



Environment and Natural Resources Trust Fund

2027 Request for Proposal

General Information

Proposal ID: 2027-346

Proposal Title: Statewide River Forecast System

Project Manager Information

Name: Zachary McEachran

Organization: U of MN - College of Food, Agricultural and Natural Resource Sciences

Office Telephone: (612) 625-1244

Email: mceac015@umn.edu

Project Basic Information

Project Summary: Using state-of-the-art models, we will triple the number of locations in Minnesota with daily flood forecasts to support proactive management of Minnesota's water resources.

ENRTF Funds Requested: \$979,000

Proposed Project Completion: June 30, 2030

LCCMR Funding Category: Water (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.

There are 300+ active river gages in Minnesota, but the National Weather Service only issues flood forecasts for about thirty percent of these locations. For example, across the western Lake Superior watershed (an area the size of Connecticut) there is only one active forecast, despite the region's criticality to the State's natural-resources economy, tourism, recreation, and commerce. Without forecasts, these locations are vulnerable to flooding without notice, forcing water resource managers, recreation-dependent businesses, and state and federal authorities to react to disasters rather than proactively prepare, with potentially life-or-death implications for Minnesota's communities and aquatic ecosystems. Reservoir operators across the state managing lake levels have limited access to forecasts to inform critical operations. A children's summer camp situated downstream of a 106-year-old dam near Rochester has no flood forecast, creating the potential for a Texas-scale disaster. Statewide, trout anglers deciding which stream to fish are unaware where a flash flood may hit. At the same time, recent advances in river modeling make it possible to expand accurate flood prediction well beyond the current network. The Statewide River Forecast System will make flood forecasts available throughout the state, and provide early warning to protect, conserve, and enhance ecosystems, infrastructure, and communities.

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.

The proposed Statewide River Forecast System will provide daily river-level forecasts at river gage locations across Minnesota. This will increase the number of locations where forecasts are available in Minnesota by 300+ percent. The new river forecast system leverages our state-of-the-art modeling approach that integrates river science and artificial intelligence (AI) to expand the current network of available forecasts and improve those already in place. This nation-leading method developed by our team has been shown to match or exceed the accuracy of official National Weather Service (NWS) flood forecasts, and can be efficiently scaled statewide.

Forecasts will be delivered through a public dashboard hosted by University of Minnesota Extension, and formatted to integrate seamlessly with existing NWS systems to enhance forecast accuracy where the public already seeks this information. We will publish a long-term dataset showing how the approach would have performed during historic floods, demonstrating its reliability. Finally, we will deliver targeted Extension resources to support flood preparedness, response, and recovery through a dedicated River Basin Roadshow. This Roadshow will include targeted demonstrations of the forecasting tool in each of the major river basins in Minnesota, from International Falls to Zumbro Falls.

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?

This project protects and enhances Minnesota's water resources by providing forecasts needed to proactively manage for floods currently unforeseeable at 70% of gaged river locations. Outcomes include a freely available, statewide dashboard offering daily forecasts and a long-term performance dataset, and Extension education to support water and natural resource resilience. Forecasts will provide insights for conservation projects, inform dam operations for downstream ecosystems, and help safeguard drinking water. We will build resiliency through our statewide River Basin Roadshow, engaging users like Gitche Gumee Trout Unlimited on the North Shore and the Metro Flood Diversion Authority in the Red River Basin.

Activities and Milestones

Activity 1: Develop the Statewide River Forecast System

Activity Budget: \$503,921

Activity Description:

This activity establishes a Statewide River Forecast System, providing seven-day river forecasts - produced daily - at gage locations throughout Minnesota. To produce these forecasts, we will compile river gage and atmospheric information, and calibrate the modeling approach to local river reaches. The modeling approach itself will be our peer-reviewed, nation-leading model that combines river physics with the predictive power of AI.

We will also improve forecast accuracy by updating this approach to better reflect the physics of how water flows within channels, creating a “channel-aware” river model tailored to Minnesota-specific conditions. For example, failure to capture these processes contributed to underestimates in official forecasts during the 1997 Red River flood, causing devastating results. We will produce forecasts using this channel-aware model in select watersheds where the new methods demonstrate skill improvements and with adequate data availability.

Finally, we will validate the river model by providing a long-term dataset to assess how these new forecasts would have performed for historical Minnesota floods (e.g., 2022 Rainy River, 2024 Minnesota River, etc.). This dataset, which will be published in the forecast dashboard (Activity 2) will provide transparency for stakeholders to build trust in these new forecasts.

Activity Milestones:

Description	Approximate Completion Date
Train, validate, and test AI river models	December 31, 2028
Finalize web workflows to handle real-time data and execute the model on a state-wide scale	March 31, 2029
Start delivering daily flood forecasts throughout the state before spring flood season 2029	April 30, 2029
Submit scientific journal article on advancements in “channel-aware” forecasting approach	December 31, 2029
Deploy improved “channel aware” forecasting approach in select watersheds	April 30, 2030
Generate and publish historical flood performance dataset to finalized Dashboard produced in Activity 2	June 30, 2030

Activity 2: Develop online interactive dashboard and flood early warning extension education

Activity Budget: \$475,079

Activity Description:

To increase access to, and use of, the new Statewide River Forecast System, we will develop an easy-to-use online interactive dashboard displaying daily forecast information, and the long-term model performance dataset. We will pair this dashboard with tailored Extension resources on flood preparedness, response, and recovery for use by Minnesota communities and water resource managers. Online articles and modules will build user “forecast fluency” and highlight resiliency solutions for flood and stormwater management, including the implementation of nature-based solutions to mitigate flood impacts.

Active demonstrations of the dashboard and flood-related extension education will travel to users in a statewide “River Basin Roadshow”, with targeted engagement occurring in each of the major river basins in Minnesota. Demonstrations will be offered to entities such as the Metro Flood Diversion Authority for the Red River, US Army Corps of Engineers Mississippi River Regulators, and the Gitche Gumee Chapter of Trout Unlimited for the North Shore (see Supplemental Attachments).

Outputs include an online interactive forecast dashboard, educational modules, and eight River Basin Roadshow events. These tools will build technical capacity and enhance public safety. Outcomes will be evaluated by tracking dashboard engagement and documenting stakeholder needs and feedback.

Activity Milestones:

Description	Approximate Completion Date
Develop and share Extension resources about forecast-informed decision-making	December 31, 2028
Publish online interactive Statewide River Forecast System dashboard before spring flood season of 2029	April 30, 2029
River Basin Roadshow events in each of Minnesota's major river basins (ongoing, 8 events total)	June 30, 2030
Deliver Statewide River Forecast System for ongoing delivery of forecasts, long-term data, and educational resources	June 30, 2030

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Heidi Roop	University of Minnesota Climate Adaptation Partnership	Roop (Associate Professor) will be co-PI with associated project leadership, supervision of research hydrologist and flood education program specialist, provide expertise on Extension program development, and advise on overall program design	Yes
Vipin Kumar	University of Minnesota College of Science and Engineering, Computer Science Department	Kumar (computer science Professor) will be co-Investigator with an advisory and consultative role for the development of advanced computational methods, and advisor of the graduate student.	Yes
Zachary McEachran	University of Minnesota Climate Adaptation Partnership	McEachran (Research Hydrologist) will be PI with associated project leadership, supervision and senior researcher for the technical development of the research including the postdoctoral associate.	Yes
Maria Tomczik	University of Minnesota Climate Adaptation Partnership	Tomczik (Senior Program Coordinator) will support project management and reporting.	Yes
Postdoctoral Associate	University of Minnesota Climate Adaptation Partnership	Postdoctoral Associate will lead technical model development/coding of the river model(s) with McEachran's supervision and the consultative collaboration and support of Kumar and Graduate Student.	Yes
Dena Coffman	University of Minnesota Climate Adaptation Partnership	Coffman (GIS Specialist) will help lead development of the River Forecast System dashboard.	Yes
Flood Education Program Specialist	University of Minnesota Climate Adaptation Partnership	Flood Education Program Specialist (TBH) will lead the River Basin Roadshow, stakeholder engagement, and the development of educational materials.	Yes
Graduate Student (computer science)	University of Minnesota College of Science and Engineering, Computer Science Department	Graduate Student (computer science) will contribute towards technical model development of the river model(s), and consult with the postdoctoral associate on technical computer science matters.	Yes
Nathan Meyer	University of Minnesota Climate Adaptation Partnership	Nathan Meyer will consult on Extension Education development by the Flood Education Program Specialist	No
Ryan Harp	University of Minnesota	Ryan Harp will use his expertise in NOAA weather forecasting products to advise what forcings to use for the hydrologic model.	No

	Climate Adaptation Partnership		
Christy Marsden	University of Minnesota Climate Adaptation Partnership	Christy Marsden will use her curriculum development expertise to help advise the Flood Education Program Specialist on curriculum development for extension education and River Basin Roadshow educational products.	No

Dissemination

Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.

We intend to conduct our development activities according to open-source principles, openly sharing our data via University or hydrology-specific data platforms in commonly used scientific formats. We will also write our computer code in widely-used modern programming languages and share all code via open source licensing (e.g., on GitHub). These dissemination routes are available to the research team as (no additional cost) institutional services at the University. Finally, all scientific publications will be published via Open Access so that they are available for the public to read and scientists to incorporate into their own work. These measures will ensure that technical users and the scientific community can build on our work to improve management of resources in Minnesota. Additionally, the real-time forecasts generated as part of this research will be published to a Dashboard that will be developed with geospatial expertise both internal to the project team and via contracting a firm that has expertise in generating professional-grade interfaces. We will present on the project at conferences that are widely attended by Minnesota's water and natural resource professionals (the Minnesota Water Resources Conference, and the Minnesota Association of Floodplain Managers). Finally, our River Basin Roadshow will engage with technical users throughout the state to help integrate our forecast products into water resource management workflows. Our project includes an entire Activity devoted to education, Extension, and dissemination (Activity 2), which will ensure our project not only provides data, but builds Minnesota's technical capacity to use flood forecast data to proactively protect, conserve, and enhance our water resources in real time.

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 Statewide River Forecast System will include an online dashboard that will be accessible in an ongoing manner through the University of Minnesota Extension's Climate Adaptation Partnership. Once developed, it is expected the maintenance costs of the forecast system will be minimal. We will also publish our modeling results in NWS-standard formats so they can be readily ingested into federal workflows, potentially expanding the number of hosts of the dashboard, and provide an avenue for potential future funding. It is expected that the River Basin Roadshow training opportunities will be able to be offered by Extension in an ongoing manner.

Project Manager and Organization Qualifications

Project Manager Name: Zachary McEachran

Job Title: Research Hydrologist

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

The project manager is uniquely qualified to oversee the proposed project. McEachran's relevant professional

experience includes three years in the National Weather Service as an operational flood forecaster and a developer of the National Water Model. His doctorate also focused on northern Minnesota flooding and he has served as an environmental consultant supporting flood control projects in Minnesota. Now at the University of Minnesota, he continues to develop the research and modeling to support flood risk assessment and resiliency at multiple scales in Minnesota, and regionally. His recent publication in the journal *Water Resources Research* is nationally recognized for significantly improving forecast accuracy and moving forward what is considered state-of-the-art by the broader scientific community for flood forecasting. This work was informed directly by his experience as a river forecaster in Minnesota. He won a NOAA Administrator's Award for outstanding hydrology support during the record 2022 flooding in the Rainy/Lake of the Woods river basin. At that time, there were no official forecasts in the Rainy River basin in Minnesota offered by NWS. By the end of his tenure, three forecast points were added, and his real-time development efforts provided additional guidance to emergency management where official forecasts were not available. These efforts illustrate that he is able to both contribute to our long-term scientific understanding of the processes at play in flood forecasting, while also supporting on-the-ground response efforts. Finally, he has managed several complex research and development projects throughout his career, from contract management in consulting to multi-agency research efforts, and overseeing the technical development of modeling strategies in river basins from Minnesota to Michigan to Missouri, from small creeks to large, navigable rivers. This has included overseeing staff, junior researchers, and an entire program of product delivery.

Organization: U of MN - College of Food, Agricultural and Natural Resource Sciences

Organization Description:

The mission of the College of Food, Agricultural, and Natural Resource Sciences at the University of Minnesota is to inspire minds, nourish people, and enhance the natural environment.

University of Minnesota Extension discovers science-based solutions, delivers practical education, and engages Minnesotans to build a better future.

Affiliated with both the College of Food, Agricultural and Natural Resource Sciences and University of Minnesota Extension, the Climate Adaptation Partnership performs applied research on extreme weather risks and flooding while also offering hands-on education, technical assistance, and support to individuals, businesses, and organizations across Minnesota. As a program recognized nationally for its innovative and high-quality approach, the Partnership's statewide team serves as a trusted partner in helping to foster and sustain resilient communities, landscapes, and economies across the state.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
Research Hydrologist (McEachran)		project leadership, supervision and senior researcher for the technical development of the research including the postdoctoral associate.			36.6%	1.5		\$230,602
Associate Professor (Roop)		project leadership, supervision of research hydrologist and extension educator, provide expertise on Extension program development, and advise on overall program design			36.6%	0.36		\$87,865
Professor (Kumar)		advisory and consultative role for the development of advanced computational methods, and advisor of the graduate student			36.6%	0.06		\$37,379
Flood Education Program Specialist (TBH)		lead the River Basin Roadshow, stakeholder engagement, and the development of educational materials.			36.6%	0.24		\$40,355
Postdoctoral Associate (TBH)		lead technical model development/coding of the river model(s) with Research Hydrologist's supervision and the consultative collaboration and support of Kumar and Graduate Student.			26.1%	2.49		\$250,291
Senior Program Coordinator (Tomczik)		support project management and reporting.			32.3%	0.24		\$24,490
GIS Specialist (Coffman)		help lead development of the River Forecast System dashboard.			32.3%	0.99		\$111,648
Graduate Student (TBD)		(computer science) will contribute towards technical model development of the river model(s), and consult with the postdoctoral associate on technical computer science matters.			50%	0.39		\$53,512
							Sub Total	\$836,142
Contracts and Services								
TBD	Service Contract	We request \$100,000 to transform University research into a stable public dashboard. Contracted expert engineering, including geospatial development and cloud computing, ensures the system operates automatically, handles high traffic without crashing, and remains compatible with				0.2		\$100,000

		state systems. This converts complex science into a dependable, long-term tool for all Minnesotans.						
Minnesota Supercomputing Institute	Internal services or fees (uncommon)	We request \$25,710 for Minnesota Supercomputing Institute (MSI) resources. High-performance computing (MSI Option 5) provides on-demand computational access essential for developing large-domain artificial intelligence hydrologic models. Funding covers 10TB of annual data storage and specialized R&D computing power required to process and calibrate the high volume of data.		X		0		\$25,710
							Sub Total	\$125,710
Equipment, Tools, and Supplies								
							Sub Total	-
Capital Equipment								
							Sub Total	-
Acquisitions and Stewardship								
							Sub Total	-
Travel In Minnesota								
	Miles/ Meals/ Lodging	River Basin Roadshow Year 1. Quantity: 2 trips for 2 people, with 2 days + 1 night. Average location of Duluth, MN used. Using a 4%-escalated version of the baseline 2026 standard rates for travel: Minnesota Nonrep. Employees Plan meal max per diem of \$43 per day (estimated \$45/day when project starts in 2027), GSA lodging rate of \$159 (estimated \$165 when project starts in 2027), IRS mileage rate of \$0.725/mile (estimated \$0.754 when project starts in 2027), and \$10 per person per day for parking. For a 2 day, 1 night stay at these rates in 2027, that is \$1,002 PER TRIP * 2	Active demonstrations of the dashboard and flood-related extension education will travel to users in a statewide “River Basin Roadshow”, with targeted engagement occurring in each of the major river basins in Minnesota. Demonstrations will be offered to entities such as the Metro Flood Diversion Authority for the Red River, US Army Corps of Engineers Mississippi River Regulators, and the Gitche Gume Chapter of Trout					\$2,004

		trips in year 1 = \$2004 in River Basin Roadshow, Year 1.	Unlimited for the North Shore (see Supplemental Attachments).					
	Miles/ Meals/ Lodging	River Basin Roadshow Year 2. Quantity: 3 trips for 2 people, with 2 days + 1 night. Average location of Duluth, MN used. Using a 4%-escalated version of the baseline 2027 PER TRIP calculation outlined in Year 1 of the River Basin Roadshow (\$1,002 per trip in Year 1). TOTAL = \$3,126	Active demonstrations of the dashboard and flood-related extension education will travel to users in a statewide “River Basin Roadshow”, with targeted engagement occurring in each of the major river basins in Minnesota. Demonstrations will be offered to entities such as the Metro Flood Diversion Authority for the Red River, US Army Corps of Engineers Mississippi River Regulators, and the Gitche Gumee Chapter of Trout Unlimited for the North Shore (see Supplemental Attachments).					\$3,126
	Miles/ Meals/ Lodging	River Basin Roadshow Year 3. Quantity: 3 trips for 2 people, with 2 days + 1 night. Average location of Duluth, MN used. Using a 4%-per-year-escalated version of the 2027 PER TRIP calculation outlined in Year 1 of the River Basin Roadshow (\$1,002 per trip in Year 1). TOTAL = \$3,251	Active demonstrations of the dashboard and flood-related extension education will travel to users in a statewide “River Basin Roadshow”, with targeted engagement occurring in each of the major river basins in Minnesota. Demonstrations will be offered to entities such as the Metro Flood Diversion Authority for the Red River, US Army Corps of Engineers Mississippi River Regulators, and the Gitche Gume Chapter of Trout Unlimited for the North Shore (see Supplemental Attachments).					\$3,251
	Conference Registration Miles/ Meals/ Lodging	Minnesota Water Resource Conference in St. Paul, Minnesota. This conference will be attended by one team member to specifically present on project results and development. Registration in 2026 was \$500, and using \$20/day for parking in 2026. Because the project starts on July 1 2027, I am multiplying each of those rates by 4% to get a 2027 estimate. No meals or overnights included in the budget because it is in the home city of UMN St Paul.	The Minnesota water resource conference is popularly attended by water resource management professionals in Minnesota, and offers an excellent venue to introduce the project, present on preliminary results in Year 1, and maximize the use and impact of the tool for Minnesotans. Conference					\$562

			travel will be to present on results and advance the project goals.					
	Conference Registration Miles/ Meals/ Lodging	For one team member to present results at the Minnesota Association of Floodplain Managers conference in Year 3 of the project. This conference moves around, but we are using the 2026 location of Rochester, Minnesota to estimate costs. Also using a 4%-escalated version of the baseline 2026 standard rates for travel PER YEAR. 2026 BASELINE RATES: Minnesota Nonrep. Employees Plan meal max per diem of \$43 per day, GSA lodging rate of \$127 , IRS mileage rate of \$0.725/mile, and \$20 per day for parking. For a 2 day, 1 night stay at these rates in 2029, including conference registration, that is \$585 total.	Funds are requested for travel for one project team member to attend the Minnesota Association of Floodplain Managers Annual Conference in Year 3 to present project results. This conference is the primary professional meeting in Minnesota focused on flood risk management and brings together floodplain managers, state agency staff, watershed districts, engineers, and local government officials responsible for flood planning and mitigation. Presenting project results at this meeting will directly disseminate findings to practitioners responsible for implementing flood management and hazard mitigation across Minnesota.					\$585
							Sub Total	\$9,528
Travel Outside Minnesota								
							Sub Total	-
Printing and Publication								
	Publication	Open access article publication charge	Paying this fee allows our research findings to be published "open access" in the peer-reviewed scientific literature, ensuring broad access by Minnesotans to our work and accelerating the ability for the scientific community to build on and enhance our work.	X				\$5,000
	Printing	Printing of educational materials for eight "River Basin Roadshow" workshops held across Minnesota. Materials will include high-resolution large-format watershed maps, participant worksheet packets, and instructional posters used	Funds are requested to print materials for eight statewide River Basin Roadshow workshops. Large-format maps, participant worksheets, and posters will enable hands-on					\$2,620

		to explain flood forecasting concepts and model outputs. Estimated materials per workshop could be: Two large-format watershed maps for group discussion and spatial analysis (~\$150 total) Twenty-five printed worksheet packets for participant exercises (~\$5 each; ~\$125 total) Five instructional posters or visual aids illustrating flood forecasting concepts (~\$10 each; ~\$50 total) Estimated printing cost is ~\$325 per workshop. For eight workshops, the total printing cost is rounded to \$2,620.	exercises with watershed data and flood forecasts, supporting collaborative learning and helping Minnesota water managers and floodplain practitioners apply project results in their local watersheds. Printing ensures all participants can actively engage regardless of technology availability, and supports the learning of "digital-heavy" concepts in forecasting and computer modeling in a more user-friendly and tactile way.					
							Sub Total	\$7,620
Other Expenses								
							Sub Total	-
							Grand Total	\$979,000

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Contracts and Services - Minnesota Supercomputing Institute	Internal services or fees (uncommon)	We request \$25,710 for Minnesota Supercomputing Institute (MSI) resources. High-performance computing (MSI Option 5) provides on-demand computational access essential for developing large-domain artificial intelligence hydrologic models. Funding covers 10TB of annual data storage and specialized R&D computing power required to process and calibrate the high volume of data.	We request funding for high performance computing at the Minnesota Supercomputing Institute (MSI). This high-level computational ability, especially the high performance dedicated computing in Years 1-2 when the computer models are most in development rather than execution, is needed to train, test, and validate river forecasting models based on artificial intelligence and machine learning approaches, trained on high volumes of data on state of the art "GPU" chips. Access to on-demand GPU computing is needed to develop these large-domain hydrologic models using state of the art approaches. These methods would not be possible to implement without state of the art computing, and not having dedicated access to on-demand compute clusters could inhibit our ability to hit deadlines and operationalize the forecasting model on-time and on-budget. Cost breakdown is based on 2026 Baseline values with escalation of 4% per year: This includes data storage of \$104.06/TB/Yr * 10TB = \$1,040 per year, and dedicated computing expenses in Year 1 and Year 2 for MSI Option 5 (125 cores AMD "Milan" CPU; 512GB of memory; 8xNVIDIA A40 GPUs), with one year costing \$10,527 in 2026. We include an escalation of 4% per year for Year 1 as the project starts on July 1, 2027, and increase the cost 4% per year for inflation/cost increases.
Printing and Publication	Publication	Open access article publication charge	Direct Project Necessity & Public Benefit: Standard academic publishing places state-funded research behind "paywalls," limiting the public and nonacademic practitioners from engaging with the work. This \$5,000 fee is necessary to secure Open Access status, ensuring that our peer-reviewed models, and "channel-aware" forecasting methodologies are immediately and perpetually available to the public, state agencies (DNR/PCA), and local water managers without cost. Alignment with Dissemination Goals: This expense is a critical component of our Activity 2 dissemination strategy. By removing barriers to entry, we accelerate the adoption of our "Statewide River Forecast System" by technical stakeholders, such as the Metro Flood Diversion Authority and Trout Unlimited, who require the full underlying scientific validation to implement these tools in local safety and resiliency planning. This investment maximizes the "Return on Investment" for the ENRTF by ensuring the research reaches the widest possible audience of Minnesota practitioners and decision-makers.

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
			State Sub Total	-
Non-State				
			Non State Sub Total	-
			Funds Total	-

Total Project Cost: \$979,000

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component

File: [dd5e1203-838.pdf](#)

Alternate Text for Visual Component

This graphic illustrates the UMN Statewide River Forecast System. A Minnesota map identifies current (blue dots) and proposed (red dots) forecast sites. The model addresses the 70% of gages lacking forecasts, aiming to triple coverage via a public dashboard and seven-day forecasts, produced daily....

Supplemental Attachments

Capital Project Questionnaire, Budget Supplements, Support Letter, Photos, Media, Other

Title	File
UMN Sponsored Projects Administration	22af8b0d-eb8.pdf
NWS Duluth Recommendation	d0e35150-680.pdf
Metro Flood Diversion Authority Support Letter	66d48857-374.pdf
Minnesota Department of Health Drinking Water Support Letter	30a20d70-0b6.pdf
City of Le Sueur Support Letter	83b5cde3-909.pdf
Gitche Gumee Trout Unlimited Support Letter	2d3d2d96-1d4.pdf
US Army Corps of Engineers factual statement on mission and use of forecasts	df9645f7-c9d.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

Do you understand that travel expenses are only approved if they follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?

Yes, I understand the UMN Policy on travel applies.

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

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 pre-design, design, construction, or renovation of a building, trail, campground, or other fixed capital asset costing \$10,000 or more or large-scale stream or wetland restoration?

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 as "the provision of care, treatment, education, training, instruction, or recreation to children")?

No

Provide the name(s) and organization(s) of additional individuals assisting in the completion of this proposal:

University of Minnesota, Sponsored Projects Administration (see attached letter)

Do you understand that a named service contract does not constitute a funder-designated subrecipient or approval of a sole-source contract? In other words, a service contract entity is only approved if it has been selected according to the contracting rules identified in state law and policy for organizations that receive ENRTF funds through direct appropriations, or in the DNR's reimbursement manual for non-state organizations. These rules may include competitive bidding and prevailing wage requirements

Yes, I understand