

M.L. 2016 Environment and Natural Resources Trust Fund (ENRTF) Recommendations (FY 2017)

The Legislative-Citizen Commission on Minnesota's Resources (LCCMR) has selected 88 projects totaling \$45.4 million to recommend to the 2016 Minnesota Legislature for funding from the Environment and Natural Resources Trust Fund (ENRTF). The recommendations are the result of the LCCMR's 2016 Request for Proposal (RFP) process, in which 186 proposals requesting a total of approximately \$131 million were received and considered through a competitive, multi-stage evaluation. The recommendations range from full funding for the full proposal and dollar amount requested to partial funding for specific proposal elements and partial dollar amounts requested.

| Topic Area | \$ Recommended (\$45,402,000) | Percentage of Total Recommendation |
|---|----------------------------------|---------------------------------------|
| A. Foundational Natural Resource Data and Information 18 Appropriations | \$8,028,000 | 17.68% |
| B. Water Resources 25 Appropriations | \$8,254,000 | 18.18% |
| C. Environmental Education 11 Appropriations | \$2,562,000 | 5.64% |
| D. Aquatic and Terrestrial Invasive Species 7 Appropriations | \$5,860,000 | 12.91% |
| E. Air Quality, Climate Change, and Renewable Energy 8 Appropriations | \$3,889,000 | 8.57% |
| F. Methods to Protect, Restore, & Enhance Land, Water, & Habitat 9 Appropriations | \$4,495,000 | 9.90% |
| G. Land Acquisition for Habitat and Recreation 9 Appropriations | \$12,179,000 | 26.82% |
| H. Other 1 Appropriation | \$135,000 | 0.30% |
| TOTAL \$ RECOMMENDATION | \$45,402,000 | 100.00% |

| Fund Source | \$ Recommended | \$ Remaining for Recommendation |
|--|----------------|------------------------------------|
| FY 2016 - Environment and Natural Resources Trust Fund (ENRTF) | \$45,402,000 | \$935,000 |
| Total \$ Available = \$46,337,000 | | |

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| | | | ENRTF: FY2017 | | | |
| Subd. 3 Foundational Natural Resource Data and Information (18 Recommendations - Subtotal = \$8,028,000) | | | | | | |
| 03a | 003-A | Data Driven Pollinator Conservation Strategies | \$520,000 | Daniel Cariveau | U of MN | Central, NW, SW |
| 03b | 005-A | Native Bee Surveys in Minnesota Prairie and Forest Habitats | \$600,000 | Crystal Boyd | MN DNR | Central, Metro, NW, SE, SW |
| 03c | 009-A | Prairie Butterfly Conservation, Research and Breeding - Phase 2 | \$750,000 | Erik Runquist Robert Dana | Minnesota Zoological Garden MN DNR | NW, SW |
| 03d | 004-A | A Statewide Monitoring Network for Changing Habitats in Minnesota | \$500,000 | Bruce Carlson | MN DNR | Statewide |
| 03e | 001-A | Updating the National Wetland Inventory Update for Minnesota | \$1,200,000 | Steve Kloiber | MN DNR | NW |
| 03f | 002-A | Minnesota Vegetative Buffer Assessment and Prioritization to Protect Water Quality | \$170,000 | David Mulla | U of MN | Statewide |
| 03g | 011-A | Assessment Tool for Understanding Vegetation Growth Impacts on Groundwater Recharge | \$212,000 | Gene-Hua (Crystal) Ng | U of MN | Statewide |
| 03h | 006-A | Sentinel Lakes Monitoring and Data Synthesis – Phase 3 | \$401,000 | Melissa Trembl | MN DNR | NE, NW, SE, SW |
| 03i | 012-A | State Spring Inventory for Resource Management and Protection - Phase 2 | \$370,000 | Jan Falteisek | MN DNR | Statewide |
| 03j | 020-A | Enhancing Understanding of the Minnesota River Aquatic Ecosystem | \$500,000 | Tony Sindt | MN DNR | Central, Metro, SE, SW |
| 03k | 016-A | Improving Brook Trout Stream Habitat through Beaver Management | \$225,000 | Andrew Hafs | Minnesota State University - Bemidji | NE |
| 03l | 023-A | Evaluate Temperature, Streamflow and Hydrogeology Impact on Brook Trout Habitat | \$115,000 | Bob Tipping | Minnesota Geological Survey | SE |
| 03m | 007-A | Restoration of Elk to Northeastern Minnesota | \$300,000 | James Forester | U of MN | NE |
| 03n | 008-A | Game and Non-Game Bird Pesticide Exposure | \$349,000 | Julia Ponder | U of MN | Statewide |

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| 03o | 013-A | Evaluating Insecticide Exposure Risk for Grassland Wildlife on Public Lands | \$250,000 | Nicole Davros | MN DNR | Central, SE, SW |
| 03p | 014-A | Development of Innovative Cost-Saving Methodology for Forest Inventory | \$1,000,000 | Dennis Kepler | MN DNR | Statewide |
| 03q | 026-A | Evaluation of Forest Tree Retention Guidelines Pertaining to Wildlife | \$232,000 | Gerald Niemi | U of MN - NRRI | Statewide |
| 03r | 015-A | Determine Impacts on Wildlife from Emerald Ash Borer Infection of Black Ash Forests | \$334,000 | Gerald Niemi | U of MN - NRRI | Statewide |
| Foundational Natural Resource Data and Information Subtotal = | | | \$8,028,000 | | | |
| Subd. 4 Water Resources (25 Recommendations - Subtotal = \$8,254,000) | | | | | | |
| 04a | 037-B | Tracking and Preventing Harmful Algal Blooms | \$500,000 | Daniel Engstrom | Science Museum of Minnesota | Statewide |
| 04b | 038-B | Assessing the Increasing Harmful Algal Blooms in Minnesota Lakes | \$270,000 | Miki Hondzo | U of MN - St. Anthony Falls Laboratory | Statewide |
| 04c | 036-B | Restoring Native Mussels for Cleaner Streams and Lakes | \$600,000 | Mike Davis | MN DNR | Statewide |
| 04d | 053-B | Assessing Technique for Eliminating Contaminants to Protect Native Fish and Mussels | \$287,000 | Kristine Wammer | University of St Thomas | Statewide |
| 04e | 035-B | Assessing Neonicotinoid Insecticide Effects on Aquatic and Soil Communities | \$400,000 | William Arnold | U of MN | Statewide |
| 04f | 039-B | Bacterial Assessment of Groundwater Supplies Used for Drinking Water | \$299,000 | Raymond Hozalski | U of MN | Statewide |
| 04g | 049-B | Understanding Bedrock Fracture Flow to Improve Groundwater Quality | \$183,000 | Anthony Runkel | U of MN - MN Geological Survey | Metro, SE |
| 04h | 050-B | Protection of State Confined Drinking Water Aquifers | \$433,000 | Johnathan Bumgarner | US Geological Survey | Statewide |
| 04i | 018-A | Techniques for Water Storage Estimates in Central Minnesota | \$250,000 | John Nieber | U of MN | Statewide |
| 04j | 047-B | Assessment of Surface Water Quality With Satellite Sensors | \$250,000 | Jacques Finlay | U of MN | Statewide |

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| 04k | 051-B | Development of Innovative Sensor Technologies for Water Monitoring | \$509,000 | Tianhong Cui | U of MN | Statewide |
| 04l | 040-B | Wastewater Treatment Process Control Improvements | \$398,000 | Timothy LaPara | U of MN | Statewide |
| 04m | 043-B | Membrane-Based Process for Decentralized Drinking Water Production | \$191,000 | Santiago Romero-Vargas Castrillón | U of MN | Statewide |
| 04n | 060-B | Analyzing Alternative for Muncipal Wastewater Treatment | \$180,000 | Scott Kyser | Minnesota Pollution Control | Metro |
| 04o | 044-B | Understanding Impacts of Salt Usage on Minnesota Lakes, Rivers and Groundwater | \$497,000 | John Gulliver | U of MN | Statewide |
| 04p | 046-B | Reducing Salt and Metal Removal Costs with Microbes | \$596,000 | Daniel Bond | U of MN | Statewide |
| 04q | 054-B | Engineered Biofilter for Sulfate and Metal Removal from Mine Waters | \$440,000 | Sebastian Behrens | U of MN | NE |
| 04r | 073-B | Developing Biosponge Technology for Removal of Nitrates from Minnesota Waters | \$198,000 | Lawrence Wackett | U of MN | Statewide |
| 04s | 042-B | Morrison County Performance Drainage and Hydrology Management | \$209,000 | Helen McLennan | Morrison SWCD | Central |
| 04t | 168-F | Agricultural and Urban Runoff Water Quality Treatment Analysis - Phase 2 | \$110,000 | Craig Austinson | Blue Earth County Drainage Authority | SW |
| 04u | 088-B | Surface Water Bacterial Treatment System Pilot Project | \$500,000 | Brian Corcoran | Vadnais Lake Area Water Management Organization | Metro |
| 04v | 045-B | Assessing Effectiveness of Wetland Restorations for Improved Water Quality | \$420,000 | Jacques Finlay | U of MN | Central, NW, SW |
| 04w | 070-B | Assessing Climate Change Effects on the Release of Mercury and Sulfur into Aquatic Ecosystems | \$300,000 | Ed Nater | U of MN | Statewide |
| 04x | 083-B | Integrating Targeted Watershed Planning Tools with Citizen Involvement | \$169,000 | Kimberly Musser | Minnesota State University - Mankato | Statewide |
| 04y | 186-H | Roseau Lake Watershed Targeted Water Quality Improvement | \$65,000 | Henry Van Offelen | MN DNR | NW |
| Water Resources Subtotal = | | | \$8,254,000 | | | |

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| | | | ENRTF: FY2017 | | | |
| Subd. 5 Environmental Education (11 Recommendations - Subtotal = \$2,562,000) | | | | | | |
| 05a | 090-C | Minnesota Conservation Apprentice Academy | \$433,000 | Jenny Gieseke | Board of Water and Soil Resources | Statewide |
| 05b | 091-C | School Forests Outdoor Classrooms | \$440,000 | Amy Kay Kerber | MN DNR | Statewide |
| 05c | 092-C | Youth-Led Sustainability Projects in 50 Minnesota Communities – Phase 3 | \$400,000 | Shelli-Kae Foster | Prairie Woods Environmental Learning Center | Statewide |
| 05d | 101-C | The New Prairie Sportsman Statewide Broadcast Video Project | \$300,000 | Timothy Bakken | Pioneer Public Television | Statewide |
| 05e | 093-C | Workshops and Outreach for Nontoxic Ammunition Alternatives | \$133,000 | Julia Ponder | U of MN | Statewide |
| 05f | 096-C | Wildlife and Habitat Conservation Education for Southwest Minnesota High Schools | \$147,000 | Carol Strecker | Minnesota Zoo | SW |
| 05g | 094-C | Standards-Based Dakota Indian Land Stewardship Education | \$197,000 | Teresa Peterson | Dakota Wicohan | Statewide |
| 05h | 099-C | Wolf Management Education in the Classroom – Phase 2 | \$240,000 | David Kline | International Wolf Center | Statewide |
| 05i | 112-C | Master Water Steward Program Expansion | \$116,000 | Peggy Knapp | Freshwater Society | Statewide |
| 05j | 105-C | Promoting Water Quality Stewardship through Student Mentoring and River Monitoring | \$39,000 | Emily Deaver | Minnesota State University - Southwest | SW |
| 05k | 111-C | Analysis of Thermally Modified Wood Nesting Boxes for Birds | \$117,000 | Ryan Hueffmeier | U of MN - Duluth NRRI | Statewide |
| Environmental Education Subtotal = | | | \$2,562,000 | | | |
| Subd. 6 Aquatic and Terrestrial Invasive Species (7 Recommendations - Subtotal = \$5,860,000) | | | | | | |
| 06a | 121-D | Minnesota Invasive Terrestrial Plants and Pests Center - Phase 3 | \$3,750,000 | Robert Venette | U of MN | Statewide |
| 06b | 122-D | Developing a Membrane Filtration System to Treat Lake Superior Ballast Water | \$151,000 | Santiago Romero-Vargas Castrillón | U of MN | NE |
| 06c | 123-D | Advancing Microbial Invasive Species Monitoring from Ballast Discharge | \$368,000 | Randall Hicks | U of MN - Duluth | NE |

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| 06d | 124-D | White Nose Bat Syndrome Biological Control - Phase 2 | \$452,000 | Christine Salomon | U of MN | Statewide |
| 06e | 128-D | Elimination of Target Invasive Plant Species - Phase 2 | \$750,000 | Monika Chandler Angela Gupta | Minnesota Department of Agriculture U of MN | Statewide |
| 06f | 131-D | Dutch Elm Disease Resistance - Phase 2 | \$200,000 | Robert Blanchette | U of MN | Statewide |
| 06g | 134-D | Invasive Carp Management Research in Lake Nokomis Subwatershed | \$189,000 | Adam Arvidson | Minneapolis Park and Recreation Board | Metro |
| Aquatic and Terrestrial Invasive Species Subtotal = | | | \$5,860,000 | | | |
| E. Air Quality, Climate Change, and Renewable Energy (8 Recommendations - Subtotal = \$3,889,000) | | | | | | |
| 07a | 140-E | Solar Cells Manufacturing Research | \$388,000 | Tianhong Cui | U of MN | Statewide |
| 07b | 153-E | Community Solar Garden Installation | \$490,000 | Jason Edens | Rural Renewable Energy Alliance | Central |
| 07c | 135-E | High Resolution Climate Projections to Aid Local Planning and Implementation Efforts | \$411,000 | Peter Snyder | U of MN | Statewide |
| 07d | 144-E | Geotargeted Distributed Clean Energy Initiative | \$800,000 | Carl Nelson | Center for Energy and Environment | Statewide |
| 07e | 151-E | Waste Heat Recovery with Efficient Thermoelectric Energy Generators | \$400,000 | Uwe Kortshagen | U of MN | Metro |
| 07f | 141-E | Hydrogen Fuel from Wind Produced Renewable Ammonia | \$400,000 | William Northrop | U of MN | Metro, NW |
| 07g | 148-E | Utilization of Dairy Farm Wastewater for Sustainable Production | \$500,000 | Bradley Heins | U of MN | Statewide |
| 07h | 149-E | Solar Energy Utilization for Minnesota Swine Farms – Phase 2 | \$500,000 | Lee Johnston | U of MN - West Central Research and Outreach Center | Central, NW, SE, SW |
| Air Quality, Climate Change, and Renewable Energy | | | \$3,889,000 | | | |
| F. Methods to Protect, Restore, and Enhance Land, Water, and Habitat (9 Recommendations - Subtotal = \$4,495,000) | | | | | | |
| 08a | 155-F | Bee Pollinator Habitat Enhancement - Phase 2 | \$387,000 | Marla Spivak | U of MN | Statewide |

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| 08b | 162-F | Measuring Pollen and Seed Dispersal for Prairie Fragment Connectivity | \$556,000 | Lauren Sullivan | U of MN | NW |
| 08c | 154-F | Establishment of Permanent Habitat Strips Within Row Crops | \$159,000 | Shawn Schottler | Science Museum of Minnesota | Statewide |
| 08d | 019-A | Evaluate Prescribed Burning Techniques to Improve Habitat Management for Brushland Species | \$267,000 | Rebecca Montgomery | U of MN | NE |
| 08e | 159-F | Controlling Reed Canary Grass to Regenerate Floodplain Forest | \$218,000 | Tim Schlagenhaft | Minnesota State Office of National Audubon Society | SE |
| 08f | 165-F | Forest Management for Mississippi River Drinking Water Protection | \$300,000 | Melissa Barrick | Crow Wing SWCD | Central |
| 08g | 166-F | Upland, Wetland and Shoreline Restoration in Greater Metropolitan Area | \$509,000 | Wiley Buck | Great River Greening | Metro |
| 08h | 169-F | Bluffland Restoration and Monitoring in Winona | \$99,000 | Neal Mundahl | Winona State University | SE |
| 08i | 173-F | Champlin Mill Pond Shoreland Restoration | \$2,000,000 | Todd Tuominen | City of Champlin | Metro |
| Methods to Protect, Restore, and Enhance Land, Water, and Habitat Subtotal = | | | \$4,495,000 | | | |
| G. Land Acquisition for Habitat and Recreation (9 Recommendations - Subtotal = \$12,179,000) | | | | | | |
| 09a | 174-G | State Parks and State Trails Land Acquisitions | \$2,000,000 | Jennifer Christie | MN DNR | Statewide |
| 09b | 175-G | Scientific and Natural Area Acquisition and Restoration | \$4,000,000 | Peggy Booth | MN DNR | Statewide |
| 09c | 179-G | Minnesota Point Pine Forest Scientific and Natural Area Acquisition | \$500,000 | Tom Werner Peggy Booth | Duluth Airport Authority MN DNR | NE |
| 09d | 177-G | Conservation Easements in the Avon Hills -- Phase 3 | \$1,300,000 | Thomas Kroll | Saint Johns Arboretum and University | Central |

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| 09e | 180-G | Wilder Forest Acquisition | \$500,000 | Hilary Otey Wold June Mathiowetz | Minnesota Food Association Washington County | Metro |
| 09f | 181-G | Lincoln Pipestone Rural Water System Acquisition for Well Head Protection | \$1,500,000 | Jason Overby | Lincoln Pipestone Rural Water System | SW |
| 09g | 178-G | Mesabi Trail Segment from Highway 135 to the City of Embarrass | \$1,200,000 | Bob Manzoline | St. Louis & Lake Counties Regional Railroad Authority | NE |
| 09h | 183-G | Tower Historic Harbor Trail Connections | \$679,000 | Linda Keith | City of Tower | NE |
| 09i | 182-G | Otter Tail River Recreational Trail Acquisition | \$500,000 | Gordon Hydukovich | City of Fergus Falls | Central |
| Land Acquisition for Habitat and Recreation Subtotal = | | | \$12,179,000 | | | |
| H. Other (1 Recommendation - Subtotal = \$135,000) | | | | | | |
| 10a | 185-H | Contract Agreement Reimbursement | \$135,000 | TBD | MN DNR | Statewide |
| Other Subtotal = | | | \$135,000 | | | |
| Total \$ Recommended = | | | \$45,402,000 | | | |

* Region of Impact designated in the State include Statewide, Central, Metro, NE, NW, SE, SW. Metro region includes the 11 counties of Anoka, Carver, Chisago, Dakota, Hennepin, Isanti, Ramsey, Scott, Sherburne, Washington, and Wright.