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

Project Title: **ENRTF ID:** **151-CH**

Promoting Forest Health and Reducing Forest Fire Hazards

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

Sub-Category: C. Environmental Education

Total Project Budget: $ 152,373

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

Summary:

The goal is to improve forest health, reduce wildfires, and grow Minnesotas forest products industry by demonstrating the benefits of a thermally modified tamarack and white pine boardwalk and boathouse.

Name: Matthew Aro

Sponsoring Organization: U of MN

Job Title: Mr.

Department: Natural Resources Research Institute

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Location:

Region: Northeast

County Name: Aitkin, Carlton, Cook, Itasca, Koochiching, Lake, St. Louis

City / Township:

Alternate Text for Visual:

Minnesota stakeholders will be educated on the benefits of utilizing thermally modified tamarack and white pine as a boardwalk and boathouse at the Boulder Lake Environmental Learning Center.

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

PROJECT TITLE: Promoting Forest Health and Reducing Forest Fire Hazards

I. PROJECT STATEMENT

The goal is to improve forest health, reduce wildfires, and grow Minnesota's forest products industry by demonstrating value-added uses for underutilized tamarack and white pine. The outcomes are to:

1. Design, install, and demonstrate an approximately 250-ft boardwalk and 400 ft^2 boathouse manufactured from thermally modified tamarack (boardwalk) and white pine (boathouse) at the Boulder Lake Environmental Learning Center (BLELC) (Duluth, MN), an environmental education leader with an 18,000-acre outdoor classroom that annually serves 10,350 K-12 through adult learners.
2. Educate BLELC visitors and forest products industry stakeholders on the economic and environmental benefits of utilizing innovative, chemical-free thermally modified tamarack and white pine.

This project is important because, while Minnesota forests display fire regimes that can be managed through proper timber harvest, tamarack harvest has decreased 44% since its peak in 2010. Also, the Eastern larch beetle has killed over 50% of mature tamarack trees on over 280,000 acres, with no indication that is subsiding. These beetle-infested trees die and become fuel for wildfires. Similarly, white pine harvest has declined 66% in the past 30 years. With relatively few markets, a large portion of unharvested tamarack and white pine become ladder fuels, leading to increased fire risk. Climate change is also likely to increase the risk for larger and more frequent wildfires and large-scale disease/insect epidemics. Unfortunately, harvest of this tamarack and white pine is often expensive and delivers minimal economic returns. *Therefore, finding new, value-added uses for tamarack and white pine is becoming more urgent*.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Design, install, and demonstrate a thermally modified wood boardwalk and boathouse at BLELC
Description: *The objective is to construct a public thermally modified tamarack boardwalk and thermally modified white pine-cladded boathouse at BLELC. The lumber will be harvested from Minnesota forestland, kiln-dried at Lester River Sawmill (Duluth, MN), and thermally modified by Superior Thermowood (Palisade, MN). It will then be cut to size and finished at the NRRI, prior to being transported to the BLELC for subsequent installation. Installation will be led by a contractor (TBD) and BLELC, with NRRI support. The specific outcomes of this Activity are successful thermal modification of the lumber, and installation of the boardwalk and boathouse. These outcomes will be used to allow BLELC visitors to use the new boardwalk and boathouse and be educated on the environmental benefits and economic opportunities presented by increased production of thermally modified wood. The outcomes will be evaluated by number of volunteers assisting with boardwalk and boathouse installation, and time to install the boardwalk and boathouse.*

ENRTF BUDGET: $106,420

Outcome	Completion Date
1. Thermal modification of tamarack and white pine	*11/30/2020*
2. Completion of boardwalk design and installation	*06/30/2021*
3. Completion of boathouse design and installation	*09/30/2021*

Activity 2: Dissemination of economic and environmental benefits

Description: *The objective is to disseminate the economic and environmental benefits of increased harvest of tamarack and white pine and subsequent production of thermally modified wood. To accomplish this Activity and publicize this innovative use of wood, we will communicate these benefits to BLELC visitors, landowners, timber harvesters and processors, wood products distributors, and other industry stakeholders. The specific outcomes are:*

1. *Sharing of web-based media (e.g., electronic newsletters, webpages/social media) with public and private stakeholders,*
2. *Presentations to National Forest Supervisors and state utilization foresters across Minnesota,*
3. *Creation of an educational video highlighting project activities and benefits,*
4. *Posting of educational signage at BLELC, and*
5. *Execution of educational workshops at BLELC. These workshops will be used to demonstrate the economic opportunities presented by thermal modification technology while improving forest health and reducing wildfire hazards in Minnesota. The outcomes will be evaluated by successful creation and dissemination of the educational video, number of reports/web-based media shared, and number of BLELC visitors educated on the project's benefits.*

ENRTF BUDGET: $45,953

Outcome	Completion Date
1. Sharing of web-based media with public and private stakeholders (will occur throughout Years 1 and 2)	*06/30/2022*
2. Presentations to National Forest Supervisors and state utilization foresters	*03/30/2022*
3. Creation of an educational video	*03/30/2022*
4. Posting of educational signage at BLELC	*06/30/2022*
5. Execution of educational workshops at BLELC (will occur throughout Year 2)	*06/30/2022*

III. PROJECT PARTNERS AND COLLABORATORS:

- Matthew Aro, Project Leader, NRRI; coordination of all project activities and reporting
- Scott Johnson, Research Scientist, NRRI; sizing/finishing of lumber and assisting with installation
- Patrick Donahue, Research Program Manager, NRRI; disseminating project benefits to stakeholders
- June Breneman, External Affairs Coordinator, NRRI; PR/media relations, developing the educational video and disseminating project benefits to stakeholders
- Jeremy Weizel, Marketing Strategist, NRRI; assisting with PR/media relations and developing the educational video
- Ryan Hueffmeier, Program Director, BLELC; coordinating boardwalk and boathouse installation with the contractor, delivering educational workshops at BLELC, and disseminating project benefits to stakeholders

IV. LONG-TERM IMPLEMENTATION AND FUNDING:

This project accelerates and complements a larger strategy to reduce wildfire threats while improving forest health and productivity by demonstrating *commercially-available* thermal modification technology that can provide new incentives to increase harvest, while simultaneously providing economic development and job creation opportunities. While the proposed Activities will be completed during the funded project period, the project team intends to continue to share project results and benefits with key stakeholders after project completion. Project Manager Matthew Aro (NRRI) and Ryan Hueffmeier (BLELC) will lead these efforts using funds legislatively-appropriated to the University of Minnesota Duluth.

Attachment A: Project Budget Spreadsheet
Environment and Natural Resources Trust Fund
M.L. 2020 Budget Spreadsheet
Legal Citation:
Project Manager: Matthew Aro
Project Title: Promoting Forest Health and Reducing Forest Fire Hazards
Organization: University of Minnesota Duluth, Natural Resources Research Institute (NRRI)
Project Budget: $152,373
Project Length and Completion Date: 2 years (completed 06/30/2022)
Today's Date: 04/08/2019

	Budget	Amount Spent	Balance
BUDGET ITEM			
Personnel (Wages and Benefits)	$ 81,736	$ -	$ 81,736
Matthew Aro (NRRI, Project Manager); $30,128 (74% salary, 26% benefits), 15% FTE each year for two years. *Note: NRRI research staff salaries are largely sponsored by external funds			
Scott Johnson (NRRI, sizing and finishing of lumber, boardwalk/boathouse installation); $14,275 (77% salary, 23% benefits), 10% FTE each year for two years. *Note: NRRI research staff salaries are largely sponsored by external funds			
Patrick Donahue (NRRI, dissemination of project benefits); $6,175 (74% salary, 26% benefits), 2% FTE each year for two years			
June Breneman (NRRI, PR/media relations, development of educational video, dissemination of project benefits); $8,429 (74% salary, 26% benefits), 5% FTE each year for two years			
Jeremy Weizel (NRRI, PR/media relations, development of educational video); $11,501 (77% salary, 23% benefits), 7.5% FTE each year for two years			
Ryan Hueffmeier (BLELC, coordinating boardwalk/boathouse installation, delivering educational workshops, dissemination of project benefits); $11,228 (74% salary, 26% benefits), 10% FTE each year for two years.			
Professional/Technical/Service Contracts			
Contract with TBD to install the boardwalk and boathouse will be selected through a competitive bid process. (Estimate of $28,000 for boathouse, $17,000 for boardwalk.)	$ 45,000	$ -	$ 45,000
Contract with Superior Thermowood (Palisade, MN) to thermally modify the tamarack and white pine lumber. A single-source contract will be used because this is the only company in Minnesota that has the equipment and expertise required to thermally modify lumber.	$ 4,000	$ -	$ 4,000
Equipment/Tools/Supplies			
2,000 board-feet of kiln-dried tamarack (boardwalk) ($5,500); 2,0000 board-feet of kiln-dried white pine ($5,500) (boathouse)	$ 11,000	$ -	$ 11,000
Wood shop supplies for sizing/finishing lumber: circular saw blades (x4, $47/ea, $188); chop saw blade (x1, $75); planer head (x1, $378); planer (x1, $600)	$ 1,241	$ -	$ 1,241
Wood coating/sealer (x30 gal, $125/gal)	$ 3,750	$ -	$ 3,750
Supplies for building weatherproof educational signage at BLELC	$ 2,000	$ -	$ 2,000
Printing			
Printing paper/large-format printing costs for brochures and educational materials	$ 250	$ -	$ 250
Travel expenses in Minnesota			
12 round trips for Aro/Johnson from NRRI to BLELC (6 trips in year one, 6 trips in year two) to assist in installing the boardwalk and boathouse. (44 miles round trip x $0.58/mile) + $10/day NRRI vehicle fee. (Travel is in accordance with UMN Policy.)	$ 427	$ -	$ 427
12 round trips for Aro/Breneman/Weizel from NRRI to BLELC (6 trips in year one, 6 trips in year two) to develop the educational video and PR/media materials. (44 miles round trip x $0.58/mile) + $10/day NRRI vehicle fee. (Travel is in accordance with UMN Policy.)	$ 427	$ -	$ 427
6 rounds trips for Aro/Donahue/Hueffmeier from NRRI to public and private stakeholders to disseminate project activities and benefits. (200 miles round trip x $0.58/mile) +$10/day NRRI vehicle fee. (Travel is in accordance with UMN Policy.)	$ 756	$ -	$ 756
Other			
Shipping of kiln-dried lumber from Lester River Sawmill (Duluth, MN) to Superior Thermowood (Palisade, MN) for thermal modification ($850). Shipping of thermally modified lumber from Superior Thermowood (Palisade, MN) to BLELC (Duluth, MN) for boardwalk and boathouse installation ($850).	$ 1,700	$ -	$ 1,700
NRRI Wood Shop use fee (for finishing/sizing lumber) (160 hours x $0.54/hours)	$ 86	$ -	$ 86
COLUMN TOTAL	$ 152,373	$ -	$ 152,373

SOURCE AND USE OF OTHER FUNDS CONTRIBUTED TO THE PROJECT	**Status (secured or pending)**	**Budget**	**Spent**	**Balance**
Non-State:		$ -	$ -	$ -
State:		$ -	$ -	$ -
In-Kind: Unrecovered F&A @ 33% MTDC		$ 50,283	$ -	$ 50,283

Other ENRTF APPROPRIATIONS AWARDED IN THE LAST SIX YEARS	**Amount legally obligated but not yet spent**	**Budget**	**Spent**	**Balance**
		$ -	$ -	$ -

Natural Resources Research Institute
University of Minnesota Duluth
Driven to Discover

PROJECT DESCRIPTION:
Promoting Forest Health and Reducing Forest Fire Hazards

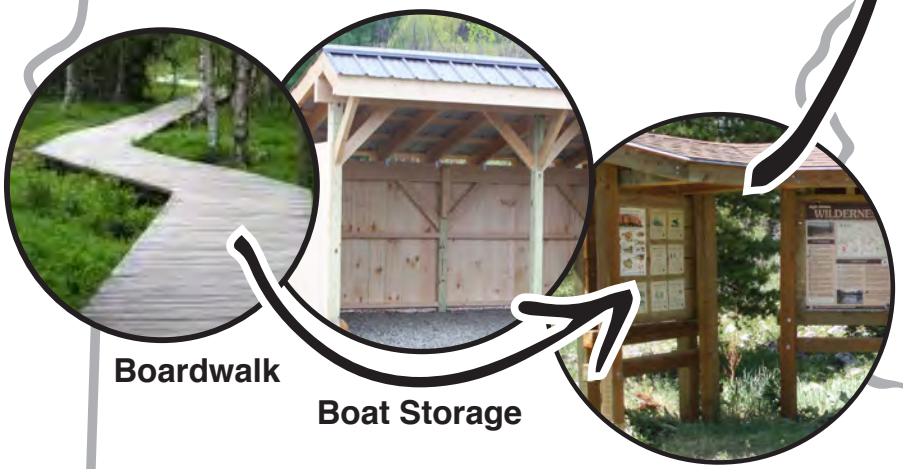
Source: Northern MN Small Diameter Tamarack & White Pine

Produce Thermally Modified Wood to Build a Recreational Resource

Boulder Lake Environmental Learning Center
Recreational Resource and Demonstration Project

PROJECT OUTCOMES

- Promote sustainable harvesting of underutilized wood species
- Value-add process develops regional natural resources
- Reduce fire risk in Northern MN Forests
- Develop resources for recreational opportunities
- Public educational opportunity



Boardwalk

Boat Storage

Inform and Educate

Develop Public Educational Opportunity

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Project Title: Promoting Forest Health and Reducing Forest Fire Hazards

Project Manager Qualifications

Project Manager Matthew Aro is a Research Program Manager of Wood Products at the University of Minnesota Duluth Natural Resources Research Institute (NRRI). He earned a B.S. in Broad Field Science from the University of Wisconsin-Superior, an M.S. in Management of Technology from the University of Minnesota, and an M.S. in Natural Resources Science and Management from the University of Minnesota. Since his start with the NRRI in 2003, he has worked on a broad spectrum of applied research projects, often conducted in cooperation with private industry, dealing with wood- and natural fiber-based materials. He regularly interacts and collaborates with public and private sector professionals and academicians in the wood products field. Project collaborators have included state agencies, the U.S. Department of Agriculture, the National Science Foundation, and the private sector (both in the U.S. and abroad). Much of this work has focused on advancing industrial development of thermally modified wood in the U.S.

Organization Description

The NRRI was founded by the Minnesota State Legislature in 1983 with a mission to deliver research solutions to balance our economy, resources, and environment for resilient communities. It focuses on developing sustainable, natural resource-based industries; informing environmental management and policy; supporting business and entrepreneurial opportunities; and assisting industry and communities in defining and maintaining the social license. NRRI Directors, program managers, scientists, and research staff have extensive experience in managing large, interdisciplinary projects whose objectives include the development of technologies and tools for environmental assessment, resource management, and positive economic development. For more information, please visit www.nrri.umn.edu.