

**ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries**

The amount available for appropriation from the Environment and Natural Resources Trust Fund (ENRTF) for the FY 2022 and FY 2023 biennium (July 1, 2021 -June 30, 2023) will be determined after June 30, 2020. As of May 22, 2020, the Legislative-Citizen Commission on Minnesota Resources (LCCMR) received 329 proposals requesting a total of approximately \$240 million. This RFP process is for funding beginning July 1, 2021.

LCCMR reviews and evaluates all proposals against their 10 adopted evaluation criteria. On June 17-18, members will select a subset of high-ranking proposals to invite for presentation before the LCCMR on July 7, 8, 9, 14, 15 and 16 in order to receive further consideration. On August 6-7, LCCMR will make final selection and funding allocation decisions. These selected projects will be presented to the 2021 Minnesota Legislature as the official LCCMR recommendations for spending from the Environment and Natural Resources Trust Fund.

Check the LCCMR schedule for the most up-to-date information and important process dates.

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
A. Foundational Natural Resource Data and Information (42 Proposals / \$34,858,000)						
2021-011	Whitfeld	Timothy	Minnesota Flora: A New Generation of Discovery	A user-friendly, interactive online guide and companion book for the identification of all 2,200+ Minnesota plants. Includes detailed information on natural history and high quality photos and distribution maps.	U of MN, Bell Museum of Natural History	\$1,527,000
2021-031	Grinde	Alexis	Grassland Bird Conservation: To Hay or Delay?	Hay fields can provide critical habitat for imperiled grassland birds, we will develop and assess flexible management strategies that integrate land owner needs while maximizing productivity of breeding grassland birds.	U of MN, Duluth - NRRRI	\$552,000
2021-052	Fieberg	John	Monitoring Carnivores Statewide: A Citizen-Science Trail-Cam Project	This project will develop and test the infrastructure needed to implement a statewide monitoring program for carnivores using remotely triggered cameras and citizen scientists.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$450,000
2021-054	Joyce	Michael	Distribution and Movements of Fishers in Southern Minnesota	We will determine the distribution, status, and habitat use of fishers in the southern half of Minnesota to provide the information needed to manage fishers in this region.	U of MN, Duluth - NRRRI	\$415,000
2021-055	Perleberg	Donna	Protecting Minnesota's Beneficial Macroalgae: All Stoneworts aren't Starry	This statewide inventory will provide baseline data and build in-state knowledge on Minnesota's stoneworts, a diverse group of aquatic plants that are critical for clear lakes and healthy fish habitat.	MN DNR, Ecological and Water Resources Division	\$1,081,000
2021-056	Joyce	Michael	Healthy Forests: Wildlife as Dispersers of Beneficial Fungi	We will determine the contribution of wildlife to increasing forest health and resilience through dispersal of beneficial fungi and how we can manage for valuable ecosystem services provided by wildlife.	U of MN, Duluth - NRRRI	\$290,000
2021-061	Onello	Emily	Manoomin Matters	The Manoomin Matters project will create a public database to enhance knowledge of and participation in beneficial activities of harvesting and consuming Minnesota's cherished resource, wild rice - manoomin.	U of MN, Duluth	\$314,000
2021-071	Putzier	Paul	County Groundwater Atlas	This project supports continuing development of the County Groundwater Atlases. The goal is to provide this valuable water and resource management "information infrastructure" to every county in Minnesota.	MN DNR, Ecological and Water Resources Division	\$2,500,000

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2021-082	Arends	Heather	Aggregate Resource Mapping of St. Louis County	DNR will map aggregate resources in St. Louis County to support ENRTF and transportation projects. Aggregate maps provide information essential to land-use planning and stewardship of Minnesota's natural resources.	MN DNR, Lands and Minerals Division	\$767,000
2021-087	Markle	Tricia	Improving Resiliency and Conservation Outcomes for Minnesota Turtles	We will improve the conservation of Minnesota's imperiled turtles by leveraging our strengths in animal husbandry, field conservation, and educational programming to bolster populations and raise public awareness.	Minnesota Zoological Society	\$460,000
2021-103	Bump	Joseph	Offal Wildlife Watching: How Do Hunters Provision Scavengers?	This is a citizen-science project driven by hunters. We will recruit hunters statewide and provide remote cameras to deploy at field-dressed deer gut piles to study scavengers and hunter provisioning.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$531,000
2021-104	Haus	Jacob	Habitat Use and Recruitment Rates in Exurban Wolves	This project will investigate wolf resource selection, home range size, pack interactions, and population dynamics within an agriculturally fragmented exurban landscape with high potential for human-wolf conflict.	Minnesota State Colleges and Universities, Bemidji State University	\$263,000
2021-113	Carlson	Bruce	Minnesota Biological Survey: Setting a Future Course	Provide information on Minnesota's biodiversity by collecting and interpreting data and delivering results that support conservation actions by natural resource managers, decision-makers, and scientists.	MN DNR, Ecological and Water Resources Division	\$3,200,000
2021-118	Halbach	Myrna	2021 Groundwater Contamination Mapping Project	The project is a continuation of the efforts begun with the 2017 ENRTF-funded Groundwater Contamination Mapping Project. The 2017 ENRTF funded project will be completed June 30, 2020.	Minnesota Pollution Control Agency	\$940,000
2021-126	Ozersky	Ted	Are Fish Mercury Concentrations Higher in Winter?	Toxic mercury levels may be higher in fish during winter. We will perform the first full-year study of mercury in Minnesota lakes. Results could strengthen Minnesota fish consumption guidelines.	U of MN, Duluth - Large Lakes Observatory	\$387,000
2021-133	Berman	Jesse	Ticks in Minnesota! Informing Control and Response	Our goal is to identify weather and land-use conditions that impact tick populations in Minnesota. The findings will make local and broad-scale tick control plans more streamlined and cost efficient.	U of MN, School of Public Health	\$250,000
2021-138	Lusardi	Barbara	Geologic Atlases for Water Resource Management	Geologic atlases provide maps/databases essential for improved management of ground and surface water. This proposal will complete current projects and start new projects to equal about 10 complete atlases.	U of MN, MN Geological Survey	\$4,122,000
2021-152	Isbell	Forest	Assessing Benefits of Enhancing Biodiversity in Habitat Fragments	Habitat fragmentation is driving loss of plant and animal diversity, thereby eroding several benefits people obtain from nature. This project experimentally tests how diverse seed inputs can reverse these impacts.	U of MN, Cedar Creek Ecosystem Science Reserve	\$498,000
2021-156	Fulton	David	Human Dimensions of Urban Carnivore Management	The project will study resident's values, beliefs, attitudes and behaviors toward coyotes and foxes in the Twin Cities and Duluth to develop outreach activities and strategies for human-carnivore conflict management.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$392,000

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2021-159	Knopik	Josh	Collaborative State and Tribal Wild Rice Monitoring Program	Work with tribal partners in the conservation of wild rice waters, creating a collaborative monitoring program and developing remote sensing tools for statewide assessment of natural wild rice abundance.	MN DNR, Ecological and Water Resources Division	\$859,000
2021-166	Bazurto	Jannell	Survey of Overlooked Natural Resource: Plant Growth-Stimulating Microbes	We will survey plant-associated microbial communities and adapt them to resist weather stress to increase crop yields, promote the maintenance of plant diversity, and support restoration of Minnesota's ecosystems.	U of MN, College of Biological Sciences	\$339,000
2021-181	Lord	Chris	Update Metro Mlccs for Enhanced Natural Resource Management	Provide critical geospatial land cover data and analytical protocols as a foundation for science-based water and ecological resource analysis, project identification, and ranking on 1.9M acres of the 11-county metro.	Metro Conservation Districts	\$499,000
2021-183	Slaats	Alison	Supporting Integrated Resource Management through Upgraded Lidar Products	Minnesota's landscape is changing. Foundational data that describes natural and built environments are aging. Using new lidar, this project delivers comprehensive data updates and training to practitioners and decision makers.	Minnesota IT Services	\$3,200,000
2021-228	Mulla	David	Solar Co-Benefits: Reducing Nitrates, Enhancing Habitat, Sequestering Carbon	This project will quantify the co-benefits of drinking water protection, carbon sequestration, renewable energy production, and rural economic revitalization associated with perennial vegetation at ground solar PV sites on DWSMAs.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$344,000
2021-230	Guala	Michele	Opening or Closing Parks in a Pandemic?	We plan to model the virus spread across Minnesota cities and test opening/closing park scenarios by simulating the stochastic motion of individuals through more or less attractive areas.	U of MN, St. Anthony Falls Laboratory	\$343,000
2021-243	Monson Geerts	Stephen	Baseline Asbestos-Emp Study of NE Minnesota Air, Pre-Mining	Create an essential and time-sensitive mineral dust baseline dataset and sample archive, complete with critical information regarding asbestos minerals, prior to development of non-ferrous mining in northeast Minnesota.	U of MN, Duluth - NRRRI	\$388,000
2021-275	Bump	Joseph	Voyageurs Wolf Project – Phase II	Wolf predation in summer is almost unknown but critical to deer, moose, wolf, and disease management. We'll measure wolf predation rates on these species and promote Voyageurs' region wildlife.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$575,000
2021-278	Dingmann	Brian	Preserving Minnesota's Wetlands: Our Resource for Future Medicine	Our Minnesota bogs are an essential resource. As we use microbes to biomonitor the health of these critical habitats, we could find the next antibacterial, antifungal, or antiviral medicinal product.	U of MN, Crookston	\$247,000
2021-284	Grinde	Alexis	EAB and Black Ash: Maintaining Forests and Benefits	Utilize ongoing experiments to determine long-term EAB impacts on water, vegetation, and wildlife; optimal replacement species and practices for forest diversification; develop indicators and criteria for prioritization of mitigation activities.	U of MN, Duluth - NRRRI	\$774,000

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2021-291	Weegman	Matt	Factors Influencing Wild Turkey Productivity in Southeast Minnesota	Our study will provide important data on wild turkey reproductive ecology in southeastern Minnesota, including the effect of habitat and environmental factors on nesting success and brood survival.	National Wild Turkey Federation	\$809,000
2021-309	Schroeder	Declan	Bee Minnesota – Protect Our Native Bumblebees	Our goal is to protect native pollinators by screening and neutralizing bee pathogens, and promoting best honey bee management practices to prevent pathogen spillover into native bees.	U of MN, College of Veterinary Medicine	\$663,000
2021-312	Mukku	Venugopal	Freshwater Sponges and AIS: Engaging Citizen Scientists	Freshwater sponges from Minnesota will be collected using citizen scientists thereby stimulating STEM education. Compounds produced by sponges will be tested against invasive species such as zebra mussels.	U of MN, Crookston	\$500,000
2021-354	Shen	Lian	Modeling Wind Energy Resources and Environment in Minnesota	We will establish an advanced tool for predicting wind conditions across Minnesota and establish a valuable map for determining suitable sites for wind energy plants, with cold weather accounted for.	U of MN, St. Anthony Falls Laboratory	\$318,000
2021-359	Caldwell	Wendy	Uniting Public and Private Sectors to Protect Pollinators	The Monarch Joint Venture will develop a statewide, multi-sector consortium to plan and enact data-driven actions for pollinator habitat conservation and address gaps in baseline research and habitat mapping.	Monarch Joint Venture	\$341,000
2021-372	Anderson	Pamela	Providing Critical Water Quality Information: Harmful Algal Blooms	Provide for Minnesota's lake users, near real-time Harmful Algal Bloom risk warnings on lakes to reduce the occurrence of human and pet illness or death from toxic algae.	Minnesota Pollution Control Agency	\$657,000
2021-378	Skancke	Jennie	Foundational Hydrology Data for Wetland Protection and Restoration	This project will improve wetland protection, management and restoration in Minnesota by completing a partially established long-term wetland hydrology monitoring network that will provide critical knowledge of wetland hydrology dynamics.	MN DNR, Ecological and Water Resources Division	\$400,000
2021-396	West	Elena	Bioacoustics for Broad-Scale Species Monitoring and Conservation	This study will use autonomous recording devices to determine the statewide distribution and reproduction of red-headed woodpeckers and develop a protocol to monitor population trends and responses to habitat management.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$359,000
2021-422	Shaw	Ruth	Healthy Prairies III: Restoring Minnesota's Prairie Plant Diversity	We will collect native seed throughout Minnesota's prairie region, study microbial effects on plant survival, estimate the geographic scale and rate of adaptation, and communicate results aiding restoration and propagation.	U of MN, College of Biological Sciences	\$531,000
2021-423	Joyce	Michael	Bobcat and Fisher Habitat Use and Interactions	We will describe habitat use, diet, and activity patterns of bobcats and fishers to understand why bobcats kill female fishers and identify potential solutions to reverse the fisher population decline.	U of MN, Duluth - NRRRI	\$447,000
2021-424	Satyshur	Colleen	Improving Pollinator Conservation by Revealing Habitat Needs	Wild pollinators must survive outdoors during our harsh Minnesota winters. We aim to help them persist by discovering habitats they require for shelter through statewide citizen scientists and novel analyses.	U of MN, College of Biological Sciences	\$614,000

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2021-426	Rowe	Erika	Expanding the Minnesota Ecological Monitoring Network	This project proposes to expand the Ecological Monitoring Network by establishing an additional 500 plots to inform the conservation and management of Minnesota's native forests, wetlands, and grasslands.	MN DNR, Ecological and Water Resources Division	\$1,587,000
2021-452	Putzier	Paul	County Groundwater Atlas ML2020 Resubmit	This project supports continuing development of the County Groundwater Atlases. The goal is to provide this valuable water and resource management "information infrastructure" to every county in Minnesota.	MN DNR, Ecological and Water Resources Division	\$1,125,000
					SubTotal	\$34,858,000
A. Foundational Natural Resource Data and Information						
H. Small Projects (20 Proposals / \$3,466,000)						
2021-019	Fallon	Ann	Does the Herbicide Paraquat Harm Insect Microbial Symbionts?	We will investigate the herbicide, paraquat, for deleterious effects on microbial symbionts of arthropods. We will focus on Wolbachia bacteria, present in more than half of all insect species.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$157,000
2021-027	Sherman-Hoehn	Katherine	MI 2021 Contract Agreement Reimbursement	Provide contract management to ENRTF pass-through appropriation recipients for approximately 60 open grants. Ensure funds are expended in compliance with appropriation law, state statute, grants policies, and approved work plans.	MN DNR, Grants Unit	\$135,000
2021-032	Grinde	Alexis	What'S "Bugging" Minnesota's Insect-Eating Birds?	Examine the relationship between insect abundance, timing of insect availability and breeding success for multiple bird species across land-use intensities to develop comprehensive guidelines to conserve bird and insect diversity.	U of MN, Duluth - NRRI	\$199,000
2021-048	Duplissis	John	Precision Forest Inventory for Aspen and Red Pine	We will estimate sequestered carbon and standing volumes of red pine and aspen using state-of-the-art lidar technology to provide stand-level measures as an alternative to wide-spread data collection	U of MN, Duluth - NRRI	\$199,000
2021-088	Moen	Ron	Minnesota Mammal Resource Atlas	We will create the Minnesota Mammal Resource, a website that is a one-stop solution for current knowledge on all Minnesota mammal species.	U of MN, Duluth - NRRI	\$148,000
2021-112	Drewitz	Matt	Mapping Existing Structural Practices in Vulnerable Agricultural Landscapes	This project fills a knowledge gap by creating a spatial dataset of structural agricultural best management practices (BMPs) that contributes to effective BMP adoption and placement on the landscape.	Board of Water and Soil Resources	\$190,000
2021-140	Zajac	Kristy	Redwood County Rim Easement Evaluation and Public Outreach	To inventory vegetation and evaluate wetland condition on permanent conservation easements, and conduct education and outreach regarding prairie and wetland habitats and their management.	Redwood Soil & Water Conservation District	\$197,000
2021-201	Clark	Mark	Status of Bigmouth Buffalo Populations in Minnesota	Bigmouth Buffalo from Minnesota are the most long-lived freshwater fish, but recruitment failure may occur in some drainages. We will complete a comprehensive assessment of populations in the state.	U of MN, Duluth	\$196,000

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2021-225	Huberty	Brian	Eyes over Minnesota's Natural Resources	Form the Minnesota Remote Sensing Coalition (MNRSC) to create a long-term, decadal plan to acquire, access, distribute aerial and satellite imagery for coordinated natural resource management and monitoring.	SharedGeo	\$119,000
2021-234	Stanton	Daniel	Moss and Lichens of Minnesota Prairies and Meadows	Mosses and lichens are an overlooked part of our landscapes. This project will uncover the identity and importance of the moss and lichens in our prairies, meadows and open bogs	U of MN, College of Biological Sciences	\$200,000
2021-238	Wettstein	Shannon	Morrison County Performance Drainage and Hydrology Management II	Complete the Morrison County culvert inventory started in 2016 to help solve landowner conflicts, protect wetlands, improve water quality, ensure road safety and design additional water storage throughout the county.	Morrison Soil and Water Conservation District	\$197,000
2021-277	Aukema	Brian	Biocontrol Breakdown in Minnesota's Spruce Budworm-Affected Forests	Spruce budworm is native to Minnesota and the most significant tree-killing defoliator in spruce-balsam fir forests. We examine whether a breakdown in biological control is associated with sustained outbreaking populations.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$200,000
2021-289	Frelich	Lee	A Biodiversity Checkup for Minnesota's Big Woods	Compare the historic and contemporary flora of Minnesota's Big Woods to see whether all species are able to survive on a small fraction of the original area	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$109,000
2021-292	Bracey	Annie	Conserving Black Terns and Forster's Terns in Minnesota	Black and Forster's tern populations have declined. Comprehensive assessment of distribution and breeding status will identify population limiting factors to inform best management practices and prioritize conservation and restoration.	U of MN, Duluth - NRR	\$199,000
2021-321	Ponder	Julia	Microbiome in Raptors: A New Tool for Conservation	We will evaluate the impact of microbial interventions during captivity on the raptor gut microbiome, both in terms of treatment efficacy during rehabilitation and subsequent environmental dissemination.	U of MN, Raptor Center	\$129,000
2021-400	Hahn	Jennifer	Unearthing Soil Health Economics in Southern Minnesota	This project will accelerate adoption of soil health practices by building a coalition of soil health farmers to learn together, provide economic research, and sharing of information in Southern Minnesota.	Minnesota Soil Health Coalition	\$200,000
2021-407	Petersen	Jessica	Tools for Supporting Healthy Ecosystems and Pollinators	Create a pollination companion guide to MNDNR's Field Guides to Native Plant Communities for conservation practitioners to better integrate plant-pollinator interactions into natural resource planning and decision-making.	MN DNR, Ecological and Water Resources Division	\$198,000
2021-430	Sherman-Hoehn	Katherine	ML 20 Contract Agreement Reimbursement	Provide contract management to ENRTF pass-through appropriation recipients for approximately 60 open grants. Ensure funds are expended in compliance with appropriation law, state statute, grants policies, and approved work plans.	MN DNR, Grants Unit	\$135,000
2021-437	Quinn	Edward	Enhancing Bat Recovery by Optimizing Artificial Roost Structures	Project will identify characteristics of successful artificial bat roost structures. Data will be used to optimize bat use and reproduction in these structures to improve survival of WNS impacted bats	MN DNR, State Parks and Trails Division	\$190,000

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2021-457	Windels	Steve	Do Beavers Buffer Against Droughts and Floods?	We propose to use existing data sets to link beaver population data to water storage in beaver ponds, to determine if they buffer against droughts and floods.	National Park Service, Voyageurs National Park	\$169,000
					SubTotal	\$3,466,000
B. Water Resources (58 Proposals / \$35,591,000)						
2021-023	Schumann	David	Larval Fishes as Indicators of Lake Ecosystem Change	Land-use practices, invasive species, and climate change threaten fish populations and lakes throughout Minnesota. Focused assessments on larval fish can provide direct insight into complex ecological stressors affecting these systems.	University of Wisconsin-La Crosse	\$410,000
2021-047	Johnson	Heather	Updating Pesticide Analytical Capabilities to Protect Minnesota Waters	This project will increase pesticide analysis capabilities of the MDA Lab. A recent recommendation from Legislative Auditor Office directed MDA to look for more pesticides in the waters of Minnesota.	Minnesota Department of Agriculture	\$3,000,000
2021-050	Brady	Valerie	Trout Stream Habitat Restoration Success	Minnesota has spent millions on stream habitat improvement and restoration; we will evaluate effectiveness and durability of project designs. Results will inform success of future projects and improve cost effectiveness.	U of MN, Duluth - NRRI	\$375,000
2021-053	Ulrich	Bridget	Protecting Minnesota's Waters using Sustainable Waste Materials	We will develop new approaches to remove nutrients and emerging contaminants from runoff using filter media derived from Minnesota-sourced waste materials, enabling statewide efforts to prevent surface and groundwater contamination.	U of MN, Duluth - NRRI	\$497,000
2021-057	Chun	Chan Lan	Reducing Nutrients and Methane Emissions using Wetland Microbes	The proposal aims to use recently discovered microbes from Minnesota wetlands to inexpensively remove nitrogen nutrients from water while consuming methane, a potent greenhouse gas, from urban and agricultural wastes.	U of MN, Duluth - NRRI	\$334,000
2021-090	Beck	Brian	Leveraging Innovations in Data Analytics for Project Implementation	Integrate newly-available datasets into a 21st-century planning tool that allows MCWD and its partners to forecast the impacts of changing precipitation patterns and quantitatively compare the most cost-effective solutions.	Minnehaha Creek Watershed District	\$883,000
2021-114	Kang	Peter	Multi-Scale Aquifer Characterization for Successful Aquifer Storage/Recovery	We develop a multi-scale aquifer characterization tool that quantifies ASR suitability and optimizes well operations. We will apply the tool to several vulnerable aquifers across Minnesota and perform field tests.	U of MN, St. Anthony Falls Laboratory	\$671,000
2021-121	Behrens	Sebastian	Monitoring Emerging Viruses in Minnesota's Urban Water Cycles	This project will address the presence and fate of enveloped viruses (e.g. coronaviruses) and their survivability in aqueous environments with emphasis on wastewater and drinking water treatment processes.	U of MN, College of Biological Sciences	\$489,000
2021-127	Fritz	Charles	Water Storage Project Implementation Framework	Establish a transferable implementation framework to assess water storage projects that includes metrics to quantitatively assess benefits (public and private) to achieve flood damage reduction, water quality, and habitat goals.	International Water Institute	\$290,000

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2021-130	Baker	Anna	Sediment-Phosphorus Management in Rainy-Lake of the Woods Basin	Guiding management for reduction of phosphorus inputs to Lake of the Woods by examining sources, mobility, and storage of sediment-bound phosphorus within Rainy River.	US Geological Survey, Upper Midwest Water Science Center	\$515,000
2021-134	Edlund	Mark	Salt Threatens Minnesota Water Quality and Food Webs	Salt levels are rising in Minnesota lakes, but the biological impacts are poorly understood. We determine how salt damages water quality and food webs and how to save our lakes.	Science Museum of Minnesota, St. Croix Watershed Research Station	\$1,174,000
2021-142	Martinovic-Weigelt	Dalma	Refined Petroleum Leaks: Improving Remediation and Risk Assessment	Toxicity of fuels and their degradation products common in MN waters is largely unknown. Project will generate knowledge needed for improvement of remediation and risk assessment of fuel spills statewide.	University of St. Thomas	\$340,000
2021-144	Singer	Randall	Microgeographic Impact of Antibiotics Released from Identified Hotspots	We will evaluate the impact of antibiotics released from hotspots identified in our previous project to surface waters in Minnesota using field, laboratory, and modeling approaches to ultimately inform interventions.	U of MN, College of Veterinary Medicine	\$598,000
2021-160	Ishii	Satoshi	Establishment of Safe Water Reuse	The goal of this project is to contribute to the establishment of safe water reuse in Minnesota by clarifying the potential health risks associated with water reuse.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$362,000
2021-165	Bazurto	Jannell	Microbial Degradation of Formaldehyde to Clean Polluted Waters	We will identify environmental microbes with naturally high capacities to degrade formaldehyde and further adapt them toward enhanced formaldehyde degradation to clean contaminated water and conserve environmental waters.	U of MN, College of Biological Sciences	\$393,000
2021-174	Gran	Karen	Slope Failures in Minnesota: Drivers, Projections, and Mitigation	This project investigates the hydrologic triggers of landslides in Minnesota and the processes by which they occur in order to better predict impacts in the future.	U of MN, Duluth	\$396,000
2021-177	Cotner	James	Glyphosate, Phosphorus and Harmful Algal Blooms	We will determine whether, when, and how much glyphosate (Roundup) is in our lakes. We will also determine if glyphosate increases the frequency of harmful algal blooms.	U of MN, College of Biological Sciences	\$506,000
2021-190	Hondzo	Miki	Quantitative Risk Assessment of Pathogens in Urban Waters	In the interest of public health and safety, this project aims to quantify risks associated with the presence of viral and bacterial pathogens in urban waters in the Twin Cities.	U of MN, St. Anthony Falls Laboratory	\$499,000
2021-195	Brauman	Kate	Changing Snowmelt Impacts Minnesota Forests, Streams, And Groundwater	Changing snow and forests will affect water in soil and stream in unknown ways. By collecting field data and developing prediction tools, we can improve management of Minnesota's water resources.	U of MN, Institute on the Environment	\$607,000
2021-204	Miao	Yuxin	Developing Smart-N App to Reduce Corn Nitrogen Pollution	Precision N management technologies can reduce N pollution of water resources. Developing a mobile App will support Minnesota corn growers to adopt precision N management technologies and protect water resources.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$248,000
2021-205	Jordan	Nicholas	Scaling a Market-Driven Water-Quality Solution for Row-Crop Farming	Adding a year of grain/winter camelina production to Minnesota crop rotations provides a market-driven clean-water solution; our watershed-scale pilot supply/value chains will accelerate wide adoption of this solution.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$909,000

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2021-211	Gulliver	John	Reduction of Environmental Impacts With Road De-Icing Alternatives	Provide innovative solutions to reduce the bond between ice/snow and pavement surface, improve ice/snow removal using designed chemicals, and investigate the environmental impact of chosen road salt alternative.	U of MN, College of Science and Engineering	\$666,000
2021-227	Rose	Lucy	Seasonal Water Quality Effects of Commercial Peat Harvesting	Hydrologic monitoring will compare surface water quality in a commercial peat harvesting site with water in an unharvested peatland during high-intensity and seasonal runoff events (snowmelt, fall/summer rain storms).	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$204,000
2021-242	Groten	Joel	USGS Streamstats enhances Sediment Monitoring in Minnesota	Enhance a publicly accessible web tool (StreamStats) to estimate sediment loads in Minnesota's Rivers lacking sampling data. This tool is needed by resource managers for stream restoration and preservation.	US Geological Survey, Upper Midwest Water Science Center	\$300,000
2021-259	Blumentritt	Dylan	Whitewater River Evolution: Sediment Dynamics and Cross-Section Inventory	Evaluate streamflow, sediment, and floodplain changes in the Whitewater River valley. Making 80 years of legacy data available and building upon it to understand changing impacts on critical river corridors.	Minnesota State Colleges and Universities, Winona State University	\$265,000
2021-260	Hall	Leah	Floodplain Reconnection in Southeast Minnesota's Driftless Area	Through GIS analysis, field data and hydrologic analysis, we will identify and prioritize opportunities in Southeast Minnesota to reconnect streams to their floodplains and implement pilot projects to demonstrate methods.	The Nature Conservancy	\$572,000
2021-264	Sattar	Junaed	Automated Weed Management for Herbicide Water Runoff Reduction	This project will quantify the effect of herbicide use in precision agriculture on water quality using observations from autonomous underwater and aerial vehicles towards environmental sustainability and cost-effective weed control.	U of MN, College of Science and Engineering	\$829,000
2021-265	Lenhart	Christian	Farming for Phosphorus Control at the Field Edge	Through watershed analysis and field collected data, we will identify opportunities to reduce phosphorus losses to water through management of the interface between land and streams in agricultural landscapes.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$577,000
2021-266	Runck	Bryan	Sustainable Irrigation Management: Expanding a Statewide Web Application	This project will promote responsible use of Minnesota's limited groundwater resources through the expansion of the existing Irrigation Management Assistance tool into a statewide, mobile-compatible web app.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$1,519,000
2021-279	Watkins	Eric	Optimizing Youth Sports Fields to reduce Environmental Impact	Sports fields are an important, neglected landscape that children throughout Minnesota interact with almost daily. We will optimize maintenance of these landscapes to improve function and environmental impacts.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$957,000
2021-282	Wright	Natasha	Managing Highly Saline Waste from Municipal Water Treatment	We will develop a cost- and energy-efficient method of managing the concentrated saline waste from a municipal desalination plant, increasing the economic feasibility of centralized water softening and sulfate removal.	U of MN, College of Science and Engineering	\$262,000
2021-285	Cates	Anna	Developing Cover Crop Systems for Sugarbeet Production	Evaluate effective ways to protect soil from erosion in sugarbeet production, with the long-term goal of slowing soil degradation, nutrient loss, and water quality.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$331,000

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Final Proposals Received by Category with Summaries

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2021-286	Nieber	John	Downscaling Water Storage for Comprehensive Water Resources Management	Water storage estimates (groundwater, soil moisture, lakes) are essential to comprehensive water management. We will integrate satellite monitoring with ground-based measurements to derive water storage estimates at useful spatial scales.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$592,000
2021-303	Griffin	Daniel	Rainfall History Recovered from old Oak Tree Rings	Are southern and central Minnesota really getting wetter? We use tree rings from old growth bur oaks to compare recent rainfall extremes with changes over the past 300+ years.	U of MN, College of Liberal Arts	\$332,000
2021-314	Cui	Tianhong	Solar-Powered Pesticide Sensor Network for Water Monitoring	The project aims to develop a small, cheap, solar powered, wirelessly distributed sensor network to monitor pesticide pollutants in very large areas of lakes and rivers in Minnesota.	U of MN, College of Science and Engineering	\$660,000
2021-317	Cui	Tianhong	Sensor-Embedded Purification System for Clean Drinking Water	We propose to develop an integrated system for the purification of drinking water while monitoring pollutants with embedded sensors, which are small, simple, cheap, efficient, and easy to use.	U of MN, College of Science and Engineering	\$536,000
2021-326	Marr	Jeffrey	Assessing Impacts of Boat Waves on Minnesota Lakes	Characterize boat wakes and propeller wash and the effects of each on shorelines, bottom sediment, aquatic vegetation, and overall water quality in Minnesota lakes.	U of MN, St. Anthony Falls Laboratory	\$420,000
2021-331	Noe	Ryan	Comprehensive Identification and Visualization of Sourcewater Protection Opportunities	Comprehensive inventory and decision-support for identifying threats to sourcewater and opportunities to obtain multiple benefits to conservation. Will allow for more efficient and effective targeting of restoration and protection activities.	U of MN, Humphrey School of Public Affairs	\$299,000
2021-346	Ruan	Roger	Treatment of Petrochemical Wastewater using Photocatalysis and Algae	Develop a photocatalysis based technology for recovery of nutrients from petrochemical wastewater and cultivation of algal biomass feedstock for production of biofuels, biochemicals, and biomaterials.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$559,000
2021-348	Ruan	Roger	Enhanced Thermophilic Anaerobic Digestion of Swine Manure	Develop an innovative thermophilic anaerobic digestion technology for improved methane production from swine manure by mitigating ammonia induced inhibition	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$609,000
2021-349	Ruan	Roger	Novel Microalgae Attached Growth for Animal Wastewater Treatment	To develop an attached growth method for fast cultivation and efficient harvesting of microalgae in the anaerobically digested manure for nutrients removal and animal feed production.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$760,000
2021-350	Ruan	Roger	Plastic-Wastes to Fuels and Chemicals through Microwave-Assisted Pyrolysis	Convert plastic wastes to liquid fuels and chemicals through microwave-assisted pyrolysis (MAP) technology and thus provide an affordable tool for solid waste management and valorization	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$914,000
2021-352	Ruan	Roger	Nitrogen Fixation using Nano-Photocatalytic Non-Thermal Plasma	Develop a novel technology to produce nitrogen fertilizers from water and air using nano-photocatalysts and non-thermal Plasma for direct and onsite application.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$555,000

ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2021-355	Shen	Lian	Microplastics in Minnesota Water and Impact on Wildlife	We will conduct computer simulations and laboratory experiments to study microplastics pollution to investigate their transport in water columns and sedimentation at water bottoms, and their interactions with wildlife.	U of MN, St. Anthony Falls Laboratory	\$317,000
2021-358	Schoenfuss	Heiko	Assessing Membrane Bioreactor Wastewater Treatment Efficacy	A comprehensive assessment of membrane bioreactor efficacy will provide the best options and information to the wastewater treatment plant and natural resource managers to update or replace aging wastewater infrastructure.	Minnesota State Colleges and Universities, St. Cloud State University	\$493,000
2021-361	Penn	Lee	Microplastics: Transporters of Contaminants in Minnesota Waters	Microplastics are ubiquitous and may contain chemicals of concern (COCs). We propose to determine the effect that microplastics have on the fate and transport of COCs in Minnesota waters.	U of MN, College of Science and Engineering	\$426,000
2021-364	LaPara	Timothy	Evaluating Coronavirus and other Microbiological Contamination of Drinking Water Sources from Wastewater	With detection of coronavirus in human feces, there are urgent concerns about microbiological contamination of drinking water sources by wastewater. We will investigate this contamination, identify sources, and evaluate solutions.	U of MN, College of Science and Engineering	\$699,000
2021-369	Ziegeweid	Jeffrey	Determining How Altered Streamflows Impair Fish and Macroinvertebrates	The project will expand existing flow-biology relations and use streamflow data and modeling to understand how streamflow alteration negatively impacts fish and macroinvertebrates in streams of varying size and class.	US Geological Survey, Upper Midwest Water Science Center	\$600,000
2021-376	Lammi	Becky	St. James Pit Water Level Control	The St. James Pit Rising Water Levels Study, Mitigation, and Diversion Plan	City of Aurora	\$305,000
2021-382	St. Lawrence	Mark	Evaluating Landfill Leachate PFAS Reduction Utilizing Engineered Wetlands	This project will focus on development, implementation, and evaluation of a semi-passive, demonstration-scale engineered wetland treatment system with integrated outflow-filtration for reducing PFAS and other landfill leachate contaminants of interest.	St. Louis County	\$895,000
2021-384	Fuchs	Dennis	Long-Term Nitrate Mitigation by Maintaining Profitable Kernza Production	Long-term nitrate mitigation by maintaining profitable Kernza production will evaluate the effectiveness of aging Kernza stands on water quality. Continue to develop a sustainable supply chain, focusing on post-harvest processing.	Stearns County Soil and Water Conservation District	\$571,000
2021-390	Donato	Justin	Antibiotic Resistance and Wastewater Treatment: Problems and Solutions	This project will quantify the ability of full-scale wastewater treatment plants to eliminate antibiotic resistance genes and the extent to which these genes are exchanged during the wastewater treatment process.	University of St. Thomas	\$508,000
2021-401	Edlund	Mark	Unprecedented Change Threatens Minnesota's Pristine Lakes	Why are Minnesota's nicest lakes turning green? We determine what's causing this change and which lakes are most at risk.	Science Museum of Minnesota, St. Croix Watershed Research Station	\$850,000
2021-403	Keegan	Bill	Innovative Solution for Protecting Minnesota Natural Resources from PFAS Contamination	Protection of State's drinking water resources and natural resources by eliminating a new Contaminant of Emerging Concern (CEC) known as Perfluoroalkyl and Polyfluoroalkyl substances (PFAS) from point source discharges.	Dem-Con	\$750,000

ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2021-409	Olander	Keith	Implementing Hemp Crop Rotation to Improve Water Quality	We will evaluate how hemp crops may reduce nitrogen contamination of surface and groundwater in conventional crop rotations while demonstrating the environmental and economic benefits of hemp grain production.	Minnesota State Colleges and Universities, Central Lakes College	\$700,000
2021-432	Novak	Paige	Technology for Energy-Generating Onsite Industrial Wastewater Treatment	We will develop "off the shelf" technology to treat industrial wastewater onsite, turning pollutants into hydrogen and methane for energy. This will lead to water quality benefits and cost savings.	U of MN, College of Science and Engineering	\$475,000
2021-436	Streets	Summer	Developing Strategies to Manage PFAS in Land-Applied Biosolids	This project helps municipal wastewater plants, landfills, and compost facilities protect human health and the environment by developing strategies to manage per- and polyfluoroalkyl substances (PFAS) in land-applied biosolids.	Minnesota Pollution Control Agency	\$1,370,000
2021-456	Stapleton	Seth	Expanding Restoration and Promoting Awareness of Native Mussels	The Minnesota Zoo will improve mussel conservation by rearing juvenile mussels for reintroduction, researching methods to improve growth and survival in captivity, and encouraging public action to benefit water quality.	Minnesota Zoological Society	\$418,000
					SubTotal	\$35,591,000
B. Water Resources						
H. Small Projects (17 Proposals / \$2,985,000)						
2021-025	Kovalenko	Katya	Does Micro-Pollution Impact Aquatic Food Webs and Birds?	We will assess the extent and impact of different types of micro-pollution on birds, fish, invertebrates, and food webs in Minnesota lakes	U of MN, Duluth - NRRRI	\$175,000
2021-076	Noe	Ryan	Will BMPs be Effective with Increased Precipitation Variability?	Expected changes in precipitation patterns are likely to negatively impact nitrate leaching mitigation practices. We will produce a report on the efficacy of best management practices under changing precipitation regimes.	U of MN, Humphrey School of Public Affairs	\$63,000
2021-089	Barry	John	Sentinel Springs, Measuring Continuous Groundwater Response and Improvement	Real time monitoring of spring flow and chemistry is an inexpensive and innovative way to determine how groundwater quality responds to land use practices such as agricultural management.	MN DNR, Ecological and Water Resources Division	\$183,000
2021-115	Hu	Bo	Novel Nutrient Recovery Process from Wastewater Treatment Plants	This proposal requests funding for a new integrated process with potential to promote nutrient removal/recovery and renewable energy production at rural municipal and industrial wastewater treatment plants (WWTP).	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$200,000
2021-128	Ulrich	Jason	Resilience and Increased Intense Rain in Minnesota Watersheds	Landscape resilience to flooding due to increases in intense rain events and landscape alteration will be evaluated for Southern Minnesota's major rural watersheds.	Science Museum of Minnesota, St. Croix Watershed Research Station	\$189,000
2021-158	Dieterman	Doug	Evaluating Stream Habitat Projects in Southeast Minnesota	Assess how climate stressors, such as flooding, interact with stream habitat project designs and local stream geomorphology to influence achievement of project objectives and need for maintenance.	MN DNR, Fish and Wildlife Division	\$197,000

ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries

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2021-170	Xiong	Boya	Minimizing Plastic Pollution through Prediction of Nano/Microplastic Generation	We will model the concentration of nano/microplastic generated from weathered bulk plastic, enabling accurate estimation of plastic pollution in Minnesota's waterways and informing what plastic products are harmful.	U of MN, College of Science and Engineering	\$200,000
2021-184	Hondzo	Miki	Algal Toxicity Detection and Mitigation in Minnesota Waters	Our major objective is to integrate existing commercially available drone and multiple spectral camera array technologies to quantify algal biomass, toxin concentrations, and temperature conditions in twelve Minnesota lakes.	U of MN, St. Anthony Falls Laboratory	\$199,000
2021-189	Musser	Kimberly	Ag-Urban Partnership Pilot: Accelerating Action in Priority Watersheds	This Ag-Urban pilot project will offer new solutions to improve water quality, reduce flows and invest public funds wisely in some of the most impaired watersheds of the state.	Minnesota State Colleges and Universities, Minnesota State University Mankato	\$199,000
2021-216	Brigham	Mark	White Iron Chain of Lakes: Baseline Trace Metals	This project will establish pre-industrial and pre-mining trace metal conditions in a chain of lakes within a proposed copper-nickel mining area of northeastern Minnesota.	US Geological Survey, Upper Midwest Water Science Center	\$117,000
2021-237	Fixen	Kathryn	Converting Toxic Compounds to Fuels Using Solar Energy	Photosynthetic bacteria can use energy from light to convert toxic compounds into valuable commodities. We will determine how to stimulate this activity in low-cost wastewater lagoons where these bacteria thrive.	U of MN, College of Biological Sciences	\$171,000
2021-258	Wilson	Melissa	Manure Testing for Better Management and Clean Water	We will start a Manure Testing Program to increase manure testing, create a nutrient analysis database for different livestock types, and improve manure application rates to protect water quality.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$200,000
2021-267	Capel	Paul	Optimization of Water-Quality Monitoring in Surface Waters	This project will use existing high-frequency water quality data to quantify the degree of accuracy in the distribution of concentration and annual load of State and local water-quality monitoring programs.	U of MN, College of Science and Engineering	\$147,000
2021-301	Babcock	Laura	Expanding Protection of Minnesota Water through Industrial Conservation	Project seeks to decrease water demand in communities at risk for inadequate ground water supply or quality by providing technical assistance to identify cost-effective ways to reduce industrial/commercial use.	U of MN, School of Public Health	\$181,000
2021-304	Barney	Brett	Minimizing Agricultural Impacts through Biological Nitrogen Fixation Alternatives	Our project seeks to isolate and characterize beneficial microbes associated with key crops in Minnesota that would benefit agriculture through broader introduction as a natural nitrogen-accumulating biofertilizer.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$196,000
2021-379	Downing	John	Understanding and Fixing Excess Lake Oxygen Depletion	The purpose of this project is to find out why important Minnesota lakes are losing their cisco-trout-friendly waters so that remedial measures can be selected to sustain cold water fisheries.	U of MN, Duluth	\$171,000
2021-381	Wagner	Margaret	Nitrate Testing and Education for Private Well Owners	This project will provide lab equipment and technical support to soil and water conservation districts so they can offer no-cost nitrate testing as well as outreach to private well owners.	Minnesota Department of Agriculture	\$197,000
					SubTotal	\$2,985,000

ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
C. Environmental Education (26 Proposals / \$12,867,000)						
2021-006	Remucal	David	Promoting Minnesota Conservation through Classroom Plant Science Research	We will bring leading-edge biological conservation research into diverse grade school classrooms, allowing students to collect and analyze data, share results, and collaborate directly with professional researchers and other schools.	U of MN, Landscape Arboretum	\$480,000
2021-041	Thompson	Seth	Connecting Minnesotans to Water through Environmental Education	The primary goal of this project is to cultivate a new generation of environmental stewards by providing inquiry-based learning opportunities in the environmental sciences to Minnesotans across the state.	U of MN, College of Biological Sciences	\$287,000
2021-042	Walz	Shannon	Increasing Outdoor Learning for Young Minnesotans	Wolf Ridge seeks scholarships for equitable access to authentic, hands on learning experiences in the outdoors that supports our Minnesota schools and achievement of the ENRTF strategic plan priority goals.	Wolf Ridge Environmental Learning Center	\$450,000
2021-086	Halvorson	Joel	Boreal Observatory at Chik-Wauk on the Gunflint	The Boreal Observatory is a public education initiative of Chik-Wauk Museum and Nature Center. It is maintained through an Affiliation Agreement with the University of Minnesota Duluth (UMD)	Gunflint Trail Historical Society	\$545,000
2021-100	Locke	Christina	MN Backyard Science: Home-Based Environmental Education and Conservation	MN Backyard Science is a community-based environmental education program centered on native pollinator and plant conservation. Families participate from their own homes, and all program materials are publicly accessible.	U of MN, Humphrey School of Public Affairs	\$502,000
2021-111	Wolf	Tiffany	Engaging Culturally-Diverse Hunting Communities on Chronic Wasting Disease	This project focuses on outreach and education in culturally-diverse hunting communities to enhance community engagement in slowing the spread of CWD in Minnesota.	U of MN, College of Veterinary Medicine	\$288,000
2021-131	Evans	Elaine	Pollinator Education in the Science Classroom	Pollinator Education in the Science Classroom will provide professional development for 60 science teachers to use pollinator education curriculum and outreach materials, ultimately reaching >8000 students annually.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$430,000
2021-132	Edmiston	Julie	Minnesota Freshwater Quest: Environmental Education for 20,000 Youth	20,000 diverse and underserved Minnesota youth (grades 6-12) participate in place-based, STEM environmental education to explore and preserve local ecosystems and waterways through the Minnesota Freshwater Quest online program.	Wilderness Inquiry	\$932,000
2021-141	Schmitt	Lee	Esteem (Earth Science Teachers Environmental Education Matters)	Earth Science Teachers Environmental Education Matters (ESTEEM) will provide statewide professional development for science teachers in Earth and Environmental Science content and pedagogy to strengthen environmental education in Minnesota schools.	Minnesota Science Teachers Association	\$582,000
2021-146	Wood	Bryan	Providing K-12 Residential Environmental Learning Experiences	Osprey Wilds Environmental Learning Center (formerly Audubon Center of the North Woods) will provide scholarships allowing over 3,000 K-12 students to experience residential environmental learning programs at Osprey Wilds.	Osprey Wilds Environmental Learning Center	\$400,000

**ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries**

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2021-175	Blair	Robert	Minnesota Master Naturalist: Nature for New Minnesotans	Nature for New Minnesotans will introduce English language learners to Minnesota's great outdoors using materials from Minnesota Master Naturalist and implemented in partnership with English learning programs that serve immigrants.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$345,000
2021-186	Hausman Rhode	Christina	The Voyageurs Classroom Initiative	The Voyageurs Classroom will connect 6,000 Minnesota youth to Voyageurs National Park over three years to learn about its waters, wildlife, forests and skies, and engage in its preservation.	Voyageurs National Park Association	\$409,000
2021-219	Thompson	Seth	Promoting Environmental Conservation through Storytelling	This project will provide intensive science communication training for students at the University of Minnesota and leverage the power of storytelling to promote environmental conservation throughout the state.	U of MN, College of Biological Sciences	\$392,000
2021-240	Adler	Trina	Engaging Diverse Low-Income Residents with Minnesota's Parks	This project offers culturally relevant experiences and barrier reduction efforts for diverse and low-income residents to engage with Minnesota's natural resources for health, mental flourishing and career exploration.	U of MN, Extension Center for Family Development	\$568,000
2021-255	Dhakai	Narayan	Cross Cultural Environmental Education	Investigate intercultural knowledge on environmental conservation, household energy, sustainable agriculture, and food processing from the minority community. Bring this knowledge to develop a hands on environmental education for MN public.	Diversity Intelligence in Climate Action	\$420,000
2021-300	Lord	Chris	Changing Yards and Minds: Overcoming Barriers to Ecoscaping	Influence perceptions, practices, and policies in the 11-county metro to encourage ecoscaping by launching multi-pronged outreach campaigns, elevating demonstration project educational value, and engaging local leaders to adopt eco-friendly policies.	Metro Conservation Districts	\$546,000
2021-320	Bloome	Katie	Restoring Land, Reviving Heritage: Conservation through Indigenous Culture	By linking natural resource management, cultural heritage, and environmental education, we aim to restore an ecologically significant area of land while fostering multi-generational environmental stewardship and restoration of Indigenous culture.	Belwin Conservancy	\$494,000
2021-335	Papanikolopoulos	Nikolaos	Water Quality and Robots: Experientially Educating Minnesotan Youth	We propose educational activities for middle school youth on water quality in Minnesota. Through group study and hands-on projects, youth will gain skills for measuring water quality and communicating results.	U of MN, College of Science and Engineering	\$344,000
2021-341	Lenczewski	John	Fostering Water Stewardship through Hands-On Learning	Hands-on learning outdoors will focus on water quality, groundwater, aquatic life and students' role as watershed stewards. Angling and volunteer opportunities for students and families will foster a conservation ethic.	Minnesota Trout Unlimited	\$654,000
2021-370	Reese	Luke	Jay C. Hormel Nature Center Supplemental Teaching Staff	The Jay C. Hormel Nature Center would like to offer its environmental education curriculum to more southeast Minnesota students by hiring an additional naturalist and interns for three years.	City of Austin	\$275,000

**ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries**

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2021-385	Simer	Kurt	375 Underserved Youth Learn Minnesota Ecosystems by Canoe	Increase opportunity for 375 underserved, diverse teens, from urban and first-ring suburbs, to experience and connect to environmental sciences in the natural world through YMCA canoeing/learning expeditions with experienced	YMCA of the Greater Twin Cities	\$375,000
2021-386	Burns	Katie	Bird Academy: Conservation for Kids	Bridge achievement gaps in public schools by providing equitable access to natural resource science education, focused on bird conservation; in-classroom lessons will transition to outdoor activities	Audubon Minnesota	\$291,000
2021-405	Poppleton	Kristen	TeachScience: Schools and Communities as STEM Living Laboratories	TeachScience will connect new science standards, renewable energy, and STEM opportunities through teacher training and support across the state to prepare students for the challenges and careers of the future.	Climate Generation: A Will Steger Legacy	\$369,000
2021-435	Loon	Deborah	Mentoring the Next Generation of Conservation Professionals	Internships and apprenticeships on the Minnesota Valley National Wildlife Refuge and Wetland Management District will introduce 50 diverse young people over three years to careers in the conservation field.	Minnesota Valley National Wildlife Refuge Trust Inc	\$757,000
2021-450	Edmiston	Julie	Minnesota Freshwater Quest: Environmental Education on State Waterways	30,000 diverse and underserved Minnesota youth (grades 6-12) participate in place-based, STEM environmental education to explore and preserve local ecosystems and waterways through the Minnesota Freshwater Quest online program.	Wilderness Inquiry	\$1,432,000
2021-459	Dorn	Cindy	Statewide Environmental Education via Public Television Outdoor Series	Pioneer PBS will produce 26 new episodes of a statewide television series designed to inspire Minnesotans to connect with the outdoors and to restore and protect our valuable natural resources.	Pioneer Public Television	\$300,000
					SubTotal	\$12,867,000
C. Environmental Education						
H. Small Projects (17 Proposals / \$2,590,000)						
2021-026	Donahue	Patrick	Off-Site Construction Technology Portal	Off-site and digital construction methods can dramatically improve buildings' energy efficiency and reduce construction waste. This project will spearhead creating the skilled workforce required to achieve these improvements in Minnesota.	U of MN, Duluth - NRRRI	\$197,000
2021-085	Cadieux	Valentine	Ecosystem Benefits from Urban Agriculture	Our multidisciplinary team will synthesize information using the Urban InVEST model in an environmental education program for practitioners and policy makers demonstrating how to optimize conservation benefits of urban agriculture.	Hamline University	\$200,000
2021-116	Furuseth	Lee	Water: Keep It Fresh	A structured process for informal education presenting children (students) and adults opportunities to think, formulate, organize, and present thoughts related to the environment and more specifically water quality in Minnesota.	Headwaters Science Center	\$86,000

ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries

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2021-147	Kalnicky	Emily	Driving Conservation Behavior for Mussels and Water Quality	The Minnesota Zoo will develop research-supported strategies to engage the public in specific conservation behaviors they can take in order to improve water quality and mussel health across the state.	Minnesota Zoological Society	\$191,000
2021-157	Jensen	Marissa	Minnesota Conservation Outreach & Education	We aim to reach a diverse and under-served community of Minnesotans with pollinator habitat conservation education through Women on the Wing trainings and Milkweed in the Classroom programming.	Pheasants Forever Inc	\$68,000
2021-171	Becker	Beth	Expansion of Ymca Mobile Day Camp	Expanding YMCA Mobile Day Camps will connect 300 more underserved urban youth, ages 5-12, to public parks promoting park use, outdoor recreation, and sustainable connections between youth and natural resources.	YMCA of the Greater Twin Cities	\$195,000
2021-214	Huberty	Brian	Emergency Location Markers for Minnesota's Trails, Parks & Landings	Accelerate the installation of Emergency Location Markers-ELM throughout the state, county and tribal land recreation areas to help the public find and relay their emergency location accurately in remote areas.	SharedGeo	\$130,000
2021-224	Daub	Betsy	High School River Bluff Pollinator Habitat Creation	0.25-acres of high school and public parkland turf grass will be restored to pollinator-friendly habitat. Students will assist in restoration and maintenance, and design long-term research and monitoring projects.	Friends of the Mississippi River	\$28,000
2021-226	Watkins	Eric	Smart Lawns: Data-Driven Lawn Care Information for Homeowners	We will develop, and make publicly available, an easy-to-use, data-driven web application to help guide Minnesotans when making lawn care decisions.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$200,000
2021-262	Schultz	Peter	The Longspur Prairie Fund Urban Prairie Learning Lab	The Longspur Prairie Fund proposes to establish an environmental learning lab with urban micro-prairie and stormwater bio-retention system components at the Rourke Art Gallery + Museum.	The Longspur Prairie Fund	\$82,000
2021-311	Mercer-Taylor	Elizabeth	Empowering Youth to become 21st Century Energy Leaders	Youth teams learn about our energy system, plan energy workshops and take the lead on hands-on projects for their communities. Youth are mentored by undergraduates from nearby Minnesota campuses.	U of MN, Institute on the Environment	\$200,000
2021-323	Ponder	Julia	Expanding Access to Environmental Education for Underserved Communities	The Raptor Center is proposing to build environmental literacy and engagement by bringing an integrated environmental education program featuring live raptors and standards-based curriculum to underserved communities throughout Minnesota.	U of MN, Raptor Center	\$178,000
2021-374	Foster	Shelli-Kae	Yes! Students take on Water Quality Challenge II	Youth Eco Solutions (YES!) teams will mobilize youth in over 20 communities and help fill the urgent need for citizen participation to protect and clean-up Minnesota waters through hands-on projects	Prairie Woods Environmental Learning Center	\$199,000
2021-389	McCoy	Casey	Firewise in the Classroom	This project provides a free, hands-on opportunity for high school students to learn or become more familiar with Geographic Information Systems (GIS) while gathering real wildfire risk data for communities.	MN DNR, Forestry Division	\$155,000

**ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries**

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2021-391	Pulscher	MaryLynn	Bioblitz Urban Parks: Engaging Community in Scientific Efforts	MPRB will work strategically with allies and volunteers to collect baseline biodiversity data for urban parks to inspire stewardship and inform habitat restoration work.	Minneapolis Parks and Recreation Board	\$198,000
2021-414	Montgomery	Maggie	Engaging Minnesotans with Phenology: Radio, Podcasts, Citizen Science	This education project will build the next generation of conservationists in Minnesota by engaging youth and adults in science and outdoor learning through radio, podcasts, citizen science and schoolyard exploration.	Northern Community Radio, Inc	\$198,000
2021-429	Sogard	Ray	Sportsmen's Training and Developmental Learning Center	The Minnesota Forest Zone Trappers Association (MFZTA) is requesting an \$85,000 grant to complete a site evaluation and a master plan for the Sportsmen's Training and Development Center.	Minnesota Forest Zone Trappers Association	\$85,000
					SubTotal	\$2,590,000
D. Aquatic and Terrestrial Invasive Species (10 Proposals / \$20,698,000)						
2021-162	Wettstein	Shannon	Oak Wilt Suppression at the Northern Edge II	Suppress oak wilt at the leading edge to prevent infestation in private and public forests to the north and west including Pillsbury State Forest and Camp Ripley.	Morrison Soil and Water Conservation District	\$498,000
2021-164	Krischik	Vera	Biocontrol of Bee Lawns and Parklands	The proposed research and outreach program is to establish a biocontrol program to manage the invasive, exotic Japanese beetle, which will reduce insecticide use in bee lawns and restorations.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$500,000
2021-188	Phelps	Nicholas	Building Knowledge and Capacity for AIS Solutions	MAISRC will launch 16-20 high-priority projects aimed at solving Minnesota's AIS problems using a rigorous and collaborative process. The science will be delivered to end-users through strategic communication and outreach.	U of MN, MAISRC	\$5,000,000
2021-217	Sorensen	Peter	Evaluating Minnesota's Last Best Chance to Stop Carp	Invasive carp have breached Minnesota's southern border. The last place they can be stopped is Lock&Dam 5 but time is of the essence. This proposal enables this solution.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$499,000
2021-313	Forester	Jeff	Stop Starry Invasion - Community Invasive Species Containment	MLR will contain starry stonewort (Nitellopsis obtusa) in the 15 lakes where it currently exists using civic organizing, waterless boat cleaning stations, and social messaging enhancements at these lakes.	Minnesota Lakes and Rivers Advocates	\$1,676,000
2021-383	James	John	Balancing Aquatic Plant Communities for Recreation and Conservation	Experimentally determine ways to favor low colony forming submerged plants over undesirable high biomass surface matting plants to balance recreational uses with having an intact ecosystem for the lakes' biota	Fish and Waters Conservation Fund	\$569,000
2021-425	Koop	Heather	Minnesota Invasive Terrestrial Plants and Pests Center, Ph.5	The Minnesota Invasive Terrestrial Plants and Pests Center (MITPPC) requests \$7 million to fund up to 15 new, high-priority applied TIS research projects to improve Minnesota's natural and agricultural resources.	U of MN, MITPPC	\$5,000,000
2021-427	Nerbonne	Brian	Applying New Tools and Techniques Against Invasive Carp	This project will enhance the current MN DNR Invasive Carp program by integrating new control and detection methods to manage invasive carp expansion in Minnesota waterways.	MN DNR, Fish and Wildlife Division	\$577,000

ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries

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2021-431	McClannahan	Valerie	Protect Community Forests By Managing Ash For EAB	Project will reduce EAB through community developed management (inventory, canopy assessment, management plan, removal, non-neonicotinoid treatment) and improve their community forest by involving citizens and planting a diversity of trees.	MN DNR, Forestry Division	\$5,930,000
2021-433	Salomon	Christine	White Nose Bat Syndrome Biological Control: Phase 3	Testing of best biocontrol microbes for controlling white nose syndrome (WNS) in bats: Mapping of fungal pathogen, field testing, and assessment of a WNS-free cave with healthy bats	U of MN, College of Pharmacy	\$449,000
					SubTotal	\$20,698,000
D. Aquatic and Terrestrial Invasive Species						
H. Small Projects (5 Proposals / \$641,000)						
2021-017	Wersal	Ryan	Starch Allocation Patterns of Starry Stonewort (Nitellopsis Obtusa) Harvested from Lake Koronis, MN	Starry stonewort is a macro-algae that has invaded Minnesota lakes, though nothing is known about its starch allocation. These data can identify weak points in allocation strategy to enhance management.	Minnesota State Colleges and Universities, Minnesota State University Mankato	\$101,000
2021-091	Anderson	Mike	Long-Term Efficacy of Invasive Removal in Floodplain Forests	This long-term scientific study will provide new, much-needed information for land managers focused on protecting Minnesota's invaluable floodplain forests from threats posed by overabundant deer, invasive shrubs and earthworms.	Macalester College	\$25,000
2021-268	Hammes	Mary	Mississippi River Crew for Forest Resilience	Emerald Ash Borer is devastating ash tree populations in the Mississippi National River and Recreation Area. A Mississippi River Crew will build forest resilience and restore lost canopy across jurisdictions.	Mississippi Park Connection	\$199,000
2021-293	Brady	Valerie	How Effective and Protective are AIS Removal Methods?	The best way to prevent aquatic invasive species spread is to stop the transfer of water and living material between lakes. We will test how well boat cleaning methods work.	U of MN, Duluth - NRRRI	\$119,000
2021-449	Edlund	Mark	Invasive Rock Snot Threatens North Shore Streams	We examine the recent spread, origin, cause, and economic and ecological threat of nuisance rock snot formation in North Shore streams and Lake Superior to inform management and outreach.	Science Museum of Minnesota, St. Croix Watershed Research Station	\$197,000
					SubTotal	\$641,000
E. Air Quality, Climate Change, and Renewable Energy (22 Proposals / \$16,339,000)						
2021-010	Mwesigye	Aggrey	Enhanced Thermo-Active Foundations for Space Heating in Minnesota	This project primarily involves the design and optimization of cost-competitive, thermally enhanced and compact heat exchanger systems for deep thermo-active building foundations for Minnesota's space heating and cooling industry	U of MN, Duluth	\$367,000
2021-167	Kortshagen	Uwe	Solar Windows: Combining Agriculture and Photovoltaics	Semitransparent "solar windows" absorb some solar light to create clean electricity while letting pass light for agricultural crop growth. This project will optimize both functions of solar windows.	U of MN, College of Science and Engineering	\$280,000

ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2021-169	Herrmann	Bryan	Storing Renewable Energy in Flow-Battery for Grid Use	Our project team will implement a rural, community-scale project, which demonstrates how a large flow-battery connected to solar and wind generation improves grid stability -- and enhances usage of renewables.	U of MN, Morris	\$3,210,000
2021-191	Heins	Bradley	Agrivoltaics to Improve the Environment and Farm Resiliency	The project team at the WCROC will model and evaluate alternative solar system designs that will maximize energy production as well as provide maximal benefits to cattle and farmers .	U of MN, WCROC	\$861,000
2021-196	Swanson	Jacob	Electricity Generation from Glycerol - Minnesota Biodiesel Waste	Modification and field testing of an plasma gasification system to create renewable on-site electricity generation from crude glycerol, a soybean derived biodiesel waste product. Conduct engineering and economics analyses.	Minnesota State Colleges and Universities, Minnesota State University Mankato	\$679,000
2021-241	Spigarelli	Brett	Foundational Data for Sequestering Co2 Using Minnesota Minerals	Can Minnesota minerals/mineral waste streams sequester CO2 safely? A fundamental study to identify candidate resources and test their CO2 storage capacity to better understand potential environmental risks and rewards.	U of MN, Duluth - NRRRI	\$353,000
2021-263	Gutknecht	Jessica	The Carbon Sequestration Potential of a Perennial Grain	We will quantify the carbon sequestration potential of a new perennial grain crop, Kernza. and will research and communicate implementation strategies for both economic and environmental gain in Minnesota.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$219,000
2021-290	Yang	Suo	Efficient Production and Clean Combustion of Renewable Biofuels	This proposal develops new technologies for efficient production and clean combustion of biofuels derived from Minnesota agriculture, and also performs a lifecycle assessment of the environmental benefits of the technologies.	U of MN, College of Science and Engineering	\$681,000
2021-294	Feist	Christopher	Behavioral Response of Bald and Golden Eagles to Acoustic Stimuli	The goal of the work is to design and implement an acoustic deterrence protocol that will discourage bald and golden eagles from entering hazardous air space near wind energy installations.	U of MN, St. Anthony Falls Laboratory	\$307,000
2021-305	Xiong	Boya	Reducing Plastic Waste by Innovating Waste-To-Energy Conversion Technology	The goal is to leverage bacteria and a mechanical mill to efficiently degrade and convert plastic waste into energy, reducing plastic waste accumulation from incinerators and landfills in Minnesota.	U of MN, College of Science and Engineering	\$530,000
2021-315	Cortus	Erin	Greenhouse Gas Sampling Approaches for Minnesota Livestock Farms	This project will measure and validate greenhouse gas emissions and estimates for the various manure management systems on Minnesota livestock and poultry farms, and help identify feasible mitigation methods.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$294,000
2021-318	Simon	Terrence	Efficient Filter and Sensor for Organic PAH Compounds	We propose to develop a filter with an integrated sensor to remove airborne polycyclic aromatic hydrocarbons (PAHs). The filter advantages include low cost, high efficiency and real-time monitoring.	U of MN, College of Science and Engineering	\$275,000

ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2021-336	Chan	Gabriel	Distributed Energy Storage Partnerships with Municipal and Cooperative Utilities	A research engagement platform to partner with municipal and cooperative utilities to develop and implement innovative utility programs for energy storage, enabling greater renewable energy deployment and local economic benefits	U of MN, Humphrey School of Public Affairs	\$364,000
2021-344	Thomas	Steve	Create Jobs Statewide by Diverting Materials from Landfills	By diverting over 20,000 tons of used household goods and building materials from the waste stream, this project will: reduce CO2 emissions; create 18 jobs; and, launch two businesses	Better Futures Minnesota	\$2,992,000
2021-345	Ruan	Roger	Treatment of Organic Medical and Covid-19 Contaminated Wastes	Develop a novel technology for on-site treatment and conversion of organic medical wastes contaminated by COVID-19 and other pathogens to energy and materials.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$910,000
2021-347	Ruan	Roger	Renewable and Green Polymers from Pennycress	Develop a novel technology to convert pennycress straw and oil into polyols for making renewable and green polymers such as biopolyurethane.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$559,000
2021-351	Ruan	Roger	Disinfect Airborne-Pathogens and Contaminants in Animal Production Facilities	Develop a non-thermal plasma (NTP) based process to disinfect airborne contaminants including pathogens in animal production facilities and thus reduce health hazards and improve wellbeing of animals.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$754,000
2021-387	Ruan	Roger	Value Added Treatment of Sewage Sludge	Develop a novel strategy to cost-effectively treat sewage sludge and simultaneously produce biofuels (biogas and bio-oil) and biochar with low emissions of pollutants	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$910,000
2021-392	Dry	Carolyn	A Novel Co2-Reducing Cement made from Minnesota Wastes	Produce an environmentally beneficial novel cement made from Minnesota industrial wastes that lessens impacts on water quality, eases pressure on landfills, and creates positive economic value while reducing CO2 release.	Designs by Natural Processes, Inc	\$290,000
2021-394	Ranade	Aditya	Assessing Wind Curtailment Reduction Potential Via Hydrogen Production	This project will assess the potential for renewable hydrogen in Minnesota as a means to store wind energy, reduce its curtailment and decarbonize the natural gas supply	Aerio Technologies	\$751,000
2021-398	Hagel	Tom	Cleaner Air for Park Events and Disaster Resilience	Procure three mobile solar battery trailers to displace fossil-fuel generators at urban park and rural/tribal community events, and for response to outages and disasters. Measure air pollution results.	City of St. Paul	\$360,000
2021-402	Kedward	Jennifer	Strengthening Minnesota's Reuse Economy to Conserve Natural Resources	This project will conserve the State's natural resources by bolstering the reuse business network, providing individual business assistance and influencing consumer behavior to prioritize reuse, repair and rental.	ReUse Minnesota	\$393,000
					SubTotal	\$16,339,000
E. Air Quality, Climate Change, and Renewable Energy						
H. Small Projects (13 Proposals / \$1,960,000)						
2021-044	Barry	Brian	Bringing Minnesota Farmers into the Low-Carbon Economy	Residuals from timber mills and the paper and pulp industry will be processed into field-ready, granular biochar products that Minnesota farmers can easily incorporate into conventional no-till systems.	U of MN, Duluth - NRR1	\$176,000

**ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries**

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2021-098	Hu	Bo	Biomass Inventory for Minnesota Renewable Natural Gas Production	This study aims to inventory statewide biomass waste streams for renewable natural gas (RNG) production and provide technical suggestions on policy implementation and RNG facilities development and distribution.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$200,000
2021-135	McFarland	Ashley	Climate Mitigation through Improved Forest Understory Health	This work seeks to support climate change mitigation strategies by promoting healthy and wildfire-resilient forests in Minnesota through improved management and utilization of small-diameter, forest understory biomass.	Dovetail Partners Inc	\$179,000
2021-193	Dahlen	Reta	Restoration of Riverside Park	Project will mitigate the effects of climate change by restoring water retentive capabilities to 7.68 acres on the Long Prairie River while also creating both recreational and educational opportunities.	City of Long Prairie	\$156,000
2021-199	Swanberg	Kevin	Twin Ports Air Quality Monitoring and Education Project	To install air monitors in communities across St. Louis County and will educate the public about their use and availability. Data from air monitors will be publicly available in realtime.	Twin Ports Action Alliance	\$30,000
2021-202	Shaffer	David	Studying Solar Panels' Impact on Wetland Quality	Little is empirically known about the impact of solar panels installed above wetlands. We propose studying how the installation of solar panels in wetlands will impact wetland quality over time.	Minnesota Solar Energy Industries Project	\$199,000
2021-239	O'Keefe	Pete	Increasing Recycling of Building Materials, Supplies, Home Goods	Build a covered donation drop-off center at the ReStore in New Brighton to reduce landfill waste by accepting and then reselling or recycling construction and building materials.	Twin Cities Habitat for Humanity, Inc	\$60,000
2021-261	Costa	Kyle	Increasing Efficiency of Methane Digesters	This proposal investigates low-cost additions to methane digesters that can increase electricity generation. We will focus on using resources that are compatible with existing methane digesters common to cold climates.	U of MN, College of Biological Sciences	\$148,000
2021-269	Twine	Tracy	Reducing Urban Heat through Reflective Roofs	We propose to simulate deployment of a reflective film that will cool roofs, reduce energy costs, and mitigate warming.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$165,000
2021-281	Guala	Michele	Protecting Stream Banks Producing Energy	The proposed research project focuses on advancing a hybrid renewable energy - bank protection system to operate in rivers of small-medium size extracting energy and preventing erosion.	U of MN, St. Anthony Falls Laboratory	\$198,000
2021-298	Sarkanen	Simo	Eco-Friendly Plastics from Cloquet Pulp-Mill Lignin	We will reduce environmental pollution from plastics by creating eco-friendly replacements using lignin from the pulp mill in Cloquet. The lignin plastics will be similar in strength to polystyrene.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$196,000
2021-360	Yamin	Mohammad	Sustainable Bricks using Minnesota Clay and Recycled Aggregate	The main objective of this research proposal is to develop sustainable, stronger and more affordable green construction bricks using Minnesota clay and recycled aggregate stabilized chemically and mechanically.	Minnesota State Colleges and Universities, Minnesota State University Mankato	\$123,000

**ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries**

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2021-448	Sosnowchik	Rachel	Diverting Unsold Food from Landfills, Reducing Greenhouse Gases	We will collect donations of prepared, ready-to-eat foods in the Metro area and send these items to local food pantries and meal programs. *Tentatively recommended for 2020 funding*	Second Harvest Heartland	\$130,000
					SubTotal	\$1,960,000
F. Methods to Protect, Restore, and Enhance Land, Water, and Habitat (37 Proposals / \$25,637,000)						
2021-007	Christenson	Scott	South Central Minnesota Rock Berm Fish Barriers	Install 5 fish barriers to enhance State Line Lake during Activity 1. Monitoring effectiveness of each rock berm fish barrier site and responses to lake health in Activity 2.	State Line Lake Restoration Inc	\$855,000
2021-022	Barrick	Melissa	Camp Ripley Sentinel Landscape Forest Restoration and Enhancements	This project will build a sustainable inter-agency private and public Camp Ripley landscape forest restoration program which includes: ▣rescribed Fire (750 acres) ▣abitat Restoration (125 acres) ▣orest Management Plans (70)	Crow Wing Soil and Water Conservation District	\$975,000
2021-039	Davis	Mike	Restoring Mussels in Streams and Lakes - Continuation	Restoring native mussel assemblages can improve water quality and ecological health of rivers. Mussel filter water, purifying and improving water clarity by removing particles and contaminants like E. coli bacteria.	MN DNR, Ecological and Water Resources Division	\$825,000
2021-058	Tucker	Rebecca	Pollinator Central II: Habitat Improvement with Community Monitoring	We will restore and enhance 133 acres of pollinator habitat on 12 sites around the metro to benefit pollinators and people, and build knowledge of the impact through community-based monitoring.	Great River Greening	\$742,000
2021-059	Windmuller-Campione	Marcella	Maximizing Economic and Ecological Benefits of Forest Management	This study will investigate ways to use forest management to maximize multiple ecosystem services in the face of rapidly changing conditions in hardwood and conifer forests in Minnesota.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$650,000
2021-065	Johnson	Nathan	Phase 2 - Prescribed-Fire Management for Roadside Prairies	This project will continue to protect biodiversity and enhance pollinator habitat on roadsides by helping to create a self-sufficient prescribed fire program at the Minnesota Department of Transportation	Minnesota Department of Transportation	\$255,000
2021-094	Pederson	Eric	Pollinator Habitat Study for Closed Landfill Program	The Closed Landfill Program will rank its 114 sites on potential for pollinator habitat, create vegetation reconstruction plans for the top five sites, and implement a plan at one site.	Minnesota Pollution Control Agency	\$300,000
2021-097	Weiss	Eric	Minnesota Green Schoolyards	Minnesota Green Schoolyards pilot project will assess, promote, and demonstrate how schoolyards can improve water, air, and habitat quality; foster next generation stewards, while improving health, education, and community outcomes.	The Trust for Public Land	\$1,997,000
2021-139	Tucker	Rebecca	Pollinator Central: Habitat Improvement with Citizen Monitoring	Restore / enhance 500 acres of pollinator habitat on 20 traditional and nontraditional sites, from Hastings to St. Cloud, to benefit pollinators and build knowledge of the impacts through citizen monitoring.	Great River Greening	\$981,000

ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2021-155	Chapman	Eric	Rural-Urban Partnerships to Advance Conservation Farming with Technology	We seek to broaden participation in conservation agriculture statewide by applying high-tech assessment tools, building farmer-scientist-student collaborations across rural and urban communities, and expanding farmer-farmer knowledge exchange networks.	University of St. Thomas	\$548,000
2021-161	Magner	Joe	Threshold Resiliency with Increased Precipitation Uncertainty	Minnesota decadal increases in precipitation have increased runoff, groundwater recharge, contamination, and infrastructure damage. ENRTF funded maps highlight landscapes at risk. We will assess and define critical ecological sustainability thresholds.	U of MN, College of Science and Engineering	\$1,899,000
2021-180	Hrubes	Jeff	Carbon Sequestration and Climate Resiliency using Forest Management	Field test new and expanded tree establishment practices through a coordinated program to establish long-lived conifers and other climate resilient species emphasizing carbon sequestration, watershed protection and wildlife habitat.	Board of Water and Soil Resources	\$615,000
2021-182	Hogan	Christopher	Minnesota Center for Agricultural Spray Drift Reduction	The University of Minnesota will establish a center devoted to developing and implementing protocols and technologies to mitigate the impacts of pesticide spray drift on water and land habitats.	U of MN, College of Science and Engineering	\$1,049,000
2021-212	Gordon	Riley	Reducing Plastic Pollution with Biodegradable Erosion Control Products	Utilization of Industrial Hemp to create biodegradable alternatives to plastic-based erosion and sediment control products.	Agricultural Utilization Research Institute	\$227,000
2021-213	Carson	Michael	Forests, Wildlife & Climate Change: Proactive Landscape Designs	First-of-its-kind strategy for statewide contingency planning, proactively addressing uncertainties surrounding climate change, carbon sequestering and spatially-explicit wildlife needs. Project helps integrate multi-objective forest landscape-planning strategies for multiple agencies.	U of MN, North Central Research and Outreach Center	\$404,000
2021-223	Ebtehaj	Ardeshir	Remote Sensing and Super-Resolution Imaging of Microplastics	The research will collect samples of microplastics to establish relationships between physical and remote sensing characteristics of microplastics for cost effective monitoring of microplastics in Minnesota natural and engineered waters.	U of MN, St. Anthony Falls Laboratory	\$364,000
2021-231	Daub	Betsy	Urban Pollinator and Native American Cultural Site Restoration	Three urban natural areas, including an iconic Native American cultural site, will be restored to native prairie and forest, with a focus on important pollinator and culturally significant native plants.	Friends of the Mississippi River	\$250,000
2021-270	Labuz	Joseph	A Safety Rating System of Mining Waste Storage in Northern Minnesota	A major public concern related to mining operations is the storage of the waste material. In this work, we will develop safety rating tools for mining waste storage.	U of MN, College of Science and Engineering	\$390,000
2021-274	Ferrington	Leonard	Winter Dynamics of Vulnerable Trout Streams: Central Minnesota	Warming temperatures resulting from global warming will affect trout populations in Minnesota. Streams of central Minnesota are particularly vulnerable. We will model winter dynamics to identify the most vulnerable streams.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$520,000

ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2021-280	Wold	Scott	Economic and Ecological Benefits of Soil Health	To provide real world economic results of cover crops and alternative tillage implementation. Environmental benefits do not have to come at a cost of bottom line profitability.	Redwood Soil & Water Conservation District	\$339,000
2021-283	Barney	Brett	Engineered Solutions to Remove Nitrates from Contaminated Waters	Our project aims to develop new engineering practices through the application of native microbes to lower the high levels of nitrate accumulating in rural water systems.	U of MN, Twin Cities	\$234,000
2021-295	Arvidson	Adam	Kenilworth Channel Riparian Restoration and Enhancement	This project will stabilize, restore, and enhance the ecology and public safety and access of the Kenilworth Channel's shorelines extending westward from the future SWLRT bridge to Cedar Lake.	Minneapolis Parks and Recreation Board	\$930,000
2021-328	Weegman	Matt	Restoring Oak Forests for Wildlife in Southeast Minnesota	We will use integrated restoration practices to enhance native oak forests throughout the Driftless Area and conduct forest inventory within the Upper Mississippi NWR.	National Wild Turkey Federation	\$661,000
2021-337	Shaw	Dan	Lawns to Legumes Program Phase 2	Phase Two of the Lawns to Legumes Program builds on current momentum to further engage residents across Minnesota to establish pollinator habitat and expands into community parks and school landscapes.	Board of Water and Soil Resources	\$1,389,000
2021-340	Arvidson	Adam	Bohemian Flats Savanna Restoration	This project will restore approximately 5 acres of compacted urban parkland adjacent to the Mississippi River to an oak savanna ecosystem.	Minneapolis Parks and Recreation Board	\$424,000
2021-357	Griffis	Timothy	Quantifying Environmental Benefits of Peatland Restoration in Minnesota	This study will provide scientific data, management- and policy options enabling state agencies to make science-based decisions about the net benefits of peatland restoration for air quality, climate, and water quality.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$742,000
2021-375	Lewanski	Tom	Reintroduction of Bison to Spring Lake Park Reserve	Dakota County, in partnership with the Minnesota Bison Conservation Herd, will reintroduce American plains bison (Bison bison) to the prairie of Spring Lake Park Reserve.	Dakota County	\$659,000
2021-377	Tuominen	Todd	Elm Creek Habitat Restoration Final Phase	Phase V is the Final Phase of the Elm Creek Habitat and Restoration that includes 3,800 linear feet of stream bank restoration of Elm Creek	City of Champlin	\$613,000
2021-397	Lenczewski	John	Creating Prioritized Plan for Restoring the Stewart River Watershed	We will develop a plan for the Stewart River Watershed that identifies and prioritizes specific river and land restoration and protection activities to efficiently meet the broadest ecological restoration goals.	Minnesota Trout Unlimited	\$298,000
2021-416	Caneff	Denny	A Showcase for Resource-Sensitive Trail Construction	Renew and rebuild the Superior Hiking Trail to minimize environmental damage, maximize safety, and increase resistance to impacts of increased traffic and climate change.	Superior Hiking Trail Association	\$450,000
2021-421	Barry	Brian	Protecting Minnesota Waters with Biodegradable, Controlled-Release Fertilizers	We will develop a biodegradable lignin-based fertilizer coating for granular urea fertilizers to replace non-biodegradable plastic coatings or non-coated fertilizers currently used by the agricultural sector.	U of MN, Duluth - NRRRI	\$260,000

**ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries**

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2021-438	Arvidson	Adam	Mississippi River Aquatic Habitat Restoration and Mussel Reintroduction	This project will restore lost Mississippi River habitat and reintroduce mussels above St. Anthony Falls on four river islands and along approximately 6,000 linear feet of shoreline.	Minneapolis Parks and Recreation Board	\$2,538,000
2021-439	Shaw	Dan	Pollinator & Beneficial Insect Strategic Habitat Program	This pilot program will restore and enhance diverse native habitat over approximately 90 projects on conservation lands and natural areas strategically located across Minnesota to address declining pollinators and insects.	Board of Water and Soil Resources	\$780,000
2021-441	Drotts	Gary	Minnesota Hunter Walking Trails, Public Land Recreational Access	Sustain, enhance public land forest recreation and management access supported by a system of hunter walking trails through the improvement of trail infrastructure needs (gate, signs, parking lots, maps, etc.)	Ruffed Grouse Society	\$300,000
2021-447	Tuominen	Todd	Elm Creek Habitat Restoration Phase IV	Elm Creek Stream Restoration Phase IV is a in-stream habitat restoration project that includes 3,670 linear feet of stream bank restoration upstream of Mill Pond Lake	City of Champlin	\$501,000
2021-455	Beebe	Andrew	Habitat Associations of Mississippi Bottomland Forest Marsh Birds	Determine habitat associations of breeding bottomland forest birds in response to restoration actions along the Mississippi River at the Reno Bottoms outside Reno, MN	Audubon Minnesota	\$275,000
2021-461	Aukema	Brian	Eastern Larch Beetle is Devastating Minnesota Tamarack Forests	Eastern larch beetle, native to Minnesota, is suddenly decimating Minnesota's tamarack forests. This proposal develops insect management techniques and determines how bad this problem may remain in the future.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$398,000
					SubTotal	\$25,637,000
F. Methods to Protect, Restore, and Enhance Land, Water, and Habitat						
H. Small Projects (18 Proposals / \$3,089,000)						
2021-020	Elston	Bob	Sleepy Eye Lake Reclamation	This project is proposed to reduce siltation and sedimentation entering and building up in the east arm of Sleepy Eye Lake.	Board of Water and Soil Resources	\$120,000
2021-062	Remucal	David	Preserving Minnesota's only Ball Cactus Population	Minnesota's only population of ball cactus is threatened as a significant proportion of the population is on private, unprotected lands. Moving plants to protected land will better protect this species.	U of MN, Landscape Arboretum	\$103,000
2021-068	Kerski	Michael	Shakopee Riverfront Habitat Restoration and Education Project	The Riverfront Project will restore Shakopee's Memorial Park back to its native prairie land, control riverbank erosion, and implement nature park structures to educate visitors of the area's historic significance.	City of Shakopee	\$200,000
2021-078	Taylor	Carrie	Developing a Rare Plant Rescue Program for Minnesota	The Anoka Sand Plain Rare Plant Rescue Project enhances the protection of Minnesota's biodiversity and genetic heritage by developing program capacity and rescuing rare plants that would otherwise be destroyed.	Anoka Conservation District	\$199,000
2021-084	Sheppard	Kevin	Restoring Upland Forests for Birds	ABC will restore a minimum of 300 acres of deciduous forest in partnership with Aitkin, Beltrami and Cass Counties, utilizing science-based BMPs to rejuvenate non-commercial stands for focal wildlife species.	American Bird Conservancy, Great Lakes Program	\$193,000

ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries

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2021-117	Jennings	Carrie	Water, Wildlife and Weather Friendly Labeling Pilot Program	Funds derived from product-labeling fees that surcharge companies to promote Water, Wildlife and Weather Friendly products are used to permanently convert lands to protect water, provide habitat and sequester carbon.	Freshwater Society	\$195,000
2021-137	Caneff	Denny	Plumbing the Muddy Depths of Superior Hiking Trail	Bring "plumbing," or serious and effective water management devices and techniques, to the Superior Hiking Trail. This includes building structures and sculpting and managing soil and rock.	Superior Hiking Trail Association	\$187,000
2021-229	Gabrielson	Sara	Woodcrest Trail Expansion and Prairie Restoration	Country Manor requests \$92,000 to restore nine acres of native prairie, and extend groomed trails through adjacent woodlands on the property of a senior living facility in Central Minnesota.	Country Manor Foundation	\$92,000
2021-245	Meschke	Linda	Improving Landscape Ecological Value with Hazelnuts	Monitoring, education, technical assistance and establishment of hazelnuts, with cooperating landowners, to provide landscape scale ecological value [water quality, erosion reduction, carbon sequestration, habitat] to protect and enhance degraded land.	Rural Advantage	\$161,000
2021-288	Schrank	Amy	Increase Golden Shiner Production to Protect Aquatic Communities	We propose four strategies to increase in-state Golden Shiner (bait) production because angler demand exceeds production. Out-of-state importation creates a high risk of introducing aquatic invasive species and disease.	U of MN, Duluth - Sea Grant	\$194,000
2021-297	Montgomery	Rebecca	Prescribed Burning for Brushland-Dependent Species-Phase II	Brushlands provide critical habitat for >250 wildlife species. We compare effects of spring, summer and fall burns on birds and vegetation, providing much needed management guidelines for this key habitat.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$147,000
2021-302	Arvidson	Adam	Mississippi Flyway Habitat Fingers	This project would pilot a means of connecting neighborhood parks and the Mississippi Flyway through habitat restoration and the development of habitat corridors in the urban core.	Minneapolis Parks and Recreation Board	\$171,000
2021-308	Cariveau	Daniel	Creating Cost-Effective Forage and Management Actions for Pollinators	We will collect long-term, species-specific plant data on pollinator forage quality and quantity. These data will be used to design an open-access web-based tool for land managers in Minnesota.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$198,000
2021-319	Cui	Tianhong	Surface Water Purification System Powered by Renewable Energy	We propose to develop a cheap and an efficient water purification system powered by solar energy that can be used to remove the pollutants in lakes and rivers in Minnesota.	U of MN, College of Science and Engineering	\$200,000
2021-322	Vlaming	Jonathan	Shoreline Stabilization, Fishing, ADA Improvements at Silverwood Park	The Project will provide water quality improvements through shoreline stabilization, shoreline fishing improvements and shoreline ADA access on the island in Silver Lake within Silverwood Park, St. Anthony MN.	Three Rivers Park District	\$200,000

ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2021-343	Cui	Tianhong	Small, Cheap, and Fast Nitrobenzene Detector for Water	We propose to develop a small, cheap, and fast photoelectrochemical detector based on a new solar cell to prevent lakes and rivers in Minnesota from the nitrobenzene contamination.	U of MN, College of Science and Engineering	\$200,000
2021-356	Shen	Lian	Help MPCP by Understanding Seeds and Pollens Dispersion	We will conduct computer simulations and laboratory experiments to understand seeds and pollen dispersion in canopy and use the knowledge to assist the planning of MPCP for environment/climate changes.	U of MN, St. Anthony Falls Laboratory	\$199,000
2021-408	Daub	Betsy	Pollinator Habitat Creation along the Urban Mississippi River	This project creates 26.5 acres of diverse pollinator and wildlife habitat at three sites within the Mississippi River corridor in the Twin Cities urban core.	Friends of the Mississippi River	\$130,000
					SubTotal	\$3,089,000
G. Land Acquisition for Habitat and Recreation (39 Proposals / \$78,620,000)						
2021-012	Yavarow	Matthew	Perham to Pelican Rapids Regional Trail (McDonald Segment)	Construction of the McDonald Segment (5.83 miles) of the 32-mile Perham to Pelican Rapids Regional Trail that will connect Perham and Pelican Rapids via Maplewood State Park.	Otter Tail County	\$2,245,000
2021-013	Cammilleri	Kenneth	Gateway State Trail	The construction and completion of additional engineering for a segment of Minnesota Gateway Trail between the Scandia Village Center and William O'Brien State Park's Savanna Campground.	City of Scandia	\$4,295,000
2021-021	Hayes	Dillon	Soo Line Trail Trestle Bridge	Replace the existing Soo Line Trail trestle bridge to improve habitat connectivity, mitigate shoreline erosion and degradation of the river channel, and expand outdoor recreational opportunities.	Mille Lacs County	\$725,000
2021-028	Manzoline	Robert	Mesabi Trail CSAH 88 To Ely	This project is for the construction of an approximately 2.8 mile long segment of the Mesabi Trail beginning at the intersection of County State Aid Highway 88 to Ely.	St. Louis & Lake Counties Regional Railroad Authority	\$2,200,000
2021-043	Mularie	Audrey	Local Parks, Trails and Natural Areas Grant Programs	Provide approximately 16 matching grants for local parks, acquisition of locally significant natural areas and trails to connect people safely to desirable community locations and regional or state facilities.	MN DNR, Grants Unit	\$3,000,000
2021-049	Lee	Jessica	Metropolitan Regional Parks System Land Acquisition- Phase 7	Acquire properties with high-quality natural resources or natural resources restoration potential for the metropolitan Regional Parks System. This \$3M request will be matched with over \$3M in local/regional funds.	Metropolitan Council	\$3,000,000
2021-069	Schultz	Todd	Sauk Rapids Rapids Project Lions Park	Lions Park improvements. Park is located on the rapids area of the Mississippi River. Enhance interaction with the river regionally with access points in this park.	City of Sauk Rapids	\$545,000
2021-092	Chanski	David	City of Brainerd - Mississippi Landing Trailhead	The Mississippi Landing Trailhead Park will help connect residents and visitors to the Mississippi River through recreation, education, and restoration; providing an accessible connection to the river for everyone.	City of Brainerd	\$3,800,000

**ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries**

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2021-093	Welle	Ron	Brooten Land Acquisition	We would maintain what has been done so beautifully already but may add some ponds to attract more ducks-geese etc.	Midwest Outdoors Unlimited	\$950,000
2021-105	Schulte	Judy	Native Prairie Stewardship & Prairie Bank Easement Acquisition	Native Prairie Bank (NPB) will help landowners conserve native prairie through multiple outreach methods, restoration and enhancement of 700 acres, and protection of 150 acres through conservation easements.	MN DNR, Ecological and Water Resources Division	\$2,100,000
2021-109	Bloom	Katie	Moose Lake - Trunk Highway 73 Trail	The City of Moose Lake will be constructing a non-motorized recreation trail along Highway 73. This new trail will connect to several regional existing trails in the Moose Lake area.	City of Moose Lake	\$330,000
2021-145	Wood	Bryan	Preserving Grindstone Lake's Shoreline: McConnell Property Acquisition	Osprey Wilds Environmental Learning Center (formerly Audubon Center of the North Woods) seeks to purchase and protect 11 acres of undeveloped lakefront property on Grindstone Lake bordering its nature campus.	Osprey Wilds Environmental Learning Center	\$640,000
2021-151	Roske	Molly	SNA Acquisition, Restoration, Citizen-Science and Outreach	Scientific and Natural Area (SNA) habitat restoration/enhancement (1000+ acres), increased public involvement, and strategic acquisition (250+ acres) will conserve Minnesota's most unique and rare resources for everyone's benefit.	MN DNR, Ecological and Water Resources Division	\$4,760,000
2021-154	Phillips	Courtney	Precision Acquisition for Restoration, Groundwater Recharge and Habitat.	This proposal is for acquisition and restoration of a 36-acre key parcel that will reduce flooding while providing water storage, groundwater recharge, nutrient reduction, pollinator and wildlife habitat.	Shell Rock River Watershed District	\$549,000
2021-221	Roske	Molly	DNR Scientific and Natural Areas (ML20 Resubmit)	Scientific and Natural Area (SNA) habitat restoration/enhancement (~600 acres), increased public involvement, and strategic acquisition (~250 acres) will conserve Minnesota's most unique and rare resources for everyone's benefit.	MN DNR - Ecological and Water Resources Division	\$3,000,000
2021-310	Terrill	Tim	Whiskey Creek & Mississippi River Water Quality/Habitat/Recreation	Project will purchase 13.8 acres and construct water quality, habitat, and recreational improvements to protect the Mississippi River from contaminants in the 400-acre, highly impervious watershed in Baxter Minnesota.	Mississippi Headwaters Board	\$500,000
2021-324	Gautreaux	Sherril	Ranier/Safe Harbor Transient Dock on Rainy Lake	To construct a dock in Ranier which would accommodate boats 26 feet or longer with the goal of increasing public access for boat recreation on Rainy Lake.	City of Ranier	\$762,000
2021-325	Olson	Neil	Veterans on the Lake	\$650,000 is respectfully requested for accessibility/handicap renovations to existing structures and roadway and trail construction for upgrading accessibility for our clients 81% of which are disabled American Veterans.	Veterans on the Lake	\$650,000
2021-329	Pohlman	JoAnn	Voyageur National Park Crane Lake Visitors Center Project	Crane Lake Township is applying for LCCMR funds to construct a 7,000 square foot Visitors Center to serve as an access point to the Voyageurs National Park.	Town of Crane Lake	\$3,600,000

ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries

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2021-330	Melin	Kaycee	Brookston Campground, Boat Launch & Outdoor Recreational Facility Final	The City of Brookston will be building a campground, boat launch, and outdoor recreation area on the banks of the St. Louis River in northeastern Minnesota.	City of Brookston	\$500,000
2021-332	Burich	Rebecca	Moose/Seven Beaver Multi-Use Trail Upgrade	The City of Hoyt Lakes and the Ranger ATV and Snowmobile Club will be improving the Moose and Seven Bears Trails and extending the trails to connect to regional trails.	City of Hoyt Lakes	\$1,200,000
2021-338	Arvidson	Adam	Above the Falls Regional Park Acquisition and Restoration	This project would acquire and restore 3.25 acres of industrial land along the Mississippi River within the Above the Falls Regional Park.	Minneapolis Parks and Recreation Board	\$1,267,000
2021-339	See-Benes	Britt	Silver Lake Trail Improvement Project	Reconstruction & renovation of the Silver Lake Walking Trail in order to allow safe multi-modal transportation between schools, parks, community recreation facilities and other community activity centers in Downtown Virginia.	City of Virginia	\$1,428,000
2021-362	Skaar	Kent	Minnesota State Trails Development	This project proposes to expand recreational opportunities on Minnesota State Trails through the rehabilitation and enhancement of existing state trails and replacement or repair of existing state trail bridges.	MN DNR, State Parks and Trails Division	\$6,000,000
2021-363	Vollbrecht	Lisa	Highbanks Ravine Bat Habernaculum Project	The City of St. Cloud will be rerouting and upgrading their existing stormwater system in the Highbanks Ravine area working with the DNR to preserve an existing bat hibernaculum.	City of St. Cloud	\$1,100,000
2021-371	Skaar	Kent	State Parks and State Trails In-Holdings	Acquire top priority in-holdings within legislatively established boundaries of Minnesota's 75 State Parks and State Recreation Areas and 26 State Trails from willing sellers	MN DNR, State Parks and Trails Division	\$3,725,000
2021-380	Stewart	Nancy	Accessible Fishing Piers and Shore Fishing Areas	Provide 6-8 accessible fishing piers and 1-2 developed shore fishing sites in locations that have a high potential to serve new angling communities, under-served populations and anglers with disabilities.	MN DNR, State Parks and Trails Division	\$400,000
2021-404	Dahl	Bill	Mesabi Trail Mckinley to Biwabik	This project is for the construction of an approximately 5.5 mile-long segment of the Mesabi Trail beginning at the City of McKinley and ending at the City of Biwabik.	St. Louis & Lake Counties Regional Railroad Authority	\$1,000,000
2021-419	Bissonette	Cathy	Birch Lake Recreation Area Campground	This project consists of expanding the existing Birch Lake Recreation Area to add a new 22 acre campground that will include 49 new campsites that will accommodate recreational vehicles/tents.	City of Babbitt	\$750,000
2021-420	Pohlman	JoAnn	Crane Lake Voyageurs National Park Campground & Visitors Center	This project consists of the design and construction of a new campground and site preparation/permitting/engineering/design for a new Visitors Center in Crane Lake.	Town of Crane Lake	\$3,600,000
2021-428	Mooney	Kevin	Rocori Trail Phase 3	This project consists of the design and construction of Phase 3 of the Rocori Trail along the old BNSF rail corridor and will connect Cold Spring, Richmond and Rockville.	Rocori Trail Construction Board	\$1,260,000

**ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries**

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2021-434	Simonson	Ryan	Crow Wing County Community Natural Area Acquisition	Acquire private land surrounding a historic fire tower to protect and provide a buffer to the tower itself while creating interpretive walking trails on the newly acquired property.	Crow Wing County	\$405,000
2021-442	Skaar	Kent	Minnesota State Trails Development	This project proposes to expand recreational opportunities on Minnesota State Trails through the rehabilitation or replacement of existing state trail bridges.	MN DNR, State Parks and Trails Division	\$994,000
2021-443	Skaar	Kent	Minnesota State Parks and State Trails Inholdings	Acquire top priority in-holdings within legislatively established boundaries of Minnesota's 75 State Parks and State Recreation Areas and 26 State Trails from willing sellers.	MN DNR, State Parks and Trails Division	\$3,500,000
2021-444	Mularie	Audrey	Local Parks, Trails and Natural Areas Grant Programs	Provide approximately 13 matching grants for local parks, acquisition of locally significant natural areas and trails to connect people safely to desirable community locations and regional or state facilities.	MN DNR, Grants Unit	\$2,400,000
2021-445	Schulte	Judy	2020-Private Native Prairie Conservation through Native Prairie Bank	Re-submission of 2020 Proposal: Native Prairie Bank (NPB) will help landowners conserve native prairie through outreach, restoration and enhancement of 700 acres, and protection of 130 acres through conservation easements.	MN DNR, Ecological and Water Resources Division	\$2,000,000
2021-446	Forbes	DJ	Turning Back to Rivers: Environmental and Recreational Protection	This project will help communities acquire priority land along the Mississippi, St. Croix, and Minnesota Rivers, and their tributaries, protecting the environment and water quality while creating much-needed recreational opportunities.	The Trust for Public Land	\$3,804,000
2021-453	Yavarow	Matthew	Perham to Pelican Rapids Regional Trail (West Segment)	Construction of the West Segment (6.83 miles) of the 32-mile Perham to Pelican Rapids Regional Trail that will connect the City of Pelican Rapids to Maplewood State Park.	Otter Tail County	\$2,836,000
2021-458	Monson	Kjersti	Early Enhancements: Upper St. Anthony Falls Lock	Acquire, preserve, and improve land on the Central Riverfront in Minneapolis abutting the Upper Lock (but not the Lock structure itself) for recreation, conservation, natural restoration, and education.	Friends of the Lock and Dam	\$2,800,000
					SubTotal	\$78,620,000
G. Land Acquisition for Habitat and Recreation						
H. Small Projects (5 Proposals / \$791,000)						
2021-029	Bartosh	Jeremy	SW MN Single Track Trail	Create a single track mountain bike trail in a county park in SW MN where there is a current need for such infrastructure to boost economic and lifestyle changes.	Jackson County	\$190,000
2021-036	Aro	Matthew	A Second Life for Urban Ash Trees	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.	U of MN, Duluth - NRRRI	\$156,000
2021-038	Langowski	Harold	Ely Trezona Trail / Pioneer Mine Site Restoration	This project seeks funding for the restoration of a failing retaining wall at Ely's Pioneer Mine Recreational Site located on the popular Trezona Trail.	City of Ely	\$185,000

ENRTF Request for Proposal (RFP) - FY 2022
Final Proposals Received by Category with Summaries

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2021-222	Brand	Jefferson	Lake Brophy Trail Expansion	The first project is a downhill trail and an uphill trail. The second project is an asphalt pump track.	Big Ole Bike Club	\$100,000
2021-406	Williams	Scott	Chippewa County Acquisition, Recreation and Education	Chippewa County will acquire 51 acres of riverine wetland/floodplain forest complex, floodplain and abandoned gravel pits along the MN River southwest of Montevideo.	Chippewa County	\$160,000
					SubTotal	\$791,000