

**Environment and Natural Resources Trust Fund**

# 2021 Request for Proposal

## **General Information**

**Proposal ID:** 2021-036

**Proposal Title:** A Second Life For Urban Ash Trees

## **Project Manager Information**

**Name:** Matthew Aro

**Organization:** U of MN - Duluth - NRRI

**Office Telephone:** (218) 788-2700

**Email:** maro@d.umn.edu

## **Project Basic Information**

**Project Summary:** This project is a model for reducing the community impact of emerald ash borer (EAB) and promoting long-term carbon sequestration via demonstration of beneficial reuse of EAB-infested ash trees.

**Funds Requested:** $156,000

**Proposed Project Completion:** 2023-06-30

**LCCMR Funding Category:** Small Projects (H) **Secondary Category:** Land Acquisition for Habitat and Recreation (G)

## **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?** Region(s): SE

**When will the work impact occur?** During the Project

## **Narrative**

**Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.**

Minnesota has the largest concentration of ash trees in the U.S., where 1 in 5 community trees are ash – all of these trees are susceptible to the Emerald Ash Borer (EAB), an invasive beetle that attacks and kills 99% of ash trees one to three years after infestation. EAB infestations were discovered in St. Paul in 2009, greater Duluth in 2016, and the Rochester area in 2015. Twenty one Minnesota counties now report EAB infestations. Rochester currently has tree canopy cover estimated at 25% citywide, with 15% being ash. It is likely that a majority of these ash trees will be infested and killed by the EAB unless costly mitigation efforts are taken.  
  
It costs approximately $1,000 to remove and replace a single city-owned ash tree, and the MN DNR estimates that EAB could kill up to 25,000 trees in community forests annually. It is estimated that EAB management will cost the City of Rochester $5.5 million. While composting, landfilling, or burning of the infested trees are mitigation options, they are less desirable than higher value utilization options, such as in added-value wood products.

**What is your proposed solution to the problem or opportunity discussed above? i.e. What are you seeking funding to do? You will be asked to expand on this in Activities and Milestones.**

We propose to demonstrate the value-added reuse of ash trees from EAB infestation zones in Rochester by developing thermally modified ash boardwalk material for construction of a new 400-foot-long boardwalk in Gamehaven Regional Park in Rochester. Thermal modification is a commercially available, chemical-free technology that improves dimensional stability and decay and moisture resistance of lumber. The thermal treatment is severe enough to effectively kill EAB eggs and larvae and thereby prevent its spread. Our objective is to use this technology to add value to the EAB-infested ash trees in Rochester, a community considered to be at “high risk” of EAB infestation, while supporting the regional manufacturing industry and keeping the wood in the community by promoting the production, sales, and use of thermally modified ash in urban parks. Further, by developing and utilizing these durable, chemical-free wood products, there is long-term sequestration of carbon in the ash trees. (If the wood was simply disposed of via burning, greenhouse gases and pollutants such as carbon dioxide (CO2), particulate matter, carbon monoxide (CO), sulfur dioxide (SO2), volatile organic compounds (VOCs), and nitrogen oxides (NOx) would be immediately emitted to the atmosphere.)

**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?**

The outcomes are designed to increase value-added utilization of EAB-infested ash, increase long-term sequestration of carbon in the ash trees, and enhance the experience for Gamehaven Regional Park visitors. The outcomes are to:  
1. Design and install a 400-foot-long boardwalk manufactured from thermally modified ash at Gamehaven Regional Park.  
2. Educate Gamehaven Regional Park visitors, community members, and forest products industry stakeholders on the economic and environmental benefits of utilizing innovative, chemical-free thermally modified ash from EAB-infested trees.  
3. Demonstrate a model for value-added utilization of EAB-infested ash that can be replicated elsewhere in Minnesota parks and outdoor recreation areas.

## **Activities and Milestones**

### **Activity 1: Thermally modify the EAB-infested ash lumber to impart improved exterior exposure performance without chemicals**

**Activity Budget:** $18,400

**Activity Description:**We will execute a Compliance Agreement with the Minnesota Department of Agriculture to ensure that all EAB-related regulations are followed prior to transporting the lumber outside of the Rochester EAB quarantine zone. Then, the 8-feet-long by 2-inches-thick by 6-inches-wide ash lumber for the boardwalk surface will be shipped to Superior ThermoWood of Brainerd (www.thermowoodmn.co; Palisade, MN) and thermally modified to impart improved dimensional stability and decay and moisture resistance. The wood will then be shipped to Rochester, MN for storage until boardwalk construction begins.

**Activity Milestones:**

|  |  |
| --- | --- |
| **Description** | **Completion Date** |
| Execute Compliance Agreement with Minnesota Department of Agriculture for safe transport of ash lumber | 2023-01-31 |
| Transport the ash lumber from Rochester to Superior ThermoWood of Brainerd (Palisade, MN) | 2023-02-28 |
| Thermally modify the ash lumber | 2023-03-31 |
| Transport the thermally modified ash lumber from Palisade to Gamehaven Regional Park (Rochester) | 2023-04-30 |

### **Activity 2: Construct boardwalk and disseminate economic and environmental benefits of value-added utilization of EAB-infested ash**

**Activity Budget:** $68,904

**Activity Description:**Rochester Department of Parks and Recreation will coordinate construction of a 400-foot-long boardwalk in Gamehaven Regional Park. The boardwalk will pass over a wetland to give park visitors and neighborhood members easy and new access to the park. The NRRI and other volunteers will provide assistance in boardwalk construction. Once the boardwalk is installed, the NRRI and Rochester Department of Parks and Recreation will disseminate the economic and environmental benefits of value-added utilization of EAB-infested ash from the City of Rochester. To accomplish this Activity and publicize this innovative use of wood, we will communicate these benefits to Park visitors, landowners, timber harvesters and processors, wood products distributors, and other industry stakeholders. We will also educate visitors during Citizen Forester program events, share web-based media (e.g., electronic newsletters, webpages, social media) with public and private stakeholders, post educational signage at Gamehaven Regional Park, and conduct an educational workshop at Gamehaven Regional Park.

**Activity Milestones:**

|  |  |
| --- | --- |
| **Description** | **Completion Date** |
| Conduct workshop to educate Park visitors on economic and environmental benefits of increased ash utilization | 2023-06-30 |
| Share economic and environmental benefits of increased ash utilization with a range of stakeholders | 2023-06-30 |
| Construct 400-foot-long boardwalk in Gamehaven Regional Park | 2023-06-30 |

### **Activity 3: Harvest EAB-infested ash in Rochester, mill into lumber, and kiln dry**

**Activity Budget:** $68,696

**Activity Description:**EAB-infested ash trees in Rochester will be harvested during normal operations in the winter of 2021/2022 and milled into lumber in the spring of 2022 using a portable sawmill. Milling will produce ash lumber that is 8-feet-long by 2-inches-thick by 6-inches-wide for the boardwalk surface; the boardwalk will require 8,500 board-feet of this lumber. The team will also produce ash lumber that is 2-inches-thick by 12-inches-wide for the boardwalk framing members; this will require 2,640 board-feet of lumber. The team will also produce black locust lumber posts that are 4-inches-wide by 4-inches-thick for the boardwalk supports; this will require 1,056 board feet of lumber. All lumber will be kiln-dried by a commercial partner located within the Rochester area EAB quarantine zone.

**Activity Milestones:**

|  |  |
| --- | --- |
| **Description** | **Completion Date** |
| Harvest EAB-infested ash trees | 2022-03-31 |
| Harvest black locust trees and mill into posts for boardwalk supports | 2022-05-31 |
| Mill the harvested ash trees into lumber for boardwalk surface and framing members | 2022-05-31 |
| Kiln dry all lumber | 2022-12-31 |

## **Project Partners and Collaborators**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Organization** | **Role** | **Receiving Funds** |
| John Bieganek | Superior ThermoWood of Brainerd | John will be responsible for receiving the ash lumber, thermally modifying the ash lumber, and preparing the thermally modified ash lumber for shipment to Gamehaven Regional Park in Rochester, MN. | Yes |
| Jeff Haberman | City of Rochester (MN) Department of Parks and Recreation | Jeff will be responsible for harvesting the EAB-infested ash trees, milling the lumber, preparing the lumber for shipment to Superior ThermoWood of Brainerd, coordinating construction of the boardwalk at Gamehaven Regional Park, and assisting in disseminating the environmental and economic benefits of value-added utilization of EAB-infested ash trees. | Yes |

## **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 be funded?**This project accelerates and complements a larger strategy to develop best and highest-value reuse of EAB-infested ash. 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) will lead these efforts using funds legislatively-appropriated to the University of Minnesota Duluth.

## **Project Manager and Organization Qualifications**

**Project Manager Name:** Matthew Aro

**Job Title:** Research Program Manager

**Provide description of the project manager’s qualifications to manage the proposed project.**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:** U of MN - Duluth - NRRI

**Organization Description:**The Natural Resources Research Institute (NRRI) is a part of the University of Minnesota Duluth and employs over 130 scientists, engineers and technicians. Its mission is to deliver research solutions to balance our economy, resources and environment for resilient communities. NRRI collaborates broadly across the University system, the state and the region to address the challenges of a natural resource-based economy.  
  
By partnering with industry, business leaders, agency decision-makers and many others, NRRI researchers frame and deliver on real-world solutions. NRRI scientists have extensive experience in managing large, interdisciplinary projects. Major objectives include the development of tools for environmental assessment and resource management. NRRI’s role is as an impartial, science-based resource that develops and translates knowledge by characterizing and defining value-resource opportunities, minimizing waste and environmental impact, maximizing value from natural resource utilization and maintaining/restoring ecosystem function.  
  
Major outcomes from NRRI projects include informing environmental management and policy and assisting industry and communities in defining and maintaining the social license to operate in natural systems. NRRI has an established mechanism for sharing outcomes through press releases, publication in peer-reviewed journals, annual reports (https://www.nrri.umn.edu/resources-publications/annual-reports), periodicals, and through social media channels.

## **Budget Summary**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Category / Name** | **Subcategory or Type** | **Description** | **Purpose** | **Gen. Ineli gible** | **% Bene fits** | **# FTE** | **Class ified Staff?** | **$ Amount** |
| **Personnel** |  |  |  |  |  |  |  |  |
| Matthew Aro |  | Project Manager responsible for preparing all LCCMR-required reports and leading project tasks to ensure they are completed on time and within budget. |  |  | 26.7% | 0.4 |  | $41,284 |
| Scott Johnson |  | Assist with boardwalk construction and shipping of lumber. |  |  | 24.1% | 0.1 |  | $7,429 |
|  |  |  |  |  |  |  | **Sub Total** | **$48,713** |
| **Contracts and Services** |  |  |  |  |  |  |  |  |
| City of Rochester (MN), Department of Parks and Recreation | Sub award | Will be responsible for harvesting the EAB-infested ash, milling into lumber, preparing the lumber for shipment to Superior ThermoWood of Brainerd, coordinating construction of the new boardwalk at Gamehaven Regional Park, and assisting in disseminating the environmental and economic benefits of value-added utilization of EAB-infested ash. |  |  |  | 0 |  | $60,900 |
| Superior ThermoWood of Brainerd | Professional or Technical Service Contract | Superior ThermoWood of Brainerd will thermally modify 8,500 board-feet of ash lumber, finish/plane the lumber, and prepare it for return shipment to Rochester, MN. |  |  |  | 0 |  | $13,317 |
| TBD | Professional or Technical Service Contract | To disseminate the economic and environmental benefits of increased utilization of EAB-infested ash, we will post weatherproof educational signage at Gamehaven Regional Park. This expense is for hiring a company to develop the signage. |  |  |  | 0 |  | $5,000 |
| TBD | Professional or Technical Service Contract | We will contract with a vendor to kiln dry all lumber used in the project. The vendor will be located within the EAB quarantine zone so the project team will be able to safely and legally transport the lumber from Rochester to the kiln dry vendor. |  |  |  | 0 |  | $15,625 |
|  |  |  |  |  |  |  | **Sub Total** | **$94,842** |
| **Equipment, Tools, and Supplies** |  |  |  |  |  |  |  |  |
|  | Tools and Supplies | Supplies for installation of the weatherproof educational signage, including framing and support posts. | These supplies will be used to support the weatherproof educational signage, which will be installed at Gamehaven Regional Park. |  |  |  |  | $2,618 |
|  |  |  |  |  |  |  | **Sub Total** | **$2,618** |
| **Capital Expenditures** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
| **Acquisitions and Stewardship** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
| **Travel In Minnesota** |  |  |  |  |  |  |  |  |
|  | Miles/ Meals/ Lodging | Roundtrip automobile travel from Duluth to Rochester (3 trips in Year 2). Each trip includes one overnight and per diem. | The purpose of this travel is to assist in construction of the boardwalk and to host the educational workshop at Gamehaven Regional Park. |  |  |  |  | $2,077 |
|  |  |  |  |  |  |  | **Sub Total** | **$2,077** |
| **Travel Outside Minnesota** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | **Sub Total** | **-** |
| **Printing and Publication** |  |  |  |  |  |  |  |  |
|  | Printing | Printing paper/large-format printing costs for educational materials | The printing will be used to develop educational materials to disseminate the economic and environmental benefits of increased utilization of EAB-infested ash |  |  |  |  | $250 |
|  |  |  |  |  |  |  | **Sub Total** | **$250** |
| **Other Expenses** |  |  |  |  |  |  |  |  |
|  |  | Shipping | Shipping ash lumber from kiln dry vendor to Superior ThermoWood of Brainerd (Palisade, MN). |  |  |  |  | $2,500 |
|  |  | Shipping | Shipping ash lumber from Superior ThermoWood of Brainerd (Palisade, MN) to Gamehaven Regional Park (Rochester, MN). |  |  |  |  | $2,000 |
|  |  | Shipping | Shipping lumber from kiln dry vendor to Gamehaven Regional Park (Rochester, MN). |  |  |  |  | $1,000 |
|  |  | Shipping | Shipping lumber from Rochester to kiln dry vendor |  |  |  |  | $2,000 |
|  |  |  |  |  |  |  | **Sub Total** | **$7,500** |
|  |  |  |  |  |  |  | **Grand Total** | **$156,000** |

### **Classified Staff or Generally Ineligible Expenses**

|  |  |  |  |
| --- | --- | --- | --- |
| **Category/Name** | **Subcategory or Type** | **Description** | **Justification Ineligible Expense or Classified Staff Request** |

### **Non ENRTF Funds**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | **Specific Source** | **Use** | **Status** | **Amount** |
| **State** |  |  |  |  |
|  |  |  | **State Sub Total** | **-** |
| **Non-State** |  |  |  |  |
| In-Kind | UMN unrecovered indirect costs are calculated at the UMN negotiated rate for research of 55% modified total direct costs. | Indirect costs are those costs incurred for common or joint objectives that cannot be readily identified with a specific sponsored program or institutional activity. Examples include utilities, building maintenance, clerical salaries, and general supplies. (https://research.umn.edu/units/oca/fa-costs/direct-indirect-costs) | Secured | $66,055 |
| In-Kind | City of Rochester, Department of Parks and Recreation | The City of Rochester Department of Parks and Recreation will contribute $8,785 of in-kind support to the project, as described below.  City of Rochester staff time for milling ash lumber: 200 hours at $35/hour ($7,000) and 30 hours at $59.50/hour ($1,785). | Secured | $8,785 |
|  |  |  | **Non State Sub Total** | **$74,840** |
|  |  |  | **Funds Total** | **$74,840** |

## **Attachments**

### **Required Attachments**

#### ***Visual Component***

File: [faef7231-d75.pdf](https://lccmrprojectmgmt.leg.mn/media/map/faef7231-d75.pdf)

#### ***Alternate Text for Visual Component***

Minnesota stakeholders and Gamehaven Regional Park (Rochester, MN) visitors will be educated on the economic and environmental benefits of utilizing thermally modified ash (made from emerald ash borer (EAB)-infested ash trees harvested in Rochester) for a new boardwalk constructed at Gamehaven Regional Park.

### **Optional Attachments**

#### ***Support Letter or Other***

|  |  |
| --- | --- |
| **Title** | **File** |
| Letter of Support from Rochester Active Sports Club (RASC) | [7caa459b-2ec.pdf](https://lccmrprojectmgmt.leg.mn/media/attachments/7caa459b-2ec.pdf) |
| Letter of Support from ArborWood Co. | [4ba1c98b-629.pdf](https://lccmrprojectmgmt.leg.mn/media/attachments/4ba1c98b-629.pdf) |
| Letter of Support from BlueLinx | [28530c36-902.pdf](https://lccmrprojectmgmt.leg.mn/media/attachments/28530c36-902.pdf) |
| Letter of Support from U.S. Forest Service Forest Products Marketing Unit | [b7f03961-02a.pdf](https://lccmrprojectmgmt.leg.mn/media/attachments/b7f03961-02a.pdf) |
| Letter of Participation from Superior ThermoWood of Brainerd | [2d5ec0d6-928.pdf](https://lccmrprojectmgmt.leg.mn/media/attachments/2d5ec0d6-928.pdf) |
| Letter of Match Commitment from Rochester Parks and Recreation | [76a9682d-f23.pdf](https://lccmrprojectmgmt.leg.mn/media/attachments/76a9682d-f23.pdf) |
| Sponsored Projects Transmittal Letter | [f5d388da-bfa.pdf](https://lccmrprojectmgmt.leg.mn/media/attachments/f5d388da-bfa.pdf) |

## **Administrative Use**

**Does your project include restoration or acquisition of land rights?**   
 No

**Does your project have patent, royalties, or revenue potential?**   
 No

**Does your project include research?**   
 No

**Does the organization have a fiscal agent for this project?**   
 Yes, Sponsored Projects Administration