



Environment and Natural Resources Trust Fund

2024 Request for Proposal

General Information

Proposal ID: 2024-261

Proposal Title: Empowering Minnesota Lake Associations to Improve Water Quality

Project Manager Information

Name: Afton Clarke-Sather

Organization: U of MN - Duluth

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Project Basic Information

Project Summary: This project will lay the foundation for accelerated improvements to water quality by documenting for local Lake Associations a set of governance practices and actions that are most effective.

Funds Requested: \$173,000

Proposed Project Completion: June 30, 2026

LCCMR Funding Category: Small Projects (H)

Secondary Category: Water Resources (B)

Project Location

What is the best scale for describing where your work will take place?

Statewide

What is the best scale to describe the area impacted by your work?

Statewide

When will the work impact occur?

During the Project and In the Future

Narrative

Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.

Improving lake water quality requires the coordination of multiple state and local organizations. State agencies identify lakes whose water quality is impaired. Local organizations, including soil and water districts, watershed districts, municipal entities, and private Lake Associations, work together to implement policies and activities that address impairments. Lake Associations are private, voluntary organizations dedicated to improving water quality in individual or closely connected lakes. Collectively membership in Lake Association exceeds that of any environmental advocacy organization in the state, yet relatively little research has examined how these organizations can most effectively improve water quality. Often these citizen groups do not have a good understanding of the best ways to partner with local, state, or federal governmental entities. Their governance structures may not be well suited to leveraging their potential to enhance the power and authority of governmental entities as they work collectively towards the public good of healthy lakes. This lack of capacity can complicate or restrain the appetite of governmental entities to partner authentically with organized citizen groups. Because membership in Lake Associations is voluntary, representatives have limited time and would benefit from a clear set of best practices and effective activities that consistently lead to improved water quality.

What is your proposed solution to the problem or opportunity discussed above? Introduce us to the work you are seeking funding to do. You will be asked to expand on this proposed solution in Activities & Milestones.

We will identify features and actions of Lake Associations that are systematically associated with improvements in lake water quality and condense these as a set of best practices for Lake Associations. The study will combine a survey of Minnesota Lake Associations with historic water quality data from MPCA. Features of Lake Associations, including partnerships with other government units, budgets, volunteer activity, and actions and projects, will be evaluated through a survey of Lake Association representatives. Markers for progress towards water quality improvement, including the development of water quality improvement plans and removal from the impaired waters list, will be identified in MPCA's EDA Surface Water Quality database. Measures of Lake Association features and actions will be combined with markers of progress towards water quality improvement for our analysis. We anticipate that effective civic governance will be as or more important in improving water quality than budgets and membership. We will condense our analysis into a draft set of recommendations and share these findings with key informants. With feedback from experienced Lake Association leaders, we will finalize a documented set of best practices for Lake Associations to prioritize their activities, and disseminate them to help Minnesota accelerate improvements to water quality.

What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?

The results of this study will document best practices of Lake Associations consistently correlated with improvements in water quality. For the state, this project will identify practices and patterns in lake management that can improve the state's ability to remove waters from the impairment list. We will disseminate results in a written online guide for Lake Association Managers and through a presentation at the North American Lake Management Society. This knowledge will accelerate the removal of water quality impairments by empowering other local organizations engaged in water quality improvement by illustrating what techniques are quantitatively associated with improved water quality.

Activities and Milestones

Activity 1: Develop partnerships with Lake Associations and deploy survey to understand features and activities.

Activity Budget: \$48,000

Activity Description:

A survey will be deployed through the membership list of the Minnesota Lakes and Rivers Advocates (see project collaborator), which serves as an association of Lakes Associations. To develop the survey, 20 key informant interviews will be conducted with Lake Association representatives to help shape survey questions. 20 additional interviews will be conducted with state government stakeholders that interface with Lake Associations to understand perceptions of Lake Association practices and effectiveness. Final survey design will be developed in consultation with MN Lakes and Rivers Advocates and key stakeholders. We anticipate that the survey will focus on the broad categories of 1. Governance structures and organization, including how boards are organized and membership activities 2. Activities and actions including measures of both types and volumes of activities undertaken by associations. 3. Partnerships and collaboration between association and other units of government such as counties and watershed districts. 4. Financial information, including overall budgets. 5. Perceived barriers to affecting change and addressing power structures. Surveys will be pretested on a small subset of lake associations before full deployment and deployed both on paper and online.

Activity Milestones:

Description	Approximate Completion Date
Key Informant interviews with Lake Association leaders and local government stakeholders	December 31, 2024
Development of Survey	February 28, 2025
Data gathering through survey	July 31, 2025

Activity 2: Develop indicators for water quality improvements by analyzing data from MPCA EDA Surface Water Quality database

Activity Budget: \$55,000

Activity Description:

The MPCA maintains a publicly available, comprehensive record of water quality for thousands of waterbodies. MPCA regularly updates a list of lakes that are impaired as water quality changes due to management actions, degradation, and new information about applicable standards. We will query this database to develop quantitative and qualitative estimates for the pace of water quality improvements at lakes with and without Lake Associations. We will seek to develop markers for the rate of water quality improvement based on: 1. repeated measurements over time, 2. the length of time that a lake is impaired, 3. the length of time to complete a water quality improvement plan, 4. the length of time between when a plan is completed and when a lake impairment is removed. Broadly available measures including lake water clarity are likely to be available for most lakes; however, the MPCA dataset has some limitations in time resolution and resolution of improvements to water quality. We will attempt to control for the presence of point sources upstream from lakes and focus on those pollutants or pollutant sources that are typically impacted by activities of citizen groups as we assess water quality improvements.

Activity Milestones:

Description	Approximate Completion Date
Consolidate water quality data from MPCA's impaired waters list	August 31, 2025
Develop markers for water quality improvements	November 30, 2025

Activity 3: Develop recommended best practices for Lake Associations and disseminate results through conferences, webinars, and an online guide

Activity Budget: \$70,000

Activity Description:

Measures of Lake Association features and actions gleaned from the survey/interviews will be combined with historic data on water quality and impairment status for lakes in a single database as the basis for our analysis. Because there are wide variations in the pollutant sources that lead to water quality impairments across the state, both water quality and survey data will be stratified based on Minnesota ecoregions. We will match improvement in water quality with features in the structures and actions of Lake Associations to create prioritized best practices with a focus on 1. key features of governance and civic engagement, and 2. most effective actions to improve lake water quality. We will use interviews from government stakeholders who interact with Lake Associations as context for interpreting survey results. Preliminary best practice recommendations will be shared with key participants for feedback prior to revising, publishing, and presenting a list of recommendations. Results from this research will be disseminated by 1. presentations at the Minnesota Lakes Management Symposium, MN Water Resources Conference, and North American Lake Management Society, 2. an applied webinar hosted for lake association leaders about the results, and 3. A written online guide for Lake Association Managers.

Activity Milestones:

Description	Approximate Completion Date
Synthesis of survey and water quality data	December 31, 2025
Dissemination at conferences	April 30, 2026
Webinar and guidebook for Lake Association leaders	June 30, 2026

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Jeff Forester	Minnesota Lakes and Rivers	Collaborator to assist in building relationships with Lake Associations, provide guidance and feedback on survey development, and provide contact info for key informants for Lake Association representatives and representatives from entities that interface with Lake Associations.	Yes
Nathan Johnson	University of Minnesota Duluth	Co-PI; lead Activity 2: research on water quality trends with historical MPCA database.	Yes

Long-Term Implementation and Funding

Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this work be funded?

The long-term goal of this work is to examine how a deeper understanding of local governance structures can inform effective resource management practices. A method for systematically examining the association between local governance features and actions and the consequent effectiveness in improved natural resource management could have far-reaching implications for a variety of disciplines and social/environmental challenges. Future applications could involve the interface between local governance structures and the institutional funding and permitting mechanisms for small scale water treatment plant infrastructure.

Project Manager and Organization Qualifications

Project Manager Name: Afton Clarke-Sather

Job Title: Associate Professor

Provide description of the project manager’s qualifications to manage the proposed project.

Afton Clarke-Sather holds a B.A. in Politics (2004) from Whitman College, an M.S. in Environmental Policy from Michigan Tech (2007) and an Ph.D. In Geography from the University of Colorado (2012). He has 18 years of experience designing and implementing survey and interview research on issues of natural resource management, particularly in the area of water policy. He has extensive experience in combining survey and interview data with biophysical measurements of water resources to improve water governance. His research had addressed agricultural water management, and humans relationship with water. He has managed grants from federal, private, and international sources and is currently an associate professor in the Geography program at the University of Minnesota Duluth.

Organization: U of MN - Duluth

Organization Description:

The University of Minnesota Duluth (UMD) is a public, comprehensive regional university that is part of the University of Minnesota System. Offering 16 bachelor’s degrees in 87 majors and graduate programs in 24 fields, UMD faculty, staff, and students work together to produce high-impact research that benefits people in Minnesota and beyond. Faculty and students in the Water Resources Science and other graduate programs across science and engineering, social science, humanities, and business engage in research that is at the forefront of translating theories into practice. UMD faculty work closely with state, federal, tribal, and industry groups to understand and apply research findings in decision-making. The relatively small campus and interdisciplinary nature of programs and relationships make position UMD well for undertaking research at the interface of natural and social science. This project will be housed in the Geography program, which has strengths in social and spatial sciences, and the Civil Engineering program, which has expertise with water quality.

UMD will partner with Minnesota Lakes and Rivers Advocates, an is an organization of Lake Associations that promotes water quality, aquatic invasive species, and the interests of shoreline owners.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
Nathan Johnson		Co-PI			26.9%	0.2		\$38,710
Afton Clarke-Sather		Project Lead and PI			26.9%	0.2		\$30,268
GRA		Water Resources Science MS			48.6%	1		\$93,287
							Sub Total	\$162,265
Contracts and Services								
MN Lakes and Rivers Advocates	Professional or Technical Service Contract	semi-annual meetings to discuss big picture project goals and findings; monthly or bimonthly Zoom check-ins to hear about progress; various other tasks involving feedback on surveys, phone calls to interview candidates, review of communication & presentation material, conference attendance				0		\$4,000
							Sub Total	\$4,000
Equipment, Tools, and Supplies								
							Sub Total	-
Capital Expenditures								
							Sub Total	-
Acquisitions and Stewardship								
							Sub Total	-
Travel In Minnesota								

	Miles/ Meals/ Lodging	- Year 1: 8 x 250 mile round trips @ \$0.655/mile + \$35 meals = \$1590 Year 2: 4 x 250 mile round trips @ \$0.655/mile + \$35 meals = \$795	Travel to interview lake associations					\$2,385
							Sub Total	\$2,385
Travel Outside Minnesota								
	Conference Registration Miles/ Meals/ Lodging	- Travel to conference (2 attendees): \$500 registration, \$350 plane ticket, 2 hotel nights @ \$165/night, \$55/day meals = \$2580	Travel to conference to present results	X				\$2,657
							Sub Total	\$2,657
Printing and Publication								
	Publication	Costs for publication of paper in open access journal	Costs for printing draft materials for review by partners					\$1,693
							Sub Total	\$1,693
Other Expenses								
							Sub Total	-
							Grand Total	\$173,000

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Travel Outside Minnesota	Conference Registration Miles/Meals/Lodging	- Travel to conference (2 attendees): \$500 registration, \$350 plane ticket, 2 hotel nights @ \$165/night, \$55/day meals = \$2580	Travel to a conference for the express purpose of presenting results of the project

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
In-Kind	University of Minnesota Duluth	Unrecovered indirect costs at 55% of MTDC project costs of \$139,164	Secured	\$76,540
			State Sub Total	\$76,540
Non-State				
			Non State Sub Total	-
			Funds Total	\$76,540

Attachments

Required Attachments

Visual Component

File: [2a3bdc54-6eb.pdf](#)

Alternate Text for Visual Component

Picture: location of 500+ Lake Associations spread across state and public meeting in high school cafeteria; Text: Over 500 Lake Associations Across the State; Lake Associations take action to make lakes cleaner; Lake Associations need best practices. Pictures: Survey + Water Quality Trends = Best Practices....

Optional Attachments

Support Letter, Photos, Media, Other

Title	File
UMN Authorization Letter	f704c3e2-5b5.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

Does your project have potential for royalties, copyrights, patents, or sale of products and assets?

No

Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?

N/A

Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?

N/A

Does your project include original, hypothesis-driven research?

Yes

Does the organization have a fiscal agent for this project?

No

Does your project include the design, construction, or renovation of a building, trail, campground, or other capital asset costing \$10,000 or more?

No

Do you propose using an appropriation from the Environment and Natural Resources Trust Fund to conduct a project that provides children's services, as defined in Minnesota Statutes section 299C.61 Subd.7?

No

