

**Environment and Natural Resources Trust Fund  
2011-2012 Request for Proposals (RFP)**

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**LCCMR ID: 002-A1**

**Project Title:** MGS County Geologic Atlases for Sustainable Water Management

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**Category:** A1. Natural Resource Data and Information: Collection

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**Total Project Budget:** \$ \$1,200,000

**Proposed Project Time Period for the Funding Requested:** 3 yrs, July 2012 - June 2015

**Other Non-State Funds:** \$ 0

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**Summary:**

Geologic atlases provide information essential to sustainable management of ground water resources. They define aquifer boundaries and the connection of aquifers to the land surface and surface water resources.

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**Sponsoring Organization:** U of MN - Minnesota Geological Survey

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**Location**

**Region:** Statewide

**Ecological Section:** Statewide

**County Name:** Statewide

**City / Township:**

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_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ Employment	_____ TOTAL _____%

# 2011-2012 MAIN PROPOSAL

## PROJECT TITLE: MGS County Geologic Atlases for Sustainable Water Management

### I. PROJECT STATEMENT

Geologic atlases provide maps and databases necessary for sustainable management of water resources. County Geologic Atlases are specifically identified as essential data in the Statewide Conservation Plan, and in the efforts of the Environmental Quality Board, DNR Waters, and the Water Resources Center at the University of Minnesota to design a sustainable water management process. They define aquifer boundaries and the connection of aquifers to the land surface and surface water resources to enable a comprehensive water management effort. A complete geologic atlas consists of Part A constructed by the Minnesota Geological Survey (MGS) and focused on geology and the County Well Index, and Part B constructed by the DNR Division of Waters and focused on hydrology. Local participation is a primary factor in determining which counties are chosen for this work, while ground water sensitivity, water demand, and the size of the population served are also considerations. The counties must request an atlas, and provide funds or in-kind service. Atlases facilitate and enhance the operations of natural resource management and regulation by state and local government units. They support management activities designed to evaluate sustainable water use and to protect water quality such as: permitting, land use planning, wellhead protection, remediation, monitoring, modeling, and well construction.

This project continues an effort to provide county geologic atlases statewide. The first atlas was initiated in 1979 but the program languished without a reliable source of funding. Funding from ENRTF in the early 1990s and from 2007 to the present has greatly accelerated production (see attached map).

### II. DESCRIPTION OF PROJECT ACTIVITIES

**Activity 1:** Initiate three or more county geologic atlases **Budget:** \$ 1,200,000

Atlases begin with compilation of a database of subsurface information. The most abundant data source is the construction records of water wells. With the cooperation of the local project partner, accurate digital locations are established for these wells to support their use in mapping. Concurrently, geologists visit the project area to describe and sample landforms, and exposures of rock or sediment. An initial assessment of the geologic data is then completed to focus additional data gathering including shallow and deep drilling programs. Analysis of the complete data set is then completed and maps and associated databases are formalized and prepared for use in geographic information systems and distribution via DVD and web. Most of the products are also printed for use in the field, and by users who prefer this format.

Outcome	Completion Date
1. Create database of well construction records to support the mapping, to document water use in specific aquifers, and to help resolve well problems	June 30, 2013
2. Complete any unfinished ENRTF supported County Geologic Atlas projects (ex; from 2010 appropriation).	June 30, 2014
3. Make progress on maps of bedrock geology, surficial geology, subsurface Quaternary geology, bedrock topography, and thickness of glacial deposits.	June 30, 2015

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### III. PROJECT STRATEGY

#### A. Project Team/Partners

The MGS team will include as many as 15 staff members (approx. 3 FTE) including database specialists, geologists, geophysicists, geographic information system specialists, and an editor. After completion of the MGS work DNR will construct Part B of the atlas which addresses water levels, water chemistry, and sensitivity using separate funding. The local partner, typically a county or SWCD, will provide services, such as establishing accurate well locations. The local partner is also consulted in the project design phase to establish specific issues, needs, and preferences.

#### B. Timeline Requirements

The work associated with this project will be initiated in 2012 and continue for three years (funding year 1 \$100,000, year 2 \$500,000, year 3 \$600,000). Most atlases require 3 to 4 years to complete, so projects started in this proposal may not be completely finished and may require additional funding.

#### C. Long-Term Strategy and Future Funding Needs

MGS is the geologic mapping agency of the state and is striving to provide comprehensive geologic mapping and associated databases at appropriate scales statewide as quickly as possible. The County Geologic Atlas program is the primary vehicle for completing this goal. Atlases are complete or under construction for 29 of the 87 counties in Minnesota. The MGS receives \$150,000 to \$200,000 per year from DNR Waters, and also leverages federal cost share dollars from the National Cooperative Geologic Mapping Program of the United States Geological Survey. MGS competes for these cost share dollars annually and they cover half of the costs of each map product incurred in that one-year window. MGS intends to propose project map elements for cost share and if successful may garner an additional \$125,000. MGS atlas development is also supported by Clean Water Funds (\$305,000 beginning July 2010). The attached chart of recent and future funding of the program illustrates how ENRTF appropriations have increased activity to a level of approximately \$800,000 per year. At this level of spending statewide coverage and updating of several existing atlases could be achieved in approximately 20 to 25 years.

## 2011-2012 Detailed Project Budget

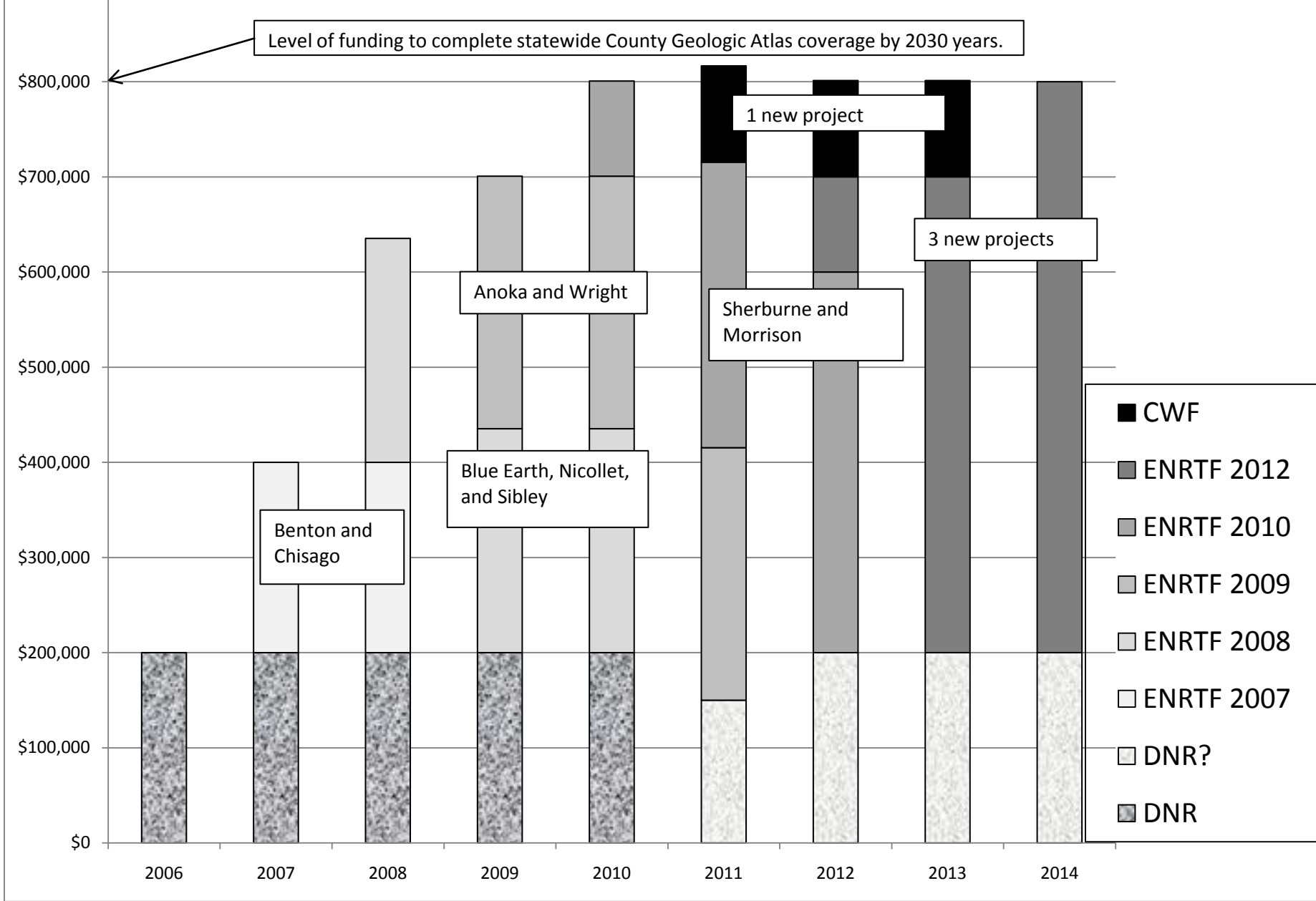
### IV. TOTAL TRUST FUND REQUEST BUDGET 3 years beginning July 2012

<b>BUDGET ITEM</b> (See list of Eligible & Non-Eligible Costs, p. 13)	<b>AMOUNT</b>
Personnel: Between 5 and 15 MGS staff will be assigned to work on geologic atlases on a part time basis; chosen based on the skill sets necessary for the geology of the selected counties. The total cost includes the University benefits rate of 40.1%	\$ 885,000
<b>Contracts:</b> rotasonic test hole drilling for geologic atlases (awarded by a competitive bidding process). Generally 3-6 holes per county, based on 3 counties.	\$ 155,000
<b>Contracts:</b> printing (awarded by a competitive bidding process); typically 1500 copies each of 6 plates per county; 3 counties.	45000
<b>Equipment/Tools/Supplies:</b> Supplies and services (photocopying well records, maps, augers and other expendable parts for soil probe, repairs, sample bags, lab supplies, lab services, scans, plotter supplies, mylar)	\$ 30,000
<b>Travel:</b> lodging, food, and vehicle rental and mileage costs; based on cost averages from past projects. Adjustment may be needed depending on project locations.	\$ 85,000
<b>Additional Budget Items:</b>	\$ -
<b>TOTAL ENVIRONMENT &amp; NATURAL RESOURCES TRUST FUND \$ REQUEST</b>	<b>\$ 1,200,000</b>

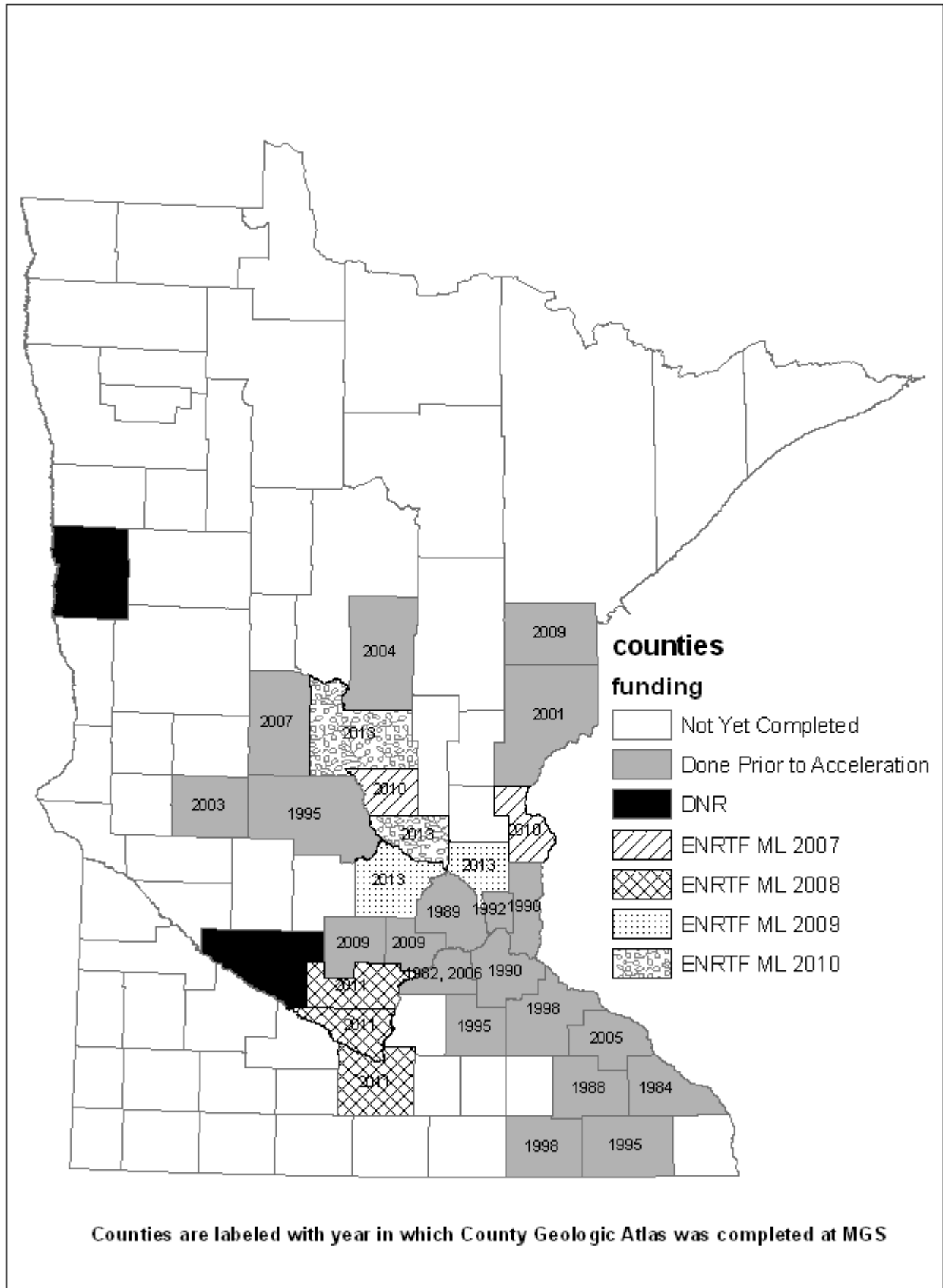
### V. OTHER FUNDS

<b>SOURCE OF FUNDS</b>	<b>AMOUNT</b>	<b>Status</b>
<b>Other Non-State \$ Being Applied to Project During Project Period:</b> MGS will compete for federal cost share dollars annually. These federal funds cover half of the costs of each map product produced within a one year window. We intend to try to cost share at least two of the map products associated with this proposal. Funding might be \$65,000 to \$130,000 over life of project.	\$ 65,000	pending
<b>Other State \$ Being Applied to Project During Project Period:</b> The MGS CGA program anticipates \$600,000 from DNR during this period, but this will be applied to separate CGA projects. MGS is also slated for \$305,000 from Clean Water Funds in the period 2011-2014.	\$ 905,000	secured
<b>In-kind Services During Project Period:</b> Each of the participating counties will be asked to establish accurate locations for water wells with construction records in the county.	\$ 90,000	pending
<b>Remaining \$ from Current ENRTF Appropriation (if applicable):</b> \$398k from ML 2008, Chap.367, Sec.2, Subd.4(h) dedicated to Blue Earth, Nicollet, and Sibley CGAs; \$606k from ML 2009, Chap.143, Sec.2, Subd.3(b) dedicated to Anoka and Wright CGAs; \$800k pending for 2010 proposal for Sherburne and Morrison CGAs.	\$ 1,804,000	Obligated to work underway.
<b>Funding History: Indicate funding secured prior to July 1, 2011 for activities directly relevant to this specific funding request. State specific source(s) of funds.</b> See line above and chart of funding history attached.	\$ -	

# MGS County Geologic Atlas Funding History and Plan



# Status of County Geologic Atlases



## **MGS County Geologic Atlases for Sustainable Water Management**

Project Manager: Dale R. Setterholm

Qualifications:

### Education

MS in Management of Technology, Carlson School of Management  
University of Minnesota, Minneapolis, MN, 1999

Capstone Project: *A Project Management System for the  
Minnesota Geological Survey*

BS in Geology, Institute of Technology, University of Minnesota,  
Minneapolis, MN 1979

### Professional Experience

Geologist, Minnesota Geological Survey, 1979-2010  
Assistant to the Director, Minnesota Geological Survey 1997-2006  
Associate Director, Minnesota Geological Survey 2007-2010

Participate in strategic planning, budget development, program administration, project management, personnel administration, purchasing, facilities management, information systems planning, search and hiring procedures, contract development, grants administration, and client relations.

Geologic interests and experience include:

- building subsurface geologic databases and applying them to geologic mapping and water resource management.
- the relationship of geologic settings and ground water sensitivity.
- the influence of geologic settings on water levels and water quality in lake management.

Organization Description:

The Minnesota Geological Survey is the geologic mapping agency for the State of Minnesota, as directed by its enabling legislation. Its goal is to produce comprehensive geologic mapping and related databases statewide at a scale of 1:100,000 or more detailed. This mapping supports informed land use management and decision-making that protects and wisely allocates resources. The MGS is part of the N.H. Winchell School of Earth Sciences in the Institute of Technology at the University of Minnesota. It has existed since 1872 and has a current staff of approximately 25.

