS serves the people of Minnesota by providing systematic geoscience information to support stewardship of water, land, and mineral resources.
- MGS geological mapping and research evolve with the progress of science and technology, and the MGS works closely with university, government, industry, and community partners to ensure we respond to the diverse needs of Minnesota.

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The Minnesota Geological Survey

COUNTY GEOLOGIC ATLAS
PROGRAM: HENNEPIN
COUNTY



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COUNTY ATLAS PROJECT FIELD METHODS

In order to meet the diverse array of uses for a County Geologic Atlas, geologist must obtain as much information as possible about the geologic units in the county. This requires various amounts of field work in which the project geologists collect samples for further analysis at the MGS's home office. Field methods for Geologists include the following:

- Driving roads (including dead ends) in a University of Minnesota marked vehicle while describing and sampling outcrops, gravel pits, quarries and construction excavation sites with landowner permission.
- Extracting sediment samples with a Giddings soil probe. The Giddings soil probe uses a two inch auger to extract sub-surface samples. Samples are collected within the right-of-way of roadways. Each site is staked and clearly marked by Gopher-1 underground utility personnel.
- A number of Rotasonic drill sites are selected in the county. Permission to drill is obtained from landowners. Rotasonic holes are drilled by licensed water well drillers and are properly abandoned, according to Minnesota Health Department standards.



COUNTY ATLAS PROJECT OBJECTIVES

- County Geologic Atlases provide objective information essential to support protection and wise use of natural resources.
- A complete atlas consists of a Part A prepared by Minnesota Geological Survey (MGS) that includes the water well database and 1:100,000 scale geologic maps showing properties and distribution of sediments and rocks in the subsurface.
- Part B is constructed by the Department of Natural Resources (DNR) Division of Waters. This includes maps of water levels in aquifers, direction of groundwater flow, water chemistry, and sensitivity to pollution.
- Together they define aquifer properties and boundaries, as well as the connection of aquifers to the land surface and to surface water resources.
- They promote sustainable management of ground water resources, for applications such as monitoring, water allocation, permitting, remediation, and well construction
- They provide a broad range of information on the geology of a county, including the location and distribution of unconsolidated glacial sediments and the bedrock units that host mineral (including construction materials) and water resources. Atlases are usually initiated by a request from a county and an offer to co-fund or provide in-kind service.
- MGS is committed to the expeditious completion and periodic updating of atlases statewide.

PROJECT COMPLETION

Upon completion of a County Geologic Atlas, maps and associated databases are prepared for use in geographic information systems (GIS) and available as pdfs and distributed via DVD and our website. Map plates are also printed as an Atlas package for the benefit of users who prefer this format. More information about the final product and each project can be found at the MGS's website: <http://www.mngs.umn.edu>

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Funding for this project is provided by the Minnesota Environment and Natural Resources Trust Fund as recommended by the Legislative-Citizen Commission on Minnesota Resources (LCCMR).

The Trust Fund is a permanent fund constitutionally established by the citizens of Minnesota to assist in the protection, conservation, preservation, and enhancement of the state's air, water, land, fish, wildlife, and other natural resources.

Currently 40% of net Minnesota State Lottery proceeds are dedicated to growing the Trust Fund and ensuring future benefits for Minnesota's environment and natural resources.



