

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

Project Title:

ENRTF ID: 006-A

Expanding the Interactive Natural Resource Atlas for Minnesota

Category: A. Foundational Natural Resource Data and Information

Sub-Category:

Total Project Budget: \$ 799,991

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

Summary:

The Natural Resource Atlas provides mapped information to improve decisions that impact the natural resources of NE Minnesota. We will expand the content and geographic scope of the Atlas.

Name: Lucinda Johnson

Sponsoring Organization: U of MN - Duluth NRRI

Job Title: Dr.

Department: Natural Resources Research Institute

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Duluth MN 55811

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Location:

Region: Statewide

County Name: Statewide

City / Township:

Alternate Text for Visual:

A digital atlas for the entire state of Minnesota, with relevant data and intuitive tools, will make information about natural resources readily accessible to users with limited mapping expertise.

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



Environment and Natural Resources Trust Fund (ENRTF)
2020 Main Proposal Template

PROJECT TITLE: Expanding the Interactive Natural Resource Atlas for Minnesota

I. PROJECT STATEMENT

Sound decisions require ready access to appropriate data and information. This is especially true when it comes to decisions that impact our natural resources. Minnesota is fortunate to have a wealth of spatial data about the built and natural environments. Unfortunately, it isn't accessible to most people. Barriers include a lack of awareness that it exists, a lack of time to become familiar with what is available, and a lack of technical skills required to use specialized mapping software. The Minnesota Natural Resource Atlas - Northeast Region (mnnaturalresourceatlas.org) has removed those barriers in 26 counties in Northeast and North Central Minnesota by providing access to over 275 multi-disciplinary spatial data layers through an intuitive, easy to use online mapping tool. The tool was developed hand-in-hand with end users (identified as the general public or small organizations with limited in-house technical capacity), who helped to identify relevant data and prioritize development of the most relevant analytical tools. The first phase of the Atlas focused on delivery of data relevant to mining regions of NE Minnesota, with an emphasis on geology and water-based resources. **We propose to leverage the existing infrastructure to expand the Atlas to the entire state and broaden the data offerings to include more detailed forestry, agriculture, water, and social science data. Specifically, we propose to:**

1. assess data and functionality needs across geographic regions and economic sectors not currently covered by the Atlas
2. expand the data sources and analysis functions to reflect the resources distributed across the entire state, and the varying needs of end users,
3. expand the extent of the Atlas to the entire State of Minnesota,
4. develop outreach and training materials to build and support the user base.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Assess statewide needs

ENRTF BUDGET: \$129,861

We will identify target end-users throughout the state of Minnesota based on organization size, technical capacity, and the natural resource decision scope and economic/cultural sector of their work. We will conduct sector-specific, regional focus groups with potential end users and technical experts to learn more about their decision making processes and the types of data and analytical functionality they require or desire for making better decisions. Data considered for inclusion in the Atlas will be prioritized based user demand and integrity of available data.

Outcome	Completion Date
1. Assess user needs through interviews with agency, non-profit, and industry representatives	10/31/2020

Activity 2: Develop and acquire data and increase analytical functionality

ENRTF BUDGET: \$451,272

Using the information gained from the assessment, we will broaden the data available within the Atlas and expand the analytical functionality to better align with the needs of end-users throughout the state. With a focus on forestry, agricultural, water, and social data, we will identify and acquire existing data sets that have been developed by Non-Government Organizations, academic institutions, and government agencies. Emphasis will be given to identifying and distributing high-value data sets that characterize Minnesota's forest and cultural resources. This emphasis will allow resource managers and industry to more accurately assess the types and volumes of forest resources available for economic use and provide a better understanding of the types and distribution of cultural resources throughout the state.

Outcome	Completion Date
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Environment and Natural Resources Trust Fund (ENRTF)
2020 Main Proposal Template

1. Identify, acquire, and deliver forestry, agricultural, water and social/cultural data products	2/31/2022
2. Identify, acquire, and deliver additional data to meet needs identified in assessments	2/31/2022
3. Develop additional analytical functionality to meet needs identified in assessments	2/31/2022

Activity 3: Expand existing Atlas statewide and develop outreach program

ENRTF BUDGET: \$218,858

We will expand the Atlas from 26 to all 87 counties in Minnesota. To increase access to an even broader set of information on Minnesota natural resources, we will improve the interoperability with other online tools (e.g., MnDNR, EPA, NRRI, UMN). An outreach and training program will be developed to broaden and support the Atlas user base. Outreach will be conducted through multiple media forms and in-person events. Training will be conducted regionally around the state of Minnesota and online.

Outcome	Completion Date
1. Expand the extent of the interactive mapping tool to the entire state of Minnesota	3/31/2022
2. Increase interoperability with the existing online state natural resource tools, including the MN Lake Browser, MN Lake Trends, Restorable Wetland Prioritization Tool, EPA's EnviroAtlas, and others.	3/31/2022
3. Develop and implement an outreach and training program	6/30/2022

III. PROJECT PARTNERS AND COLLABORATORS:

Mae Davenport - Professor, U. of MN Twin Cities; Director, Center for Changing Landscapes - UMN

Cindy Hagley - Environmental Quality Extension Educator, MN Sea Grant

IV. LONG-TERM IMPLEMENTATION AND FUNDING:

Currently, ongoing maintenance of the Minnesota Natural Resource Atlas - Northeast Region is being supported by funding from the Department of Iron Range Resources and Rehabilitation and the Natural Resources Research Institute. A long-term funding model is also being investigated, based on a model used by Minnesota Compass, an online database that delivers economic/demographic information. We envision larger organizational users and groups of smaller organizations will be recruited to become Atlas Sponsors who will provide annual funding to the Atlas via a subscription. In return, they will be invited to join a steering committee that gives them influence over future data acquisition and functionality development decisions. The tool will continue to provide open access to all users, regardless of subscription status.

V. Timeline Requirements:

Two years, from July 1, 2020 through June 30, 2022.

Attachment A: Project Budget Spreadsheet
 Environment and Natural Resources Trust Fund
 M.L. 2020 Budget Spreadsheet

Legal Citation:

Project Manager: Lucinda Johnson

Project Title: Expanding the Interactive Natural Resource Atlas for Minnesota

Organization: Natural Resources Research Institute

Project Budget: \$799,991

Project Length and Completion Date: 2 Years; 6/30/2022

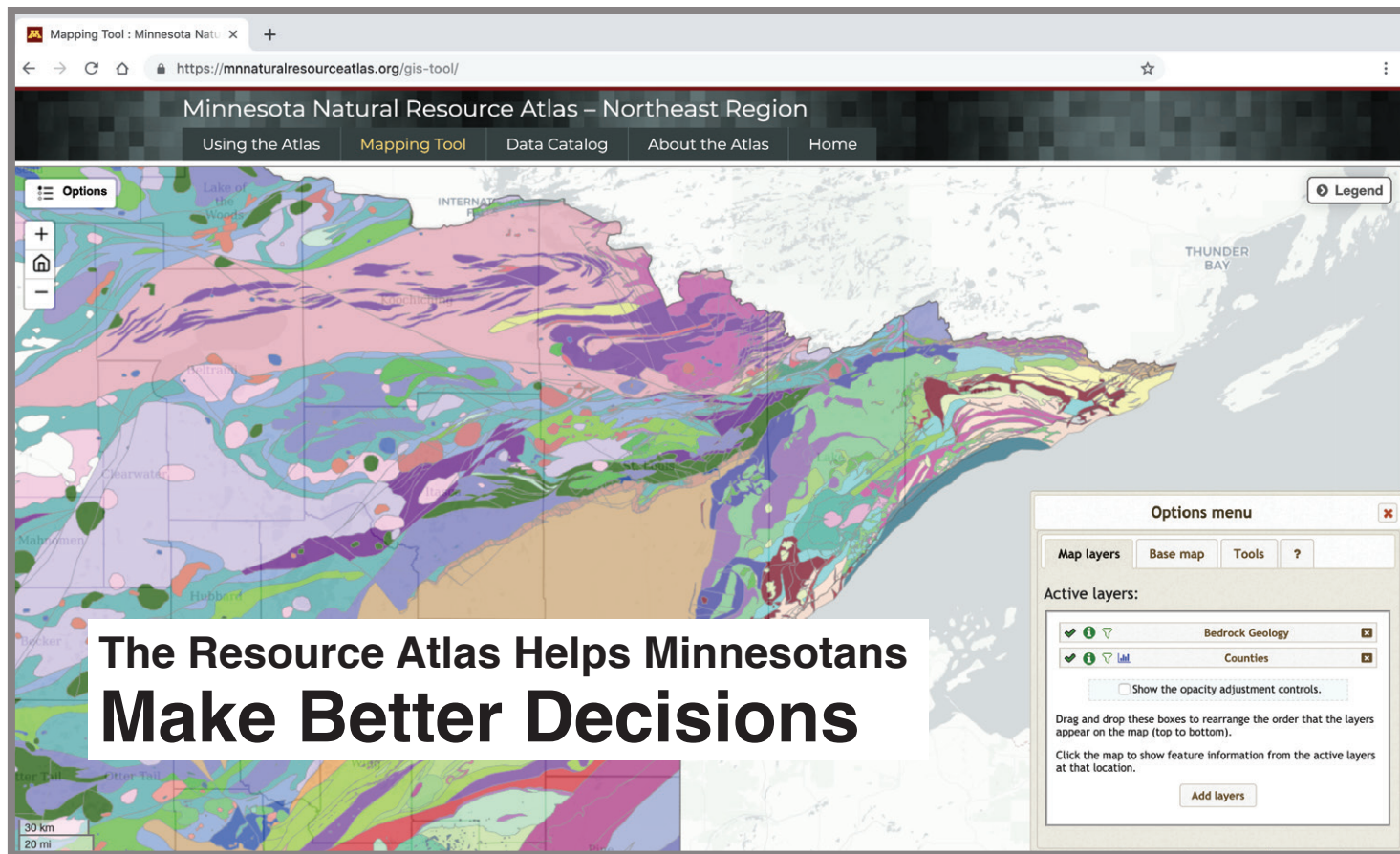
Today's Date: 4/05/2022



ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET		Budget	Amount Spent	Balance	
BUDGET ITEM					
Personnel (Wages and Benefits)		\$ 782,422	\$ -	\$ 782,422	
Lucinda Johnson/Principal Investigator; \$46,235 (74% salary, 26% benefits); FTE: Year 1 = 10%, Year 2 = 10%					
George Host/Co-Investigator; \$36,159 (74% salary, 26% benefits); FTE: Year 1 = 15%, Year 2 =15%					
Mae Davenport/Co-Investigator; \$36,530 (74% salary, 26% benefits); FTE: Year 1 = 8%, Year 2 = 8%					
George Hudak/Co-Investigator; \$18,341 (74% salary, 26% benefits); FTE: Year 1 = 5%, Year 2 = 5%					
Cindy Hagley/Co-Investigator; \$60,567 (74% salary, 26% benefits); FTE: Year 1 = 25%, Year 2 = 25%					
John DuPlissis/Co-Investigator; \$52,589 (74% salary, 26% benefits); FTE: Year 1 = 20%, Year 2 = 20%					
Will Bartsch/Project Manager; \$124,874 (74% salary, 26% benefits); FTE: Year 1 = 75%, Year 2 = 75%					
Shima Hosseinpour/Project Coordinator; \$8,594 (74% salary, 26% benefits); FTE: Year 1 = 4%, Year 2 = 4%					
Norm Will/Programmer; \$91,364 (77% salary, 23% benefits); FTE: Year 1 = 50%, Year 2 = 50%					
TBD/Programmer; \$67,492 (77% salary, 23% benefits); FTE: Year 1 = 40%, Year 2 = 40%					
Kristi Nixon/GIS Analyst; \$109,114 (77% salary, 23% benefits); FTE: Year 1 = 75%, Year 2 = 75%					
Jane Reed/Web Programmer; \$14,541 (77% salary, 23% benefits); FTE: Year 1 = 10%, Year 2 = 10%					
Elaine Ruzycki/Researcher; \$40,046 (74% salary, 26% benefits); FTE: Year 1 = 25%, Year 2 = 20%					
Dan Buchman/Researcher; \$21,861 (77% salary, 23% benefits); FTE: Year 1 = 15%, Year 2 = 10%					
TBD/Researcher; \$54,115(77% salary, 23% benefits); FTE: Year 1 = 50%, Year 2 = 25%					
* Substantial portions of the salaries of NRRI, Sea Grant, and Center for Changing Landscape employees are sponsored by external funders.					
Professional/Technical/Service Contracts					
		\$ -	\$ -	\$ -	
Equipment/Tools/Supplies					
Assessment, Outreach, and Training Materials		\$ 2,400	\$ -	\$ 2,400	
		\$ -	\$ -	\$ -	
Fee Title Acquisition					
		\$ -	\$ -	\$ -	
Easement Acquisition					
		\$ -	\$ -	\$ -	
Professional Services for Acquisition					
		\$ -	\$ -	\$ -	
Printing					
		\$ -	\$ -	\$ -	
Travel expenses in Minnesota (all travel expenses are estimated using federal milage, lodging, and per diem rates)					
Agency Meetings: \$742		\$ 742	\$ -	\$ 742	
Outreach and Training Workshops: \$3,371		\$ 3,371	\$ -	\$ 3,371	
Needs Assessment Workshops: \$4,220		\$ 4,220	\$ -	\$ 4,220	
U of MN Twin Cities Team Members to NRRI for Meetings: \$400		\$ 400	\$ -	\$ 400	
Other					
GIS Lab Fees: \$3,081		\$ 3,081	\$ -	\$ 3,081	
Domain Fees and Web Hosting: \$355		\$ 355	\$ -	\$ 355	
Server Fees: \$3,000		\$ 3,000	\$ -	\$ 3,000	
COLUMN TOTAL		\$ 799,991	\$ -	\$ 799,991	
SOURCE AND USE OF OTHER FUNDS CONTRIBUTED TO THE PROJECT		Status (secured or pending)	Budget	Spent	Balance
Non-State:			\$ -	\$ -	\$ -
State:			\$ -	\$ -	\$ -
In kind: Unrecovered F&A @ 54% MTDC			\$ 431,995	\$ -	\$ 431,995
Other ENRTF APPROPRIATIONS AWARDED IN THE LAST SIX YEARS		Amount legally obligated but not yet spent	Budget	Spent	Balance
			\$ -	\$ -	\$ -

PROJECT DESCRIPTION:

Expand the **Natural Resource Atlas** to include the entire state of Minnesota: <https://mnnaturalresourceatlas.org/>



The Resource Atlas Helps Minnesotans
Make Better Decisions

Minnesota Natural Resource Atlas

Online mapping tools and data for natural resource planning, management, and research in Minnesota

PROPOSAL

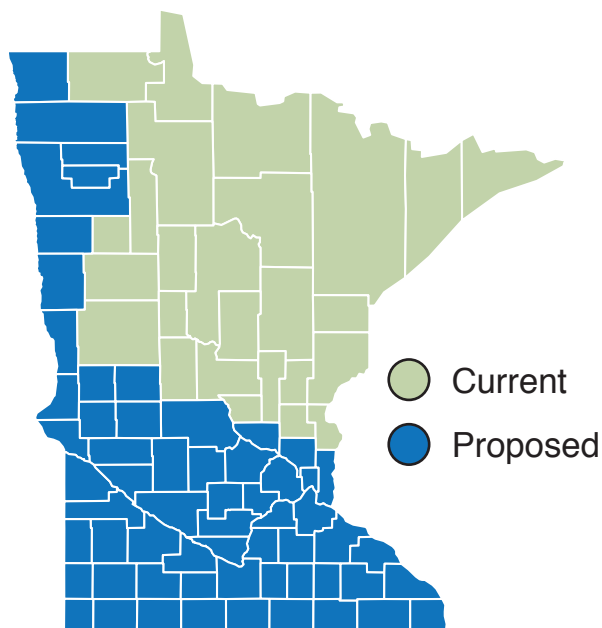
Leverage the existing website infrastructure to expand the Resource Atlas to cover the entire state of Minnesota. Broaden the data offerings to include more detailed forestry, agriculture, water, and social science data.

Expanded scope will include:

- Assessing data and functionality needs across geographic regions and economic sectors not currently covered by the Atlas
- Expanding the data sources and analysis functions to reflect the resources distributed across the entire state, and the varying needs of end users
- Expanding the extent of the Atlas to the entire State of Minnesota
- Developing training and outreach materials to enhance the user base

IMPACT

- 1) Improves decision making for agencies and NGO's with limited access to mapping expertise
- 2) Makes statewide spatial data easily accessible to the general public
- 3) Provides intuitive tools for analysis of mapped data and information
- 4) Delivers comprehensive coverage of Minnesota's natural resources





Environment and Natural Resources Trust Fund (ENRTF) 2019 Project Manager Qualifications and Organization Description

PROJECT TITLE: Expanding the Interactive Natural Resource Atlas for Minnesota

Dr. Lucinda Johnson, Natural Resources Research Institute (NRRI), University of Minnesota Duluth (UMD)

Key Qualifications

As the Water Initiative leader, Dr. Lucinda Johnson (NRRI-UMD Associate Director, a landscape and aquatic ecologist) has been directing a team of scientists involved in the development of Phase 1 of the Natural Resource Atlas for Northeast Minnesota, (<https://mnnaturalresourceatlas.org/>)--- an initiative funded by the MN Legislature to NRRI. This project was developed to bring natural resource data directly into the hands of end users and the general public, with particular emphasis on use by organizations with little technical capacity to conduct complex spatial analyses. To that end, the Atlas was developed hand in hand with both end users and other technical developers of digital, online tools. Johnson has led three previous LCCMR projects (2005; 2007; 2016) quantifying climate change impacts on aquatic resources in Minnesota. Johnson has considerable experience leading large projects, including a prior project to validate indicators of coastal ecosystem conditions (\$1.67M, funded by USEPA). The Atlas team consists of programmers, as well as social scientists, natural scientists, and educators.

EDUCATION

Ph.D., Zoology, Michigan State University, 1999

M.S., Environmental Science and Forestry, State University of New York, 1984

B.A., Duke University, 1976

Project Team:

This team brings together a broad set of skills from three different groups across the University of Minnesota: the Natural Resources Research Institute - University of Minnesota Duluth (NRRI - UMD), the Center for Changing Landscapes - University of Minnesota (CCL - UMN), and Minnesota Sea Grant. The NRRI group has demonstrated success developing web-based tools and deep knowledge of Minnesota's forest, water, and geological resources. **Dr. George Host** is the Director of the Forest and Land Initiative at NRRI-UMD and a forest ecologist with extensive experience characterizing and mapping the distribution of forest cover types across Minnesota. **Dr. George Hudak** is the director of the Minerals, Metallurgy, and Mining Initiative at NRRI-UMD and an economic geologist with extensive knowledge of the geology of Minnesota. **Mr. John DuPlissis** is the NRRI Silviculture Program Manager and has a strong background in forestry extension services. **Dr. Mae Davenport** is the Director of the Center for Changing Landscapes and researches the human dimensions of natural resources and recreation management. **Ms. Cindy Hagley** is an Environmental Quality Extension Educator with Minnesota Sea Grant has extensive experience facilitating the transfer of knowledge from the public to researchers and resource managers.

ORGANIZATION DESCRIPTION

The Natural Resources Research Institute is a University of Minnesota Duluth applied research organization. NRRI's mission is to deliver research solutions to balance Minnesota's economy, resources and environment for resilient communities.