



**Environment and Natural Resources Trust Fund (ENRTF)
M.L. 2011 Work Plan**

Date of Status Update:

Date of Next Status Update: 12/1/2011

Date of Work Plan Approval: 6/23/2011

Project Completion Date: 6/30/2015

Is this an amendment request? _____

Project Title: County Geologic Atlases for Sustainable Water Management

Project Manager: Dale Setterholm

Affiliation: U of MN - MN Geological Survey

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Location:

Counties Impacted: Statewide

Ecological Section Impacted: Lake Agassiz Aspen Parklands (223N), Minnesota and Northeast Iowa Morainal (222M), North Central Glaciated Plains (251B), Northern Minnesota and Ontario Peatlands (212M), Northern Minnesota Drift and lake Plains (212N), Northern Superior Uplands (212L), Paleozoic Plateau (222L), Red River Valley (251A), Southern Superior Uplands (212J), Western Superior Uplands (212K)

Total ENRTF Project Budget:	ENRTF Appropriation \$:	1,200,000
	Amount Spent \$:	<u>0</u>
	Balance \$:	1,200,000

Legal Citation: M.L. 2011, First Special Session, Chp. 2, Art.3, Sec. 2, Subd. 03b1

Appropriation Language:

\$900,000 the first year and \$900,000 the second year are from the trust fund to accelerate the production of county geologic atlases to provide information essential to sustainable management of ground water resources by defining aquifer boundaries and the connection of aquifers to the land surface and surface water resources. Of this appropriation, \$600,000 each year is to the Board of Regents of the University of Minnesota for the Geologic Survey and \$300,000 each year is to the commissioner of natural resources. This appropriation is available until June 30, 2015, by which time the project must be completed and final products delivered.

I. PROJECT TITLE: County Geologic Atlases for Sustainable Water Management

II. PROJECT SUMMARY: 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 provide funds or in-kind service to participate. 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.

III. PROJECT STATUS UPDATES:

Project Status as of *December 31, 2011:*

Project Status as of *June 30, 2012:*

Project Status as of *December 31, 2012:*

Project Status as of *June 30, 2013:*

Project Status as of *December 31, 2013:*

Project Status as of *June 30, 2014:*

Project Status as of *December 31, 2014:*

Project Status as of *June 30, 2015:*

IV. PROJECT ACTIVITIES AND OUTCOMES:

ACTIVITY 1: Create geologic atlases for 3 or more counties (yet to be named)

Description: 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. As soon as the funds for this project are secured counties will be contacted to find willing and able local partners. This effort will begin with counties prioritized on the basis of need that may be driven by growth, resource demand, resource vulnerability, or opportunities for cooperation with other water management activities. When counties join this project progress and budgeting will be reported as Activity 1A, 1B, and 1C.

Summary Budget Information for Activity 1:

ENRTF Budget: \$ 1,200,000
Amount Spent: \$ 0
Balance: \$1,200,000

Activity Completion Date:

Outcome	Completion Date	Budget
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	\$120,000
2. Complete any unfinished ENRTF supported County Geologic Atlas projects (ex: from 2010 appropriation).	June 30, 2014	\$100,000
3. Make progress on maps of bedrock geology, surficial geology, subsurface Quaternary geology, bedrock topography, and thickness of glacial deposits.	June 30, 2015	\$980,000

Activity Status as of December 31, 2011:

Activity Status as of June 30, 2012:

Activity Status as of December 31, 2012:

Activity Status as of June 30, 2013:

Activity Status as of December 31, 2013:

Activity Status as of June 30, 2014:

Activity Status as of December 31, 2014:

Activity Status as of June 30, 2015:

Final Report Summary:

V. DISSEMINATION:

Description: County Geologic Atlases are created in digital and print forms. Printed copies are useful in the field, and for users without computers. The printed copies are shared with the county and also distributed by the MGS. The atlas content is also provided as portable document files (pdfs) that can be accessed by free software, as geographic information system (GIS) files that can be accessed and manipulated to create new or customized maps by those with GIS software, and as GIS files that can be accessed by free GIS software. The digital files are available on a DVD, from the county, or from a digital conservancy through the MGS web site.

MGS provides project status reports to each county, and at the completion of our work we hold a workshop in the county to introduce the products and demonstrate their uses. A field trip is usually conducted to relate the map units to landforms and geologic materials at locations around the county.

Status as of December 31, 2011:

Status as of June 30, 2012:

Status as of December 31, 2012:

Status as of June 30, 2013:

Status as of December 31, 2013:

Status as of June 30, 2014:

Status as of December 31, 2014:

Status as of June 30, 2015:

Final Report Summary:

VI. PROJECT BUDGET SUMMARY:

A. ENRTF Budget:

Budget Category	\$ Amount	Explanation
Personnel:	\$958,000	approx. 10.6 FTE civil service and student workers
Professional/Technical Contracts:	\$108,000	rotasonic drilling- awarded by bid process; costs generally range from \$30 to \$60 per foot (more expensive at depth) plus \$8 per foot for abandonment. This amount would likely drill about 9 holes- 3 per county averaging 200 feet deep. This is typically the minimal coverage and may be augmented if conditions require.
Equipment/Tools/Supplies:	\$18,000	expendables for field and laboratory work
Printing:	\$36,000	bid process; typically 6 plates per county (size about 3' by 3'), four color, and 1,500 copies of each for 3 counties equals 27,000 maps
Travel Expenses in MN:	\$80,000	food, lodging, vehicle rental from University Fleet as necessary for field work (typically weekly)
TOTAL ENRTF BUDGET:	\$1,200,000	

Explanation of Capital Expenditures Greater Than \$3,500: none

Number of Full-time Equivalent (FTE) funded with this ENRTF appropriation: approx. 10.6, cannot calculate until counties are chosen and staff are assigned based on skills required for those counties.

B. Other Funds:

Source of Funds	\$ Amount Proposed	\$ Amount Spent	Use of Other Funds
Non-state			
STATEMAP, Great Lakes Geologic Mapping Coalition (both are federal cost-sharing)	\$125,000	\$	Will apply for funds as projects are developed- none are locked in at this time.
State			
Clean Water Legacy Funds	\$305,000	\$	Dedicated to Houston and Winona CGA projects, not this proposal
TOTAL OTHER FUNDS:	\$430,000	\$	

VII. PROJECT STRATEGY:

A. Project Partners: Under a separate workplan and budget DNR Waters and Environmental Services will receive \$600,000 to work on Part B of County Geologic Atlases

B. Project Impact and Long-term Strategy: 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 32 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 and the Great Lakes Geologic Mapping Coalition. 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 (one grant of \$305,000 beginning July 2010).

C. Spending History:

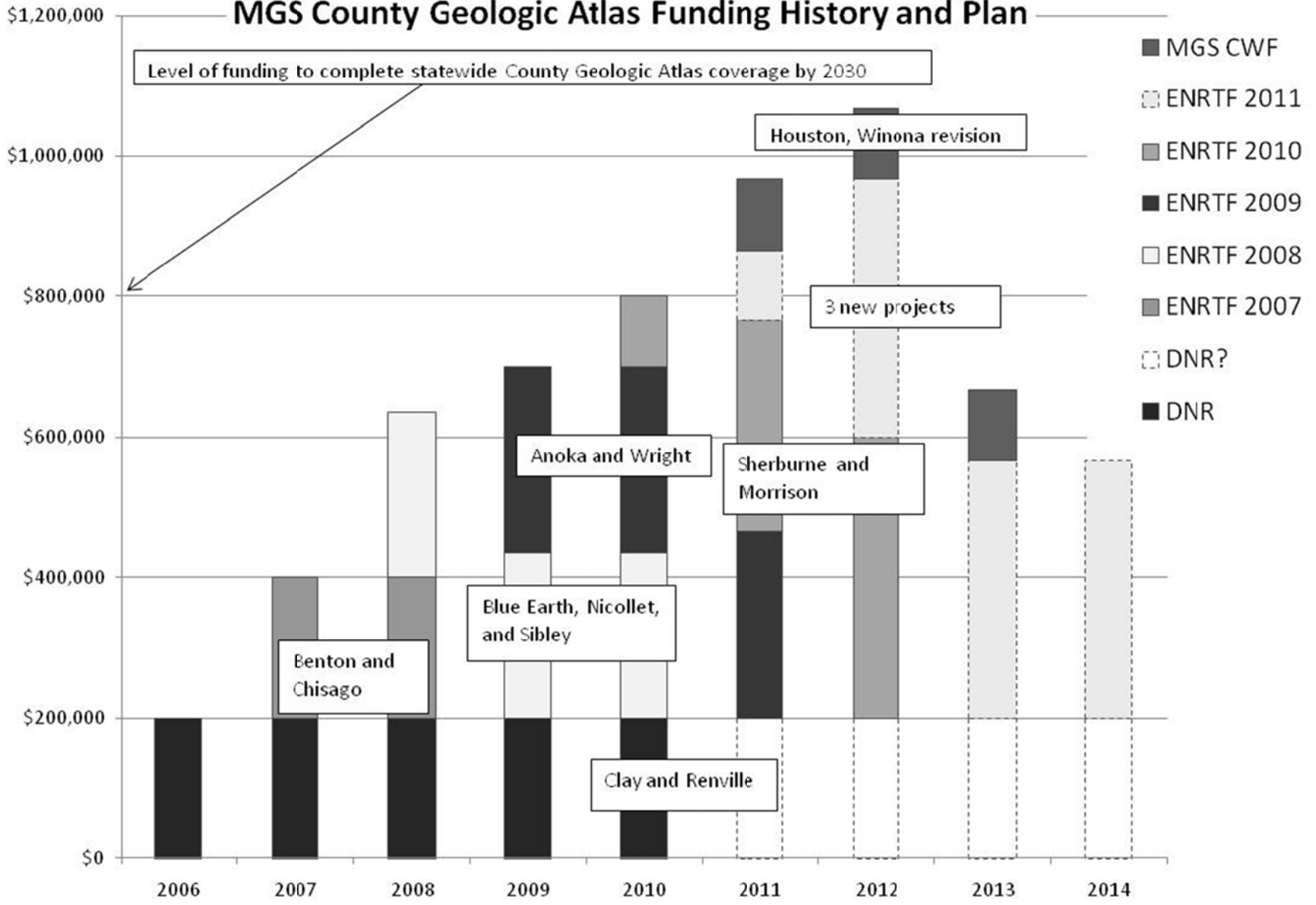
Funding Source	M.L. 2005 or FY 2006-07	M.L. 2007 or FY 2008	M.L. 2008 or FY 2009	M.L. 2009 or FY 2010	M.L. 2010 or FY 2011
Benton and Chisago CGAs		\$400,000			
Blue Earth, Nicollet, Sibley CGAs			\$706,000		
Anoka and Wright CGAs				\$820,000	
Sherburne and Morrison CGAs; St. Lawrence Confinement Study, Rochester Geochem Study					\$800,000 and \$330,000

VIII. MAP(S): map of CGA program progress and funding sources

IX. REPORTING REQUIREMENTS:

Periodic work plan status update reports will be submitted not later than December 31, 2011, June 30, 2012, December 31, 2012, June 30, 2013, December 31, 2013, June 30, 2014, December 31, 2014. A final report and associated products will be submitted between June 30 and August 1, 2015 as requested by the LCCMR.

MGS County Geologic Atlas Funding History and Plan



Attachment A: Budget Detail for M.L. 2011 (FY 2012-13) Environment and Natural Resources Trust Fund Projects
Project Title: County Geologic Atlases for Sustainable Water Management

Legal Citation: M.L. 2011, Chapter

Project Manager: Dale Setterholm

M.L. 2011 (FY 2012-13) ENRTF Appropriation: \$1,200,000

Project Length and Completion Date: 4 years; June 30, 2015

Date of Update: May 6, 2011

**ENVIRONMENT AND NATURAL RESOURCES TRUST
FUND BUDGET**
**Activity 1
Budget**
Amount Spent
Balance
**TOTAL
BUDGET**
**TOTAL
BALANCE**
BUDGET ITEM
Fill in your activity title here.
Personnel (Wages and Benefits)

Approximately 10.6 FTE in a team of database managers, surficial geologists, bedrock geologists, geophysicists, student lab technicians, editor, and GIS scientists. Salary 58.7%, fringes 41.3%, except for students (100% salary). Assignments will be made when project locations (counties) are chosen.

\$ 958,000

0

958,000

958,000

958,000

Professional/Technical Contracts

Scientific drilling services TBD by bidding process; about 9 holes averaging 200' deep including abandonment; may be augmented as necessary

\$ 108,000

0

108,000

108,000

108,000

Printing services TBD by bidding process (typically 6 plates, 1,500 copies, 3 counties; yields 27,000 3' by 3' maps in color

\$ 36,000

0

36,000

36,000

36,000

Equipment/Tools/Supplies

(2) hand-held GPS units and map files

\$ 700

0

700

700

700

photocopying, maps, publications, sample envelopes and bags, core boxes, pallet banding, sieves, batteries

\$ 17,300

0

17,300

17,300

17,300

Printing (see professional contract above)
Travel expenses in Minnesota

vehicle rental and mileage (approx. \$40 to \$47 per day, \$0.17 to \$0.37 per mile), mileage on MGS geophysics van (\$0.51 per mile); meals (up to \$46 per day); lodging (up to \$77 per day). Amounts cannot be calculated until project locations (counties) are known. Rentals from U Fleet Services as needed, typically on weekly basis.

\$ 80,000

0

80,000

80,000

80,000

COLUMN TOTAL
\$ 1,200,000
\$0
\$1,200,000
\$1,200,000
\$1,200,000

Status of County Geologic Atlases

