

**Environment and Natural Resources Trust Fund
2020 Request for Proposals (RFP)**

Project Title:

ENRTF ID: 148-CH

Enriching Natural Resource Knowledge for Informed Decision Making

Category: H. Proposals seeking \$200,000 or less in funding

Sub-Category: C. Environmental Education

Total Project Budget: \$ 196,627

Proposed Project Time Period for the Funding Requested: June 30, 2022 (2 yrs)

Summary:

A pilot educational outreach program designed to engage and encourage Minnesotans to participate in well-informed discussions about the complex interrelationships between Minnesota's water and mineral resources and clean energy future.

Name: Lawrence Zanko

Sponsoring Organization: U of MN - Duluth NRRI

Job Title: _____

Department: Natural Resources Research Institute (NRRI)

Address: 5013 Miller Trunk Highway
Duluth MN 55811

Telephone Number: (218) 788-2674

Email lzanko@d.umn.edu

Web Address: _____

Location:

Region: Statewide

County Name: Statewide

City / Township:

Alternate Text for Visual:

Project title; NRRI and Sea Grant logos with a map of Minnesota between; text describing the project; and embedded graphics representing fresh water, mining, clean energy, people, and interpersonal engagement.

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



Environment and Natural Resources Trust Fund (ENRTF) 2020 Main Proposal Template

PROJECT TITLE: Enriching natural resource knowledge for informed decision making

I. PROJECT STATEMENT

University of Minnesota researchers (UMD Natural Resources Research Institute, Minnesota Sea Grant) propose a pilot educational and informational outreach program to identify/assemble/disseminate validated information regarding the complex interactions between Minnesota's clean water and mineral resources. The program will be citizen-focused and structured to drive fact-based discussions and well-informed recommendations concerning cost, risk, and benefit analyses of mineral opportunities in a fresh water-rich state. This work supports our shared goal with LCCMR for the effective maintenance and enhancement of Minnesota's natural resources that include citizen and community involvement in scientific efforts.

Why is this program important? Because clean energy objectives and growing societal demands have brought it to the forefront. The State of Minnesota and major Minnesota corporations like Xcel Energy and 3M share the same stated goal of achieving zero-carbon, clean energy production by 2050. The clean energy economy will include wind farms, solar arrays, and new energy storage and distribution alternatives. To achieve the clean energy goal – based on the state of today's renewable clean energy technologies and manufacturing capabilities – some estimates suggest more metals will have to be supplied in the next 30 years than have been supplied in the last 100. Growing standards of living and lifestyle changes are also driving increasing world-wide demand for metals, and metal availability is necessary for economically supporting both. This means we will need to be prepared to respond to that rising demand in responsible and sustainable ways.

So, what now? Most of the mineral resources sought to satisfy the increased metal demand, in part driven by new energy technologies, cannot be provided by recycling alone. They will come instead from larger, lower-grade, and deeper mineral deposits simply because most of the higher-grade and easier-to-access deposits have largely been discovered, put into production, or exhausted.

It is a given that pursuit of mineral opportunities must protect water resources. Mineral resource development has had a chequered track-record, and development of those resources can lead to complex interrelationships that have both environmental and economic consequences. We have a mineral opportunity in the state of Minnesota to start with good info and make better decisions that drive sustainability and resiliency of our resources, society, and economy.

This proposal seeks LCCMR funding to develop and implement a pilot outreach program focused on providing understanding of the complex interrelationships between Minnesota's water and mineral resources that will empower Minnesotans to hold well-informed discussions and reach recommendations for sound, long-term decisions. The pilot will be carried out in three representative communities across Minnesota. The program will use local steering committees to help guide this program. Citizen input and reaction will be gathered throughout the program to determine baseline scientific understanding of these complex issues and gained knowledge as a result of program participation.

The Natural Resources Research Institute and Minnesota Sea Grant – two of the University of Minnesota's applied research institutes – will combine and make best use of their respective areas of expertise and deliver a comprehensive and multidisciplinary educational outreach service to Minnesota citizens from a non-advocacy perspective.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Formation of community steering committees to inform program content

Three Minnesota communities will be selected for the pilot study (potential examples – northeast Minnesota, St. Cloud, and Rochester) with the intent to develop similar efforts statewide based on the experiences and lessons learned from the pilot. The University team (led by Zanko, McFarland, and Hagley) will form diverse multidisciplinary steering committees comprised of 10-12 community members that represent multiple facets of



**Environment and Natural Resources Trust Fund (ENRTF)
2020 Main Proposal Template**

the issue. Two to three in-person meetings will be held in each community to conduct an informal needs assessment which will inform what content could be of greatest benefit, which could include; understanding Minnesota’s available mineral resources and their potential value in applications, interactions between mineral and water resources, emerging water resource challenges and capabilities of water remediation technologies, among others. Guidance on program format and delivery will also be sought from the committee to maximize the potential for community engagement.

ENRTF BUDGET: \$94,638

Outcome	Start Date	End Date
1. Project team assembled; communities identified; formation of community steering committees	Jul 1, 2020	Sep 30, 2020
2. Steering committee meetings; informal needs assessment work	Oct 1, 2020	Nov 30, 2020
3. Development of outreach programs	Dec 1, 2020	Mar 31, 2021

Activity 2: Delivery of outreach programs in each targeted community

Informed by the community steering committees outlined in Activity 1, individual community events will be hosted with the primary objective to present unbiased information clearly and promote constructive conversations around the challenging issues of metal mining and water resources. Citizen input and reaction will be solicited to determine baseline knowledge of science and related issues coming into the program and after to determine how the program content increased participant knowledge. Program evaluations coupled with the citizen input will inform a project report that will outline lessons learned from the pilot study in attempt to advise potential program dissemination statewide.

ENRTF BUDGET: \$101,989

Outcome	Start Date	End Date
1. Delivery of outreach programs (forum/symposium style event) in each community; concurrent survey work	Apr 1, 2021	May 31, 2021
2. Analysis of survey work and reflections from the programs	Jun 1, 2021	Sep 30, 2021
3. Report development outlining results of pilot study, recommendation for statewide application, analysis of change in citizen literacy and perceptions	Oct 1, 2021	Dec 31, 2021
4. Distribution of report and presentations at appropriate venues	Jan 1, 2022	Apr 30, 2022
5. Final report to LCCMR completed and project findings posted and made available to inform the public and decision-makers.	May 1, 2022	June 30, 2022

III. PROJECT PARTNERS:

A. Partners receiving ENRTF funding: N/A

B. Partners NOT receiving ENRTF funding: Partners will be identified locally and included in the community steering committees

IV. LONG-TERM- IMPLEMENTATION AND FUNDING:

The work conducted on this pilot project will inform potential statewide application to support increased natural resource understanding throughout Minnesota. The model may be applied to other complex natural resource based issues where citizen’s values and understanding are critical to manage changing landscapes. Long-term funding for this and similar communication and education programs will be a blend of grant, matching, and in-kind support from the project collaborators, agencies, foundations, and the private and public sectors.

V. TIME LINE REQUIREMENTS:

The project duration would require two years of ENRTF funding from 7/1/2020 to 6/30/2022.

Attachment A: Project Budget Spreadsheet
 Environment and Natural Resources Trust Fund
 M.L. 2020 Budget Spreadsheet



Legal Citation:

Project Manager: Lawrence M. Zanko

Project Title: Enriching natural resource knowledge for informed decision making

Organization: University of Minnesota Duluth

Project Budget: \$196,627

Project Length and Completion Date: 2 years; June 30, 2022

Today's Date: April 14, 2019

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET		Budget	Amount Spent	Balance
BUDGET ITEM				
Personnel (Wages and Benefits)		\$ 183,727	\$ -	\$ 183,727
Larry Zanko, Principal Investigator: \$35,145 (sal. 74%; fringe 26%); 12% FTE annually for 2 years*				
Cindy Hagley, Co-Investigator: \$37,240 (sal. 74%; fringe 26%); 15% FTE each year for 2 years [†]				
Ashley McFarland, Co-Investigator: \$26,591 (sal. 74%; fringe 26%); 15% FTE each year for 2 years [†]				
TBD: Social science expertise for data gathering and analysis - \$12,412 (sal. 74%; fringe 26%); 5% FTE each year for 2 years				
NRRI Outreach Team: \$72,339 (sal. 74%; fringe 26%); cumulative 26% FTE each year for 2 years*				
In addition to the PI and co-PIs, the NRRI outreach team consists of 11 individuals listed below - 11 researchers covering the breadth of NRRI's research areas, and NRRI's communications specialist.				
NOTE: 3 to 5 team members will participate in most aspects of the outreach, while others will be available to serve when the needs match their expertise.				
George Hudak (Mining, Minerals, and Metallurgy Initiative Director)				
Lucinda Johnson (Water Initiative Director)				
Christopher Filstrup (Applied Limnologist)				
Euan Reavie (Assistant Water Initiative Director)				
George Host (Forest and Land Initiative Director)				
Dean Peterson (Senior Research Program Manager: Minerals, Metallurgy & Mining - Geologist)				
Pat Schoff (Senior Research Program Manager - Ecotoxicologist, and Sustainable Development)				
Valerie Brady (Senior Research Program Manager - Aquatic Ecologist)				
Will Bartsch (Senior Research Scientist)				
Chanlan Chun (Environmental Science and Engineering)				
June Breneman (Communications Specialist/External Affairs)				
* NOTE: NRRI research staff salaries are largely sponsored by external funds				
[†] Sea Grant staff salaries rely on 25% external funds				
		\$ -	\$ -	\$ -
Printing				
		\$ -	\$ -	\$ -
Travel expenses in Minnesota				
Statewide Travel (\$8,400): mileage at 2500 miles x \$0.58 per mile (\$2,900) and lodging and meals estimated at \$140 per night x 25 person-nights (\$3,500) : Conference registration for 4 people to present project findings (\$2,000). NOTE: Travel will be reimbursed per established University policy		\$ 8,400	\$ -	\$ 8,400
Other				
Expenses related to outreach meetings (\$2,000): (meeting room rental, etc.) associated with renting or paying fees for space needed for holding outreach forums.		\$ 4,500	\$ -	\$ 4,500
Outreach Materials (\$500): Printing/photocopying for outreach mailings and handouts.				
Expenses related to project report development/dissemination (\$2,000)				
COLUMN TOTAL		\$ 196,627	\$ -	\$ 196,627
SOURCE AND USE OF OTHER FUNDS CONTRIBUTED TO THE PROJECT				
	Status (secured or pending)	Budget	Spent	Balance
Non-State:		\$ -	\$ -	\$ -
State:		\$ -	\$ -	\$ -
In kind: Unrecovered indirect: 54% on modified total direct cost (\$198,320 base)		\$ 106,179	\$ -	\$ 106,179
Other ENRTF APPROPRIATIONS AWARDED IN THE LAST SIX YEARS				
	Amount legally obligated but not yet spent	Budget	Spent	Balance
		\$ -	\$ -	\$ -

Enriching natural resource knowledge for informed decision making

UMD
**Natural Resources
Research Institute**
UNIVERSITY OF MINNESOTA DULUTH
Driven to Discover



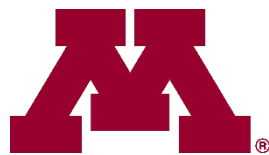
A pilot educational outreach program designed to engage and encourage Minnesotans to participate in well-informed discussions about the complex interrelationships between Minnesota's water and mineral resources and a clean energy future.



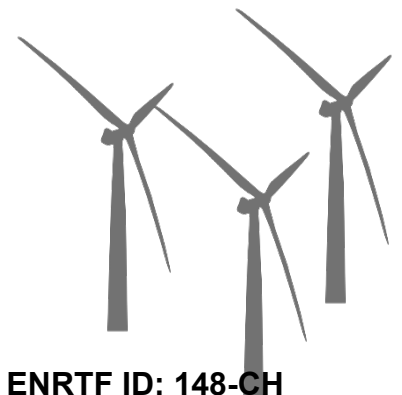
Engaging



Learning



Listening





Environment and Natural Resources Trust Fund (ENRTF) 2020 Project Manager Qualifications and Organization Description

PROJECT TITLE: Enriching natural resource knowledge for informed decision making

LAWRENCE ZANKO: Natural Resources Research Institute, University of Minnesota Duluth

Key Qualifications: Mr. Zanko is a Senior Research Program Manager (Researcher 7) for By-Product Reuse and Remediation within the Minerals, Metallurgy and Mining (M3) Program at UMD – NRRI.

Since his start with NRRI in 1988, he has participated in or led a broad spectrum of research projects dealing with non-ferrous minerals, ferrous minerals, industrial minerals (with a focus on construction aggregates), contaminated sediment remediation and reuse, resource modeling and estimation, and related policy issues.

Education: Master of Geological Engineering, University of Minnesota, Twin Cities (UMTC); Bachelor of Geological Engineering; and B.S. Microbiology (UMTC)

NRRI Research: Includes 1 patent (co-inventor), 4 peer-reviewed professional publications, and over 40 publicly available technical reports. Recent and current membership on two committees of the Transportation Research Board (TRB) of the National Academies: Aggregates (AFP70) and Resource Conservation and Recovery (ADC60).

CYNTHIA HAGLEY: Minnesota Sea Grant

Key Qualifications: Ms. Hagley is Environmental Quality Extension Educator for Minnesota Sea Grant. Her areas of focus include: Great Lakes coastal environments, water & environmental quality, shoreland management, and coastal resource use. She possesses skills to serve as a discussion facilitator and has experience in administrative and programmatic coordination.

Education: M.S. Aquatic Ecology/Limnology, University of California Davis; B.S. Biology, University of Minnesota

ASHLEY MCFARLAND: Minnesota Sea Grant

Key Qualifications: Ms. McFarland serves as the Business and Industry Liaison Extension Educator for Minnesota Sea Grant. She works with industry, policymakers, natural resource professionals, Great Lakes researchers, and the public to increase cooperation among business and industry organizations toward improving environmental management. She has experience managing a diverse research portfolio and is an experienced project manager.

Education: M.S. Environmental Science, Water Resources, Iowa State University; B.A. Political Science and Environmental Studies, Central College

Research: McFarland's research has primarily focused on watershed management, particularly in regions dominated by natural resource based economies – timber and mining. She has also worked extensively in agricultural communities by developing production systems that maximize on-farm productivity, profitability, and environmental stewardship.

ORGANIZATION DESCRIPTION

The Natural Resources Research Institute is a University of Minnesota Duluth applied research organization. NRRI's mission is to deliver research solutions to balance Minnesota's economy, resources and environment for resilient communities.

Minnesota Sea Grant is part of the National Oceanic and Atmospheric Administration's (NOAA) Sea Grant Program. Minnesota Sea Grant's mission is to facilitate interaction among the public and scientists to enhance communities, the environment, and economies along Lake Superior and Minnesota's inland waters by identifying information needs, fostering research, and communicating results.