Environment and Natural Resources Trust Fund
2018 Request for Proposals (RFP)

Project Title: **ENRTF ID: 113-C**

Minnesota River Education Model: Connecting Students to Watersheds

Category: C. Environmental Education

Total Project Budget: $ 248,582

Proposed Project Time Period for the Funding Requested: 3 years, July 2018 to June 2021

Summary:

An educational model that delivers watershed stewardship education to 2,000 high school students in St. Peter, Mankato, and New Ulm, using science to promote an action-based conservation ethic.

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Sponsoring Organization: Minnesota State University - Mankato, Water Resources Ctr

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Location

Region: Central, Southwest, Southeast

County Name: Statewide

City / Township: New Ulm, Manakto, St. Peter

Alternate Text for Visual:

Map of participating schools and a watershed graphic depicting project partners.

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

PROJECT TITLE: Minnesota River Education Model: Connecting Students to Watersheds

I. PROJECT STATEMENT

The Minnesota River drains one of the most impaired river basins in the state. Studies have shown the clean-up solutions require thousands of people on tens of thousands of acres to play a role. This pilot project engages the next generation by providing high school students with an experiential environmental education program with a scope and sequence that promotes greater understanding of local water quality problems and solutions. This educational pilot project delivers a watershed stewardship educational program to 2,000 high school students in St. Peter, Mankato, and New Ulm. Students will learn directly from local scientists and natural resource professionals about local watershed health and how to improve and maintain water quality where they live.

Broad goals include:

- Engaging a broad-based partnership to deliver a high quality, hands-on STEM-based educational curriculum centered on watershed stewardship
- Disseminating watershed-specific information that will raise awareness and understanding of complex water quality problems and solutions
- Connecting students with local scientists to learn about performing scientific inquiry and field work as well as exposing students to a diverse array of STEM careers (e.g. geology, hydrology, chemistry, biology, natural resource management)
- Providing hands-on, authentic learning experiences and developing skills in scientific field methods (biomonitoring, water sampling)
- Providing an educational framework that will culminate in a Minnesota Department of Natural Resources (MNDNR) naturalist-led outdoor field day/canoe trip on a river and lake near their school

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Deliver and Implement Watershed-based Education into High School Curriculum

Work with scientists and environmental educators in the region to design, deliver and implement an interdisciplinary watershed based curriculum into high schools. We will primarily use existing educational curriculum and create additional educational modules where needed.

Outcome 1: Create a Scientific and Education Advisory Group composed of agency staff, environmental educators, and area teachers to frame issues using the best available data and integrated educational approach. Convene advisory group four (4) times.

Outcome 2: Create Watershed-specific Educational Framework. Compile existing river-based curriculum that aligns with educational standards in order to tailor a watershed-specific framework for each school. Lesson plans will be developed using existing and new educational materials that describe watershed conditions and highlight steps students can take to improve their watershed. Educational programming will use existing foundational watershed data (e.g. MPCA and MNDNR monitoring and assessment data, Watershed Restoration and Protection Strategies, MPCA Watershed Pollutant Load Monitoring Network, Sentinel Lake Program etc.). To further clarify watershed-specific restoration strategies, we will create ten (10) video interviews of scientists and agency representatives explaining flow, nutrient and sediment reduction strategies as well as other key approaches identified by the advisory group.

Outcome 3: GIS Story Map. Assemble, create, and integrate visually-engaging curriculum modules into an interactive web-based GIS Story Map housed on the Minnesota River Basin Data Center at Minnesota State University, Mankato Water Resources Center (MSU-WRC). Modules will include depictions of watershed conditions using existing and new videos and drone imagery. An interdisciplinary course will be offered at Minnesota State University, Mankato that will provide faculty, staff and student support to help develop watershed-based modules and GIS Story maps that align with high school curriculum standards.

Outcome 4: Pilot and deliver environmental education into school curriculum. Work with area teachers to pilot the environmental education program with area schools, including six (6) focus groups with students during development. A component will include creating a speaker's bureau of local scientists, environmental educators and other natural resource professionals willing to come into class to deliver content specific lectures. A printed paddling guide that reinforces watershed-specific key learning points will be developed for each school group.
Outcome 5: Support Field Day. Provide support to MNDNR staff as needed to deliver in-school field day of paddling a stretch of 8 to 10 miles on the Minnesota River, one of its major tributaries, or area lake (depending on school location and flow conditions). MNDNR naturalist and/or Wilderness Inquiry will coordinate and deliver field trip (no grant funds needed). Project team will help develop field-based curriculum that highlight different Minnesota River issues (e.g., geology, cultural history, water quality indicators). Project team will also provide hands-on experience with scientific field methods including conducting water quality tests (e.g., t-tube, dissolved oxygen, temperature, pH), and biomonitoring at different stops along the journey.

Activity 1: Deliver Watershed-based Education into High School Curriculum **Budget: $245,582**

Outcome	Completion Date
1. Scientific and Education Advisory Group	June 2020
2. Develop Watershed Educational Materials	June 2020
3. Develop web-based GIS Story Map	June 2020
4. Pilot and deliver education program into schools	June 2021
5. Support river and lake paddles and field trips	June 2021

Activity 2: Program Evaluation and Planning **Budget: $3,000**
Project staff will use six (6) student focus groups to shape the educational program development. For in-class and field experience, staff will use participant surveys to evaluate the learning outcomes. Educators and project developers will refine educational modules based on feedback.

Outcome	Completion Date
1. Hold focus groups and create a student participant survey	May 2021
2. Use feedback to modify programming	June 2021

III. PROJECT STRATEGY

A. Project Team/Partners
This locally-led, diverse partnership connects state agency staff; environmental education professionals and centers; Minnesota State University, Mankato faculty, students and staff with High School students, teachers and staff in Mankato, New Ulm, and St. Peter. Core Team Partners include MSU-WRC staff and students and MSU Professor Dr. Robyn Ceurvorst (project management, program development and delivery); Scott Kudelka, MNDNR and Ben Leonard, Minnesota Historical Society (project coordination, program development and delivery).

B. Project Impact and Long-Term Strategy
This project aligns with ENRTF goals to develop strategies for delivery of environmental education to Minnesota students. It also will help to increase public awareness of human impact on watersheds, augment exposure to STEM careers, and help students understand the need for watershed restoration. Longer term, educating youth will create a more informed citizenry that serves as a foundation for community based conservation.

C. Timeline Requirements
This project would begin in July 2018 and continue for 36 months (July 2018-June 2021).

2018 Detailed Project Budget

Project Title: Minnesota River Education Model: Connecting Students to Watersheds

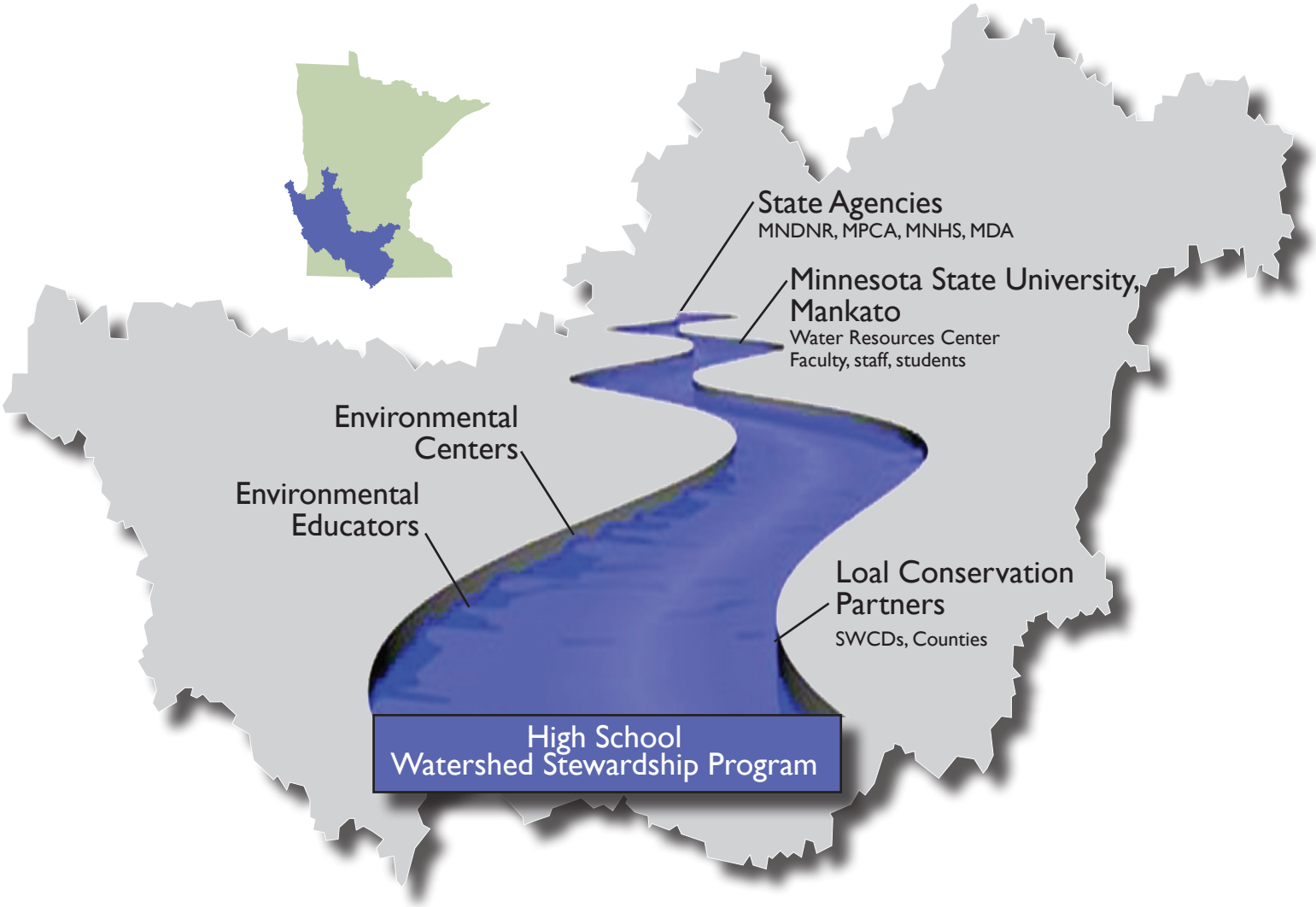
IV. TOTAL ENRTF REQUEST BUDGET -- 3 years

BUDGET ITEM *(See "Guidance on Allowable Expenses", p. 13)*	**AMOUNT**
Personnel: **Recreation, Parks and Leisure Services** (teaching/consulting/programming): 6 credit release/benefits =$10,750 **Project Manager (***Water Resources Center -WRC): 25% annual salary/benefits=$23,000 x 3 years = $68,850* ***Assistant Project Manager*** *(WRC): 18% annual salary/benefits=14,5600 X 2 years= $26,208* ***GIS Specialist*** *(WRC): 20% annual salary/benefits 13,312 X 2 years =$26,624* ***Graduate Assistant: (curriculum and high school coordination)*** *(Stipend @ $4,500 x 3 semesters = $13,500) + (Tuition, 18 credits $8,175) + (FICA @7.65% summer $345) = $22,020 x 3 years = $66,060 Total* ***Intern*** *: Video, GIS & website development; 2 academic years@ $11.75*20 hours X 18 pay periods = $8,460*	$ 206,952
Printing: Printing/binding paddle guides 2700 X 10 pages@ .35 =$9,450 Printing certificates 2700 X 1 page @ .29 = $ 810	$ 10,260
Equipment/Tools/Supplies: Advertisement (baseball cap) 2,000 students/30 advisory group = 2030 X $12.00 =24,360 Drone and video camera =$3,000 External 5T hard drives 2@160 =$320 Adobe Creative Suites for 2 years 2 @ $395 =$790 Meeting expenses-Focus group meetings (20 students and advisors) 6 meetings @ $50/mtg = $300 Meeting expenses - Advisory Sessions: 4 sessions X 30 advisors=120 X $15 =$2,200 Room rental for Advisory Session 4 X $100= $400	$ 31,370
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND $ REQUEST =	$ 248,582

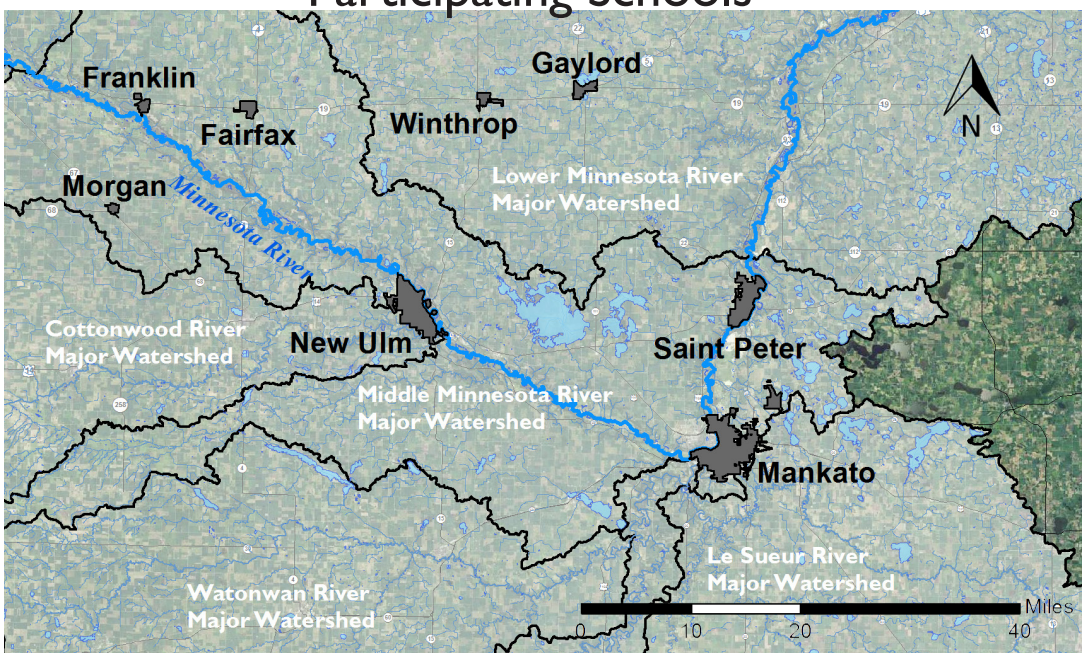
V. OTHER FUNDS *(This entire section must be filled out. Do not delete rows. Indicate "N/A" if row is not applicable.)*

SOURCE OF FUNDS	**AMOUNT**	**Status**
Other Non-State $ To Be Applied To Project During Project Period: N/A	$ -	*N/A*
Other State $ To Be Applied To Project During Project Period: N/A	$ -	*N/A*
In-kind Services To Be Applied To Project During Project Period: Kimberly Musser, project manager, quarter-time of annual salary/benefits $10,000 x 3 years = $30,000 Robyn Ceurvorst, assistant project manager, partial time of annual salary/benefits $10,000 x 3 years = $30,000 Ben Leonard, Minnesota Historic Society partial time of annual salary/benefits $5,000 x 3 years = $15,000 DNR Scott Kudelka Area Naturalist, quarter-time of annual salary/benefits $25,000 x 3 years = $75,000 MSU, School Districts and DNR equipment and supplies such as computers, printers, ink, paper, transportation and boating equipment $50,000 for 3 years = $150,000 15 advisors @ 4 meeting plus prep @ 4 days X 500 =$30,000	$330,000	*Staff and advisors mostly secured, some equipment pending*
Funding History: N/A	$ -	*N/A*
Remaining $ From Current ENRTF Appropriation: N/A	$ -	*N/A*

Minnesota River Education Model:
Connecting Students to Watersheds



Participating Schools



PROJECT TITLE: Minnesota River Education Model: Connecting Students to Watersheds

Project Manager Qualifications and Organization Description

Kimberly Musser, Project Manager
As Acting Director of the Water Resources Center, Minnesota State University, Mankato, (MSU-WRC), Kimberly Musser has coordinated a wide variety of Minnesota River Basin centered projects. Kimberly focuses on planning, outreach, and civic engagement. She enjoys the challenge of taking technical and scientific information and helping to make it understandable to broader audiences. She has served as project manager for the *Minnesota River Basin Trends Report*, *State of the Minnesota River Water Quality Monitoring Reports*, *Minnesota River Experts: An Educational Field Trip Online*, *Le Sueur River Civic Engagement Project*, *Watonwan Civic Engagement Project, Southwest Minnesota Civic Engagement Cohort on Water Quality, Integrated Targeted Watershed Planning Tools with Citizen Involvement, Minnesota Nutrient Planning Portal*, *Minnesota River Basin Data Center website update and expansion,* among others. These projects all focus on summarizing data and providing watershed-based information to diverse audiences.

Kimberly brings over a decade of project management experience to the project. Additionally, she has developed and taught a dozen courses Minnesota State University, Mankato in the Geography and Urban and Regional Planning departments. She holds a Master's degree in Community and Regional Planning from the University of Oregon and an undergraduate degree in Geography from the University of California at Berkeley.

Water Resources Center, Minnesota State University, Mankato
In 1987 the WRC was created to serve as a regional center for gathering, interpreting, and distributing data of environmental significance. Faculty and students accomplish these tasks through applied research, educational programming, technical assistance, and water resource planning. In addition, we have GIS staff with the capacity to create sophisticated GIS analysis and maps, three-dimensional landscape visualization, as well to capture drone and video footage. Using the latest scientific data, the WRC works with citizens within the Minnesota River Basin to enhance the quality of regional lakes, rivers, wetlands, and groundwater.

Since its beginning, the WRC has participated in over 100 research, educational, and planning projects involving partnerships with dozens of public and private organizations. These projects range from groundwater, lake assessment, and TMDL studies to citizen engagement and water quality workshops, to the development of watershed-based plans for surface water quality protection. Our stability since 1987 stands as a testament to the objective and quality products we produce. Long-term partnerships with counties, nonprofit organizations, and state agencies have resulted in many important and far-reaching land and water resource initiatives. We have a dedicated staff and look forward to enhancing students and the broader public's understanding of and connection with water resources in the region.