Environment and Natural Resources Trust Fund
2018 Request for Proposals (RFP)

Project Title: **ENRTF ID: 002-A**

County Geologic Atlas for Water Resource Sustainability Part-B

Category: A. Foundational Natural Resource Data and Information

Total Project Budget: $ 2,400,000

Proposed Project Time Period for the Funding Requested: 3 years, July 2018 to June 2021

Summary:

County geologic atlases provide information that is essential to sustainable management of Minnesotas groundwater resources by identifying key areas to protect our drinking water and ensure future availability for all.

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Location

Region: Statewide

County Name: Becker, Brown, Cass, Dodge, Hubbard, Isanti, Kanabec, Olmsted, Redwood, Wadena, Washington

City / Township:

Alternate Text for Visual:

The map of Minnesota shows the 31 counties and 6 Regional Hydrogeologic Assessments where atlases are complete and the 11 counties included in this project proposal.

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

PROJECT TITLE: County Geologic Atlas for Water Resource Sustainability Part-B

I. PROJECT STATEMENT

A county geologic atlas (CGA) provides information that is essential to sustainable management and wise use of Minnesota's groundwater resources. The complete atlas is prepared in two parts:

- Part A – First, the geology of a county is mapped by the Minnesota Geological Survey (MGS).
- Part B – Next, the hydrogeology (groundwater) is mapped by the Department of Natural Resources (DNR).

This projects supports continuing development of the Part B atlases by the DNR. The Part B atlas defines aquifer boundaries and helps identify the interconnection of aquifers, their sensitivity to pollution, and their connection to the land surface and surface water resources. Delineation and mapping of aquifers, recharge areas, and karst systems is an essential step to inform management decisions that will protect water supplies, public health, ecological systems and the groundwater resource. This project will complete, continue, or initiate Part B projects for the following counties:

- Becker
- Brown
- Cass
- Dodge
- Hubbard
- Isanti
- Kanabec
- Olmsted (update)
- Redwood
- Wadena
- Washington (update)

Each Part B atlas project includes some or all of the following work components: assembly of data layers and development of conceptual hydrogeologic models; development of maps of the water table and deeper aquifers; groundwater sample collection and laboratory analysis; analysis and interpretation of water chemistry data; geophysics field data collection and analysis; technical analysis and maps of groundwater systems; construction of hydrogeologic cross sections; construction of maps of pollution sensitivity; preparation and publication of the final atlas report, training of local atlas users, and dissemination of information. Depending on the geologic or hydrologic setting of a specific county, other data or field data may also be assembled or collected. The karst landscape of southeast Minnesota is an example where additional data to further define the hydrogeologic system may be collected and could include defining additional related karst features and karst system analysis. This project will continue with the assembly of county atlas groundwater maps into geospatial (GIS) data layers for use in decision-support systems, such as the Department of Natural Resource (DNR) electronic permitting process and DNR's online web-based applications such as the Watershed Health Assessment Framework (WHAF). These assembled data layers and electronic tools make the information more accessible for local, regional, and state decision makers, scientists and citizens.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: County Geologic Atlas, Part B **Budget: $2,400,000**

Building on the Part A atlas data from the MGS, the DNR will collect groundwater samples, compile field chemistry, analyze groundwater samples for natural chemistry and age-dating isotopes, and assemble aquifer characteristics data. The project includes preparing groundwater maps, cross sections, and interpretations of pollution sensitivity of each aquifer for publication in completed Part B atlas reports. As data are finalized and new reports are completed, the project will continue to add and assemble GIS and other data onto statewide data layers to be available online. Project design and data collection for counties in southeast Minnesota (Dodge and Olmsted) may include limited specialty karst system mapping in support of the complete Part B report. The goal is to complete Activity 1 work in approximately three years.

Outcome	Completion Date
1. Publish completed Part B reports (up to four counties per year).	June 30, 2021
2. Continue ongoing work on Part B projects (up to eight counties).	June 30, 2021
3. As new projects are completed, continue to add data to compiled GIS data layers.	June 30, 2021
4. Start new Part B projects (up to four per year).	June 30, 2021

TOTAL BUDGET: $2,400,000

III. PROJECT STRATEGY

A. Project Team/Partners

The Minnesota Geological Survey completes Part A of the county geologic atlases. To determine the priority for which counties to begin work, the MGS asks that the counties participate with in-kind services and the MGS also considers groundwater sensitivity, resource demand, and the size of the population served. The Minnesota Department of Agriculture and the University of Minnesota provide laboratory analytical services as partners in support of the atlas work. When the Part B for an atlas is published, the DNR requests that local governments (county environmental and public works staff, county soil and water conservation districts) sponsor and support training workshops within the county for local staff and the public. The half-day workshops include presentations by the MGS (Part A) and the DNR (Part B), and also include working through several table-top exercises that demonstrate the application of the information provided in the atlas (e.g., landfill siting, water supply planning, and spill release response). The DNR atlas staff also offer to make presentations to county commissioners and staff.

B. Project Impact and Long-Term Strategy

The County Geologic Atlas program is the primary vehicle to provide comprehensive geologic and hydrogeologic mapping and associated databases at useful scales for planners and scientists statewide. The atlas products have had a profound impact on managing the groundwater resource of Minnesota. Planners, scientists and citizens at state and local levels have used the atlases for a wide variety of projects such as resources development and resource protection, water supply planning, land use decisions, transportation planning, and more. To accomplish this important work, the Part B atlases are currently supported by a combination of the state general fund, ENRTF, and Clean Water Fund appropriations to the DNR. Karst system mapping and research to investigate and understand groundwater flow in complex geologic systems and has been ongoing in southeast Minnesota; some of this work has been supported by ENRTF and the University of Minnesota. The MGS receives funding for the Part A atlas from the DNR and also leverages federal dollars from the National Cooperative Geologic Mapping Program of the USGS. The MGS competes annually for these federal cost-share dollars. MGS Part A atlas development is also supported by ENRTF and Clean Water Fund though direct appropriation.

C. Timeline Requirements

This proposal builds on past LCCMR proposals and the 26-year CGA program history. This proposal requests funding to publish up to four atlases per year during the project period and to initiate work on the next set of counties when the Part B atlas has been completed by the MGS. The goal is complete work under this project within three years.

2018 Detailed Project Budget

Project Title: County Geologic Atlas for Water Resource Sustainability Part-B

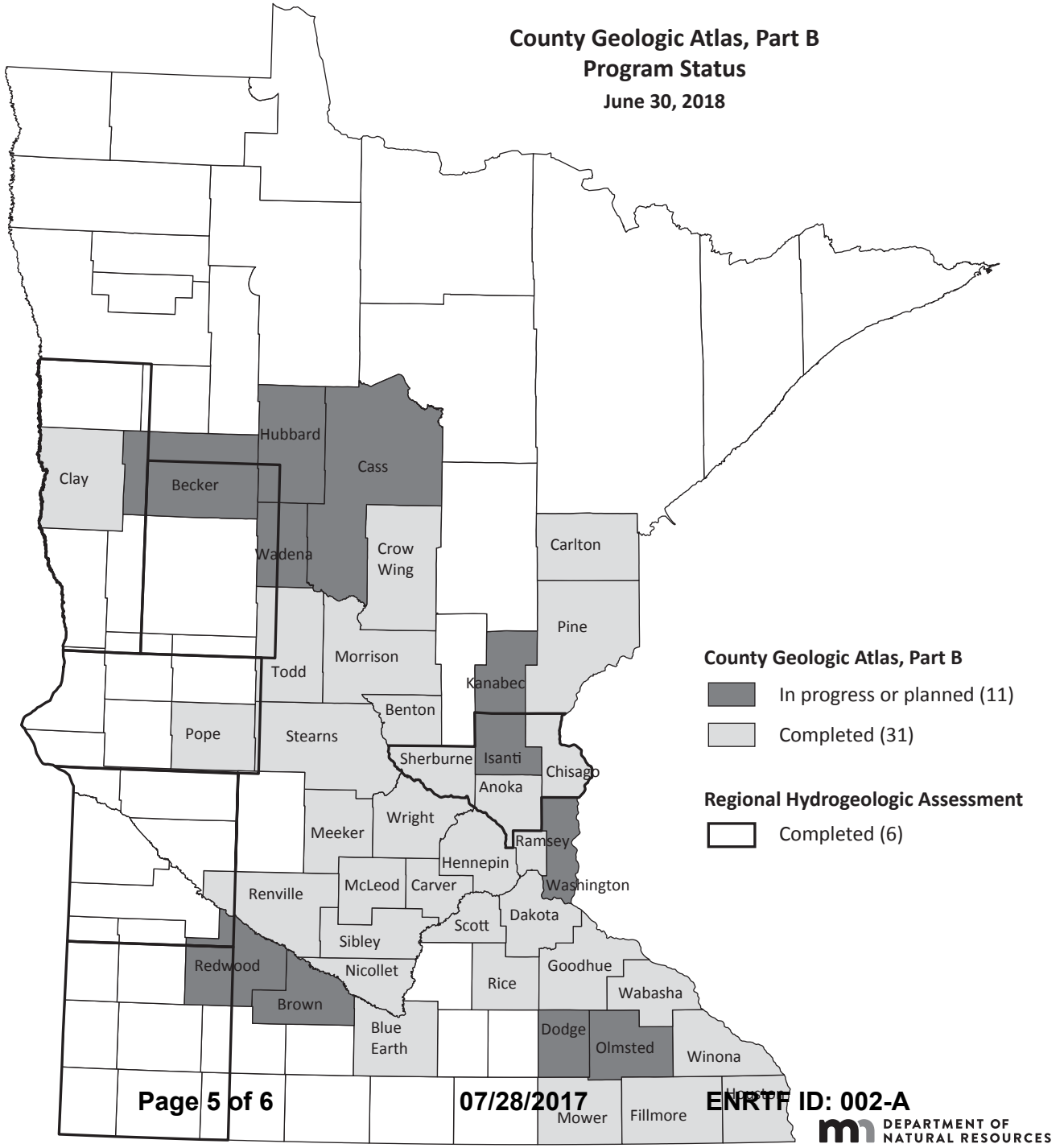
IV. TOTAL ENRTF REQUEST BUDGET: 3 years

BUDGET ITEM	AMOUNT
Personnel: Continuation of eleven existing ENRTF-funded staff (Atlas commitment: 9.5 FTE): Hydrologist Supervisor (classified): $126,000; 0.5 FTE Res Sci 3 (classified): $126,000; 1 FTE Hydrologist 3 (classified): $119,000; 0.5 FTE Hydrologist 3 (classified): $106,000; 1 FTE Hydrologist 2 (unclassified or classified): $88,000; 2 FTE Hydrologist 1 (classified or unclassified): $70,000; 1.5 FTE Information Officer 2 (classified or unclassified): $71,000; 1 FTE Research Analyst Sn-GIS (classified or unclassified): $74,000; 1 FTE Research Analyst-GIS (classified or unclassified): $56,000; 1 FTE Salaries include ~15-25% fringe benefits as per state union contracts	$ 1,674,300
Professional/Technical/Service Contracts: Contracts: Laboratory analysis of approximately 110 water samples per county (Approx. 880 total) for primary analysis. Lab budget for existing state contracts with MN Department of Agriculture ($33,200/county), University of MN ($6,000/county) and University of Waterloo ($15,000/county).	$ 433,600
Equipment/Tools/Supplies: Water sampling and measurement tools and field analytical meters and equipment (est $15,000 for replacement Trimble, Hack water quality meters, Rugged Pro field probes and titrate system). Supplies, including expendable water sampling supplies (Approx. 880 samples total. $30/sample: high volumn mico filters; valves and tubing for each well sampled, titration supplies (est $25,000). Shipping costs for water samples to laboratories (est $2,000).	$ 42,000
Travel: In-state vehicle mileage (est $25,075) and travel expenses (est $21,866), primarily for water sample and field data collection.	$ 46,941
Additional Budget Items - Atlas Production: Upgrades for GIS and report publication specialty software (ex. Avenza Map Publisher) for three DNR Atlas production staff (est $3,000). Speciality software training for DNR Atlas production staff, such as Adobe InDesign, Map Publisher, ArchGIS (est $3,000).	$ 6,000
Additional Budget Items - Atlas Printing: Each Atlas Part B includes printing (off-set and digital) of approximatley 300 copies: 1) One 40-60 page bound report with up to 40 color figures, maps and tables 2) Three to four, full color map plates that are each approximatley 24-inches by 36-inches in size. Some Atlases require a second, figures only, bound report. Printing costs also includes preparing 1,000 post cards for each county mailed to citizens to obtain permission for water well sampling. Total anticipated per county printing costs estimated to be $9,000. Printing costs for eight (8) county atlas estmated to be $72,000.	$ 72,000
Additional Budget Items - Direct & Necessary: *Direct and Necessary expenses: HR Support (~$28,206), Safety Support (~$6,480), Financial Support (~$29,721), Communication Support (~$1,271), IT Support (~$58,409), and Planning Support (~$1,072) necessary to accomplish funded programs/projects.	$ 125,159
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND $ REQUEST =	$ 2,400,000

*Direct and Necessary expenses include Department Support Services (Human Resources, IT Support, Safety, Financial Support, Communications Support, and Planning Support). Department Support Services are described in the agency Service Level Agreement and billed internally to divisions based on rate that have been developed for each area of service. These services are directly related to and necessary for the appropriation. Department leadership services (Commissioner's Office and Regional Directors) are not assessed. Those elements of individual projects that put little or no demand on support services such as large single-source contracts, large land acquisitions, and funds that are passed through to other entities are not assessed Direct and Necessary costs for those activities.

V. OTHER FUNDS

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State $ To Be Applied To Project During Project Period: N/A	$ -	*N/A*
Other State $ To Be Applied To Project During Project Period: General Fund, atlas staff and support, estimated $1,200,000 for 2-year project period to support completion of Part B atlases in base program.	$ 1,200,000	*Pending*
In-kind Services To Be Applied To Project During Project Period: County/local government assistance to arrange water sampling access and sponsor local training workshop.	$ 16,000	*Pending (estimated)*
Past and Current ENRTF Appropriation: County Atlas: M.L. 1991 ENTRF to DNR $600,000; M.L. 1993 ENTRF to DNR $425,000; M.L. 2009 ENTRF Ch 143 Sec 2 Subd 3 to DNR $890,000 (county geologic atlas portion); M.L. 2011, First Special Session,Chp. 2, Art. 3, Sec. 2, Subd. 03b2, $600,000; M.L. 2013, Chp. 52, Sec. 2, Subd. 03c, $1,200,000; Springshed: M.L. 2007, Chap. 30, Sec 2, Subd. 5g, $125,000; M.L. 2009, Chapter 143, $250,000; M.L. 2011, 1st Sp. Session, Ch. 2, Art. 3, Sect. 2, Subd. 5(b)-Springshed Phase III, $220,000; [Atlas - $3,715,000; Springshed - $595,000]; M.L. 2013, Chp. 52, Sec. 2, Subd. 03c, $1,200,000; M.L. 2015, Chp. 76, Sec. 2, Subd 3b, $2,000,000.	$ 7,510,000	Spent (See below for unspent)
Remaining $ From Current ENRTF Appropriation: Atlas -- M.L. 2013, Chp. 52, Sec. 2, Subd. 03c, ($107,339 as of 2/22/17); M.L. 2015, Chp. 76, Sec. 2, Subd 3b, ($1,854,695). Expected to be spent by June 30, 2018.	$100,000	Est. Unspent by June 30, 2018
Other Funding History: *Includes general fund ($300,000) and Clean Water Fund ($125,000)*	$ 425,000	*Pending*



07/28/2017

ENRTF ID: 002-A

DEPARTMENT OF NATURAL RESOURCES

Project Manager Qualifications and Organization Description
Project Manager: Paul F. Putzier

Degrees and Professional Certificates:
M.S. Geology, University of South Florida, Tampa, Florida 1987
B.S. Geology, University of Wisconsin, Madison, Wisconsin 1982
Minnesota Professional Geologist, License #30053

Qualifications:
2011 to present DNR Hydrogeologist

Provide technical and program direction for the completion of DNR Part B county geologic atlases or regional hydrogeologic assessments. Directed the development of project databases, directed the editing and publication of Part B atlases and documents, assured web access of project data, supported staff development of improved mapping tools and techniques, and assisted others in use of and access to project results and data.

Previous employment:

2008 - 2009	HDR Engineering. Section Manager/Senior Project Manager and Hydrogeologist. Managed Environmental Sciences (NEPA) Section including 35 scientists & GIS professionals, providing environmental permitting (EIS) for large capital projects.
2004 to 2008	STS Engineering. Manage Environmental Sciences Section including 12 engineers. Project manager/hydrogeologist for state & federal Superfund sites & Superfund site investigations.
1992 to 2004	The RETEC Group. Operations manager for office of 35 engineers, geoscientists, and environmental professionals. Managed the $6 million Lower Fox River, Wisconsin Superfund project successfully through the remedial investigation, feasibility study (RI/FS), and risk assessments.(RA) steps of CERCLA to an approved ROD.
1984 to 1992	Groundwater Technology Inc. Operations manager responsible for four regional offices including over 60 engineers, geoscientists, and environmental professionals.

Project Responsibilities: The project manager will be responsible for: providing overall program management and technical direction for the project; directing project staff; contracting for professional services in support of the program; contracting laboratory and other services; coordinating with project partners; directing the development of atlas reports; and preparing and submitting project work plans, updates and final reports.

Organization Description: The Minnesota Department of Natural Resources (DNR)'s mission is to work with citizens to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.