



Environment and Natural Resources Trust Fund

2027 Request for Proposal

General Information

Proposal ID: 2027-440

Proposal Title: Dam Failure and the Future Blue Earth River

Project Manager Information

Name: Phillip Larson

Organization: Minnesota State Colleges and Universities - Minnesota State University Mankato

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Project Basic Information

Project Summary: Monitor and assess geomorphic and ecological response to the Rapidan Dam Failure, Blue Earth River valley. Surveying and monitoring through the period of proposed dam removal and river modification.

ENRTF Funds Requested: \$415,000

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?

Region(s): SE

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.

Minnesota's aging dams pose risk, with many of its ~650 dams needing repair and monitoring. On June 24, 2024, an avulsive dam failure occurred at Rapidan Dam, Blue Earth River. This released >1,750,000 m³ of sediment from within 2 km upstream of the dam, based on our surveys. Our team from MNSU, University of Wisconsin–Eau Claire (UWEC), Minnesota DNR (DNR), and University of Minnesota (UMN) have monitored the river's response, funded by an expiring National Science Foundation award to assess the immediate impacts of dam failure.

Our results reveal ongoing geomorphic change, including tributary and hillslope erosion, valley incision, excavation of reservoir sediments, and dynamic shifts in river bed and planform due to increased sediment transport. These processes are impacting aquatic habitats and fish passage and leave much uncertainty about the future river.

With changes still unfolding and plans to remove the dam and modify the river corridor, continued monitoring is essential to assess change in the context of fluvial system evolution and support MN DNR efforts in habitat and biodiversity management. This research will inform government officials in adapting conservation plans for post-dam sediment loading, while enhancing communication of risks and management options for dams statewide.

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.

Our prior results, existing uncertainties regarding the ongoing change to the river, and associated impacts on riverine ecosystems —compounded by planned dam removal and river modification — requires intensified, continued monitoring of the Blue Earth River system. We propose a data-driven approach that will quantify sediment flux, geomorphic change, and ecological impact over time, while tracking these factors through the forthcoming engineered modifications.

Our team will build on existing efforts to:

- 1) Utilize drones, satellite imagery, and archived datasets to collect new, compile prior, and analyze all remotely sensed data, quantifying tributary and hillslope erosion, valley incision, reservoir sediment excavation, and planform changes in the context of geologic processes and dam failure;
- 2) Conduct enhanced field cross-sectional and bed sediment surveys to monitor sediment transport dynamics —directly informing on riverine habitat quality and fish passage;
- 3) Partner with DNR to assess ecological change and impact from sediment loading and geomorphic change, supporting mitigation strategies for habitat restoration and biodiversity in the post-dam river;
- 4) Attend, present at, and host meetings to disseminate findings to local and state governmental agencies, consultants, and managers, guiding adaptive conservation and risk communication for the Blue Earth River and further afield regarding Minnesota's aging dams.

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?

We will deliver data-driven understanding of ongoing change on the Blue Earth River. Results will aid in protecting and conserving riverine habitats and management of the Blue Earth system for all Minnesotans.

Outcomes include:

- 1) Quantified river and erosional change, guiding DNR and Blue Earth County in mitigating loading, protecting water quality, and restoring riverine habitats and fish passage amid ongoing changes and dam removal.
- 2) Generalized framework for predicting river evolution and recovery after dam failure or removal, enabling communities to develop mitigation strategies that minimize habitat destruction, sediment releases, and biodiversity loss while promoting river conservation and enhancement.

Activities and Milestones

Activity 1: Quantifying erosional and planform dynamics with remotely-sensed data

Activity Budget: \$63,121

Activity Description:

Building on prior data; our team will continue quantifying both erosional and planform change dynamics within the Blue Earth River system. This will occur upstream of the former dam site to the County Road 34 bridge. It will also occur downstream of the dam site to near the confluence with the Minnesota River. Drone flights will be conducted on a bi-monthly basis for the three-year duration of this project, ending in June of 2030. Our prior datasets will be compiled with this new data and compared to pre-failure LiDAR digital elevation data to produce both overall totals and time-series estimates of volumetric erosional flux and planform change (e.g., channel width, length, lateral migration, sinuosity) within the Blue Earth River valley. Observations of channel planform and valley evolution will document erosional and sediment transport mechanisms, characteristics, and locations to aid in river management for governmental agencies and their consultants. These locations will be ground-truthed in the field to verify remote interpretations. Drone technology required for this activity is available at UWEC and provided to this project without additional cost. Prior data produced by our team for this activity is also provided at no additional cost.

Activity Milestones:

Description	Approximate Completion Date
6 drone flights per year and imagery processing. Change calculations will occur after each interval.	June 30, 2030
Compilation of datasets and analysis to quantify total change and observations.	June 30, 2030

Activity 2: Assessing cross-sectional and bed morphology, and bed sediment change.

Activity Budget: \$124,978

Activity Description:

DNR partners have conducted repeat surveys at key river cross-sections since dam failure. Given resources and time, the combined extent and frequency of cross-section surveys was limited, but their observations produced critical information about the post-dam river adjustment. It revealed a generally aggrading bed downstream of the dam, but also significant variability in the bed morphology through time. Initial ecologic impact of the dramatic bed morphology change appears to be reduced fish habitat and limited passage upstream.

Here, we propose to not only continue these surveys in collaboration with the DNR but expand them in both quantity and frequency of data collection to fully assess sediment flux through the river corridor and ongoing change to the river bed. This data can be compared with our analysis in Activity 1 to paint a three-dimensional view of river adjustment critical to understanding the impact on aquatic habitat and passage. Cross-sectional data will be collected with high resolution Global Navigation Satellite Systems at low-flow conditions at locations identified with our DNR partners. While collecting cross-sectional data, we will measure gravel grain-size distributions in the field and collect bed-sediment samples for further analysis in the EARTH Systems Lab to assess the character of sediment

Activity Milestones:

Description	Approximate Completion Date
Cross sectional survey and bed sampling (2x per year; fall and spring/summer)	June 30, 2030
Post data collection processing and change quantification in GIS.	June 30, 2030
Data compilation and total change calculation over time.	June 30, 2030

Activity 3: Placing fluvial system adjustment to dam failure and ongoing modifications to the river within the natural geologic context

Activity Budget: \$104,166

Activity Description:

Research in the tributary Le Sueur River valley (Gran et al., 2013) suggests the Blue Earth River is adjusting to geologic processes produced by the large glacial meltwater floods that carved the Minnesota River valley ~13,400 years ago. The Rapidan Dam disrupted the river's geologic evolution by creating an artificial impoundment to flow and sediment transport. After the dam was bypassed, the river has been trying to reestablish a more natural course. To understand the magnitude of change produced by dam failure and the natural condition the river is trying to reach, assessing the geologic context of the river is critical. This is also imperative to understand the potential impact and long-term suitability of upcoming dam removal and engineered adjustments being proposed.

We propose to link data produced in Activities 1 and 2 to the geologic state of the river in order to appropriately and effectively contextualize the adjustments of the river associated with dam failure. This will be done through geomorphic mapping and analysis from field observations and LiDAR datasets, coupled with establishing a geochronologic record utilizing optical stimulated luminescence dating (OSL) of these landforms within proximity to and downstream of the Rapidan Dam site.

Activity Milestones:

Description	Approximate Completion Date
Mapping and landform analysis from field and LIDAR data/observations	September 30, 2028
Geochronology (OSL) sampling	November 30, 2028
Geochronology (OSL) lab analysis	November 30, 2029
River adjustment contextualized within geologic context	June 30, 2030

Activity 4: Riverine ecological change and impact to dam failure and river modification

Activity Budget: \$74,903

Activity Description:

Activity 4 will link the changes in riverine ecology to the adjustment of the river in response to failure of the Rapidan Dam. This will take place in two facets:

1) Reservoir ecology: Following drainage of the Rapidan Dam reservoir, erosion of sediment excavated the reservoir basin and the river rechannelized. Portions of the reservoir are no longer inundated as a result. Preliminary observations reveal rapid revegetation throughout these newly exposed areas. To aid the DNR, we propose to conduct ecological surveys to determine the character and spatial extent of vegetation that is repopulating the former reservoir. Concerns about invasive species versus native vegetation establishment can be addressed and government entities can determine the best course of action for ecosystem health. This is also critical for slope stability and sediment flux as the vegetative cover could stabilize susceptible hillslopes.

2) Fish habitat and passage: Led by DNR partners, we plan to collect data on river characteristics along a 2000ft reach downstream of Rapidan Dam representative of habitat conditions now present in the lower Blue Earth River. This data will be integrated by DNR collaborators into a modified Instream Flow Incremental Method to assess fish habitat post dam failure.

Activity Milestones:

Description	Approximate Completion Date
Reservoir flora ecological survey (2x per year)	June 30, 2030
Fish habitat and passage survey. Integration into Instream Flow Incremental Method with DNR	June 30, 2030
Compile survey results and deliver data to DNR	June 30, 2030

Activity 5: Communication of results and integration with Minnesota Department of Natural Resources

Activity Budget: \$47,832

Activity Description:

Effectively communicate our findings to both the public and relevant governmental agencies involved in decision making and management of the future Blue Earth River, in Activity 5 we propose several mechanisms for communication and dissemination of the work:

- 1) Attend the 2028/2029 DNR Dam Removal Workshop. Reaching professionals concerned with dam management and removal.
- 2) Attend the Upper Midwest Stream Restoration Symposium. Reaching professionals concerned with stream restoration.
- 3) Work with DNR collaborators and their available data to place the Rapidan Dam failure in context of other dams in Minnesota that have been removed, either intentionally or via failure. This synthesis and contextualization will support future management and/or removal efforts in major watersheds across the state.
- 4) Host a “Kick Off” and “Blue Earth River” symposium at MNSU during the first and final year of the project. For the Blue Earth River Symposium, we will reach out to agencies and entities interested or relevant to this work to share our findings and address any questions or concerns about our work.
- 5) Publish all data and disseminated products with the Data Repository for the University of Minnesota (DRUM). This will allow all results and datasets to be publicly available

Activity Milestones:

Description	Approximate Completion Date
DNR Dam Removal Workshop - attend, present at	October 31, 2029
Upper Midwest Stream Restoration Symposium (to reach stream restoration professionals in the Upper Midwest)	February 28, 2030
Host the Blue Earth River Symposium in Mankato	May 31, 2030
Work with DNR to supply data and results. Integration of results with statewide dams information.	June 30, 2030
Compiled datasets submitted to DRUM database at University of Minnesota	June 30, 2030

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Mark Ellefson	Minnesota Department of Natural Resources	MN DNR Co-PI. Continued cross-sectional surveys and field monitoring. Geospatial data compilation and analysis. Connecting data to ecological impacts through MN DNR. Will contribute to dissemination and communication of findings.	No
Jon Lore	Minnesota Department of Natural Resources	MN DNR Co-PI; Continued cross-sectional surveys and field monitoring. Connecting data to ecological impacts through MN DNR. Will contribute to dissemination and communication of findings	No
Karen Gran	University of Minnesota Duluth	Subcontract PI; Contributed to study design. Will aid in data collection, interpretation and assessment of change, bedload transport data, and longitudinal profile evolution of the Blue Earth River. Will mentor UMD grad student and co-mentor MNSU grad students on the project. Will contribute to dissemination and communication of results.	Yes
Andrew Wickert	University of Minnesota Twin Cities	Subcontract Co-PI; Contributed to study design. Will aid in data collection, interpretation and assessment of geomorphic change, bedload transport data, and longitudinal profile evolution of the Blue Earth River. Will co-mentor UMD and MNSU grad students on the project. Will contribute to dissemination and communication of findings.	Yes
Zachary Hilgendorf	University of Wisconsin Eau Claire	Subcontract PI; Contributed to study design. Lead data collection and analysis on remotely sensed data derived from drones and aerial imagery. Will contribute to cross-sectional data analysis and ecological surveys. Will mentor UWEC undergrads and co-mentor MNSU grad students on the project. Will contribute to dissemination and communication of findings.	Yes

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.

Work will be disseminated through:

M.S. Theses that are publicly available after publication

Conference Presentations at academic conference

DNR Dam Workshop attendance and presentations

DRUM database at U of Minnesota

Collaboration with MN DNR, where all data will be directly shared with them.

Upper Midwest Stream Restoration Symposium attendance and presentations

Blue Earth River Symposium hosted at MNSU final year of project.

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?

Data will be submitted to the data repository for the University of Minnesota (DRUM) and compiled into theses and

peer-reviewed manuscript(s) for publication. Thus, all datasets will be publicly available.

Our results will be integrated with objectives at the DNR focused on riverine habitat conservation and management. In addition, our work will inform DNR teams focused on future dam failures and removals. Thus, all data produced will be provided to the public and DNR (Activity 5) and can be utilized by them in perpetuity.

At this time, we do not expect further funding to be needed beyond this project.

Project Manager and Organization Qualifications

Project Manager Name: Phillip Larson

Job Title: Professor; Director of EARTH Systems Laboratory

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

Larson has earned a bachelor's degree in Geography and Geology (double major) from the University of Wisconsin - Eau Claire. In addition, Larson earned graduate degrees (masters and doctoral) studying geomorphology/earth surface processes, with a focus on river systems and drainage basin evolution, from Arizona State University.

Larson is currently a Professor who instructs on and conducts research within Earth Science Programs and the Department of Anthropology and Geography. He also serves as founder/Co-Director of the EARTH Systems Laboratory at Minnesota State University, Mankato (MNSU). He has served at MNSU for the past 12 years. In addition, Larson is Graduate Faculty in the Department of Earth and Environmental Sciences at University of Minnesota – Twin Cities.

In these current roles, Larson has primarily taught about and studied regional river systems, including the Blue Earth River valley. He has served as Project Director, PI, or subcontract PI on numerous externally funded research projects, including prior successfully completed legacy-funded projects focused on invasive carp in the Minnesota River, landslides in Minnesota, and agricultural land use impacts on the Whitewater River valley.

Most recently, Larson was an institutional PI on a now expiring National Science Foundation award acquired to study the immediate impact of the Rapidan Dam failure on the Blue Earth River and its valley, with collaborators (Hilgendorf, Wickert) on this proposal. This project hopes to continue this work for a longer duration of monitoring and assessment of the ecological and environmental impacts of the Rapidan Dam failure given the results of this work thus far.

Organization: Minnesota State Colleges and Universities - Minnesota State University Mankato

Organization Description:

This project will be facilitated through the EARTH Systems Laboratory at Minnesota State University, Mankato. The EARTH Systems Laboratory is an interdisciplinary lab that brings together Earth Science, Geography, and Anthropology to educate and prepare Minnesota State University, Mankato students for future careers in academia, private business, or in government agencies. Students are immersed in scientific and applied research to obtain hands-on, experiential learning to better understand natural processes in the world around us and the impact these natural processes have on human beings through both modern and ancient timescales. We conduct research focused on archeology, soils, climate/paleoclimate and climatic change, erosional-earth surface processes, geomorphology, natural resources, natural hazards, and human-environment interactions. The work of the EARTH Systems Laboratory primarily focuses on conducting research and training students to address archeological, environmental, and natural resource issues in Minnesota and the surrounding region. Prior National Science Foundation-funded monitoring and assessment of the Blue Earth River following the failure of the Rapidan Dam was, in part, conducted through this laboratory. All Partners/Collaborators will have access to this lab's resources and facilities during this project.

<https://hss.mnsu.edu/organizations/earth-systems-research-laboratory/>

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
Principal investigator - Phillip Larson		Leads project team in accomplishing project objectives. Advises Graduate students 1 and 2 on their thesis research within project objectives.			24%	0.18		\$24,412
Co-PI - Mark Bowen		Leads project team in training students on particle size analysis for bed sediments sampled in this study.			24%	0.09		\$9,095
Graduate Student 1		Survey data collection, data processing, sample collection			0%	3		\$65,360
Graduate Student 2		Survey data collection, data processing, sample collection			0%	3		\$65,360
							Sub Total	\$164,227
Contracts and Services								
University of Minnesota	Subaward	Personnel: 120612 (includes both faculty and students) Equipment/Supplies: 375 Travel: 18552 UMN (Gran, Wickert) will be collaborating on Activities 2-5 and UMN students will be leading efforts on Activity 2 and 4. No indirect recovery.				1.47		\$139,539
University of Wisconsin Eau Claire	Subaward	UWEC subaward PI (Hilgendorf) is critical to Activity 1,2,4, and 5. Undergraduate students (3x) will directly contribute to Activity 1 and 4. Personnel: 65470 (Hilgendorf, 3x undergraduate students) Travel: 9260 No indirect recovery.		X		0.6		\$74,730
							Sub Total	\$214,269
Equipment, Tools, and Supplies								
	Equipment	1x Emlid RS4 Pro (GNSS unit)	High-precision Global Navigation Satellite System unit for accurate					\$4,600

			position and elevation data collection. Will serve as rover to collect data along the cross-sections in Activity 2 and Activity 4.					
	Equipment	1x Emlid RS4 Base Station Kit	High-precision Global Navigation Satellite System unit for accurate position and elevation data collection. Serves as stable base station for rover to reference while data is being collected. Data collected with this and RS4 Pro (Rover) will be utilized in Activity 2 and 4.					\$4,670
	Equipment	1x Rover Kit	This kit includes a survey pole and mount for the RS4 Pro (Rover) for field surveys. This will be utilized in Activities 2 and 4.					\$538
	Equipment	Shipping for RS4 Pro, Rs4 Base Station Kit, Rover Kit	Shipping costs for these pieces of equipment to be utilized in Activity 2 and 4.					\$1,000
							Sub Total	\$10,808
Capital Equipment								
							Sub Total	-
Acquisitions and Stewardship								
							Sub Total	-
Travel In Minnesota								
	Miles/ Meals/ Lodging	MNSU fleet vehicle or personal vehicle usage to travel to and from the field. 10 field surveys (cross-sections, drone flights, and ecological surveys) per year.	Travel to support collection of field data					\$3,600
	Miles/ Meals/ Lodging	Attend and present at DNR-led dam workshop in 2028/2029	Students and personnel involved in the project will attend and present findings at DNR dam workshop. This serves to disseminate findings and integrate results with DNR efforts across the state.					\$1,600

	Conference Registration Miles/ Meals/ Lodging	Attend and present at Upper Midwest Stream Restoration Symposium (to reach stream restoration professionals in the Upper Midwest)	Students and personnel involved in the project will attend and present findings at UMSRS. This serves to disseminate findings and obtain feedback on results.					\$1,600
							Sub Total	\$6,800
Travel Outside Minnesota								
	Miles/ Meals/ Lodging	Travel expenses to travel to/from (one trip) and conduct laboratory work at Utah State University Luminescence Laboratory.	OSL sample processing at Utah State University Luminescence Laboratory	X				\$3,000
	Conference Registration Miles/ Meals/ Lodging	Travel expenses to travel to/from (one trip) academic conference (Geological Society of America) to acquire feedback on results	Dissemination of results and acquire feedback to improve the work before completion. Includes personnel and all students who will be presenting work.	X				\$3,600
							Sub Total	\$6,600
Printing and Publication								
							Sub Total	-
Other Expenses								
		Optically Stimulated Luminescence Dating sample analysis (10x)	Sample collection and analysis for OSL dating as it pertains to Activity 3. Samples processed at Utah State's Luminescence Laboratory to establish natural system/geologic context of Blue Earth River adjustment to dam failure. Shipping of samples (UPS/FedEx) to the lab included.					\$10,500
		Blue Earth River Symposium and Kick-Off meetings	Costs to host both meetings at Minnesota State University, Mankato (food, refreshments, room reservations depending on demand/attendance).					\$1,796
							Sub Total	\$12,296
							Grand Total	\$415,000

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Contracts and Services - University of Wisconsin Eau Claire	Subaward	UWEC subaward PI (Hilgendorf) is critical to Activity 1,2,4, and 5. Undergraduate students (3x) will directly contribute to Activity 1 and 4. Personnel: 65470 (Hilgendorf, 3x undergraduate students) Travel: 9260 No indirect recovery.	UWEC is an out of state entity. However, Dr. Hilgendorf (Professor at UWEC) completed his masters degree at Mankato and returned to southern Minnesota to lead the work thus far on monitoring the Rapidan Dam failure. He was the lead PI on the now expiring National Science Foundation project where he established connections with county and state-level agencies, along with private industry consultants hired by these agencies to conduct dam removal and upcoming river modification. He has been collaborating with the DNR colleagues on this proposal for several years. Given his lead on the prior work and established connections, integration and continuation of the work he led is critical for this proposed work to be successful. In addition, it is critical for effective, efficient and complete conveyance of results and data to the DNR and other relevant agencies/entities. Lastly, and most significantly, Dr. Hilgendorf has access to the Wingtra Drone needed for Activity 1, which he will provide at no cost. He is also a highly recognized drone and remote sensing expert that will make sure the quality of data is preserved. In totality, Dr. Hilgendorf's involvement greatly reduces the required cost, increases our capacity to monitor the Blue Earth River, and assures prior and proposed work maintains consistency and quality. He will be leading Activity 1 and will be co-leading (with Larson, MNSU) Activity 5 in this project. Indirect recovery is not included per LCCMR ENRTF policy.
Travel Outside Minnesota	Miles/Meals/Lodging	Travel expenses to travel to/from (one trip) and conduct laboratory work at Utah State University Luminescence Laboratory.	Utah State University's Luminescence Laboratory is a world-renowned laboratory for this analytical technique. No such laboratory exists in the state of Minnesota. In addition, Dr. Tammy Rittenour (lab director) permits our students to visit, train in, and process samples in her lab.
Travel Outside Minnesota	Conference Registration Miles/Meals/Lodging	Travel expenses to travel to/from (one trip) academic conference (Geological Society of America) to acquire feedback on results	Travel expenses to travel to/from (one trip) the Geological Society of America conference to present our findings. Both PI's and students can obtain feedback and engage experts in discussion regarding our work to improve our findings and interpretations.

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
In-Kind	Indirect recovery contribution (Minnesota State University, Mankato)	Minnesota State University, Mankato's indirect recovery rate of 12% indirect rate on all direct costs. In-Kind contribution.	Secured	\$24,087
In-Kind	Indirect recovery contribution (University of Minnesota)	University of Minnesota's indirect recovery rate of 54% of modified total direct costs, which exclude tuition remission costs. In-Kind contribution.	Secured	\$65,242
			State Sub Total	\$89,329
Non-State				
			Non State Sub Total	-
			Funds Total	\$89,329

Total Project Cost: \$504,329

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component

File: [3ac20fc0-66c.pdf](#)

Alternate Text for Visual Component

Example of current progress on the ongoing change using geomorphic change detection. These results are assessed between a rasterized 1911 survey and pre-failure LiDAR (A) and change in the landscape following Rapidan Dam failure (B). More red is erosion/surface degradation. More blue is deposition/surface aggradation. Figure caption included....

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 Commissioner's Plan 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?

No

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:

In addition to Project Collaborators, Anne Ludvik at Minnesota State Mankato Research and Sponsored Programs Office assisted in reviewing this proposal.

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

N/A