Environment and Natural Resources Trust Fund
2020 Request for Proposals (RFP)

Project Title: **ENRTF ID: 007-A**

County Groundwater Atlas

Category: A. Foundational Natural Resource Data and Information

Sub-Category:

Total Project Budget: $ 2,250,000

Proposed Project Time Period for the Funding Requested: June 30, 2022 (2 yrs)

Summary:

The groundwater atlas provides essential fundamental information for sustainable management and wise use of Minnesotas groundwater resources. Atlases are used by citizens, industry, agriculture and all levels of government.

Name: Paul Putzier

Sponsoring Organization: MN DNR

Job Title: Hydrogeologist Supervisor

Department: Ecological and Water Resources

Address: 500 Lafayette Road

St. Paul MN 55155

Telephone Number: (651) 259-5692

Email paul.putzier@state.mn.us

Web Address https://www.dnr.state.mn.us

Location:

Region: Statewide

County Name: Becker, Cass, Dodge, Hennepin, Hubbard, Isanti, Kanabec, Olmsted, Wadena

City / Township:

Alternate Text for Visual:

Map of Minnesota displaying counties with completed groundwater atlases, and showing the nine counties included in this proposal ML2020.

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

PROJECT TITLE: County Groundwater Atlas

I. PROJECT STATEMENT

This projects supports continuing development of the County Groundwater Atlases by the Department of Natural Resources (DNR). The goal is to provide this valuable water and resource management "information infrastructure" to every county in Minnesota. Approximately half the counties have a completed atlas, and with this funding, four to five new atlases will be completed each year for the next two years. This LCCMR project will complete, continue, or initiate Groundwater Atlases for the following counties:

- Becker
- Cass
- Dodge
- Hennepin
- Hubbard
- Isanti
- Kanabec
- Olmsted
- Wadena

A Groundwater Atlas provides information that is essential to sustainable management and wise use of Minnesota's groundwater resources. The atlas is the primary tool providing comprehensive geologic and groundwater mapping and associated information for planners, managers, scientists and citizens statewide for a wide variety of projects such as:

- Water supply planning
- Land use decisions
- Resources development
- Resource protection
- Transportation planning
- Agricultural Water Supply
- Groundwater Research
- Environmental Impact Statement

A few of the many representative comments provided by typical atlas users are provided below. The comments demonstrate some of the many uses and the value Minnesota places on having a completed atlas for their county:

Heather Cunningham is the Zoning and Environmental Services Administrator for Carlton County, "I *use the atlas on a monthly basis*. In the last 6 months, I have used it for the review of an EAW, pollution sensitivity for a proposed mixed use development, groundwater contamination at our closed landfill, and in working with a lake association."

Stephanie Souter, Supervisor of Planning and Performance Management Team, Washington County "The updated data on shallow and subsurface groundwater sensitivity in the *DNR's Part B atlas was an integral part* of the county's development of a septic system risk assessment tool."

Rob Vix is a Drilling Manager with Traut Well Drilling Companies, "For agriculture projects the atlas helps when looking for *places to drill high capacity wells*. The county atlas maps also provide ideas of the feasibility of my geothermal projects."

The Groundwater Atlas defines aquifer availability and boundaries and helps identify the interconnection of aquifers, their sensitivity to pollution, recharge areas 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. A completed atlas represents a resource management benefit to the county and others.

The complete county atlas is prepared in two parts (**Two Parts: One Atlas**):

- Geologic Atlas (Part A) – The geology is mapped by the Minnesota Geological Survey (MGS).
- Groundwater Atlas (Part B) – The groundwater resources are mapped by the DNR.

Each Groundwater Atlas project includes some or all of the following work components: assembly of data layers and development of groundwater models; development of flow direction maps of the water table and deeper aquifers; groundwater sample collection and laboratory analysis; analysis and interpretation of water chemistry data including age of groundwater; construction of hydrogeologic cross sections; construction of maps of pollution sensitivity; preparation and publication of the final atlas report, training of local atlas users, dissemination of information and follow up support.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1 Title: Groundwater Atlas Production – Work on Nine Counties

Description: The DNR will collect groundwater samples in at least eight counties, compile field chemistry, analyze groundwater samples for natural chemistry and age-dating isotopes, and assemble aquifer characteristics. The project includes preparing groundwater maps, groundwater cross sections, and interpretations of pollution sensitivity of aquifers for up to eight counties, with publication as Groundwater Atlas reports.

This project will provide GIS data layers for use in decision-support systems, such as county land use planning, and county environmental programs. The assembled GIS layers and electronic tools also make the information accessible for local, regional, and state decision makers, scientists, industry and citizens. Project design and data collection for counties in southeast Minnesota (Dodge and Olmsted) may include specialty mapping of the karst groundwater conditions, including dye tracing.

This LCCMR project will complete, continue, or initiate Groundwater Atlases for the nine counties list in the Project Statement, Section 1. The goal is to complete Activity 1 work in approximately two years.

ENRTF BUDGET: $2,250,000

Outcome	Completion Date
1. Publish completed Groundwater Atlas reports (four counties per year).	June 30, 2022
2. Continue ongoing work on Groundwater Atlas projects (up to eight counties).	June 30, 2022
3. Continue to add data GIS data layers.	June 30, 2022
4. Start new Groundwater Atlas projects in counties (up to four per year).	June 30, 2022

III. PROJECT PARTNERS AND COLLABORATORS:

The Minnesota Geological Survey completes 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 county Groundwater 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 (Geologic) and the DNR (Groundwater), and also include table-top exercises that demonstrate the real-life application of the information provided in the atlas (e.g., landfill siting, water supply planning, and spill release response). Minnesota Department of Health participates in the Groundwater Atlas by providing a substantial amount of groundwater chemistry data collected by them for their purposes. The DNR atlas staff also offer to make presentations to county commissioners and staff and may lead field trips upon request.

IV. LONG-TERM IMPLEMENTATION AND FUNDING:

To accomplish this important work, the Groundwater 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 Geologic 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 Geologic Atlas development is also supported by ENRTF and Clean Water Fund though direct appropriation.

Attachment A: Project Budget Spreadsheet
Environment and Natural Resources Trust Fund
M.L. 2020 Budget Spreadsheet
Legal Citation: M.L. 2020 XXXXXXX
Project Manager: Paul Putzier
Project Title: County Groundwater Atlas
Organization: Minnesota Department of Natural Resources
Project Budget: $2,250,000.00
Project Length and Completion Date: Two years; June 30, 2022
Today's Date: April 10, 2019

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET	Budget	Amount Spent	Balance
BUDGET ITEM			
Personnel (Wages and Benefits)	$ 1,500,274	$ -	$ 1,500,274
Personnel: Continuation of eleven existing ENRTF-funded staff (Commitment: approx. 8.0 FTE): Hydrologist Supervisor (classified, 0.5 FTE for two years) Res Sci 3 (classified, 1 FTE for two years) Hydrologist 3 (classified, 0.5 FTE for two years) Hydrologist 3 (classified, 0.5 FTE for two years) Hydrologist 2 (classified, 1 FTE for two years) Hydrologist 2 (classified, 1 FTE for two years) Hydrologist 1 (classified or unclassified, 2.5 FTE for two years) Information Officer 2 (classified or unclassified, 0.5 FTE for two years) Research Analyst Sn-GIS (classified or unclassified, 0.5 FTE for two years) Salaries include ~15-25% fringe benefits as per state union contracts.ENRTF funds will not be used as a substitute for traditional sources of funding. Staff salaries for these positions are currently paid with ENRTE funds			
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 ($35,500/county), University of MN ($7,000/county) and University of Waterloo ($16,500/county).	$ 472,000	$ -	$ 472,000
Equipment/Tools/Supplies			
Non-capital equipment including: water sampling and measurement tools and field analytical meters and equipment (est $15,000 total for replacement multiple, individual meters: 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	$ 42,000	$ -	$ 42,000
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 and postage to mail 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	$ -	$ 72,000
Travel expenses in Minnesota			
In-state vehicle mileage (est $27,000) and travel expenses (est $26,956), primarily for water sampling and field data collection in up to eight counties. All travel per DNR travel policy.	$ 53,956	$ -	$ 53,956
Other			
***Direct and Necessary expenses:** HR Support (~$24,522), Safety Support (~$4,438), Financial Support (~$19,958), Communication Support (~$1,388), IT Support (~$58,326), and Planning Support (~$1,138) necessary to accomplish funded programs/projects.	$ 109,770	$ -	$ 109,770
COLUMN TOTAL	$ 2,250,000	$ -	$ 2,250,000

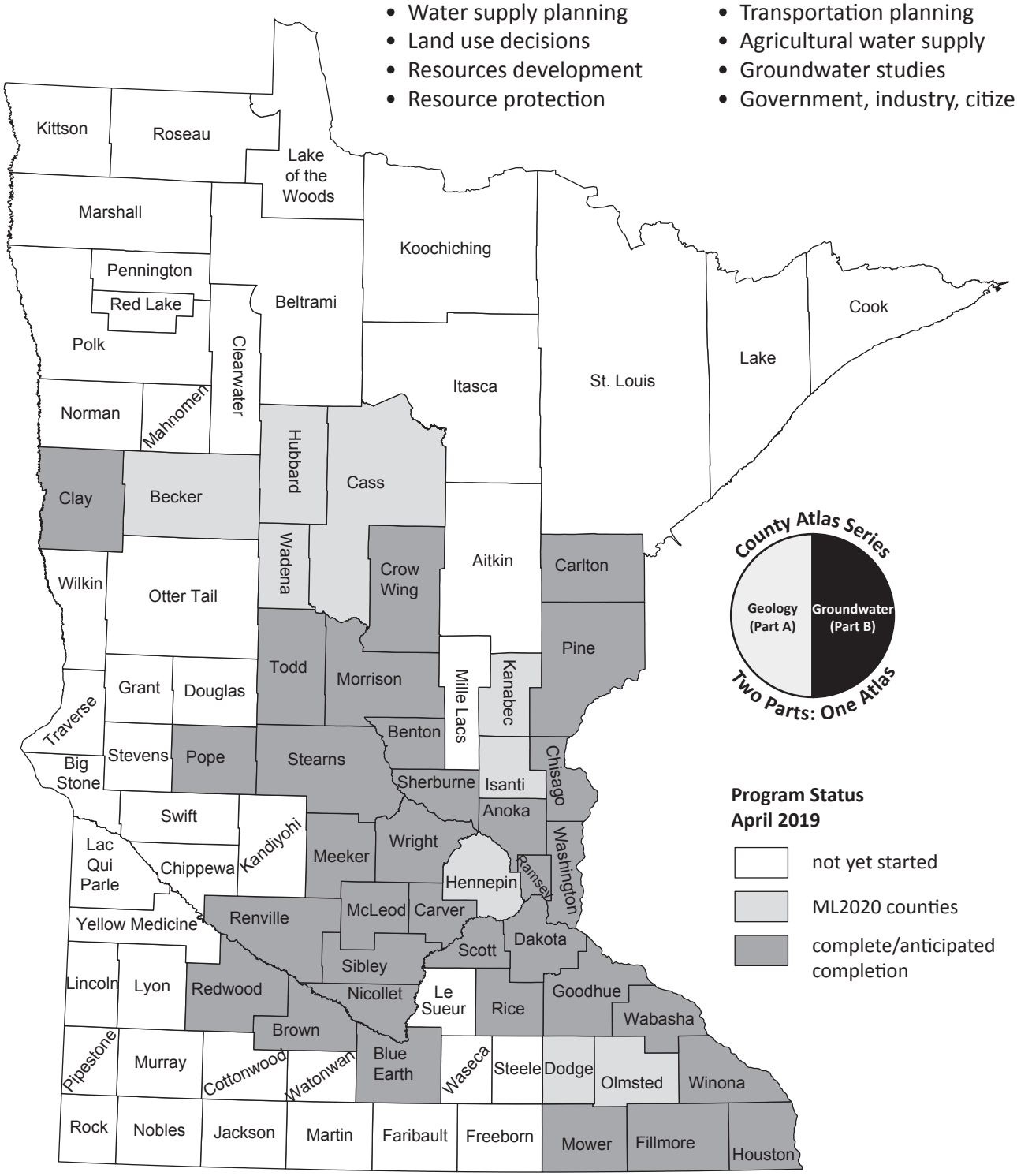
*Direct and Necessary expenses include Department Support Services (Human Resources, IT Support, Safety, Financial Support, Communications Support, and Planning Support). Department Support Services are described in the agency Service Level Agreement and billed internally to divisions based on rate that 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.

SOURCE AND USE OF OTHER FUNDS CONTRIBUTED TO THE PROJECT	Status (secured or pending)	Budget	Spent	Balance
Non-State:	N/A	$ -	$ -	$ -
State: General Fund, atlas staff and support, estimated $1,200,000 for 2-year project period to support completion of groundwater atlases in base program.	pending (estimate)	$ 1,200,000	$ -	$ 1,200,000
In kind: County/local government assistance to arrange water sampling access and sponsor local training workshop. Approximately $4,000/county.	pending (estimate)	$ 32,000	$ -	$ 32,000

Other ENRTF APPROPRIATIONS AWARDED IN THE LAST SIX YEARS	Amount legally obligated but not yet spent	Budget	Spent	Balance
M.L. 2013, Chp. 52, Sec. 2, Subd. 03c, $1,200,000;	Balance will be zero by FY20.	$ 1,200,000	$ 1,200,000	$ -
M.L. 2015, Chp. 76, Sec. 2, Subd 3b, $2,000,000.	Balance will be zero by FY20.	$ 2,000,000	$ 1,700,000	$ 300,000

County Groundwater Atlas

- Water supply planning
- Land use decisions
- Resources development
- Resource protection
- Transportation planning
- Agricultural water supply
- Groundwater studies
- Government, industry, citizens



LCCMR ML2020 Component F

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 Supervisor

Provide technical and program direction for the completion of county groundwater atlases or regional hydrogeologic assessments. Directed the development of project databases, directed the editing and publication of groundwater 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.