

2019 Environment and Natural Resources Trust Fund Proposals Received

For the FY 2020 and FY 2021 biennium (July 1, 2019 - June 30, 2021), approximately \$59 million is available each year for funding from the Environment and Natural Resources Trust Fund. As of April 11, 2018, the Legislative-Citizen Commission on Minnesota Resources (LCCMR) received 273 proposals requesting a total of approximately \$191 million. This RFP process is for funding beginning July 1, 2019.

LCCMR reviews and evaluates all proposals against their 10 adopted evaluation criteria. On June 5-6, members select a subset of high-ranking proposals to invite for presentation before the LCCMR on June 19, 20, 21, 25, 26 and 27 in order to receive further consideration. On July 17-18, LCCMR then makes final selection and funding allocation decisions. These selected projects are presented to the 2019 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.

ENRTF ID #	Last Name	First Name	Title	Summary	Organization	\$ Requested
A. Foundational Natural Resource Data and Information (RECEIVED: 27 Proposals / Subtotal - \$20,279,405)						
001-A	Carlson	Bruce	Minnesota Biological Survey – Continuation	MBS proposes baseline biological field surveys in three northern counties; targeted field surveys of sensitive plant species, pollinators, and plant communities; digital maps; book drafts; technical guidance; and data management.	MN DNR	\$2,987,000
002-A	Lusardi	Barbara	Minnesota Geological Survey 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	\$4,121,625
003-A	Davis	Mike	Restoring Native Mussels in Streams and Lakes	Restore native freshwater mussel assemblages in the Mississippi, Cedar, and Canon rivers to provide necessary ecosystem services, expand imperiled species populations, and inform the public on mussels and their conservation.	MN DNR	\$735,981
004-A	Texler	Hannah	Minnesotas Ecological Monitoring Network - Continuation	The project will expand upon the statewide network of permanent ecological monitoring plots developed in 2017 to track long-term status and trends in Minnesotas prairies, forests and wetlands.	MN DNR	\$696,004
005-A	Etterson	Matthew	Mercury and PFAS Risk to Minnesota Raptors	We will quantify exposure to two contaminants for 12 Minnesota raptors. Polyfluoralkyl substances (PFAS) and methylmercury (Hg) are bioaccumulative toxicants that cause reproductive failure in birds.	Hawk Ridge Bird Observatory	\$282,093
006-A	Johnson	Lucinda	Optimizing Minnesotas Forest Products and Ecosystem Services	To ensure a healthy forest industry we will provide data and tools to help identify the optimal uses of forest resources, considering both goods (bioproducts) and services (habitat, clean water).	U of MN - Duluth	\$789,649
007-A	Nordquist	Gerda	Wild Bee Surveys in Minnesotas Forest Habitats	Wild bee surveys will extend into the coniferous-deciduous forest region of Minnesota. Information will augment the state list of wild bees documented from the prairie and broadleaf forest regions.	MN DNR	\$636,044
008-A	Sindt	Tony	Phase-II: Enhancing Understanding of the Minnesota River Ecosystem	Phase-II will build upon and expand efforts of phase-I to enhance understanding of plankton, Paddlefish, spawning success, backwater habitats, and more in the Minnesota River.	MN DNR	\$598,241
009-A	Cornett	Meredith	An Integrated Statewide Forest Monitoring System for Minnesota	Minnesota’s forests face many challenges. We propose a system of regular “check-ups” to track forest health over time, detect distress signals, and correct course through active management.	The Nature Conservancy	\$371,000
010-A	Kloiber	Steve	A Better System for Wetland Inventory Data Stewardship	The state spent \$7 million to update the wetland inventory for Minnesota. We propose to develop a cost-effective system to streamline ongoing data maintenance and avoid another expensive future overhaul.	MN DNR	\$291,000
011-A	Rao	Sujaya	Conserving Monarch Butterflies: Habitat Assessment and Citizen Engagement	Across Minnesota, MJV will assess monarchs, their habitat, and pollinator project success; we will engage broad stakeholders through rural outreach and field demonstrations as well as volunteer monitoring training.	U of MN	\$380,067

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012-A	Reavie	Euan	Conserving Lake Trout in Minnesota	Determine long-term causes of fish loss and develop management recommendations for rehabilitation of coldwater fisheries in hundreds of lakes. A collaboration with the MNDNR to enhance the sentinel lakes program.	U of MN - Duluth	\$782,549
013-A	Stapleton	Seth	Conserving Minnesotas Nine Species of Freshwater Turtles	The Minnesota Zoo will improve the long-term viability of Minnesotas imperiled turtle populations by researching threats, implementing mechanisms to reduce mortality, and creating educational materials for use throughout the state.	Minnesota Zoo	\$333,000
014-A	Andersen	David	Minnesota Trumpeter Swan Migration Ecology and Conservation	We propose to radio-mark and monitor movements of Minnesota trumpeter swans to provide foundational information necessary for management and conservation.	U of MN	\$414,372
015-A	Nordquist	Gerda	Minnesotas Imperiled Bats - Protecting the Survivors	Winter and summer roost sites, supporting bat species that have been impacted by White-nose Syndrome, will be inventoried and evaluated for their importance to bats surviving WNS.	MN DNR	\$208,331
016-A	Ponder	Julia	Spruce Grouse: Sentinels for Boreal Forest Connectivity	Our primary objective is to understand how to harvest timber in the boreal forest in a way that enables species with limited movements to thrive in a changing landscape.	U of MN	\$361,630
017-A	McClannahan	Valerie	Community Tree Canopy Assessment and Diversity Survey	This project will provide canopy assessments, statistically sampled tree surveys, and an analysis of community tree benefits for 350-400 communities statewide.	MN DNR	\$914,447
018-A	Wolf	Tiffany	Next Step in Helping Minnesota's Moose: Understand Brainworm Transmission to Find Solutions	A 2017 workshop determined we don't know enough about brainworm transmission to moose and what mitigation strategies are optimal. We've assembled a multidisciplinary team to tackle the highest research priorities.	U of MN	\$434,186
019-A	Dumke	Josh	Tagged Trout Explain if Beaver Dams Stop Fish	We will determine when/how Beaver dams affect tagged Brook Trout movement. This will allow managers to make decisions based on knowledge, rather than opinion, of how Beaver and trout interact.	U of MN - Duluth	\$389,874
020-A	Duncan	Nancy	Data Visualization Tool for Minnesota Riverbed Habitat	The data visualization tool is an interactive web map that displays distribution and diversity of riverbed habitat helping resource managers better understand underwater features critical to effective management and restoration.	National Park Service	\$509,231
021-A	Roy	Charlotte	Grasslands, Grazing, and Greater Prairie-chickens: Testing Trade-offs	Our study will determine whether grazing to meet conservation objectives has trade-offs for ground-nesting birds, like Greater Prairie-chickens, that should be considered in planning and implementation.	MN DNR	\$392,065
022-A	Feng	Xue	Mapping Climate and Insect Threats for Minnesota Pines	Pine trees in Minnesota are increasingly threatened by droughts and insect attacks. The proposed statewide vulnerability map will identify where pine trees are most "at-risk" from changing future conditions.	U of MN	\$339,474
023-A	Barker	Keith	Malaria in Migrant and Resident Birds of Minnesota	New, harmful strains of avian malaria are spreading. Currently, there are no data on the occurrence of malaria in Minnesotan birds. This project will provide the first such data.	U of MN	\$417,544
024-A	Kimball	Jennifer	Wild Rice Conservation: Building a Genetic Resource Database	This project aims to build a foundational genetic resource to be routinely used for wild rice conservation. This database will become increasingly powerful with new additional environmental and trait data.	U of MN	\$296,000
025-A	McCann	Nicholas	Mapping Habitat Use and Disease of Urban Carnivores	We will map habitat and diseases of urban foxes and coyotes to understand what they need to live and risks posed to people and pets, thereby demystifying them for residents.	U of MN	\$657,159
026-A	Fritz	Charles	RRB Seamless Foundational Geospatial Data Initiative	Complete a seamless hydro-conditioned digital elevation model (h3DEM) to develop foundational geospatial data for the MN Red River Basin.	International Water Institute	\$559,860

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027-A	Arends	Heather	Accelerated Aggregate Resource Mapping	To map the aggregate resource potential of 6 counties. Each county has passed a county board resolution requesting this work to be completed.	MN DNR	\$1,380,979
A. Foundational Natural Resource Data and Information						
H. Proposals seeking \$200,000 or less in funding (RECEIVED: 20 Proposals / Subtotal - \$3,443,394)						
028-AH	Shaw	Dan	Minnesota Restoration Mapping and Pollinator Protection	Statewide mapping using GIS layers, updated ranges of at-risk species, and action plans will provide local conservation planners with a foundation of information for targeted pollinator protection and restoration investments.	Minnesota Board of Water and Soil Resources	\$199,898
029-AH	Smith	Erik	Protecting Minnesota's Cold-Water Fish into the Future	Cold-water fish are threatened by low oxygen and warming waters across Minnesota lakes. Warming cannot be stopped, but nutrient runoff that contributes to oxygen depletion can be improved.	USGS	\$168,760
030-AH	Moen	Ron	City Bats and Country Bats - Whats the difference?	Urban and suburban bat populations may be larger than generally thought. We will use acoustic detectors and telemetry to improve knowledge about bat populations and benefits to human society.	U of MN - Duluth	\$200,000
031-AH	Hansen	Gretchen	Walleye Habitat Status to Guide and Prioritize Management	To guide walleye management, we will quantify walleye habitat, evaluate walleye population status relative to habitat potential, and assess sensitivity to changing water clarity and temperature in 1,400 walleye lakes.	MN DNR	\$198,784
032-AH	Moen	Ron	Artificial Den Boxes for Fishers	DNR data show that fisher in Minnesota have declined 50% since 2000. Den sites may be limiting reproduction. We will test if den boxes can help the fisher population increase.	U of MN - Duluth	\$190,000
033-AH	Wittkop	Chad	Influences of Glacial Sediment Chemistry on Water Quality	Glacial sediments cover much of Minnesota, but little is known about their chemistry. Our project will assess their role as sources of natural contaminants such as arsenic, sulfate, and phosphorous.	Minnesota State University - Mankato	\$199,244
034-AH	Andersen	David	Red-headed Woodpeckers: Indicators of Oak Savanna Health	Red-headed woodpeckers are a flagship species of threatened oak savannas in Minnesota. We aim to better understand red-headed woodpecker population ecology and develop a unified management plan for restoration.	U of MN	\$171,000
035-AH	Hall	Kristin	Implementing Conservation Plans for Avian Species of Concern	Establishing monitoring sites to implement Conservation Plans for selected focal species using information from the statewide marshbird survey and the Breeding Bird Atlas focused within existing Important Bird Areas.	Audubon Minnesota	\$124,500
036-AH	Windels	Steve	Use Existing Data on Beaver Populations to Improve Management Outcomes in Minnesota	We will conduct analyses from existing databases of beaver population dynamics in Voyageurs National Park to increase efficiency and improve management outcomes associated with beaver-human conflicts in Minnesota.	Voyageurs National Park	\$196,900
037-AH	Severud	William	Finding Fawns Based on GPS-Collared Deer Movement	Locating deer birth sites is important to understanding fawn survival (key to management), but current methods are inefficient. We will develop a method to find fawns remotely using GPS-collared deer.	U of MN	\$138,540
038-AH	Bump	Joseph	Aquatic Habitats for Moose and Enhanced Lake Foodwebs	Data is needed about which aquatic habitats moose prefer and how moose can potentially enhance nearshore lake foodwebs. This project will map critical aquatic habitats and measure lake foodweb effects.	U of MN	\$199,600
039-AH	Kipfmuller	Kurt	Foundational Ecological Information for Tribal Fire Management	The collection and development of tree-ring records for traditional Ojibwe lands to inform long-term adaptive management of 7.5 million acres of fire-dependent forests in Minnesota.	U of MN	\$182,860
040-AH	Reschke	Carol	Characterizing St. Louis River Estuary Aquatic Habitats	This project will characterize and map aquatic habitats in the St. Louis River estuary to advance restoration planning, and inform conservation of fish and wildlife habitats and critical species populations.	U of MN - Duluth	\$198,000
041-AH	Mosiman	Garrett	Comprehensive Environmental Building Site Design Using GIS Mapping	This proposal seeks to enhance the environmental performance of building sites, by creating a web application that streamlines compliance with the B3 Guidelines, and helps complete the Environmental Assessment Worksheet.	U of MN	\$195,000

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042-AH	Schilling	Jonathan	Data Foundations to Enable Open Research at Itasca	The University of Minnesota recently committed to building research capacity and data resources at Itasca Biological Station. Our project would leverage this investment, at its outset, for sustained region-wide benefit.	U of MN	\$140,000
043-AH	Sessoms	Florence	Assessing the Legacy of Minnesotan Urban Ecosystem Services	We are proposing a complete assessment of urban green space legacies on their soil-related ecosystem services and bacterial communities using soil extraction techniques, molecular and metagenomic analysis.	U of MN	\$72,675
044-AH	Forbes	DJ	Understanding Recreational Access: Lower St. Croix Pilot	Through GIS analysis and community engagement, this pilot project will improve understanding of recreational 'supply and demand' identifying needed recreational opportunities in the Lower St. Croix.	The Trust for Public Land	\$141,000
045-AH	Swanson	Jacob	Aircraft Noise Pollution MN Valley National Wildlife Refuge	Accurately measure aircraft noise pollution levels to provide insight into what changes should be implemented to preserve and protect the home of waterfowl, migratory birds, fish, and resident wildlife.	Minnesota State University - Mankato	\$192,544
046-AH	Veraguth	Patrick	Improving Statewide GIS Data by Restoring the PLS	Restoring the Public Land Survey (PLS) will improve foundational GIS data that resource managers and citizens utilize on ENRTF projects and conservation easements.	Minnesota Association of County Surveyors	\$135,250
047-AH	Yang	Zixuan	Mapping and Mitigation of Strong Winds in Cities	We will collect data of wind in street canyons with high winds, develop models for forecasting wind speed, and make executable plan to mitigate high winds in streets.	U of MN	\$198,839
B. Water Resources (RECEIVED: 52 Proposals / Subtotal - \$25,281,282)						
048-B	Arnold	William	Neonicotinoid Insecticides: Occurrence And Influence on Algal Blooms	The potential of neonicotinoid insecticides to initiate algal blooms will be tested by measuring the occurrence of neonicotinoids and their breakdown products in Minnesota's surface and ground waters.	U of MN	\$356,000
049-B	Arnold	William	Benign Design: Environmental Studies Leading to Sustainable Pharmaceuticals	We will identify wastewater treatment and natural processes that prevent the formation of highly toxic byproducts from fluoro-pharmaceuticals. This will lead to improved treatment and rules for better pharmaceutical design.	U of MN	\$415,300
050-B	Babcock	Laura	Wastewater Nutrient Reduction through Industrial Source Reduction Assistance	Provide industrial, source reduction technical assistance to reduce nutrient discharge to wastewater treatment facilities through industrial process optimization. Document impact of nutrient reduction on wastewater operations and discharge quality.	U of MN	\$278,000
051-B	Schreiner	Kathryn	Quantifying Microplastics in Minnesotas Inland Aquatic Ecosystems	We propose to quantify the amount, type, and source of microplastics in the water, sediment, and fishes of a range of Minnesota lakes in collaboration with MN DNR.	U of MN - Duluth	\$277,419
052-B	Novak	Paige	Outstate Wastewater: Improving Nitrogen Removal in Treatment Ponds	This research will help the State of Minnesota understand how to improve the nitrogen removal of wastewater treatment ponds when needed, protecting outstate surface water quality and groundwater safety.	U of MN	\$402,033
053-B	Novak	Paige	Stimulating Bacteria to Degrade Chlorinated Industrial Contaminants	Sites contaminated with chlorinated industrial pollutants are a significant problem in Minnesota. We will determine the best way to stimulate bacteria for faster and more complete pollutant dechlorination.	U of MN	\$252,884
054-B	Hozalski	Raymond	Improving Drinking Water for Minnesotans through Pollution Prevention	This research will reduce exposure of Minnesotans to toxic, cancer-causing chemicals by identifying and curbing key pollutant sources in the Upper Mississippi River watershed and improving drinking water treatment.	U of MN	\$345,778
055-B	Simcik	Matt	Protecting Minnesota Waters by Removing Contaminants from Wastewater	Wastewater contains many environmental contaminants including pharmaceuticals, personal-care products, PFAS and micro-plastics. They are not removed by treatment plants. We propose to remove them using commercially available drinking water coagulants.	U of MN	\$345,877

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056-B	Filstrup	Christopher	Satellite Tracking of Harmful Algal Blooms in Lakes	Harmful algal blooms (HABs) are becoming increasingly toxic and spreading north. We will use satellite imagery to create a web-based HAB tracking system to help protect Minnesotans from HAB toxins.	U of MN - Duluth	\$466,987
057-B	Elias	Mikael	Harnessing Minnesota's Biological Resources for Cleaner Waters	We propose to harness the potential of newly discovered proteins from Minnesota ecosystems that turns environmental, toxic pollutants into harmless compounds to protect our state waters quality.	U of MN	\$388,000
058-B	Kyser	Scott	Reducing Municipal Wastewater Mercury Pollution to Lake Superior	This technology transfer project helps the municipal wastewater plants in the Lake Superior basin reduce mercury pollution and save money.	Minnesota Pollution Control Agency	\$297,000
059-B	Berg	Jim	Understanding Groundwater Flow, Central Arrowhead, County Geologic Atlas	Complete and sample approximately 20 observation wells and borings to help understand groundwater flow characteristics In the Central Arrowhead – County Geologic Atlas area, for wise management of groundwater resources.	MN DNR	\$435,966
060-B	Carlson	Erin	Dangers of Nanoparticles on Aquatic Health	We will determine the dangers of nanoparticles to aquatic bacteria and fish health, enabling us to provide recommendations about safe levels and to predict how new nanomaterials might affect aquatic species.	U of MN	\$494,075
061-B	Hillmyer	Marc	Membranes for Removing Toxic Metals from Mining Wastewater	We will develop, test, and implement new highly-selective membranes for the removal of toxic metals in mining wastewater treatment facilities to help ensure long-term safety of Minnesota mining operations.	U of MN	\$449,203
062-B	Hu	Bo	Phytoremediation for Extracting Deicing Salt from Roadside Soils	We propose to study native plants that can adsorb salts to be planted on the roadside to address the environmental concerns over deicing road salts.	U of MN	\$360,231
063-B	Valentas	Kenneth	Removing Phosphorous from Drainage Water Discharge- Phase II	In our previous LCCMR project, a metal modified char effectively removed phosphorous from water at laboratory scale. Phase II scale-up, in collaboration with NRRI, will culminate with a field trial.	U of MN	\$398,000
064-B	Barney	Brett	Transformation of Plastic Waste into a Valued Resource	We will develop technologies that utilize indigenous microbes to convert waste plastics into useful chemical compounds and fuels, lowering the likelihood that these materials end up in our environment.	U of MN	\$308,000
065-B	Ishii	Satoshi	Outstate Wastewater: Low-Cost and Efficient Nutrient Removal Technology	This project will develop an innovative wastewater treatment technology for low-cost and highly efficient nutrient removal. This technology is particularly suitable for the treatment of outstate wastewater.	U of MN	\$275,000
066-B	Norris	Doug	Improving Wetland and Groundwater Management Through Hydrologic Monitoring	This project will acquire and install the equipment needed for a long-term wetland hydrology monitoring network to improve understanding of wetland hydrology and groundwater interaction, leading to improved management.	MN DNR	\$573,661
067-B	Gulliver	John	Eliminating Nitrate in Drain Tile Runoff	To develop a technology to convert nitrate from drain tile discharge to nitrogen gas, thus providing low-cost treatment and helping the farm community protect water resources.	U of MN	\$398,623
068-B	Pennington	Derric	Evaluating Public and Private Benefits of Ag-Water Certification	We will provide evidence on the environmental and economic impacts of Minnesota's Agricultural Water Quality Certification Program from the farm, watershed, and broader supply chain perspectives.	World Wildlife Fund, Inc.	\$349,486
069-B	Barney	Brett	Harnessing What's Within: Minimizing Nitrogen Pollution through Localization	The goal of this project is to construct sustainable biofertilizers with minimal-runoff potential by utilizing natural strains of nitrogen-fixing microbes found living inside the leaves and stems of plants.	U of MN	\$290,000
070-B	Downing	John	Forecasting Lake Superior Water Level and Community Security	Lake Superior's water level is changing in unpredictable ways threatening important fisheries, parks, and North Shore environments. We will find how to predict level to sustain environmental and recreational quality.	U of MN - Duluth	\$329,687
071-B	Bushley	Kathryn	Enriching Native Fungi to Control Aquatic Phosphorus Pollution	This project proposes to use novel fungi from Minnesota agricultural fields that can uptake, store, and transfer P to plants to reduce P fertilizers and P pollution from agricultural runoff.	U of MN	\$356,000

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072-B	Fuchs	Dennis	Accelerating Perennial Crop Production to Prevent Nitrate Leaching	Reducing nitrate leaching on sandy soils of central Minnesota by developing water-efficient production methods, supply chains, and end-use markets for these profitable perennial crops: Kernza, prairie, and alfalfa.	Stearns County Soil and Water Conservation District	\$448,905
073-B	Trost	Jared	A Rapid, Mobile Vertical Groundwater Nitrate Sampling System	We will combine new sampling technologies to rapidly measure vertical groundwater nitrate profiles. This alternative monitoring method can be applied statewide for understanding groundwater quality improvements from land management changes.	USGS	\$297,900
074-B	Penn	Lee	Storing Sulfide Safely at MN Mining Sites	Sulfate in mining wastewater is a major concern in Minnesota. We propose to process biproducts of sulfate remediation to produce bricks for safe storage of sulfur at MN mining sites.	U of MN	\$536,161
075-B	Donato	Justin	Combatting Antibiotic Resistance Through Bacterial Signal Manipulation	This project will investigate a novel solution to stop the spread of antibiotic resistance at wastewater treatment plants by thwarting bacterial signaling, thus protecting the health of Minnesotans.	University of St. Thomas	\$444,865
076-B	Olander	Keith	Farm-Ready Cover Crops for Protecting Water Quality	We will implement an economically-viable, farm-based strategy to protect water quality across more than 100,000 acres of vulnerable wellhead protection regions using cover crops in corn-soybean rotation.	Central Lakes College - Ag and Energy Center	\$741,184
077-B	Nieber	John	Setting Realistic Nitrate BMP Goals in Southeast Minnesota	Advanced tools are needed which provide critical timelag and feedback information for making environmental policy decisions, as Minnesota prepares to launch the Groundwater Protection Rule and nutrient reduction strategies.	U of MN	\$444,000
078-B	Hondzo	Miki	Enhanced Nitrogen Removal in Minnesota's Watersheds	We will use GIS and satellite data to develop tools to enhance nitrogen removal in Minnesota watersheds.	U of MN	\$408,277
079-B	Ruan	Roger	Converting Concentrated Wastewaters to Fertilizers and Clean Water	To develop and demonstrate innovative and sustainable technologies to convert concentrated animal wastewaters to clean water and at the same time produce methane energy, fertilizers, and valuable biomass.	U of MN	\$842,000
080-B	Cui	Tianhong	Small Sensor Networks for Water Monitoring (Phase II)	This project is to develop small sensor networks based on sensors in Phase I, a very cheap and highly efficient approach for pollutants monitoring in lakes and rivers in Minnesota.	U of MN	\$980,758
081-B	Heger	Sara	Testing Filter Removal of Microfibers for Water Quality	This project will determine the effectiveness of low-cost filters to reduce microfibers from laundry discharge to increase longevity of septic systems and enhance performance of WWTPs for improved water quality.	U of MN	\$320,936
082-B	Smith	Tim	Evaluating Long-Term Success of Wetland Hydrology Restoration	An evaluation of the long-term sustainability of twenty wetlands restored through RIM and wetland banking in Southern Minnesota by assessing the current hydrologic condition against a planned and reference condition.	Board of Water and Soil Resources	\$294,662
083-B	Proctor	Beth	Assessment of Toxic-Algae/Phosphorus/E. coli Entering Minneopa State Park	Water ENTERING Minneopa Park has problems with toxic-algae and E. coli (16 times the stream standard). Due to health concerns we will assess levels/sources and potential controls for these agents.	Minnesota State University - Mankato	\$327,253
084-B	Wilson	Melissa	Protecting Water Quality with Comprehensive, Integrated Nutrient Planning	The University of Minnesota will join the 21st century by creating user-friendly, web-based tools for fertilizer and manure management planning to help farmers save money and protect water quality.	U of MN	\$1,721,159
085-B	Almendinger	James	The Future of Groundwater Supply	Future groundwater supply -- crucial for sustaining Minnesota's lakes, streams, and drinking water -- will be forecast for a region of east-central Minnesota sensitive to groundwater inputs.	Science Museum of Minnesota	\$280,000
086-B	Hamilton	Trinity	Double Trouble: Blooms, Invasive Mussels and Lake Health	This study will compare microbiomes in healthy MN lakes to those impacted by HABs and invasive mussels to inform management strategies to mitigate the compounding effects of HABs and mussels.	U of MN	\$576,279

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087-B	Twine	Tracy	Sustaining Fresh Water Resources while Producing Healthy Crops	Minnesota leads production of sweet corn, peas, and potatoes, which are increasingly groundwater-irrigated. This project identifies hydrologic, agronomic, and economic tradeoffs to inform water management and policy during future droughts.	U of MN	\$496,988
088-B	Sterner	Robert	Pathways of Human Impact in Lake Superior	Watershed impact on Lake Superior is not evenly distributed. This project will establish zones of heavy human influence in western Lake Superior to further assessments of many kinds.	U of MN - Duluth - Large Lakes Observatory	\$568,470
089-B	Ziegeweid	Jeffrey	Assessing Algal Toxins in Fish from Minnesota Lakes	Determining concentrations of several algal toxins in fish and water samples from Minnesota lakes will fill current data gaps and raise awareness about potential hazards to ecosystems and human health.	USGS	\$350,000
090-B	Current	Dean	Sustainable, Integrated Food Waste Treatment and Utilization	Develop and demonstrate an integrated scalable systems for converting food waste into renewable energy, feed, food, and clean wastewater.	U of MN	\$1,076,000
091-B	Kang	Peter	Quantifying Water Exchange Between Groundwater and Surface Water	We will develop a critical tool for accurately quantifying and predicting water exchange between groundwater and surface water. Water exchange will be effectively visualized to aid sustainable water resources management.	U of MN	\$478,276
092-B	Missaghi	Shahram	Mobilizing Minnesota Communities to Fight Proliferating Toxic Harmful Algal Blooms (HABs)	This project will create seven tools to mobilize Minnesota communities to fight, detect and mitigate the impending toxic harmful algal blooms using drones and assisted by citizen science volunteers.	U of MN	\$513,179
093-B	Bramburger	Andrew	Rapid Detection of Algal Toxins in Minnesota Lakes	In this project we will use novel environmental genomics techniques, coupled with citizen science sampling in order to develop a statewide rapid-alert system for harmful algae blooms.	U of MN - Duluth	\$599,051
094-B	Roberson	Glen	Southeast Minnesota Cover Crop and Soil Health Implementation	This project will expand implementation of cover crops in Southeastern Minnesota, expand its economic framework, outreach, educational efforts, coordinate with other groups and involve agriculture youth organizations.	SE SWCD Technical Support Joint Powers Board	\$806,540
095-B	Slesak	Robert	Maintaining Supply of Clean Water from Working Forests	Concentrated forest disturbance can degrade water quality but thresholds are unknown. We will identify configurations of disturbance where water quality is degraded, and identify watersheds where potential impacts are greatest.	U of MN	\$288,000
096-B	Shannon	Laura	Protecting Ground Water from Nitrogen in Potato Production	Complementary approaches to limiting nitrogen leaching into ground water from potato production: 1. integrate potato into a rotation with a deep rooted perennial 2. breed potatoes which require less nitrogen.	U of MN	\$798,070
097-B	Goehring	Julie	Reducing Nitrate Harm in the Red River Basin	RRB subsurface drainage has increased along with toxic surface water nitrate concentrations. BMPs using 2-stage ditches, cattail harvest applied back to fields will reduce water quality impacts, improve soil health.	Red River Basin Commission	\$225,749
098-B	Musser	Kimberly	Minnesota River Basin: Point-Nonpoint Water Quality Trading	A feasibility study and stakeholder engagement process to evaluate a point-nonpoint water quality trading program in the Minnesota River Basin, a cost-effective strategy to achieve nutrient reduction.	Minnesota State University - Mankato - Water Resources	\$399,634
099-B	Johnson	David	State Park Waste Water Systems Condition Assessments	The project will result in an inventory and functional assessment of septic and waste water systems located in state parks and a 10-year Construction Improvement Plan (CIP) which will be used to guide future capital investment decisions.	MN DNR	\$1,173,776
B. Water Resources						
H. Proposals seeking \$200,000 or less in funding (RECEIVED: 19 Proposals / Subtotal - \$3,447,370)						
100-BH	Ulrich	Jason	Repurposing Unprofitable Cropland: Water and Wildlife's Silver Bullet?	We propose conducting the first statewide analysis mapping the extent of Minnesota's unprofitable cropland and estimating both the water-quality and habitat benefits of converting these lands to perennial crops/vegetation.	Science Museum of Minnesota, St. Croix Watershed Research	\$199,618

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101-BH	Chun	Chanlan	Evaluating Locally-Sourced Sanding Materials for Road Salt Reduction	The project will evaluate the effectiveness and benefits/impacts of locally sourced woodchip, corncob, and iron-bearing minerals as alternative effective abrasive materials to lower salt use for protecting Minnesotas water resources.	U of MN - Duluth	\$162,445
102-BH	Putzier	Paul	Minnesota Spring Inventory Final Phase	The project will complete the Minnesota Spring Inventory, identifying, cataloging and assisting in the protection of important water springs threatened by overuse of groundwater, development, land-use changes, and changing climate.	MN DNR	\$71,000
103-BH	Cai	Meijun	Using Local Iron Byproducts to Remove Surface-water Phosphorus	We will use local iron byproducts to remove phosphorus from agricultural drainage, lakes, and streams exhibiting eutrophication. Project results will identify cost-effective materials for water treatment applications.	U of MN - Duluth	\$195,216
104-BH	Bramburger	Andrew	Fake Food: Man-made Materials in Aquatic Food Webs	We will assess sources and impacts of anthropogenic "fake food" in aquatic food webs including effects of bioaccumulation in phytoplankton, zooplankton, fish, and Common Tern; a threatened species in Minnesota.	U of MN - Duluth	\$199,698
105-BH	Smanski	Michael	New Technology for Removing Mercury from Minnesota Waters	We will demonstrate that minnows equipped with two genes from environmental bacteria will be able to detoxify mercury in our aquatic ecosystems, making game-fish safer to eat.	U of MN	\$199,000
106-BH	Dickhart	Andrew	Citizen-Aided Carp Management: Overcoming Roadblocks to Lake Restoration	Citizens will be enlisted to field-test a new method of managing carp to restore an impaired lake. Water quality & cost-effectiveness will be quantified to inform statewide implementation.	Carver County Water Management Organization	\$106,151
107-BH	Gutknecht	Jessica	Identifying Grassland Plant Mixes to Reduce Nitrate Pollution	We contribute to Minnesota's land management efforts by identifying which mixtures of grassland plant species best remove nitrates in vulnerable soils, using a series of long term species mixture plots.	U of MN	\$197,646
108-BH	Janke	Benjamin	Shallow Waters: Road Salt Impairment and Mitigation Potential	We will determine the extent of road salt accumulation and its impairment of dissolved oxygen in Minnesota's numerous shallow waters, and evaluate pond features that could impact chloride mitigation.	U of MN	\$196,720
109-BH	Kozarek	Jessica	Assessing Chloride Hot spots near native mussel beds	This project will gather information about the movement and mixing of salt in Minnesota rivers and investigate the impacts of salt on sensitive aquatic organisms: native freshwater mussels.	U of MN	\$200,000
110-BH	Lee	Sungyon	Plastic Debris Remediation in the Great Lakes	The objective of this project is to improve the health of the Great Lakes by devising an engineering solution to extract the floating plastic debris that infiltrates our food chain.	U of MN	\$199,979
111-BH	Knoll	Lesley	Warmer Winter Effects on Water Quality and Fish	This project will determine the importance of warm winter and spring conditions in controlling harmful cyanobacteria, phosphorus cycling, oxygen distribution, and suitable coldwater fish habitat in Minnesota lakes.	U of MN	\$177,911
112-BH	Jones	Perry	Are Metal Concentrations in Kawishiwi Waters Above Standards?	Metal concentrations in some waters of the south Kawishiwi watershed are above aquatic life and recreation standards. This project assesses effects of exposed mineralized bedrock on metal concentrations in waters.	USGS	\$174,268
113-BH	Guala	Michele	Simulating and Exploring Drought Scenarios at Reduced Scale	water evaporation from differently saturated soil will be reproduced in a wind tunnel to better model the effect of wind, terrain roughness and solar radiation under controlled laboratory conditions.	U of MN	\$199,640
114-BH	Ebtehaj	Ardeshir	Minnesota Weather Smart Irrigation System for Water Conservation	The goal is to advance science for developing a next generation of weather smart irrigation systems for urban and agricultural water conservation.	U of MN	\$198,766
115-BH	Shen	Lian	Map and Monitor Turbidity in Minnesota Water Bodies	We will use laboratory experiments and simulations to investigate how water movements spread turbidity to help control and reduce the turbidity pollution in 371 impaired water bodies in Minnesota.	U of MN	\$197,012

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ENRTF ID #	Last Name	First Name	Title	Summary	Organization	\$ Requested
116-BH	Nemmers	Troy	Spring Biological Nitrate Removal to Protect Drinking Water	Fairmont's drinking water safety is threatened by high springtime nitrate levels. Fairmont intends to build an experimental passive biological treatment system to reduce nitrates that enter its source water supply.	City of Fairmont	\$175,000
117-BH	Trappe	Jon	Reducing Nitrogen Inputs and Loss in Minnesota Lawns	The purpose of this project is to quantify the amount of fertilizer applied to Minnesota lawns and to create appropriate fertilizer recommendations to ultimately reduce the amount of fertilizer applied.	U of MN	\$197,376
118-BH	Hu	Bo	Electrochemical Process to Protect Sewer System from Sulfide	We want to develop an electrochemical system to protect sewage wastewater transportation and handling facilities and septic tanks from sulfide corrosion and reduce odor emissions.	U of MN	\$199,924
C. Environmental Education (RECEIVED: 17 Proposals / Subtotal - \$8,771,388)						
119-C	Hamilton	Patrick	Water Lab: Engaging Minnesotans in Water Quality Challenges	Water Lab would enable the Science Museum's 600,000 annual Minnesota visitors to conduct hands-on water analyses, learn about citizen water monitoring opportunities, and access near real-time statewide water quality information.	Science Museum of Minnesota	\$830,000
120-C	Mercer-Taylor	Beth	GreenStep Schools: Statewide Program, 20 School District Pilot	Minnesota GreenStep Schools Program gets students, school staff and communities learning about the environment as they explore their school's built and natural infrastructure while saving energy, water, waste, and habitat.	U of MN	\$992,959
121-C	Grilley	Dorian	Environmental Learning by Bicycle for Ages 8-80	Environmental Learning by Bicycle will teach 5,000 children and adults to safely bicycle in their communities while exploring local trails, learning about natural resources, and appreciating nearby parks.	Bicycle Alliance of Minnesota	\$393,000
122-C	Jones	Isiah	Camp Sunrise: Respect Self, Others and the Environment	Camp Sunrise is an integrated environmental education program for economically disadvantaged youth. This innovative camp experience allows children a hands-on program to understand their impact on the environment and nature.	YouthCARE MN	\$237,000
123-C	Legato	Denise	Increasing Diversity in Environmental Careers: Fellowships, Internships, Mentorships	This project provides a college to workforce pathway for under-represented students to successfully complete STEM based education and obtain environmental employment by reducing and eliminating barriers.	MN DNR	\$250,000
124-C	Knopf	Chris	Connecting Over 11,000 Students to the Boundary Waters	This project will connect over 11,000 students to the Boundary Waters through classroom education and wilderness canoe experiences, targeting diverse and underserved populations across Minnesota.	Friends of the Boundary Waters Wilderness	\$783,135
125-C	Fleischman	Forrest	Plugging Knowledge Gaps for Sustainable Forest Management	There are knowledge gaps in forest management. The gaps may be because research doesn't exist or because research exists but isn't reaching managers. We plan to "plug" the gaps.	U of MN	\$300,000
126-C	Finlay	Jacques	Enhancing Water Quality Education with Inquiry and Research	Educational curricula are most effectively delivered through hands-on, real-world experience. Involving students and citizens in gathering and interpreting information at the Bell Museum, this project will enliven water quality education.	U of MN	\$279,684
127-C	Carlson	Stephan	1000 Citizen Scientists Collect Phenological Data Statewide	Students lack real data to make STEM learning relevant. Partnering with nature centers and schools, this project expands a network of 1000 student citizen science observer's using local phenology data.	U of MN Extension	\$224,000
128-C	Blair	Robert	Driven to Discover: Implementing Citizen Science in Classrooms	Driven to Discover will improve science education and increase knowledge about Minnesota's natural resources by helping teachers implement curriculum for citizen science projects focused on birds, phenology, dragonflies, and pollinators.	U of MN	\$262,314

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ENRTF ID #	Last Name	First Name	Title	Summary	Organization	\$ Requested
129-C	Blair	Robert	Incubating Citizen Science at the University of Minnesota	Incubating Citizen Science will develop Best Practices that enable expansion of citizen science capacity in Minnesota by launching three natural-resource demonstration projects related to monitoring mammals, phenology, and invasive species.	U of MN	\$1,706,203
130-C	Simer	Kurt	YMCA BOLD & GOLD Youth Leadership Environmental Education	Increase capacity of Bold & Gold to serve 720 additional youth who will gain leadership skills, learn teamwork and perseverance and an understanding of conservation, preservation, positive citizenship and community leading to a sustained caring and awareness that will ensure their protection of Minn	YMCA of the Greater Twin Cities	\$507,990
131-C	Briscoe Runquist	Ryan	Connecting All Minnesotans with Science and Scientists	We will connect Minnesotans to science and scientists by bringing MN research to farmer's markets and fairs throughout the state and developing hands-on activities to start lively science conversations.	U of MN	\$277,800
132-C	Pachuta	Emma	Neighborhoods Sustained: Multimodal Education in Metro Suburbs	TLC-Smart Trips will engage suburban residents, increasing their knowledge and skills to live more sustainably through walking, bicycling, and transit use and reducing the environmental impact of cars.	Transit for Livable Communities and St. Paul Smart Trips	\$756,793
133-C	Onufer	Judy	Race 2 Reduce: A Minnesota Water Resource Education Curriculum	Race 2 Reduce, a water resource education curriculum, seeks funding to complete modules that teaches students about water resources and empowers them to take action through advocacy and civic engagement.	H2O for Life	\$205,670
134-C	Henke	Bill	Northwest Minnesota Partners Unite to Grow Eco-system Stewards	The Tamarac Nature Connection unites natural resource partners and is organized for the purpose of providing regional school districts with hands-on, water ecosystem education, which focuses on sustainability and stewardship.	Friends of Tamarac NWR	\$214,840
135-C	Hartman	Jay	Green Sustainability Walk - St. Anthony Village	Green Sustainability Walk - St. Anthony Village Develop a Two Mile Sustainability Educational Walking Tour that engages all senses through the use of Augmented Reality, Mobile Applications and Kiosks.	City of St. Anthony Village	\$550,000
C. Environmental Education						
H. Proposals seeking \$200,000 or less in funding (RECEIVED: 24 Proposals / Subtotal - \$3,272,656)						
136-CH	Lutsky	Karen	A North Shore Community-Engaged Forest Landscape Laboratory	This project engages North Shore landowners, business owners, natural resource managers and visitors in identifying, designing, and testing forest management strategies within a public Landscape Laboratory at Tettegouche State Park.	U of MN	\$199,000
137-CH	Liu	Donald	Teaching Sustainability through an Economics Lens	Stage 2 pilot of Teaching Sustainability through an Economics Lens, an already-developed high-school curriculum, includes teacher trainings, classroom implementation, and Sustainability Summits, attracting student projects from around the state.	Minnesota Council on Economic Education	\$138,552
138-CH	Zanko	Lawrence	The Natural Resources Literacy Initiative	A cross-disciplinary team of scientists will reach out and engage with the public throughout Minnesota in a series of interactive, give-and-take, outreach forums called the "The Natural Resources Literacy Initiative."	U of MN - Duluth	\$194,485
139-CH	Potter	Caitlin	Water-Focused Education Across Rural and Urban Communities	Combine the expertise of two established Minnesotan science education entities to provide paired hands-on classroom/outdoor experiences that build a water-focused conservation ethic for 8500 urban and rural students and teachers.	U of MN - Cedar Creek Ecosystem Science Reserve	\$190,000
140-CH	Woods	David	Youth Conservation and Stewardship Training Lab	This project engages underserved youth in the development of interactive learning stations, based on themes of water, urban restoration and pollinators, encouraging all park visitors to engage in citizen science.	Urban Roots	\$198,478
141-CH	Blair	Robert	Minnesota Master Naturalist at the Bell Museum	The Minnesota Master Naturalist program and the Bell Museum collaborate to teach adults about Minnesota's rich natural history so that they can volunteer and spread that knowledge to public audiences.	U of MN	\$173,422

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ENRTF ID #	Last Name	First Name	Title	Summary	Organization	\$ Requested
142-CH	Kraus	Alan	A Farm Laboratory for Environmental Studies	This project gives undergraduate students unique opportunities to interact with working farmers, state agencies, and others as they conduct research on agricultural productivity and ecosystem resilience.	Cannon River Watershed Partnership	\$199,900
143-CH	Hammes	Mary	Mississippi National River & Recreation Area Forest Restoration	This is a forest restoration project within the Mississippi National River and Recreation Area to address the loss of ash trees to EAB and plant 15,000 native trees and plants.	Mississippi Park Connection	\$199,500
144-CH	Daniels	Lisa	4-H and Renewable Energy: Growing Young Leaders	Windustry will work with rural and urban staff, leadership and youth participants of Minnesota 4-H to grow opportunities to learn about wind, solar and other renewable energy resources.	Windustry	\$199,950
145-CH	Musser	Kimberly	Slow the Flow in the Minnesota River Basin	A "Slow the Flow in the Minnesota River" media campaign and website will increase education about water storage practices and programs that reduce water flow and improve water quality.	Minnesota State University - Mankato - Water Resources	\$160,318
146-CH	Scholl	Laura	Citizen-Based Boulevard Bioswales Installation during Ash Tree Replacement	Installing Boulevard Bioswales during Ash Tree Replacement engages citizens losing their tree canopy due to Emerald Ash Borer in a clean water, pollinator habitat, environmental justice, and green workforce opportunity.	Metro Blooms	\$198,600
147-CH	Pedely	Mark	Watershed: Arts-Based Education in Minnesota's State Parks	The Watershed program will use creative performance in 20 State Parks to teach families about water stewardship. The audience will then become "Minnesota's Water Heroes" in a follow-up documentary film.	U of MN	\$84,926
148-CH	Moen	Sharon	Inventing Tools and Technologies to Improve Water Quality	Momentum leading up to and encompassing an aqua-hackathon will unite programmers, engineers, technology professionals and water experts. Outcome: Solutions to state water quality challenges and potential for an annual event.	U of MN - Duluth	\$136,433
149-CH	Johnson	Margaret	Middle Fork Crow River: Appreciate, Clean, Learn, Connect	We will develop and carry out 3 annual events for 3 years aimed at connecting 1,050 people through paddling, cleaning up, and studying the Middle Fork Crow River.	Middle Fork Crow River Watershed District	\$12,968
150-CH	Mohan	Ned	Converting UMN's Sustainable-Electricity Course for Two-Year Community Colleges	Develop free-to-use resources so that an established course (Sustainable-Electricity Supply) at UMN can be taught in two-year community colleges statewide to build a robust pipeline of students to 4-year colleges/universities.	U of MN	\$96,956
151-CH	Ohmans	Patricia	1,000 Trees for Frogtown: Restoring Inner City Canopy	In St Pauls most diverse neighborhood, resident volunteers seek support to grow and plant hundreds of trees, tackling Frogtowns deficient urban tree canopy while demonstrating innovative tree nursery technology.	Frogtown Green	\$88,350
152-CH	Meagher	Thomas	Owatonna ESTEM Middle School: Makece Ohoda Outdoor Classroom	The funding requested is to support the creation of an interactive, outdoor classroom for over 1,100 students in grades 6-8 at Owatonna ESTEM Middle School.	Owatonna Public Schools	\$26,475
153-CH	Allen	Gregg	Environmental Education Through the Generations Ages 5-105	To teach healthy and sustainable lifelong skills to K-12 students within our economically disadvantaged school and surrounding communities with multiple benefits to nature's pollinators, and humans while incorporating multigenerational opportunities.	Mesabi East Schools ISD 2711	\$199,908
154-CH	Doll	Phil	Discover the Prairie Outreach Campaign	Our most endangered ecosystem is native prairie. This outreach campaign develops a much needed hub of prairie information to help our citizens discover the prairie and build their appreciation.	Becker SWCD	\$190,100
155-CH	Cadieux	Valentine	Urban Food Habitat Signs and Curriculum Delivery	TCALT will coordinate a program developing attractive signs explaining to passersby the several ways that food production sites using regenerative agriculture practices are contributing to environmental and community health.	Twin Cities Community Agricultural Land	\$53,175

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ENRTF ID #	Last Name	First Name	Title	Summary	Organization	\$ Requested
156-CH	Aukema	Brian	Introducing Minnesotas Resource Professionals to Global Pest Experts	This proposal brings the next global gathering of IUFRO (forest pest experts) to Minnesota to exchange knowledge with local resource professionals (e.g., tree care providers, park and rec workers, etc.).	U of MN	\$19,400
157-CH	Berg	Christa	Establish an Environmental Education Activity Center in Coleraine	Renovate building and playground to establish a center for environmental education and outdoor recreation including a STEAM based outdoor water play area, natural playground, and flexible use indoor classroom space.	ISD 316	\$81,800
158-CH	Chapman	Rick	Expanding Minnesota Clean Marina Initiative to Protect Waters	Aligned with more than 30 other states with clean water programs, MCMI aims to create partnerships with marinas and their boaters to protect natural resources and promote economic growth.	Minnesota Clean Marina	\$200,000
159-CH	Swanson	Jacob	'Solarize your House' Modeling Activities for K12	Project will implement 3D solar energy modeling curriculum in K12. Engagement will be increased because students will model their home and the return-on-investment of each solar-panel installation will be determined.	Minnesota State University - Mankato	\$29,960
D. Aquatic and Terrestrial Invasive Species (RECEIVED: 8 Proposals / Subtotal - \$17,805,123)						
160-D	Phelps	Nicholas	Building Knowledge and Capacity to Solve AIS Problems	MAISRC will launch 12-16 new or continuation projects aimed at solving Minnesota's AIS problems using a competitive RFP process, informed by an annual research needs assessment and stakeholder consultation.	U of MN	\$5,000,000
161-D	Chandler	Monika	Elimination of Target Invasive Plant Species Transition Phase	To prevent environmental and economic damage, we will: 1) Train people to find target invasives; 2) Engage communities and 3) Survey for and control these species before they spread.	Minnesota Department of Agriculture	\$772,871
162-D	Frohnauer	Nick	Invasive Carp Acoustic Deterrence Field Trial at Lock19	This project will support the installation, monitoring, and evaluation of an acoustic deterrence system at Lock and Dam 19 on the Mississippi River to prevent upstream movement of invasive carp.	MN DNR	\$300,000
163-D	McClannahan	Valerie	Communities and Citizens Manage Ash for EAB	This project will reduce EAB through community developed management (inventory, management plan, removal, non-neonicotinoid treatment) and improve their community forest by involving citizens and planting a diversity of trees.	MN DNR	\$3,246,610
164-D	Huinker	Dane	Boat Cleaning Stations and Education Prevent AIS Spread	Deploying watercraft cleaning stations on infested waters along with regional Clean Drain Dry public awareness will reduce the spread of AIS and empower social behaviors for sustainable aquatic resources.	Wildlife Forever	\$7,378,575
165-D	McCartney	Michael	Genetic Analysis of Spiny Water Flea Invasion Sources	This project uses genetic and genomic methods to determine the source water bodies from which spiny water fleas were carried to infest MN lakes.	U of MN	\$337,942
166-D	Elias	Mikael	Ecological Coatings to Mitigate Proliferation and Spread of Invasive Species	We propose to develop innovative coatings containing a revolutionary antifouling ecological molecule: these coatings will contribute to stop the proliferation and the spread of aquatic invasive species.	U of MN	\$401,000
167-D	McCartney	Michael	Zebra Mussel Genetic Biocontrol: Methods and Public Engagement	We develop techniques for precise genetic modification of zebra mussels, and at the same time engage the public in decisions on whether and how to apply these for biocontrol.	U of MN	\$368,125
D. Aquatic and Terrestrial Invasive Species						
H. Proposals seeking \$200,000 or less in funding (RECEIVED: 6 Proposals / Subtotal - \$960,072)						
168-DH	Ambourn	Angie	Brown Marmorated Stink Bug Phase2: Monitoring & Biocontrol	Brown marmorated stink bug is increasing in Minnesota. This project will expand monitoring to identify areas of spread and establishment, gather data on native parasitoids and begin biocontrol implementation.	Minnesota Department of Agriculture	\$188,707
169-DH	Montgomery	Rebecca	Suppressing Reed Canary Grass with Native Plants	Build on current ENTRF project by testing whether cover crops of native plants suppress recolonizing reed canary grass and foster floodplain forest tree regeneration while creating pollinator habitat.	U of MN	\$191,000

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ENRTF ID #	Last Name	First Name	Title	Summary	Organization	\$ Requested
170-DH	Dunning	Robert	Using Artificial Intelligence for Noxious Weed Detection	Modify and automate an existing mobile plant identification application to allow for early detection and rapid response to noxious weed invasions (Palmer amaranth) for local weed inspectors, producers and public.	Stearns County	\$89,005
171-DH	Hansel	Ilena	Cook County Invasive Species Project	The project will work towards the goal of preventing and limiting the impacts of terrestrial invasive species in Cook County through a coordinator position.	Cook SWCD	\$200,000
172-DH	Kramar	David	Mitigating Non-Native Plant Encroachment in Minnesota's Prairie Grasslands	This project will quantify, identify, and remediate non-native and noxious species in Minnesotas grasslands. We will utilize a standard drone platform developing methods for rapid assessment prior to remediation.	Minnesota State University - Moorhead	\$191,360
173-DH	McLennan	Helen	Oak Wilt Suppression at Northern Edge	Eradicate identified oak wilt at these northern most locations on nine private properties by mechanical means to stop the invasiveness before it spreads to healthy state forests affecting habitat.	Morrison Soil & Water Conservation District	\$100,000
E. Air Quality, Climate Change, and Renewable Energy (RECEIVED: 16 Proposals / Subtotal - \$11,944,279)						
174-E	Edlund	Mark	When the Dust Settles: Pristine Lakes are Changing	Minnesota's most protected lakes are changing without an obvious source of pollution. We need to know if windblown dust is carrying the nutrients that turn these once pristine lakes green.	Science Museum of Minnesota	\$696,667
175-E	Cui	Tianhong	Cheap Efficient Reactor to Remove Toxic Organic Compounds	This project is to develop a new reactor to remove toxic organic compounds from vehicles and chimneys. The technology is very cheap and highly efficient to improve Minnesota air quality.	U of MN	\$728,365
176-E	Reese	Michael	Development of Clean Energy Storage Systems for Farms	Energy storage systems for farms will be developed using wind-generated ammonia. Novel ammonia fuel systems will be tested in a farm grain dryer and engine generator displacing fossil fuels.	U of MN - WROC	\$994,224
177-E	Sarkanen	Simo	Plastics from Unused Lignin in Plants and Trees	Profitable conversion of cellulose to fuels and chemicals has not been achieved from lignocellulose in forest and agricultural residues. Now, plastics composed almost entirely of lignin will provide necessary revenue.	U of MN	\$998,000
178-E	Randolph	Jimmy	Grid-Scale Geologic Energy Storage in MN: Earth Battery	The project will test an innovative power system and model a site in southern Minnesota, the initial steps to bring grid-scale, cost-effective geologic energy storage to Minnesota.	TerraCOH, Inc	\$315,250
179-E	Anderson	Ellen	Community-Scale Energy Storage Guide for Renewable Energy	This project proposes to expand community-based, locally-produced renewable energy by increasing access to effective energy storage.	U of MN	\$637,305
180-E	Holmes	Russell	Practical, Inexpensive, and Non-Toxic Solar Cells	Unique partnership with Natural Resources Research Institute (UMN-Duluth) to integrate life-cycle assessment and toxicology analyses into the early-stage design of non-toxic materials for construction of inexpensive and efficient solar cells.	U of MN	\$479,409
181-E	Monson Geerts	Stephen	Fugitive Mineral Dust Baseline Air Quality Project	Better baseline air quality data are needed for projects that generate fugitive dust. Lake sediment and air will be sampled and characterized at locations representing past, present and future impacts.	U of MN - Duluth	\$600,000
182-E	Heins	Bradley	Optimization of a Net-Zero Dairy System	This project will develop and optimize energy efficient lighting and thermal energy storage systems at the WCROC in Morris, MN.	U of MN - WROC	\$876,706
183-E	Ruan	Roger	Instant On-Demand Nitrogen Fixation (iONF) from Air	To develop and demonstrate innovative instant on-demand nitrogen fixation (iONF) process and system to convert air nitrogen and water to nitrogen fertilizer rich water for direct cropland applications.	U of MN	\$1,352,000
184-E	Goodnough	Troy	Harvesting Hidden Clean Energy from Wastewater Systems	Existing technologies capable of harvesting hidden clean energy from wastewater streams will be studied to determine their effectiveness in moving the state toward an increasingly clean energy future.	U of MN - Morris	\$408,694

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ENRTF ID #	Last Name	First Name	Title	Summary	Organization	\$ Requested
185-E	Chan	Gabriel	Support Tools for Facilitating Renewable Energy Choice	Develop and pilot decision support tools for Minnesota's municipal and cooperative utilities to help the 40% of Minnesotans served by these utilities make individual choices to deploy more renewable energy.	U of MN	\$243,232
186-E	ODay	Vicki	White Earth Nation Community Solar for Community Action	Project goals include installation of a 200-kW White Earth community-owned solar garden reducing GHG emissions, increasing economic development through environmental education and solar workforce training, and improving energy resilience.	Rural Renewable Energy Alliance	\$572,702
187-E	Brown	Karl	Using Solar Resources to Create Student Scholarship Funds	The MN Coalition of Residential Environmental Learning Centers proposes to create statewide scholarships for 550-650 economically underprivileged students, annually, through LCCMR funded solar array expansions at six environmental centers.	Minnesota Coalition of Residential Environmental Learning Centers/Mounds View Public Schools	\$1,800,000
188-E	Sleezer	Robert	Self-Cleaning Solar Cell Coatings in Minnesota	This project will study the performance of new coatings designed to enhance the performance of solar cells to determine if they are appropriate for the Minnesota climate.	Minnesota State University - Mankato	\$381,205
189-E	Soholt	Beth	Advancing Renewable Energy through Education and Community Engagement	Minnesota is in the midst of a shift in electric generation to renewable energy. Rural energy discussions will educate and enable an orderly transition to meet Minnesota's clean energy goals.	Wind on the Wires	\$860,520
E. Air Quality, Climate Change, and Renewable Energy						
H. Proposals seeking \$200,000 or less in funding (RECEIVED: 9 Proposals / Subtotal - \$1,459,944)						
190-EH	Pappenfus	Ted	Sustainable Solar Energy from Agricultural Plant Byproducts	Producing new materials from regional plant byproducts for renewable solar energy. This project engages many students in environmental research; this homegrown technology will ultimately provide affordable energy to Minnesota families.	U of MN - Morris	\$185,018
191-EH	Randolph	Jimmy	Novel Combined Solar Thermal-Geothermal Heat Pump System	The project will conduct numerical modeling and field testing of a novel combined solar-thermal geothermal heat pump system, an efficient and affordable renewable heating/cooling approach.	Juneberry	\$168,000
192-EH	Mohan	Ned	Showcasing Carbon-Neutral, Energy-Positive Transformation of an Occupied House	Showcase carbon-neutral and energy-positive transformation of an occupied house that becomes a model for the entire state, where utility pays homeowners for electricity while they significantly reduce their carbon footprint.	U of MN	\$66,532
193-EH	Berman	Jesse	Associations Between Extreme Weather and Harmful Vector Populations	Minnesota boasts extensive outdoor recreation, but harmful vectors present risk. Relationships between extreme weather and vectors will be quantified, while risk communication will inform public safety and insect-control strategies.	U of MN	\$199,531
194-EH	Mohan	Ned	Enhancing Renewables Utilizing Generators of Retiring Coal Powerplants	Increasing penetration of renewables by retiring coal/gas powerplants affects grid stability. We will research retaining generators of retiring powerplants, supplemented by a small amount of battery storage, to maintain stability.	U of MN	\$183,301
195-EH	Park	Sung Goon	Wind Plants Interaction with Local Climate in Minnesota	This project will develop a cutting-edge tool to assess potential environmental costs/benefits of wind plants through an interdisciplinary fusion of laboratory- and field-scale studies as well as computer simulations.	U of MN	\$199,584
196-EH	Hill	Blaine	Modeling Energy and Environmental Roadmaps for Minnesota Communities	The City of Morris and several partners will develop a model community for energy and environmental stewardship which will serve as a roadmap for other small communities across the state.	City of Morris	\$199,995

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ENRTF ID #	Last Name	First Name	Title	Summary	Organization	\$ Requested
197-EH	Rog	April	Diverting Prepared Food from Landfills, Reducing Greenhouse Gases	This project will build the capacity of our Prepared Foods Donation Program, which will collect food from restaurants and prevent food from going to landfills, thereby reducing greenhouse gas emissions.	Second Harvest Heartland	\$65,000
198-EH	Droessler	Bill	Clean Air Assistance Project (CAAP)	The Clean Air Assistance Project connects businesses with financial and technical resources to voluntarily reduce air pollution.	Environmental Initiative	\$192,983
F. Methods to Protect, Restore, and Enhance Land, Water, and Habitat (RECEIVED: 32 Proposals / Subtotal - \$32,371,852)						
199-F	Aukema	Brian	Eastern Larch Beetle is Decimating Minnesota's Tamarack Forests	Eastern larch beetle is decimating Minnesota's tamarack forests. This proposal focuses on devising insect management techniques and determining how bad this problem may remain in the future.	U of MN	\$382,000
200-F	Reinikainen	Mike	Evaluating Forestry Tools for Conserving Minnesota's Tamarack Forest	Over 440,000 of Minnesota's 1.1 million acres of tamarack forests have been damaged by eastern larch beetle. We will implement and evaluate forestry tools to restore and conserve tamarack forests.	MN DNR	\$864,436
201-F	Montgomery	Rebecca	Sustaining One Million Acres of Minnesota Pine Forest	We will produce guidelines to maintain and maximize healthy and diverse pine forests with sustained growth and productivity of our state tree, the red pine, during seasonal and periodic drought.	U of MN	\$420,000
202-F	Runquist	Erik	Saving Endangered Pollinators through Data-Driven Prairie Restoration	Minnesota Zoo, Parks, and TNC will use prairie restorations and Endangered Dakota skipper reintroductions to study factors supporting butterflies and develop foundational habitat management recommendations for Minnesota's imperiled prairie butterflies.	Minnesota Zoo	\$977,813
203-F	Petersen	Jessica	Evaluating Ecological Benefits of Prairie Plan Restorations	Evaluating ecological outcomes of prairie restorations under the Minnesota Prairie Conservation Plan by spatially tracking accomplishments, monitoring indicators of ecosystem functioning, and creating metrics of success to improve future restorations.	MN DNR	\$534,468
204-F	Galatowitsch	Susan	Ensuring High-Quality Restoration Outcomes in Minnesota	This project seeks to improve Minnesota restoration quality by 1) designing certification standards for project/organizational excellence, 2) developing guidance for volunteer involvement, and 3) address training gaps in project planning/management.	U of MN	\$529,102
205-F	Main	Rylee	Restoring the Upper Mississippi River at Lake Pepin	Leveraging \$15 million federal dollars to implement a program to improve Lake Pepin's gamefish and waterfowl production by restoring 100 acres of terrestrial habitat and 1,000 acres of aquatic habitat.	Lake Pepin Legacy Alliance	\$525,000
206-F	Taylor	Carrie	Minnesota Rare Plant Salvage Anoka Sand Plain Pilot	In Minnesota, permitted take of endangered/threatened plants allows for destruction, but does not provide for salvage. This project will create a pilot program to salvage and relocate these plants.	Anoka Conservation District	\$357,788
207-F	Hernandez	Daniel	Comparison of Burning and Haying for Prairie Restoration	This project will test how the frequency and timing of haying, used alone or combined with prescribed burning, can promote biodiversity and pollinator habitat in prairie.	Carleton College	\$338,111
208-F	Patelke	Marsha	Minnesota By-products Recycled to Sustainable Designed Soil	Characterize and blend undervalued regional by-products (dredge sediment, mineral tailings, wood waste, and biochar) creating productive soil, smarter recycling/reuse practices for site restoration providing environmental and economic benefit to Minnesota.	U of MN - Duluth	\$448,964
209-F	Buck	Wiley	Restoration, Engagement, Soil Health: St Cloud, Twin Cities	Restore 830ac, 0.5mi shoreline, engage 3150 restoration volunteers 1) in St. Cloud for the first time, and 2) sustaining/expanding in Twin Cities; assessment of soil health will inform restorations.	Great River Greening	\$2,180,000
210-F	Etterson	Julie	Forest Regeneration: Right Seed in the Right Place?	Minnesota forest ecosystems are maintained by continual reforestation efforts. This project will help the DNR determine the best sources of seeds to plant in the diverse habitats of our state.	U of MN - Duluth	\$476,336

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ENRTF ID #	Last Name	First Name	Title	Summary	Organization	\$ Requested
211-F	Haines	Dustin	Does Native Seed Farming Reduce Prairie Restoration Success?	Prairie restorations use native plant seeds produced in agricultural conditions. Has this altered traits required for survival, thereby undermining restoration success? Our experimental and genetic studies will answer this question.	U of MN - Duluth	\$449,962
212-F	Feeken	Neal	Conserving Minnesota's Best Prairie Habitats and Rarest Species	The project will accelerate management on 30,000 acres of "Biologically Significant" prairie, conduct monitoring of rare prairie species, and develop a comprehensive database of management practices and their impacts.	The Nature Conservancy	\$1,261,500
213-F	Zamora	Diomy	Promoting and Restoring Oak Savanna Using Silvopasture	Oak savanna is imperiled and threatened ecosystem with only 0.2% remaining of historically 5.5 million acres in Minnesota. This project will demonstrate the use of silvopasture to restore this ecosystem.	U of MN	\$1,270,910
214-F	Lenhart	Christian	Innovative Strategies to Re-Introduce Wood into Driftless Area Streams	This project will install innovative large wood structures in a Driftless Area stream and identify scaling-up strategies. The site will be monitored for post-project and used for demonstration purposes.	The Nature Conservancy	\$317,300
215-F	Shen	Lian	Evaluation and Improvement of Aeration in Lakes	We will measure concentrations of oxygen and nutrients in lakes with/without aeration, develop prediction model, and propose strategies on the proper deployment and use of aerators to improve lake ecosystems.	U of MN	\$312,228
216-F	Huckett	Steven	Protecting Drinking Water Sources: 2,000ac in Mississippi Headwaters	To improve critical ecological services in drinking water source and well-head protection areas by restoring and enhancing 2,000 acres on private land easements in the Camp Ripley Sentinel Landscape (CRSL).	Great River Greening	\$1,396,950
217-F	Salomon	Christine	Protecting Minnesota Birch by Sustainable Chaga Cultivation	Development of methods to cultivate medicinal chaga fungus to protect birch trees from unsustainable harvesting and damage and to provide access to a valuable Minnesota commodity.	U of MN	\$385,232
218-F	Peterson	Daryl	Piping Plovers and Common Terns: Critical Habitat Restoration	This project will restore critical habitat for threatened and endangered bird species lost due to recent sustained high water levels on Interstate Island in the St. Louis River estuary.	Minnesota Land Trust	\$1,243,500
219-F	Shen	Lian	Use Floating Mini-Islands for Wetland Restoration	We propose a new method of wetland restoration using floating mini-islands. We will deploy mini-islands to collect data, develop model to predict wetland growth, and demonstrate the strategy in practice.	U of MN	\$312,228
220-F	Albright	Bruce	Stony Creek Stream and Habitat Restoration Project	Over 4.5 miles of Stony Creek restoration, improving water quality to State standards and providing 100 acres of permanently protected expanded riparian habitat along this prairie stream in northwest Minnesota.	Buffalo-Red River Watershed District	\$1,750,000
221-F	Tuominen	Todd	Elm Creek Stream Restoration Phase IV Final	The final phase of Elm Creek Stream Restoration, includes 1.4 miles of habitat & stream restoration which, flows through the Elm Creek Preservation Area upgradient of the Mill Ponds.	City of Champlin	\$858,650
222-F	Sykora	Justin	Woodland Restoration Project	Belwin Conservancy will restore 72 acres of Belwin's nearly 1400 acres. This woodland restoration project is in a beautiful area that will be open to the public in the future.	The Belwin Conservancy	\$227,000
223-F	Christenson	Scott	Restoring 430 acres of the Panicum Prairie WMA	Restoring the Panicum Prairie WMA will reconnect a fragmented flyway and provide critical nesting and stopover habitat for migratory waterfowl in a safe and efficient manner.	Shell Rock River Watershed District	\$650,000
224-F	Kaproth	Matthew	State of the Prairies: Assessing Public-Private Land Management	We propose to survey Central and Southern Minnesota prairies to develop assessments measuring the success of prairie restorations and correlate management practices that promote high quality functions.	Minnesota State University - Mankato	\$337,055
225-F	Brethorst	Michael	Sauk River Dam Removal and Rock Rapids Replacement	This project consists of habitat restoration, water quality and fish passage improvements through the removal of the existing fixed elevation dam, construction of rock arch rapids and in-stream habitat restoration.	City of Melrose	\$2,768,000

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ENRTF ID #	Last Name	First Name	Title	Summary	Organization	\$ Requested
226-F	McClannahan	Valerie	Serving Community Forests by Assisting Low-Income Homeowners	75% of Minnesota's land is private, requiring citizens to depend on their trees and neighbors' for benefits. The DNR with Habitat for Humanity will help low-income landowners care for trees.	MN DNR	\$415,024
227-F	Dorothy	Olivia	Mississippi Gorge Restoration Study	American Rivers seeks funding to conduct a detailed study to remove two dams in the 8-mile Mississippi River Gorge between St Anthony Falls and the Minnesota River confluence.	American Rivers	\$503,295
228-F	Kinney	Mike	Using Economic Analysis to Repair the Sunrise River	The Comfort Lake-Forest Lake Watershed District will perform diagnostic subwatershed monitoring of the impaired Sunrise River in southern Chisago County to identify, then implement, the most cost-effective pollutant reduction project(s).	Comfort Lake-Forest Lake Watershed District	\$575,000
229-F	Drown	Bryan	Restoration of Norway Brook Connectivity to the Pine River by Removal of Norway Lake Dam.	The project will restore and enhance habitat and fish passage and accessibility to the river by removing an existing dam and replacing it with a rock riffle pool structure.	City of Pine River	\$2,200,000
230-F	McCarty	Michael	Water Quality Mitigation Project	Restoration of 90 acres of wetland and buffer with channel naturalization for stormwater storage, groundwater recharge, habitat and nutrient uptake reducing TP 18% and TSS 33%.	City of Mankato	\$7,104,000
F. Methods to Protect, Restore, and Enhance Land, Water, and Habitat						
H. Proposals seeking \$200,000 or less in funding (RECEIVED: 16 Proposals / Subtotal - \$2,511,544)						
231-FH	Jordan	Nicholas	Supporting Pollinators and Prairie Restorations with Beneficial Fungi	We will help managers improve habitat quality of reconstructed prairies for imperiled Monarch butterflies and other declining pollinators by increasing plant access to soil resources via beneficial fungi.	U of MN	\$187,362
232-FH	Zlonis	Katharine	Conservation and Monitoring of Minnesota's Rare Arctic Plants	The North Shore houses completely unique plant communities that are in danger of decline. This project will provide critical monitoring and invasive removal to conserve these rare and endangered plants.	U of MN - Duluth	\$135,541
233-FH	Lynch	Michael	Develop Forest Management Methods that Enhance Bird Habitat	Develop, publish, and promote guidebooks on forestry methods that enhance breeding bird habitat while engaging landowners in forest stewardship and encourage the sustainable production of Minnesota forest products.	Forest Stewards Guild	\$197,337
234-FH	Noe	Ryan	Cost-Effective Environmental Protection by Predicting Land Use Change	Cost-effective environmental protection requires reliable predictions of which natural land will be lost without protection. We will produce statewide maps that quantify the likelihood of future conversion for every parcel.	U of MN	\$199,420
235-FH	Dee	Laura	Cooperatively Improving Minnesotas Remnant Prairies through Adaptive Management	This project leverages an existing partnership of managers to improve the quality of Minnesota's native plant communities on remnant prairie, by providing cost-effective management recommendations and public access to data.	U of MN	\$199,038
236-FH	Daub	Betsy	Integrated Research and Restoration in Prairie and Forest	Comparisons of two methods of restoration both in forest and prairie habitat to provide land managers with evidence-based choices for ecological and cost effective restoration solutions.	Friends of the Mississippi River	\$150,583
237-FH	Merkord	Christopher	Combating Woody Encroachment with Grazing after Mechanical Clearing	We will evaluate the potential for cattle grazing to reduce woody vegetation regrowth following mechanical clearing and to enhance biodiversity of grassland species in the Agassiz Beach Ridge core area.	Minnesota State University - Moorhead	\$199,704
238-FH	Johnson	Margaret	Farming for Water Quality: Implementation, Education, & Documentation	This project will protect and enhance water quality through implementation, education, and documentation of regenerative farming practices within the Middle Fork Crow River Watershed and all water bodies downstream.	Middle Fork Crow River Watershed District	\$97,321
239-FH	Thompson	Ann	Improving Stream Restoration Designs to Prevent Project Failures	Costly river restorations can fail without an objective review process. We will develop methods to test and review designs before construction and will provide finalized methods for future projects.	South St. Louis Soil and Water Conservation District	\$140,000

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ENRTF ID #	Last Name	First Name	Title	Summary	Organization	\$ Requested
240-FH	LaBarre	Tom	Friends of Tamarac National Wildlife Refuge Wetland Restorations	To fully restore and permanently protect the natural hydrology to 119 wetland basins within the Clearwater watershed for the significant and measurable benefits to wildlife, water quality and flood reduction.	Friends of Tamarac	\$80,500
241-FH	Yang	Zixuan	Shoreline Erosion Control Using Aquatic Plants	We will conduct experiments to monitor shoreline evolution corresponding to various aquatic plants, streams, and wave conditions, develop prediction model, and provide guidelines on using aquatic plants for shoreline protection.	U of MN	\$199,019
242-FH	Cadieux	Valentine	Promoting Environmental Urban Agriculture	This project surveys policy and practical barriers that prevent conservation efforts in metropolitan farming, analyzes alternatives, and assists urban farmers to share knowledge that can effectively promote conservation in farming.	Hamline University	\$59,280
243-FH	Bendorf	Doug	City of Staples Street Sweeper Mitigate Wetlands Contamination	Road salt is proven to harm natural resources. The City of Staples proposes to greatly lessen salt impact with an enhanced Street Sweeper that reduces chemicals left on streets.	City of Staples	\$191,775
244-FH	Wiegrefe	Susan	Restoring Tree Cover and Diversity to Houston Streets	We are seeking funds to plant 120 trees from multiple genera to replace those lost to Emerald Ash Borer. Assistance for current property owners will benefit future generations.	City of Houston, MN	\$83,080
245-FH	Deng	Bingqing	Prediction of Ice Shove in Lakes in Minnesota	A prediction model and an alert system of ice shove will be developed based on the data collected from field experiments and numerical simulations to prevent damages.	U of MN	\$199,584
246-FH	OKeefe	Pete	Keep Usable Building Materials Out of Minnesota Landfills	Keep usable building materials and supplies out of landfills via Habitat for Humanity ReStores. This grant will purchase three vehicles to pick up hundreds of tons of items annually.	Twin Cities Habitat for Humanity, Inc.	\$192,000
G. Land Acquisition for Habitat and Recreation (RECEIVED: 25 Proposals / Subtotal - \$59,448,660)						
247-G	Schulte	Judy	DNR Scientific and Natural Areas	Scientific and Natural Area (SNA) habitat restoration and improvements (1100+ acres), increased public involvement and strategic acquisition (500+ acres) will conserve Minnesota's most unique and rare resources for everyone's benefit.	MN DNR	\$5,758,000
248-G	Mularie	Audrey	Grants for Local Parks, Trails and Natural Areas	Provide approximately 25 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	\$3,000,000
249-G	Christie	Jennifer	Minnesota State Parks and State Trails In-Holdings	Acquire high priority State Park, Recreation Area and Trail in-holding parcels from willing sellers to protect Minnesotas natural and cultural heritage, enhance outdoor recreation and promote tourism.	MN DNR	\$5,000,000
250-G	Schulte	Judy	Native Prairie Bank Conservation Easements and Landowner Assistance	Native Prairie Bank will provide prairie technical assistance, restore and enhance 1,170 acres, and acquire 300 acres through permanent conservation easements and 300 acres through 15-year agreements from willing sellers.	MN DNR	\$3,828,000
251-G	Skaar	Kent	Minnesota State Trails Development	This project fulfills legislative direction to expand recreational opportunities on Minnesota State Trails through the development of new trail segments; and the rehabilitation and enhancement of existing State Trails.	MN DNR	\$8,750,000
252-G	Heggerston	Leah	National Loon Center: State Bird Survival and Protection	National Loon Center dedicated to survival of loon, habitat protection, recreation, and environmental research establishing Minnesota as the premiere destination to experience the freshwater ecosystem we share with native wildlife.	National Loon Center Foundation	\$4,000,000
253-G	Stewart	Nancy	Accessible Fishing Piers	Provide 7-8 accessible fishing piers in locations that have a high potential to serve new angling communities, undeserved populations and anglers with physical disabilities.	MN DNR	\$320,000

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ENRTF ID #	Last Name	First Name	Title	Summary	Organization	\$ Requested
254-G	Manzoline	Robert	Mesabi Trail Extensions	Complete the Mesabi Trail by constructing the four remaining trail segments where further described within the Main Proposal.	St. Louis and Lake Counties Regional Railroad Authority	\$5,150,000
255-G	Perry	Vanessa	Reviving a Camp for North Minneapolis Youth	A conservation easement on the Phyllis Wheatley Community Center's Camp Katherine Parsons property will protect habitat, water quality, and provide outdoor education and recreation opportunities for North Minneapolis youth.	Minnesota Land Trust	\$1,373,000
256-G	Kennedy	Tim	Britton Peak to Lutsen Mountains Mountain Bike Trail	Sustainably built singletrack mountain bike trail connecting trail clusters that draws new visitors and becomes part of the NE Minnesota efforts to become a national destination for mountain biking.	Superior Cycling Association	\$350,000
257-G	Geissler	John	Preserving the Avon Hills with Reverse-Bidding Easements	Utilize proven cost-saving MMAPLE reverse-bid conservation easement ranking system to permanently protect 650 acres and restore/enhance 400 acres of priority private lands already protected in the Avon Hills.	Saint Johns University	\$2,410,500
258-G	Forbes	DJ	Turning Back to Rivers: Creating Recreation Opportunities	This project will protect land through fee title acquisition along Minnesota's Big Rivers (the Mississippi, St. Croix, and Minnesota) increasing public opportunity for outdoor recreation.	The Trust for Public Land	\$4,792,500
259-G	Greedy	Ross	Restoration of Winona's Prairie Island	The City of Winona aims to improve ecosystem health and provide quality recreation at Prairie Island Park through prairie restoration, tree planting, storm water management, and redesigned access.	City of Winona	\$352,201
260-G	Henderson	Scott	Sauk River Watershed Habitat Protection and Wetland Restoration	This project aims to protect and restore sensitive areas from urban and agricultural encroachment for the betterment of surface water, groundwater and drinking source water.	Sauk River Watershed District	\$2,247,520
261-G	Lantry	Tom	Lake Vermilion Trail Phase 1: Tower Connection	Design and construct a 4.6 mile paved, non-motorized recreational trail between Tower and the Hwy 169/CR 77 Intersection as Phase 1 of the planned 40-mile Lake Vermilion Trail.	Lake Vermilion Trail Joint Powers Board	\$1,814,000
262-G	Gautreaux	Sherril	Rainy Lake Recreational Access and Boat Wash Station	To enhance and increase public access to Rainy Lake by providing an adequate ADA compliant recreational parking lot, ADA compliant public restroom and AIS boat wash station.	City of Ranier	\$511,710
263-G	Berg	Anita	Purchasing 316 acres for Conservation and Agriculture Education	The Food Group requests funding to purchase 316 acres of farmland and diverse habitat in the Wilder Forest in Washington County to demonstrate sustainable farming, and undertake ecological management.	The Food Group	\$1,500,000
264-G	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 campsites for recreational vehicles and tent campers.	City of Babbitt	\$700,000
265-G	See-Benes	Britt	Bailey Lake Trail and Fishing Pier	This project consists of the reconstruction of the existing Bailey Lake Trail and construction of a new fishing pier on Bailey Lake.	City of Virginia	\$681,000
266-G	Lammers	Julie	Vergas Long Lake Trail	Long Lake is a community asset for Vergas, enjoyed by residents and visitors alike. This project will construct a trail bordering Long Lake, maintaining public access and restoring the shoreline.	City of Vergas	\$291,111
267-G	Roepke	Scott	Cannon Valley Trail Erosion Control/Water Quality Improvements	The project improves Cannon Valley Trail water conveyance infrastructure to reduce sediments entering wetlands and the Cannon River. Improvements include erosion control, repair of failing slopes, and improved sediment capture.	Cannon Valley Trail Joint Powers Board	\$1,586,200
268-G	Hasbargen	Bruce	Construct Bicycle/Pedestrian Bridge Near Pennington, MN	Construction of bicycle/pedestrian bridge over the Mississippi River on Lady Slipper Scenic Byway / Great River Road near Pennington Minnesota, for increased safety and enhanced recreation.	Beltrami County & Lady Slipper Scenic Byway, Inc.	\$600,000

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ENRTF ID #	Last Name	First Name	Title	Summary	Organization	\$ Requested
269-G	Miller	Ryan	Glacial Edge Trail and Downtown Pedestrian Bridge	The project proposes a .48 mile trail along the Otter Tail River in downtown Fergus Falls as well as a 125 ft. long bicycle and pedestrian bridge crossing the river.	City of Fergus Falls	\$602,918
270-G	DeFrang	Brian	Winona's 1st Recreation Bridge over Highway 61	Winona's 1st Recreation Bridge over Highway 61 offers safe passage and connects the Mississippi River Trail and downtown bike trails to Bluffside Park and Richard J. Dorer Memorial Hardwood Forest.	City of Winona	\$3,375,000
271-G	Beste	Bruce	Crane Lake to Vermilion Falls Trail	This project consists of designating and improving a 5.6 mile wooded trail from Crane Lake to the Vermilion Falls to accommodate ATV and Snowmobile users.	Voyageur Country ATV	\$455,000
G. Land Acquisition for Habitat and Recreation						
H. Proposals seeking \$200,000 or less in funding (RECEIVED: 1 Proposal / Subtotal - \$191,000)						
272-GH	Caneff	Denny	Making the SHTs Big Bad Five Beautiful Again	To renew the most damaged parts of five sections of the Superior Hiking Trail, and to return the Trail to an abandoned route.	Superior Hiking Trail Association	\$191,000
I. Other (RECEIVED: 1 Proposal / Subtotal - \$135,000)						
273-I	Sherman-Hoehn	Katherine	Contract Agreement Reimbursement	Provide continued contract management and customer service to ENRTF pass-through appropriation recipients. Ensure funds are expended in compliance with appropriation law, state statute, grants policies, and approved work plans.	MN DNR	\$135,000