



Environment and Natural Resources Trust Fund

M.L. 2025 Approved Work Plan

General Information

ID Number: 2025-097

Staff Lead: Tom Dietrich

Date this document submitted to LCCMR: June 9, 2025

Project Title: Accelerated Genetic Migration of Bur Oak- 10yr Data

Project Budget: \$223,000

Project Manager Information

Name: Wiley Buck

Organization: Great River Greening

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Web Address: <https://www.greatrivergreening.org/>

Project Reporting

Date Work Plan Approved by LCCMR: June 24, 2025

Reporting Schedule: March 1 / September 1 of each year.

Project Completion: June 30, 2029

Final Report Due Date: August 14, 2029

Legal Information

Legal Citation: M.L. 2025, First Special Session, Chp. 1, Art. 2, Sec. 2, Subd. 08e

Appropriation Language: \$223,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with Great River Greening to assess the growth and survival of previously restored bur oak ecotypes to inform techniques for improved climate resiliency. This appropriation may also be used to enhance the previous plantings and disseminate results of the study to practitioners, students, landowners, and others. This appropriation is available until June 30, 2029, by which time the project must be completed and final products delivered.

Appropriation End Date: June 30, 2029

Narrative

Project Summary: Collect the 8-10yr data on growth and survival, of three bur oak ecotypes previously planted in four restoration sites under ML2015 "Enhancing Restoration Techniques for Improved Climate Resilience". Disseminate results.

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

Trees, particularly oaks, are both slow-growing and key species for many of our natural communities. Growth and survival information for different oak ecotypes in the 10 year time period following planting, needs to be collected in order to inform restoration practices. While tree planting innovations abound, an earlier ML2015 planting offers a longer-term data collection opportunity, and is one of the few initiatives that used an 'extreme climate/ weather whiplash' ecotype from NW MN, in addition to southern and local ecotypes, presenting an opportunity to compare these three ecotypes in terms of growth and survival during the last 10 years, to inform successful bur oak planting practices in the face of climate change which includes weather extremes, precipitation and temperature 'whiplash', in addition to overall warming.

What is your proposed solution to the problem or opportunity discussed above? Introduce us to the work you are seeking funding to do. You will be asked to expand on this proposed solution in Activities & Milestones.

Partnering with the U of M Center for Forest Ecology, we will collect the available 10 year growth and survival data on three (3) bur oak (*Quercus macrocarpa*) ecotypes planted using standard restoration techniques, in four (4) restoration sites - Allemansratt Wilderness Park (Lindstrom), Bald Eagle-Otter Lakes Regional Park (White Bear Lake), Fish Creek Natural Area (Maplewood) and South Washington Central Corridor (Cottage Grove/Woodbury) - using 'common garden' research design. Over 5800 of these bur oak trees were planted in Phase 1 with a previous Trust Fund ML2015 allocation; first year growth and survival data was collected and analyzed with the same allocation.

We will return to each of the four planting sites to collect and analyze this subsequent set of data. We will also enhance the plantings equally using typical restoration practices as warranted, including such treatments as mulching, fencing, mowing and establishing nurse crops, to increase overall growth and survival rates.

Data will be analyzed and a final report prepared. We will then disseminate the results, to be presented to researchers, students and academics by U of M, and by GRG presentations to practitioners. An interpretive panel will be developed, fabricated, and installed at each site.

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?

Inform the state-of-the-art for bur oak restoration planting, to help maximize success of future plantings through climate resilience, in the face of climate change. Bur oaks are keystone species for many of Minnesota's rarest and most important natural communities including oak savanna. Natural rates of migration for bur oaks will not meet the need for rapid migration and recolonization rates with our forecasted climate change. This data will inform future bur oak planting activities.

Project Location

What is the best scale for describing where your work will take place?

Region(s): Metro

What is the best scale to describe the area impacted by your work?

Statewide

When will the work impact occur?

During the Project and In the Future

Activities and Milestones

Activity 1: Monitor Site Plantings

Activity Budget: \$10,200

Activity Description:

Great River Greening and Landowner will perform a walk-through monitoring visit at each of the four (4) original planting sites. During this site visit, we will assess accessibility and access for researchers; identify restoration/enhancement needs for the tree plantings. We will write management briefs for each individual site, including a timeline for enhancement, and in conjunction with the U of MN, a data collection timeline.

Activity Milestones:

Description	Approximate Completion Date
Complete 4 site visits with all partners and landowners	November 30, 2025
Coordinate Data Collection and Enhancement Timelines and Plans	March 31, 2026

Activity 2: Collect and Analyze Data, Create Report

Activity Budget: \$121,400

Activity Description:

Activity 2. Data collection and analyses by Dr. Lee Frelich with student assistance. This consists of relocating trees of three ecotypes—Roseau (north), Rice County (central) and Des Moines (south)—planted at each of four metro sites in 2016. Trees were individually located with GPS in 2016 (5899 trees). Those that are missing in 2024 will be considered as mortality since 2016. A subset (2589) of trees had height and diameter growth measured during their first full growing season (summer of 2017), and these will be remeasured at the end of eight years of growth (summer 2024). We will test the hypotheses that: (1) survival was equal among the three seed sources (taking into account differences in survival among planting sites to isolate the effects of seed source), and (2) height and diameter growth were equal among the three seed sources (taking into account growth rate differences among planting sites to isolate the seed source effect). The key item of interest is whether there is a difference in mortality, height growth and diameter growth among the three seed sources. South seed source trees should perform best because they may be preadapted to the climate warming that has occurred.

Activity Milestones:

Description	Approximate Completion Date
Data Collection protocol developed and finalized	April 30, 2026
Data Collection	September 30, 2026
Data Summary, Analysis and Final Report	February 28, 2027

Activity 3: Enhancement of Existing Plantings

Activity Budget: \$39,200

Activity Description:

At each site, equal treatment to all plantings to increase success following typical restoration practices will be applied.

Anticipated activities may include but are not limited to mulching, mowing, herbivore protection repair/replacement, planting woody nurse crop, and non-native invasive species control. Activities will be determined and planned in earlier

activities, and implemented here.

This work will be completed via subcontract(s) with service provider(s) chosen through RFP process and vendors, along with GRG crew and landowner in-kind assistance and coordination.

Activity Milestones:

Description	Approximate Completion Date
Implement Pre-Winter Enhancement Needs	October 31, 2025
Implement Growing Season Enhancement Needs	October 31, 2027

Activity 4: Dissemination

Activity Budget: \$52,200

Activity Description:

U of MN and GRG will disseminate information about methods, objective, results and data analysis of this project.

GRG will disseminate this information through our practitioner partnerships and membership: Anoka Sand Plain Partnership; Metro Big Rivers Partnership; Cannon River Watershed Habitat Restoration and Protection Partnership; Camp Ripley Sentinel Landscape Partnership; Sauk River Watershed Habitat Restoration and Protection Partnership, and; Metro Conservation Network.

GRG will present at one (1) or more Minnesota-based workshops and/or conferences totaling 50 or more attendees, such as the Minnesota Shade Tree Short Course or equivalent, and present / discuss with five (5) or more Minnesota practitioner organizations, other Minnesota landowners, and/or government units. GRG will present and discuss results with the four (4) landowners.

GRG will present at one (1) out-of-state regional conference that includes Minnesota representatives, such as the Midwest Society for Ecological Restoration annual conference, or equivalent.

Dissemination by UMN: Results of the study will be presented by students at regional professional meetings, used in classroom teaching, submitted for publication in a peer-reviewed journal article, and discussed in varied news media outlets.

Activity Milestones:

Description	Approximate Completion Date
UMN Final Report	March 31, 2027
Present at Academic Conference or equivalents	December 31, 2027
Present at Minnesota Shade Tree Short Course or equivalent; share with practitioners via partnership meetings	November 30, 2028
Present at Out-of-State SER Conference or Similar :GRG	November 30, 2028
Develop and install interpretive panels on sites	November 30, 2028

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Dr. Lee Frelich, Ph.D.	Center for Forest Ecology, University of Minnesota	Lead Researcher	Yes
Anthony Randazzo	South Washington Watershed District	Landowner	No
Carole Gernes	City of Maplewood	Landowner	No
Michael Goodnature	Ramsey County Parks	Landowner	No
Matt Fraley	City of Lindstrom	Landowner	No

Dissemination

Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.

U of MN and GRG will disseminate information about methods, objective, results and data analysis of this project. Acknowledgement of Environment and Natural Resources Trust Fund support will follow the Acknowledgement requirements as posted on the web page, for all dissemination activities including poster presentations, power point presentations, and interpretive panels, most likely through the inclusion of the Trust Fund logo, at a minimum.

GRG will disseminate this information through our practitioner partnerships and membership: Anoka Sand Plain Partnership; Metro Big Rivers Partnership; Cannon River Watershed Habitat Restoration and Protection Partnership; Camp Ripley Sentinel Landscape Partnership; Sauk River Watershed Habitat Restoration and Protection Partnership, and; Metro Conservation Network.

GRG will present at one (1) or more Minnesota-based workshops and/or conferences totaling 50 or more attendees, such as the Minnesota Shade Tree Short Course or equivalent, and present / discuss with five (5) or more Minnesota practitioner organizations, other Minnesota landowners, and/or government units. GRG will present and discuss results with the four (4) landowners. Interpretive panels will be developed and installed at each site.

GRG will present at one (1) out-of-state regional conference that includes Minnesota representatives, such as the Midwest Society for Ecological Restoration annual conference, or equivalent.

Dissemination by UMN: Results of the study will be presented by students at regional professional meetings, used in classroom teaching, submitted for publication in a peer-reviewed journal article, and discussed in varied news media outlets.

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 work be funded?

Dissemination of this round of data, along with initial growth and survival data from ML2015, will be completed to add to the knowledge base of bur oak planting. Ongoing efforts for valuable future data collection are planned, with funding to be determined, but may include re-approaching LCCMR in the future.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Pollinator Central: Habitat Improvement with Citizen Monitoring	M.L. 2021, First Special Session, Chp. 6, Art. 5, Sec. 2, Subd. 08a	\$750,000
Camp Ripley Sentinel Landscape Forest Restoration And Enhancements	M.L. 2021, First Special Session, Chp. 6, Art. 6, Sec. 2, Subd. 08a	\$731,000
Pollinator Central II: Habitat Improvement With Community Monitoring	M.L. 2021, First Special Session, Chp. 6, Art. 6, Sec. 2, Subd. 08c	\$631,000
Engaging a Diverse Public in Environmental Stewardship	M.L. 2022, , Chp. 94, Art. , Sec. 2, Subd. 05d	\$300,000
Biochar Implementation in Habitat Restoration: A Pilot	M.L. 2023, , Chp. 60, Art. 2, Sec. 2, Subd. 07b	\$185,000
Pollinator Central III: Habitat Improvement with Community Monitoring	M.L. 2023, , Chp. 60, Art. 2, Sec. 2, Subd. 08g	\$190,000

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
Grant Manager		Grant Management, Project Management, Professional Services Contract Management, Dissemination			21.83%	0.09		\$15,000
Grant Administration		Budgets, Invoicing, Filing, Reports/Amendments			21.83%	0.12		\$10,100
Program Manager		Peer Review			21.83%	0.03		\$3,000
Project Manager Ecologist		Surveys, Planning, Monitoring, Contract Management, Dissemination			21.83%	0.09		\$9,000
Field Crew		Field Implementation of Enhancements			21.83%	0.45		\$30,000
							Sub Total	\$67,100
Contracts and Services								
University of Minnesota	Subaward	Data Collection, Data Analysis, Reporting, Research Design, Dissemination of Results		X		1.2		\$105,000
TBD	Service Contract	Interpretive Panel Design, Fabrication and Installation; Mulching				0.3		\$44,000
							Sub Total	\$149,000
Equipment, Tools, and Supplies								
	Tools and Supplies	Plants, Mulch, Fencing, Herbicide, Equipment Fuel, Hand Tools	Enhancement					\$2,300
							Sub Total	\$2,300
Capital Expenditures								
							Sub Total	-
Acquisitions and Stewardship								

							Sub Total	-
Travel In Minnesota								
	Miles/ Meals/ Lodging	80 trips at 30mi each on average; including 16 eligible for meal reimbursement	Site Visits, Meetings, Procurement					\$1,700
							Sub Total	\$1,700
Travel Outside Minnesota								
	Conference Registration Miles/ Meals/ Lodging	One presentation at Society for Ecological Restoration (SER) Midwest Chapter, or equivalent	Presentation. Dissemination of Results	X				\$2,300
							Sub Total	\$2,300
Printing and Publication								
	Printing	Posters, Handouts	Conference and Workshop Presentations					\$600
							Sub Total	\$600
Other Expenses								
							Sub Total	-
							Grand Total	\$223,000

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Contracts and Services - University of Minnesota	Subaward	Data Collection, Data Analysis, Reporting, Research Design, Dissemination of Results	Up to \$3,000 for out-of-state travel for Lead Researcher and/or student(s) presenting at regional conference(s)
Travel Outside Minnesota	Conference Registration Miles/Meals/Lodging	One presentation at Society for Ecological Restoration (SER) Midwest Chapter, or equivalent	Premier regional conference, including Minnesota chapter

Non ENRTF Funds

Category	Specific Source	Use	Status	\$ Amount
State				
			State Sub Total	-
Non-State				
In-Kind	Landowner In-Kind	Assist with Enhancement and Data Collection	Potential	\$2,000
Cash	Great River Greening	GRG direct expenses required to do the work for this grant	Pending	\$15,000
In-Kind	Great River Greening	GRG staff indirect administrative expenses required to do the work for this grant	Secured	\$1,300
			Non State Sub Total	\$18,300
			Funds Total	\$18,300

Total Project Cost: \$241,300

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component

File: [0c9fa204-9de.pdf](#)

Alternate Text for Visual Component

Summary of proposal in words and pictures, including a county overlay map showing planting sites, a regional map showing seed sources, and three photos of planting activities from original planting and data collection through ML2015, all including volunteers....

Financial Capacity

Title	File
990 Great River Greening (Full Version)	007a7fc2-71d.pdf
Good Standing SOS	a1719efb-fb8.pdf
GRG Financial Audit	3227bf99-3ba.pdf

Board Resolution or Letter

Title	File
GRG Board Resolution 2025-097	e313d41e-f34.pdf

Supplemental Attachments

Capital Project Questionnaire, Budget Supplements, Support Letter, Photos, Media, Other

Title	File
Letter of Support - The Nature Conservancy	d84ff476-be7.pdf
Letter of Support - Mississippi Park Connection	58e1902b-968.pdf
Letter of Support - City of Maplewood	7d19656e-e36.pdf
Letter of Support - City of Lindstrom	7773e31c-d85.pdf
Letter of Support - South Washington Watershed District	082f85db-3cb.pdf
Letter of Support - Ramsey Co	7a0401ed-7c2.pdf

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

I added 6 months to the end date. I modified some milestones by a few months, to accommodate U of MN process to staff up. I added 'interpretive panels' to the dissemination narrative, as that item had been erroneously omitted in that area in the proposal while mentioned elsewhere.

1.31.25 I added dissemination language assuring Trust Fund recognition; reviewed Subaward designation and accepted conditions of Service Contract; updated location information using the new pop up menus.

Additional Acknowledgements and Conditions:

The following are acknowledgements and conditions beyond those already included in the above workplan:

Do you understand and acknowledge the ENRTF repayment requirements if the use of capital equipment changes?

N/A

Do you understand that travel expenses are only approved if they follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?

Yes, I understand the Commissioner's Plan applies.

Does your project have potential for royalties, copyrights, patents, sale of products and assets, or revenue generation?

No

Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?

N/A

Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?

N/A

Does your project include original, hypothesis-driven research?

No

Does the organization have a fiscal agent for this project?

No

Does your project include the pre-design, design, construction, or renovation of a building, trail, campground, or other fixed capital asset costing \$10,000 or more or large-scale stream or wetland restoration?

No

Do you propose using an appropriation from the Environment and Natural Resources Trust Fund to conduct a project that provides children's services (as defined in Minnesota Statutes section 299C.61 Subd.7 as "the provision of care, treatment, education, training, instruction, or recreation to children")?

No

Provide the name(s) and organization(s) of additional individuals assisting in the completion of this project:

Dr. Lee Frelich, Director of Center for Forest Ecology, University of Minnesota; Carole Gernes, City of Maplewood; Matt Fraley, City of Lindstrom; Tony Randazzo, South Washington Watershed District; Michael Goodnature, Ramsey County.

Todd Rexine, Great River Greening; Kateri Routh, Great River Greening.

Do you understand that a named service contract does not constitute a funder-designated subrecipient or approval of a sole-source contract? In other words, a service contract entity is only approved if it has been selected according to the contracting rules identified in state law and policy for organizations that receive ENRTF funds through direct appropriations, or in the DNR's reimbursement manual for non-state organizations. These rules may include competitive bidding and prevailing wage requirements

Yes, I understand