Environment and Natural Resources Trust Fund
2011-2012 Request for Proposals (RFP)

LCCMR ID: 195-G

Project Title: Heightened Watershed Awareness in the Red River

Category: G. Environmental Education

Total Project Budget: $ $184,432

Proposed Project Time Period for the Funding Requested: 3 yrs, July 2011 - June 2014

Other Non-State Funds: $ 0

Summary:

Establishment of an Environmental Sciences Program at the UM-Crookston with outreach activities including summer research opportunities for area teachers and a traveling workshop for teachers address watershed/water quality awareness.

Name: Katy Smith

Sponsoring Organization: U of MN - Crookston

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Crookston MN 56723

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Web Address http://www3.crk.umn.edu/faculty/S/Katy_Smith.html

Location

Region: NW

Ecological Section: Red River Valley (251A)

County Name: Statewide

City / Township:

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

2011-2012 MAIN PROPOSAL

PROJECT TITLE: ***Heightened watershed awareness in the Red River***

PROJECT STATEMENT

This proposal addresses the need to train young scientists in environmental sciences as well as the need to increase environmental awareness from the community and ultimately improve not only the water quality of the Red River Basin and Lake Winnipeg, but the water, air, soil, and beyond quality as we move into the next century. The objective of the current proposal is to increase environmental awareness for all citizens by establishing environmental science curricula at UMC, teacher workshops, and research opportunities for K-12 teachers. As part of this program teachers and students would have the opportunity to work with laboratory equipment and participate in service learning opportunities to work with K-12 schools in the area. The goals and outcomes of the project are 1) Creation of environmental science research opportunities for elementary and high school teachers. 2) Implementation of service-learning activities for UMC students such as trips to high school and elementary classrooms and assisting with teacher workshops. 3) Conduct a traveling, 2-day environmental science workshop for educators to observe relationships between land use and water quality, environmental services, and ecosystem health within a watershed context.

Many UM-Crookston (UMC) students come from the Red River Basin which feeds into Lake Winnipeg. Land use changes and nutrient inputs, especially phosphorus, in the Red River Basin have impacted Lake Winnipeg through decreased water quality. Through educating the broader community about how land use impacts water quality, we hope to improve the land use and thus water quality of the Red River Basin and ultimately Lake Winnipeg. In addition to local students, UMC also attracts students from out of the region and from other countries. These students come from urban and rural environments facing their own unique environmental issues. An environmental sciences program has been developed at the UM-Crookston campus and will begin as a program in the fall of 2010.

The goals of this project will be achieved by offering scholarships to students entering our program, providing summer research experiences for teachers, having students involved in service learning activities (helping teachers in classroom, helping teachers implement environmental action plans ((1) use of safe water purification methods (algae's, horseradish tree, etc…), development of buffers around parking lots, rain gardens, rain barrels, and evaluation of chemicals used in laboratories), and a field trip/workshop that would commence at UMC and travel to the eastern edge of the watershed in the headwaters where selected rivers begin as trout streams in the Boreal Forest, progress through the Deciduous Forest biome where rivers transition to warmer, walleye fisheries, and finally onto the flat, Red River Valley lake plain where rivers become meandering catfish rivers in an originally prairie landscape. Travel, food, and lodging costs will be provided by this grant.

II. DESCRIPTION OF PROJECT ACTIVITIES

Activity 1: Recruitment of students into program **Budget:** $ ___10,000_____

Outcome	Completion Date
1. High quality students working on their Environmental Sciences degree at the University of Minnesota-Crookston	June 2014

The funds requested for this activity will be used to give 5 students $2,000 dollar scholarships that enter into our program.

Activity 2: Environmental science research opportunities for teachers. **Budget:** $ ___104,250___

Outcome	Completion Date
1. Teachers understanding environmental science research and implementing new techniques into their classrooms as a result of their new understanding of this discipline	June 2013

The funds requested for this activity will be used to provide hourly teacher salaries (up to $5,000) per teacher and fringe benefits for summer positions at the University of Minnesota at set at 9% of the salary. In addition there will be $2,000 available for the purchase of supplies need for these research activities and the summer research symposium where teachers and students will present results of their summers research to each other(note: this will not be given to the teachers, but rather used to purchase items needed in the teacher's research). The requested funds will fund 5 teachers for 3 summers, so a total of 15 teachers would be involved in this activity over the duration of the project.

Activity 3: Implementation of service-learning activities. **Budget:** $ __5,000_____

Outcome	Completion Date
1. Students and teachers in K-12 would begin working on environmental projects at their schools increasing their environmental awareness as well as the communities environmental awareness.	June 2014

The funds requested for this activity will be used for travel to schools, minimal supplies that will be used to show teachers how to apply for funds to implement environmental action plans, and photocopy expenses. Examples of service learning activities are given in the project statement. Approximately 16 students/year or a total of 48 undergraduates would do this for the duration of the project.

Activity 4: Conduct a traveling, 2- day workshop **Budget:** $ __65,181.66___

Outcome	Completion Date
1. Traveling workshop (1 each year)	June 2014

Participants will observe land use/vegetation/topographic and water quality relationships along this transect. Participants (~30/year; total of 90) will hear Canadian environmental specialists describe water quality and related land use issues of Lake Winnipeg. Various speakers will inform participants along the way. During this 2-day workshop teachers will be given an assignment to develop environmental action plans with their students upon returning to their schools. Teachers will be provided with examples of action plans and information about how and where to write grants to receive funding for these action plans.

III. PROJECT STRATEGY

A. **Project Team**

Katy Smith, U of MN, Crookston, Project coordinator (1 month summary salary will be paid) and Dan Svedarsky, NorthWest Research and Outreach Center, U of MN, Crookston, Co-Project coordinator, teachers from area schools, undergraduates to be enrolled in the environmental sciences program at UMC,

B. Timeline Requirements

This project will be completed in 3 years.

C. Long-Term Strategy and Future Funding Needs

As this program builds are produces environmental scientists and teachers that are more environmentally aware, we anticipate increase environmental awareness from the community and ultimately improved water, air, and soil quality of the Red River Basin and Lake Winnipeg and beyond as we move into the next century. As the reputation of the program builds recruiting of students into the program will come more naturally and the program will become self sustaining. After the program has built reputation tuition can be charged for the participation in the travelling workshop which would bring this program to a self sustaining position. Thus, funds requested are intended to attract students and teachers to the programs and build the reputation of the programs. We do not intend to utilize the commission as an ongoing source of funding for this project. The intent is to utilize this funding as seed money to start a self-sustaining program.

2011-2012 Detailed Project Budget

INSTRUCTIONS AND TEMPLATE (1 PAGE LIMIT)

Attach budget, in MS-EXCEL format, to your "2011-2012 LCCMR Proposal Submit Form".

(1-page limit, single-sided, 10 pt. font minimum. Retain bold text and DELETE all instructions typed in italics. ADD OR DELETE ROWS AS NECESSARY. If a category is not applicable write "N/A" , leave it blank, or delete the row.)

IV. TOTAL TRUST FUND REQUEST BUDGET *[Insert # of years for project]* **years**

BUDGET ITEM *(See list of Eligible & Non-Eligible Costs, p. 13)*	**AMOUNT**
Personnel: Katy Smith (8.3% of employment; 19% fringe benefits) (tenure track position) $23,181.66 (for 3 summers) **Teacher Summer Salaries with 9% fringe (($81,750 for 15 total teachers)**	$ 104,932
Contracts: *In this column, list out proposed contracts. Be clear about whom the contract is to be made with and what services will be provided. If a specific contractor is not yet determined, specify the type of contractor sought. List out by contract types/categories - one row per type/category.*	$ -
Equipment/Tools/Supplies: Supplies for summer research projects ($1500 available for each project) Supplies	$ 53,500
Acquisition (Fee Title or Permanent Easements): *In this column, indicate proposed # of acres and and name of organization or entity who will hold title.*	$ -
Travel: *In-state travel to local schools for service learning activities ($1,000) Charter bus, and hotels for traveling workshop ($5,000/yr) $15,000*	$ 16,000
Additional Budget Items: *Five $2,000 scholarships to be given to highly qualified incoming students into the environmental sciences program*	$ 10,000
TOTAL ENVIRONMENT & NATURAL RESOURCES TRUST FUND $ REQUEST	$ 184,432

V. OTHER FUNDS

SOURCE OF FUNDS	**AMOUNT**	**Status**
Other Non-State $ Being Applied to Project During Project Period: *Indicate any additional non-state cash $ to be spent on the project during the funding period. For each individual sum, list out the source of the funds, the amount, and indicate whether the funds are secured or pending approval.*	$ -	*Indicate: Secured or Pending*
Other State $ Being Applied to Project During Project Period: *Indicate any additional state cash $ (e.g. bonding, other grants) to be spent on the project during the funding period. For each individual sum, list out the source of the funds, the amount, and indicate whether the funds are secured or pending approval.*	$ -	*Indicate: Secured or Pending*
In-kind Services During Project Period: *Salary of D. Svedarsky(1 month)*	$ 8,500	
Remaining $ from Current ENRTF Appropriation (if applicable): *Specify $ and year of appropriation from any current ENRTF appropriation for any directly related project of the project manager or organization that remains unspect or not yet legally obligated at the time of proposal submission. Be as specific as possible. Describe the status of $ in the right-most column.*	$ -	*Indicate: Unspent? Not Legally Obligated? Other?*
Funding History: *Indicate funding secured prior to July 1, 2011 for activities directly relevant to this specific funding request. State specific source(s) of funds.*	$ -	

Figure 1. The area in yellow indicates the Red River Basin which would be the area impacted by our proposal.

Katy E. Smith, Ph.D.
Assistant Professor of Biology and Environmental Science
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218-281-8262

Education:
University of North Dakota, B.S. Biology 2001
Purdue University, Ph.D. Environmental Science Science 2005

Teaching:
Currently in my position at the University of Minnesota, Crookston I teach a wide variety of classes including Botany, Plant Physiology, Fate of Chemicals in the Environment, Environmental Science and Remediation Techniques, Risk Assessment and Environmental Impact Statements, General Biology, and Analytical Chemistry and Spectroscopy. I am also a member of the campus sustainability curriculum committee where we are working to develop a minor in sustainability which would complement our environmental sciences program.

Research and Management Experience:
Currently I conduct research in two areas: 1) greenhouse emissions from soils of various land uses (ex. Agricultural with different sources of N); 2) phytoremediation of contaminated sediments and soils. While conducting this research I have involved, and therefore managed several undergraduates working on these projects and have had them present their results in the form of poster and oral presentations. I currently have a student who will be writing up her results into an honors thesis. In addition, prior to UMC I was a research soil scientists for the USDA ARS in Auburn, AL where I conducted global change research dealing with greenhouse gas emissions and the impacts of elevated CO2 on crop response. Prior to USDA ARS I was a postdoctoral fellow with the University of Massachusetts-Amherst where I worked on buffer strips surrounding golf courses and how these could be used to mitigate pesticides entering water bodies through surface runoff. Prior to this I was at Purdue University conducting research on PCB and PAH phytoremediation. Prior to my PhD I conducted research as an undergraduate at the University of North Dakota on selenium phytoremediation. In all of my research I have involved undergraduate students whom I have supervised and managed on these projects. In addition, I have written proposals with other colleges in which I was the project manager and was responsible for collecting data, write-ups and other products of the research to input into progress reports and publications.

University of Minnesota Crookston
Located in northwest Minnesota, the Crookston campus of the University of Minnesota provides its unique contribution through applied, career-oriented bachelor's degrees that combine theory, practice, and experimentation in a technology-rich environment. With an enrollment of just over 1,300 undergraduates from 25 countries and 40 states, the Crookston campus offers a friendly, safe, close-knit atmosphere where students may select from 28 undergraduate degree programs, six of which are also offered entirely online, and 50 concentrations. Faculty and staff serve as true mentors, offering personalized attention through a student/faculty ratio of 17:1. As the original "Laptop U" and with more than 15 years of technological leadership, the U of M, Crookston provides all students and faculty with powerful laptop computers and helps them develop superior technology skills. Taken together, these features have given the Crookston campus a reputation of producing graduates who are well prepared to begin their careers or to continue on to graduate programs.