

2016 - LCCMR Member Presentation Selection Rankings: Environment and Natural Resources Trust Fund Proposals

Sorted by Funding Priority Category in Rank Order (Highest to Lowest) According to Compiled Member Rankings*

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Line #	ID #	Member Scoring Compiled (Out of 16)	# Members Reporting Conflict	Staff Ranking	Project Title	\$ Requested	Project Summary (30 words)	Organization	Project Manager	Member Notes	Staff Notes
1	A. FOUNDATIONAL NATURAL RESOURCE DATA AND INFORMATION (34 Proposals / Subtotal = \$15,166,583)										
2	001-A	15		89	Completing the National Wetland Inventory Update for Minnesota	\$1,644,270	This project will update and field verify wetland inventory maps for all 19 remaining counties in central and northwestern Minnesota (20,668 mi2), thereby completing the wetland inventory update for Minnesota.	MN DNR	Kloiber, Steve	- Who is using this data? - This is a continuation effort. They recently completed SE Minnesota. NWI is a wonderful product with many new enhancements to the utility and access.	- Related open appropriations: ML 2013 - Updating the National Wetland Inventory for Minnesota - Phase IV = \$1,000,000 (expires 06/30/16); ML 2015 - Updating the National Wetland Inventory for Minnesota - Phase V = \$1,500,000 (expires 06/30/18) - Budget includes designated contracts: \$200,000 for MN.IT; \$150,000 for DNR Resource Assessment Office; \$300,000 for St. Croix Watershed Research Station. - Budget includes \$69,270 for "Direct and Necessary Expenses", of which \$54,020 is for division and regional program management. - Statewide natural resource dataset
3	003-A	13		83	Data Driven Pollinator Conservation	\$558,611	Rigorous guidelines are lacking for designing and planning pollinator habitat. We will determine optimal placement of pollinator habitat, ideal plants for native bees, and assess bee pollination of rare plants.	U of MN	Cariveau, Daniel	- Critically needed data	- Related open appropriations: ML 2014 - "Enhancing Pollinator Landscapes" = \$864,000 (expires 06/30/2019) - Budget includes some undesignated portion of \$5,000 for journal publication fees. - Pollinators
4	008-A	13		73	Do Neonicotinoids Pose a Risk to Minnesotas Birds?	\$349,767	We propose to evaluate the potential risk to birds of neonicotinoid exposure using sharp-tailed grouse. Neonicotinoids are applied to agricultural seeds and are the most widely used pesticide worldwide.	U of MN	Ponder, Julia	- May also be an emerging issue consideration.	- Budget includes designated contract: \$87,010 for MN DNR; \$104,295 for Southern Illinois University - Carbondale - Wildlife - Neonicotinoids
5	014-A	11		68	Enhancing Forest Inventory Using Multiple Remote Sensing Technologies	\$1,053,638	Develop a robust cost-saving methodology for an enhanced stand-based forest inventory, including attributes that relate to forest structure and habitat suitability, using LiDAR, high resolution imagery, and plot data.	MN DNR	Kepler, Dennis	- This is something that would bring forest management into the era of highly accurate remote sensing and showing how it best to be done would likely be widely adopted.	- Related appropriations: ML 2013 - Improved Rapid Forest Ecosystem and Habitat Inventory = \$262,000 (expired 06/30/15) - Budget includes designated contract: \$50,000 for U of MN; \$50,000 for Northland Technical College. - Budget includes capital expenditures over \$5,000: \$30,000 for 3-survey grade GPS units - Budget includes \$63,837 for "Direct and Necessary Expenses". - Forestry
6	007-A	10		73	Feasibility of Restoring Elk to Northeastern Minnesota	\$325,541	The University of Minnesota, Fond du Lac Band, and Rocky Mountain Elk Foundation will determine the habitat suitability and levels of public support necessary for restoring elk to Northeastern Minnesota.	U of MN	Forester, James		- Project appears to be requesting to update data for MN Land Cover dataset funded by ENRTF beginning 07/01/14 and not scheduled to be completed until 06/30/17. - Wildlife
7	002-A	9		86	Minnesota Vegetative Buffer Assessment and Prioritization	\$170,421	A GIS assessment of riparian vegetative buffers in 70 agricultural counties in Minnesota using state of the art aerial imagery and prioritization of unprotected waters using LiDAR terrain analysis.	U of MN	Mulla, David	- This would be a data-driven, current assessment by an independent party that would be very useful for landowners and regulators.	- Unknown what funding available in FY16-17 buffer initiative appropriations. - Budget includes potentially ineligible expense: \$6,500 for computers. - Agriculture - Water

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8	004-A	8		81	A Statewide Monitoring Network for Minnesota's Changing Habitats	\$645,821	Design and launch a consolidated statewide network of permanent habitat monitoring sites in Minnesota's prairies, forests and wetlands to prioritize habitats for protection and management in a changing environment.	MN DNR	Wovcha, Daniel	- I like this but wanted more information about the long-term commitment plans to carry this forward.	- Related open appropriations: ML 2015 - MN Biological Survey = \$2,450,000 (expires 06/30/17) - Budget includes designated contract: \$56,000 for MN.IT - Travel budget includes both a rental fee and a mileage fee. - Budget includes \$52,621 for "Direct and Necessary Expenses". - Statewide natural resource dataset
9	005-A	8		80	Wild Bee Surveys in Minnesotas Prairie-Forest Habitats	\$707,364	The DNRs Minnesota Biological Survey will expand its wild bee surveys into the prairie-forest border region. Public outreach activities include bee identification workshops and the state species list of bees.	MN DNR	Boyd, Crystal	- This would be a good supplement to the non-forest bee survey - an obvious gap in the data here.	- Related open appropriations: ML 2014 - "Wild Bee Pollinator Surveys in Prairie-Grassland Habitats" = \$370,000 (expires 06/30/2016). - Budget includes \$34,664 for "Direct and Necessary Expenses". - Pollinators - Statewide natural resource dataset
10	009-A	8		72	Prairie Butterfly Conservation, Research and Breeding - Phase 2	\$990,042	Minnesota Zoo and DNR, in collaboration with USFWS and others, are working to prevent the extinction of imperiled Minnesota prairie butterflies through breeding, research, field surveys, and potentially reintroduction.	Minnesota Zoo	Runquist, Erik	- For these criters this may be their last hope and the MN Zoo is well situated to.	- Joint proposal with DNR: MN Zoo request = \$551,050; DNR = \$438,992 - Related open appropriations: ML 2014 - Imperiled Prairie Butterfly Conservation, Research and Breeding Program = \$625,000 (expires 06/30/2017) - Budget includes capital expenditures over \$5,000: \$34,000 for 2 hoop houses. - Budget includes \$24,632 for "Direct and Necessary Expenses". - Pollinators
11	016-A	8		67	Improving Brook Trout Stream Habitat through Beaver Management	\$225,210	This project will quantify how beaver activity influences habitat quality for stream dwelling brook trout in NE MN to help improve current and future management in the region.	Bemidji State University	Hafs, Andrew	- Beaver issues are a big management issue for trout, hydrology, flooding, and property damage. There is a lot of data done in Wisconsin on trout impacts, but not so much on the comprehensive view of beaver management.	- Budget includes designated contract: \$96,500 for University of Minnesota-Duluth. - Budget includes potentially ineligible item: some portion of \$15,000 for GIS workstation. - Wildlife
12	026-A	8		52	Tree Retention Following Harvest: Maximizing Benefits for Wildlife	\$232,310	Project assesses effectiveness of MFRC tree retention guidelines in sustaining Minnesota's wildlife populations. Results will quantify and evaluate impacts of leave tree configurations on bird, small mammal, and amphibian diversity.	U of MN - Duluth NRRI	Niemi, Gerald	- I am not convinced that "leave trees" make sense but the forestry industry needs data.	- Forestry
13	006-A	7		80	Sentinel Lakes Monitoring and Data Synthesis	\$401,623	This project sustains intensive monitoring and multidisciplinary research on Minnesota's 25 Sentinel Lakes; data integration and synthesis will enhance understanding of how lakes respond to large-scale environmental stressors.	MN DNR	Tremel, Melissa	- A continuation of a project that has already provide much useful information. We do need to discuss how long we will support continuation.	- Related open appropriations: ML 2013 - Sustaining Lakes in a Changing Environment - Phase II = \$1,200,000 (expires 06/30/2016). - Budget includes \$28,173 for "Direct and Necessary Expenses". - Water

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14	011-A	7		71	Assessing Vegetations Control on Minnesota's Groundwater	\$212,964	Plant response to climate affects groundwater, but current groundwater recharge maps omit this link. Proposed statewide assessment tool predicts vegetation growth and groundwater recharge impacts under climate and land-use change.	U of MN	Ng, Gene-Hua (Crystal)	- This is an important missing element in understanding Minnesota's Groundwater flux. We have heard about the risk to hydrology from the loss of Ash trees, this is a more comprehensive look at the entire vegetative effect on our groundwater.	- Budget includes potentially ineligible item: \$3,000 for desktop computer.
15	013-A	6		68	Insecticide Exposure Risk of Wildlife on Public Grasslands	\$263,299	We will investigate exposure risk of grassland wildlife to soybean aphid insecticides with known toxicity to birds and beneficial insects. Results will guide management of grasslands in Minnesota's farmland regions.	MN DNR	Davros, Nicole	- Need to define which pesticides and should probably include the fungicides and the means of application, seed coatings, ground spraying, and crop dusting.	- Budget includes \$4,799 for "Direct and Necessary Expenses". - Wildlife - Pollinators
16	017-A	6		67	Promoting Prairie Pollinators: Bee Diversity in Fragmented Prairies	\$598,569	We will conduct an unprecedented survey of bee pollinators in prairies. We will identify factors that prevent pollinator communities from persisting in native prairie fragments and establishing in restored prairies.	U of MN	Moeller, David		- Budget includes house rental in western MN at \$6,000/month. - Travel budget includes request to rent vehicles and pay for fuel rather than mileage rate. - Proposed work is partly duplicative of current ENRTF-funded DNR wild bee survey. Differences include increased # of site comparisons, expanded geographic range, and additional analysis of site size, site isolation, and bee and plant relationships. - Wildlife - Pollinators
17	031-A	6		39	Habitat Use of Minnesotas Rarest Rodent	\$90,062	Project will assess northern bog lemming habitat use and connectivity in order to mitigate the deleterious effects of climate change on lemming populations	Leech Lake Band of Ojibwe	Mortensen, Steve	- I would advocate for this as a low cost project that would be worthwhile.	- Wildlife
18	012-A	5		70	State Spring Inventory for Resource Management - Phase 2	\$518,499	Springs are natural points of groundwater discharge. This project continues work to systematically inventory springs statewide to provide fundamental data needed to maintain spring flows and protect groundwater dependent resources.	MN DNR	Falteseik, Jan		- Related open appropriations: ML 2014 - State Spring Inventory for Resource Management and Protection" = \$200,000 (06/30/2017) - Budget includes designated contract: \$15,000 for MN Geological Survey; \$20,000 for MN.IT - Budget includes \$46,506 for "Direct and Necessary Expenses". - Water resources data - Statewide natural resources dataset

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19	018-A	5		67	Minnesota: How Much Water? How is it Changing?	\$702,231	Accurate water storage estimates (groundwater, soil moisture, streams, lakes, wetlands) are essential to sustainable water management. We will integrate satellite monitoring with traditional ground-based measurements to improve water storage estimates.	U of MN	Nieber, John	- USGS participation brings leveraged dollars. Statewide groundwater modeling and storage estimates do not now exist and would be a useful planning and management tool.	- Budget includes designated contract: \$129,600 for USGS - Water
20	023-A	5		60	Protecting Native Brook Trout: Temperature, Streamflow and Hydrogeology	\$119,858	Advances in temperature measurements using fiber optic cables (distributed temperature sensing) are used to evaluate links between southeastern Minnesota stream temperature, trout habitat and bedrock hydrogeology.	Minnesota Geological Survey	Tipping, Bob		- Budget includes designated contract: \$8,300 for MN DNR; \$12,800 for Oregon State University
21	021-A	4		63	Past and Future of Minnesota's Coldwater Fish Habitat	\$670,335	We will identify the causes of loss of coldwater fish in Minnesotas lakes, predict the future status of lake habitats, and make recommendations for preserving coldwater fish for the future.	U of MN - Duluth NRRI	Reavie, Euan		- Budget includes designated contract: \$20,000 for St. Croix Watershed Research Station; NRRI for \$500 - Budget includes \$3,187 for conference attendance.
22	015-A	3		68	Emerald Ash Borer and Black Ash: Wildlife Impacts	\$334,218	Project assesses impacts of emerald ash borer and adaptive management on wildlife diversity in black ash forests. Results will quantify impacts on wildlife diversity and develop recommendations for mitigation.	U of MN - Duluth NRRI	Niemi, Gerald		
23	010-A	2		71	Microbes at SNAs: Preservation of Minnesotas Biodiversity	\$417,324	We will create a foundational state-wide atlas and database linking microbial and plant biodiversity, which will significantly enhance our ability to understand, preserve, and manage Minnesota's diverse ecosystems.	U of MN	Kennedy, Peter		- Budget includes designated contract: \$50,200 for Science Museum of Minnesota; \$39,800 for Bell Museum of Natural History. - Travel budget includes both vehicle rental and mileage fee for vehicle - Statewide natural resource dataset
24	024-A	2		56	Biogeographic Characterization of Antibiotics Produced in Minnesota Soils	\$171,858	Antibiotics produced by soil bacteria are an under-appreciated natural resource. We aim to systematically characterize the capacity of Minnesota soils to yield new antibiotics for biocontrol and clinical applications.	U of MN	Smanski, Michael	- A little understood aspect to our ecological foundation. It looks like the team of U of M and Mayo could shed some light on this.	- Budget includes designated contract: \$5,000 for Mayo Clinic Molecular Biology Core; \$5,000 for UMN Biomedical Genomics Center; \$5,000 for UMN MS Core; \$5,000 for UMN NMR Core - Potential patent and/or related future income to ENRTF per 116P.10.
25	034-A	2		32	Protecting Minnesotas Livestock, Wildlife and Farmers	\$739,400	This project will provide a mechanism to educate and support farmers in using nonlethal methods for wolf-livestock conflicts. It will compare nonlethal to lethal to no interventions on wolf conflicts.	Howling For Wolves	Hackett, Maureen		- Request includes potentially ineligible budget items: \$7,500 for "work vehicle" and \$6,000 for "transportation vehicle" (also includes \$5,000 for mileage in addition); \$240,000 for guard dogs; \$6,000 for incentive payments for farmers to meet with the project organization; <u>undesignated portion of \$60,000 for media and public relations.</u>
26	019-A	1		65	Prescribed Burning to Improve Management for Brushland Species	\$267,623	Brushlands provide critical habitat for >250 wildlife species. We compare effects of spring, summer and fall burns on brushland vegetation, providing much needed management guidelines for this key wildlife habitat.	U of MN	Montgomery, Rebecca		- Budget includes designated contract: \$58,500 for MN DNR

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27	020-A	1		63	Enhancing Understanding of the Minnesota River Ecosystem	\$573,447	This project will accelerate collection of baseline data to enhance understanding of the Minnesota River ecosystem, measure future impacts of an ever-changing climate and landscape, and guide future management efforts.	MN DNR	Lauer, Jack		- Budget includes \$38,852 for "Direct and Necessary Expenses". - Budget includes potentially ineligible items: \$3,000 for computers and \$3,000 for misc replacement equipment. - Travel budget includes mileage fee of \$0.73/mile, which exceeds Federal mileage rate.
28	022-A	1		60	Scientific Asset Management: Digital Preservation for Future Generations	\$406,218	This project will build the core infrastructure to store and organize DNRs scientific information assets into standard digital formats for easier search, retrieval, public access, and long-term preservation.	MN DNR	Holdsworth, Andrew	- This is a basic DNR administrative function that I don't believe should be funded by ENRTF. This is a capital and information tech cost that should be included routinely in the General Fund request.	- Budget includes \$24,218 for "Direct and Necessary Expenses".
29	025-A	0		52	Causes and Effects of Human-Related Stress on Mammals	\$319,128	Determine what human activities and developments cause stress in bears and their corresponding consequences. Work with the MN DNR to apply knowledge towards reducing stress in mammal species of concern.	U of MN	Ditmer, Mark		- Medtronic-donated devices are previously used so full value of a new device is not applicable as a leverage. - Travel budget includes both vehicle rental and mileage fee for vehicle.
30	027-A	0		44	Wildlife Health and Reproduction Among Different Quality Habitats	\$484,000	We will determine if fragmented agricultural and urban grasslands/wetlands contribute a significant percentage of total reproductive output for a common bird in comparison to more contiguous habitat.	U of MN	McGaugh, Suzanne		- Wildlife
31	028-A	0		42	Tracking Minnesota Plant Life Below Winter Snow	\$180,000	This project will combine automated measurements of conditions below snow and plant photosynthesis to develop a model of Minnesota plant activity during the winter.	U of MN	Stanton, Daniel		
32	029-A	0		41	North Shore Wildlife Conservation Toolset	\$284,113	We will develop a Conservation Toolset allowing major North Shore landowners to implement high priority conservation actions for rare birds, amphibians and reptiles, including innovative new monitoring techniques.	Great Lakes Ecological Services, LLC	Casper, Gary		- Budget includes designated contract: \$24,000 for Grand Portage National Monument; \$15,000 for Grand Portage Band of Lake Superior Chippewa. - Applicant is private firm. - Data would be need to be public and integrated into MN Biological Suvery. - Wildlife
33	030-A	0		39	An Integrated Population Model for Minnesota Mallards	\$37,013	An integrated population model for Minnesota mallards that will synthesize survey, banding, and harvest data from all periods of the annual cycle to improve our understanding of mallard management.	U of MN	Arnold, Todd		- Budget includes \$6,000 for journal publication fees. - Game and Fish Fund? - Wildlife

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34	032-A	0		36	Mobilizing Vital Insect Baseline Data for Northeast Minnesota	\$210,757	We will database the holdings of the University of Minnesota Duluth Insect Collection so that citizens and scientists can use the data to evaluate environmental changes and guide management decisions.	U of MN	MaKarrall, Rachel		
35	033-A	0		33	Measuring Access to Natural Resources and Recreation	\$261,049	This project will measure access to Minnesotas natural resources and recreation opportunities. The resulting data, maps, and reports will provide a detailed understanding of how access varies geographically and demographically.	U of MN	Owen, Andrew		
36	B. WATER RESOURCES (55 Proposals / Subtotal = \$23,681,203)										
37	037-B	13		80	Tracking and Preventing Harmful Algal Blooms	\$764,300	Harmful algal blooms, which greatly reduce the ecological and recreational value of many Minnesota lakes, have been increasing in recent years. We will determine their root causes and target solutions.	Science Museum of Minnesota - St. Croix Research Station	Engstrom, Daniel	- Very expensive. - I like it as emerging issues.	- Budget includes designated contract: \$100,000 for USGS - Addresses research questions from 06/25/15 LCCMR presentation of: 1. Improving ability to predict when and where blue-green blooms will occur ("early warning"); 2. Determining what conditions favor the production of blue-green algae; however not specifically production of toxins; 3. Potentially examining what factors can be controlled or moderated. - Blue-green algae - Potential emerging issue.
38	036-B	12		81	Restoring Native Mussels for Cleaner Streams and Lakes	\$744,798	Native mussels are important to streams but have been lost. Clean up today allows for their return but is constrained by dams. Propagation and reintroduction will return mussels to streams.	MN DNR	Davis, Mike	- Quite expensive, native mussels but we don't want Zebra mussels, which also filter water, what's the difference? - With recent data on the severe impact that crop fungicides have on native mussels this is a critical issue.	- Request includes capital expenditures over \$5,000: \$16,000 for Aquaneering fish habitat system; \$5,000 for water transport trailer and tank. - Budget includes \$10,000 for out-of-state travel. - Budget includes \$58,948 for "Direct and Necessary Expenses"

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39	038-B	12		80	Increasing Harmful Algal Blooms in Minnesota Lakes	\$395,249	Using field and laboratory measurements we will provide state agencies with a predictive model for harmful algal blooms, and communities with a web-based interface for monitoring algae in Minnesota lakes.	U of MN - St. Anthony Falls Laboratory	Hondzo, Miki	- Emerging issue - Not as expensive as 37-B, but what's the difference and can these two join together? - Candidate for emerging issues	- Budget includes capital expenditures over \$5,000: \$8,792 for laboratory fluorometer - Budget includes \$7,500 for conference attendance and some unidentified portion of \$6,025 for journal publication fees. - Request includes potentially ineligible items: \$12,300 for travel/lodging for citizen work group; some undesignated portion of \$6,025 for food for citizen gatherings. - Addresses research questions from 06/25/15 LCCMR presentation of: 1. Improving ability to predict when and where blue-green blooms will occur ("early warning"); 2. Determining what conditions favor the production of toxins; 3. Maybe examining what factors can be controlled or moderated; 4. Maybe determining if toxins persist and when water becomes safe. - Blue-green algae - Potential emerging issue.
40	042-B	11		76	Morrison County Performance Drainage and Hydrology Management	\$261,000	Morrison County will conduct an assessment of drainage infrastructure; develop hydrology restoration priorities and a county-wide performance drainage ordinance to stem the negative impacts of rapid land use changes that impact hydrology.	Morrison SWCD	McLennan, Helen	- Why would we do this? Expensive. - I think that Morrison county benefitted parties need to have skin in the game with a larger contribution.	- Equipment/Tools/Supplies needs better breakdown and may include potentially ineligible expenses: \$75,000 for "Trimble survey laser equipment/software/vehicle/laptop" - Travel budget is \$11,000 for "fuel/vehicle maintenance"
41	035-B	10		89	Neonicotinoid Insecticide Effects on Aquatic and Soil Communities	\$412,000	Neonicotinoid insecticide breakdown products produced in water and plant leaves will be identified and their toxicity to soil and aquatic species tested to allow informed use and management.	U of MN	Arnold, William	- Add fungicide, emerging issue - I like the emerging issues idea.	- Neonicotinoids - Potential emerging issue.
42	050-B	10		68	Protecting Drinking Water Aquifers-Phase 2	\$433,400	Building on an ongoing study, two additional sites are needed to measure infiltration variability through clay confining units. The complete study will provide information to protect important drinking water aquifers.	U. S. Geological Survey	Bumgarner, Johnathan	- Concern about more attack on irrigators. - This issue is critical to understanding the hydrology in the metro area and in the glaciated terrain to the west.	- Related open appropriations: ML 2014 - Protection of State's Confined Drinking Water Aquifers = \$394,000 (expires 06/30/17) - Budget includes designated contract: \$151,000 for USGS; \$34,000 for MN Geological Survey
43	044-B	9		74	Salt Impacts to Minnesota Lakes, Rivers and Groundwater	\$497,276	This project will quantify the current water softening salt loads in Minnesota, assess alternative softening materials and methods and quantify the transport of de-icing and softening salt through the soil.	U of MN	Gulliver, John	- Expensive. - This group is very experienced and competent.	- Budget includes designated contract: \$66,300 for Connie Fortran; \$29,111 for Peter Weiss

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44	049-B	9		70	Understanding Bedrock Fracture Flow to Improve Groundwater Quality	\$183,627	We will use new techniques of borehole testing and rock fracture mapping in the Twin Cities to achieve a better understanding of groundwater flow through fractured bedrock, improving groundwater management.	Minnesota Geological Survey	Runkel, Anthony	- The science of hydrology in fractured bedrock and the issue of contaminant transport relative to groundwater quality has finally advanced to where this research could be groundbreaking study for understanding the hydrology of the Twin Cities Basin. University of Geleph is world renowned for this type of research. I also like the fact that Twin Cites consultant Braun Intertec has lent their experience to the project without cost.	- Budget includes designated contract: \$40,000 for University of Guleph, Ontario
45	083-B	9		46	Integrating Targeted Watershed Planning Tools with Citizen Involvement	\$169,108	To demonstrate targeted subwatershed conservation planning and innovative citizen engagement to facilitate improvements in one of the most degraded watersheds in the state.	Mankato State University - Water Resources Center	Musser, Kimberly	- Rural and low cost, want more details on what they'll do. - This is the right scale to do this work. Leadership from MSU would be a welcome addition to the watershed management needs of southern MN.	
46	045-B	8		73	Assessing Wetland Restorations for Improved Water Quality	\$420,000	We will quantify the environmental benefits of sediment removal and native plant communities in wetland restorations by measuring reductions in nitrogen and phosphorus delivery to groundwater and surface water.	U of MN	Finlay, Jacques	- Expensive. - There is a large body of literature on the issue of the effectiveness of wetlands, the cycle and flux of nutrient uptake and discharge, and the need for vegetative harvesting in order to assure nutrient benefits.	- Budget includes \$1,000 for journal publication fees
47	046-B	8		71	Reducing Salt and Metal Removal Costs with Microbes	\$596,599	To use recently discovered microbes from Minnesotas Soudan Iron Mine to reduce the cost of removing salts and metals from subsurface and aquatic water resources	U of MN	Bond, Daniel	- Good idea, natural methods, but is expensive	- Related open appropriations: ML 2013 - Harnessing Soudan Mine Microbes: Bioremediation, Bioenergy and Biocontrol = \$838,000 (expires 06/30/16) - Budget includes \$3,000 for journal publication fees. - Budget includes capital expenditures over \$5,000: \$47,800 to build 8 water treatment reactors. - Potential patent and/or related future income to ENRTF per 116P.10. - Sulfates

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48	047-B	8		71	Innovative Assessment of Minnesotas Surface Waters from Space	\$458,000	This project advances statewide assessment of water quality using new satellite sensors to measure major water quality indicators in Minnesota's 10,000 lakes and rivers at high frequency and low cost.	U of MN	Finlay, Jacques	- The new satellite platforms available are under-utilized in Minnesota. This would bring us up to date with the most current remote sensing technology in a way that could make the data widely accessible.	- Budget includes some undesignated portion of \$9,000 for conference attendance and \$2,000 for journal publication fees. - Travel budget includes both vehicle rental and vehicle mileage fees. - Budget includes capital expenditures over \$5,000: \$20,000 for YSI Sensor
49	052-B	8		68	Perfluorochemical Contamination Effects on Amphibians and Wetland Ecosystems	\$250,954	Chemical contamination puts aquatic ecosystems at risk. We will measure perfluorochemical contamination in wetlands and effects on frog survival/ development to identify risks to declining amphibian populations and wetland ecosystems.	U of MN - Duluth NRRI	Olker, Jennifer	- Suspicious. - Because these chemicals are widely used in waterproofing it is likely they could end up in wetlands affecting amphibians.	
50	082-B	8		46	Hydrologic Trends: Identify, Manage and Adapt	\$682,000	Identify watershed most impacted by altered doxology and evaluate an array of scenarios to restore hydrology for cost, compatibility, and effectiveness.	Freshwater Society	Gerber, Darrell	- The partnerships here are top notch and the FWS has a good track record of public involvement providing information and motivating action.	- Budget includes designated contract: \$240,000 for USGS; \$30,000 for Science Museum of MN; \$223,000 for Rebecca Kluckhohn and Joel Toso; \$50,000 for UMN - Budget includes potentially ineligible expense: salary for executive director = \$44,000
51	043-B	7		75	Membrane-Based Process for Decentralized Drinking Water Production	\$191,304	We will develop a low-energy, membrane-based process to produce drinking water from untreated surface waters polluted with contaminants of emerging concern (e.g., pesticides and pharmaceuticals), and heavy metals.	U of MN	Romero-Vargas Castrillón, Santiago		- Budget includes capital expenditures over \$5,000: \$63,795 to construct one lab-scale forward osmosis system and membrane distillation system and one forward osmosis and membrane distillation pilot scale water purification unit. - Potential patent and/or related future income to ENRTF per 116P.10.
52	051-B	7		68	Tiny Cheap Sensors for Pollutants Monitoring in Waters	\$508,878	This project is to develop very tiny, cheap, fast, sensitive sensors and wireless sensor networks, a new approach for pollutants continuous monitoring in lakes and rivers in Minnesota.	U of MN	Cui, Tianhong	- Seems far fetched. - More and more we are seeing boutique designed microsensors doing important work. This is a groundbreaking proposal from a U of M lab with the capacity and equipment to make new advancements.	- Potential patent and/or related future income to ENRTF per 116P.10. - Timeline requirements are unclear - somewhere between 3 and 3.5 years.
53	054-B	6		67	Engineered Biofilter for Sulfate Removal from Mine Waters	\$439,817	This project will develop an efficient, low-cost, biomass-derived adsorbent material used in bioactive filters to clean mining impacted waters from sulfate and metals for the protection of Minnesota's water resources.	U of MN	Behrens, Sebastian	- Seems expensive, why so much?	- Budget includes designated contract: \$12,000 for UMN Genomics Center; \$34,000 for UMN Research Analytical Lab. - Potential patent and/or related future income to ENRTF per 116P.10. - Sulfates

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54	061-B	6		65	Vanishing Winter: Effects on Lakes Small to Large	\$600,000	Climate-driven declining ice cover on Minnesota lakes from small to large will be studied using state of the art science tools and public involvement.	U of MN - Large Lakes Observatory	Sterner, Robert	- Suspicious. - This fills a fundamental gap in knowledge about Minnesota ecology. There are plants, insects and other invertebrates, and small mammals that I have seen thrive under the snow. It would be good to understand this better.	- Related open appropriations: ML 2013 - Evaluation of Lake Superior Water Quality Health = \$600,000 (expires 06/30/16) - Request includes \$5,000 for "Educator support, busing, and subsistence" - Budget amount requested is \$600,000 on cover page and \$599,590 on budget page.
55	070-B	6		59	Predicting Climate Change Effects on Mercury in Peatlands	\$643,088	We seek to determine the effects of increased temperatures on release of mercury from Minnesota peatlands, which could greatly exacerbate existing human health problems associated with the consumption of fish.	U of MN	Nater, Ed	- Suspicious.	- Budget includes \$18,000 for out of state travel.
56	073-B	6		54	Removal of Nitrates from Minnesota Waters	\$198,256	We will develop, demonstrate, and disseminate a simple, effective and inexpensive technology to remove nitrates from drinking water, a major problem in Minnesota today.	U of MN	Wackett, Lawrence	- Good price, but somewhat unsure. - This is something that most rural Minnesotans in SE and Central Sands will need within the next decade.	- Budget includes designated contract: \$40,000 for UMN Biotechnology Institute - Potential patent and/or related future income to ENRTF per 116P.10. - Unclear how proposed technology would be deployed if developed.
57	040-B	5		78	Quantifying Bacteria for Better Wastewater Treatment Process Control	\$398,592	This project will characterize and quantify the nutrient-removing microorganisms used for municipal wastewater treatment to help provide better process control, as needed to meet future regulations.	U of MN	LaPara, Timothy	- Using natural bacteria for breakdown is good.	Budget includes designated contract: \$37,500 for UMN Genomics Center
58	056-B	5		67	On-Farm Prairie Filter Strips: Optimizing Water Quality Benefits	\$340,552	Establish a research and demonstration program to evaluate on-farm prairie filter strips – an innovative variation of buffer strips that economically and strategically protects water quality.	U of MN - Water Resources Center	Sleeper, Faye	- Good to look at with buffer strips	- Budget includes designated contract: \$17,000 for Land Stewardship Project
59	060-B	5		66	Sulfate/Wild-Rice Municipal Wastewater Treatment Plant Alternative Analysis	\$180,000	Analyze alternatives for improved treatment of sulfate and salty parameters at municipal wastewater plants. This analysis will inform implementation of the wild rice and sulfate and other water quality standards.	MPCA	Kyser, Scott		- Entire budget request of \$180,000 is for contracts to be determined through RFP. - Sulfates
60	039-B	4		79	Is Minnesotas Groundwater Safe to Drink?	\$299,829	Groundwater is used by more than 90% of Minnesotas public water systems, serving more than 75% of the population. This project will determine the microbiological quality of Minnesotas groundwater resources.	U of MN	Hozalski, Raymond	- Seems like part of the attack on using irrigation systems. - This project should be married to the current MN Dept. of Ag efforts to screen wells statewide for nitrates.	- Budget includes designated contract: \$20,000 for UMN Genomics Center

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61	053-B	4		68	Eliminating Contaminants to Protect Endangered Native Fish/Mussels	\$287,448	Tonalide and galaxolide are two of the most commonly detected wastewater contaminants. UV-treatment will be evaluated to remove these suspected endocrine disruptors and reduce toxicity to native fish and mussels.	University of St. Thomas	Wammer, Kristine	- Musks and fragrances get past the wastewater treatment process? This would be a big breakthrough if they could be inexpensively removed.	- Budget includes capital expenditures over \$5,000: \$11,085 for UV photoreactor - Budget includes designated contract: \$87,017 for Gustavus Adolphus; \$33,000 for UMN - Crookston
62	055-B	4		67	Novel Algae Bioreactors for Nitrogen and Phosphorus Removal	\$350,000	Novel algae bioreactors will be developed to reduce nitrogen and phosphorus concentrations in agricultural runoff water. The reactors will be installed and operated in the fields to improve water quality.	U of MN	Ishii, Satoshi	- Might be intriguing.	- Budget includes designated contract: \$5,800 for UMN Genomics Center; \$2,700 for UMN Soil and Water Testing Lab
63	088-B	4	1	38	Surface Water Bacterial Treatment System Pilot Project	\$991,600	Reduce bacteria and nutrient loads to Vadnais Lake, a drinking water supply reservoir, through implementation of a subsurface constructed wetland and its viability as a BMP for statewide use.	Vadnais Lake Area Water Management Organization	Corcoran, Brian	- Expensive, maybe interesting if it is a natural bacteria. - Bacteria is a threat to a large portion of Metro water users requiring expensive and bad tasting treatment. If this system could abate the need for treatment is would be worth the effort.	- Budget includes some undesignated portion of \$52,000 for conference attendance and journal publication fees. - TMDL
64	041-B	3		76	Sponge Technology to Remove Mercury from Wastewater/Surface Waters	\$146,609	We propose an efficient and cost-effective sponge technology to remove mercury from wastewater and surface waters, and improve water quality and aquatic life in Minnesota	U of MN	Abbas, Abdennour	- Good like 40-B, and is less expensive	
65	057-B	3		66	Innovative Methods for the Removal of Trace Phosphate	\$345,405	Phosphate is an environmental pollutant, including at trace levels. Current methods for removal are limited, and we proposed an innovative technology to capture efficiently, cost-effectively trace P from waste waters.	U of MN	Elias, Mikael		- Potential patent and/or related future income to ENRTF per 116P.10.
66	063-B	3		63	On-Site Removal of Metal-Sulfide Particles from Mining Waters	\$497,758	This project will develop a clean real-time sensing and on-site chemical treatment technology for the removal of metal sulfide contaminates from Minnesota waters impacted by copper-nickel-sulfide mining.	U of MN	Dutcher, Cari		- Potential patent and/or related future income to ENRTF per 116P.10. - Sulfates
67	089-B	3		27	Shagawa Lake Contaminants of Interest: Source, Fate, Movement	\$171,635	This proposed project will augment an existing USGS database, provide a comprehensive contaminant of interest characterization of a vital local water resource, and provide unique student research and project experiences.	Vermilion Community College	Tedrow, ONiell	- Low cost, want to know more of what they will actually do.	

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68	058-B	2		66	Forest to Potatoes Conversion and Sustainable Water Use	\$286,658	We will measure and model threats to water quantity and quality under forest to potato conversion in north-central Minnesota, and distribute tools useful to stakeholders for sustainable water resource management.	U of MN	Griffis, Timothy	- This should be the subject of an EIS for land conversion paid for by the potato companies	- Budget includes capital expenditures over \$5,000: \$54,447 for 2 eddy flux measurement systems.
69	064-B	2		63	Vegetated Filter Strips as Optimized Water Purification Systems	\$278,744	Plant-soil amendments will be evaluated to determine which combination creates a soil microbial community in vegetated filter strips that enhances the loss of nitrates, sediments, polycyclic aromatic hydrocarbons, and nanoparticles.	U of MN	Nannenga, Katy	- Good with buffer strips, good price.	- Budget includes designated contract: \$38,016 for UMN; 33,060 for University of ND - Travel budget includes vehicle rental.
70	065-B	2		62	Evaluating Oils Toxic Effects on Water Resources	\$346,470	Evaluate the toxicology of natural waters impacted by crude oil spills using innovative high-throughput, high-content biological assays together with current and historical water chemistry data to evaluate health hazards.	University of St. Thomas	McGuire, Jennifer		- Budget includes designated contract: \$121,000 for USGS and MN State University - Budget includes \$3,000 for conference attendance
71	067-B	2		60	Reducing Municipal Sulfate Discharges to Wild Rice Waters	\$244,181	A new wild rice sulfate standard might require cities to reduce sulfate discharges. Engineered treatment is expensive. This project would create a tool for cities to examine alternative techniques.	U of MN	Baker, Lawrence		- Budget includes \$700 for conference attendance. - Sulfates
72	076-B	2		51	Production of Value-Added Materials from Wastewater	\$946,431	We will develop an algae-based approach to water treatment, and employ synthetic biology tools to produce value-added products.	U of MN	Zhang, Kechun	- Expensive.	- Related open appropriations: ML 2014 - Demonstrating Innovative Technologies to Fully Utilize Wastewater Resources = \$1,000,000 - Related ENRTF funding history not indicated in budget. - Potential patent and/or related future income to ENRTF per 116P.10.
73	077-B	2		50	Prioritizing Threats and Actions in the Mississippi Headwaters	\$396,000	This project will guide the use of private and public resources necessary to implement conservation activities that are cost effective and represent positive return on investment to the public, private industry and local communities.	The Nature Conservancy	Biske, Richard		
74	086-B	2		42	Emerging Chemical Detection in Animals and the Environment	\$834,878	This project aims to determine levels of emerging and unregulated pollutants, termed micropollutants, in subsistence species and the environment in and around the Grand Portage Indian Reservation, Cook County, Minnesota.	Grand Portage Band of Lake Superior Chippewa	Moore, Seth	- Expensive.	- Budget includes designated contract: \$220,337 for UMN - Unclear what contaminants project is specifically aiming to sample and analyze for.
75	059-B	1		66	Evaluate and Quantify Streamflow Changes Affecting Aquatic Life	\$300,000	The project will evaluate the impacts of hydrologic modification on fish and macroinvertebrate communities in rivers and streams using Minnesota streamflow and biological monitoring data.	MPCA	Johnson, Gregory		- Budget includes designated contract: \$100,000 for UMN; \$200,000 for USGS - Entire budget request of \$300,000 is for contracts.

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76	062-B	1		64	Modular Biological Phosphorus Recapture for Field Application	\$618,565	This project aims to remove excess phosphorus from impaired waters through the use of an algal biofilm bioreactor, and to utilize the resulting algal cells as a suitable compost.	U of MN	Barney, Brett	- May be interesting, but expensive.	- Request includes capital expenditures over \$5,000: \$25,000 for "Ion Chromatography System" and \$50,000 to "Prototype Bioreactor". - Budget includes \$3,000 for journal publication fees. - Potential patent and/or related future income to ENRTF per 116P.10. - Blue-green algae
77	066-B	1		61	Virtual Bioreactor for Improving Treatment of Minnesotas Wastewaters	\$536,916	A virtual bioreactor, to accurately simulate activated sludge wastewater treatment processes, will be created. Engineers will use this powerful tool to optimize treatment plant performance and improve Minnesota's water quality.	U of MN	Mott, Henry	- Good for natural wastewater treatment, but seems expensive.	- Budget includes \$500 for conference attendance. - Water
78	068-B	1		60	Minnesota Resources to Remove Pollutants and Enhance Crop Production	\$505,833	We will use reed-sedge peat, a Minnesota natural resource, to prevent nitrogen and phosphorus run-off from agricultural drainage and use the recovered peat as a fertilizer for enhanced crop production.	U of MN	Sadowsky, Michael	- Quite expensive.	- Budget includes designated contract: \$80,000 for Science Museum of MN and Bell Museum) - Budget includes \$2,000 for journal publication fees. - Equipment/Tools Supplies budget has inadequate detail: \$15,000 for "equipments for sample collection and nutrient monitoring"; \$60,000 for "Peat and laboratory supplies: \$20,000/year x 3 years" - Relationship between project and proposed exhibits at Science Museum and Bell Museum is unclear.
79	071-B	1		58	Reducing Early Spring Nutrient Inputs to Agricultural Streams	\$482,563	This project will determine the importance of early spring nutrient inputs to agricultural streams, and evaluate alternative best management practices to reduce these inputs.	U of MN	Baker, Lawrence		- Budget includes \$3,000 for conference attendance. - Sulfates
80	072-B	1		55	St. Croix Harmful Algae Prediction and Alert System	\$312,280	Partnerships will develop a harmful algae bloom prediction and public alert system to better protect human health and the water quality of the St. Croix River.	St. Croix River Association	Ryun, Deb		- Budget includes designated contract: \$222,280 for USGS - Budget includes undesignated portion of \$3,500 for conference attendance. - Might address (not clear) research questions from 06/25/15 LCCMR presentation of: 1. Maybe (?) improving ability to predict when and where blue-green blooms will occur ("early warning"); 2. Maybe (?) determining what conditions favor the production of blue-green algae; however not specifically production of toxins. - Blue-green algae
81	075-B	1		51	Understanding the Role Sediment plays on Lake Eutrophication	\$345,207	The long-term strategy of this project is to use data collected from this initial phase to design potential remediation strategies that could be used to clean eutrophic Minnesota lakes.	U of MN	Pagliari, Paulo	- Maybe, if this project is not just to be anti-agriculture.	

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82	078-B	1		50	Riparian Buffer Optimization: Modeling Determinants of Buffer Adoption	\$390,093	This project will create a statewide riparian buffer optimization tool (RiBOT) to examine riparian lands that are ecologically, economically and socially suitable for buffers by modeling geospatial and survey data.	U of MN	Davenport, Mae	- Good buffer options, but can we merge some of these buffer projects?	
83	080-B	1		48	Mitigating Nitrogen to Protect Aquatic and Human Life	\$461,000	We will determine if nitrogen in water can be reduced by increasing plant abundance in shallow lakes, and assess whether nitrate-nitrogen is an endocrine disruptor for aquatic organisms.	University of St Thomas	Zimmer, Kyle	- Expensive, concerned of attack on agriculture.	- Budget includes designated contract: \$217,000 for UMN; \$22,000 for UC-Davis
84	048-B	0		70	Triclosan Impacts on Wastewater Treatment - Phase 2	\$399,063	This project will quantify benefits (reduced antibiotic resistance and triclosan/dioxin loads to the environment) and costs (increased usage of alternative antibacterials) of Minnesotas pending ban of triclosan in cleaning agents.	U of MN	LaPara, Timothy		- Related open appropriations: ML 2014 - Triclosan Impacts on Wastewater Treatment = \$380,000 (expires 06/30/17) - Budget includes \$4,500 for out-of-state travel. - Budget includes designated contract: \$15,000 for UMN Genomics Center; \$12,500 for UMN Cancer Center
85	069-B	0		60	Impacts of Invasive Earthworms on Water Quality in Minnesota	\$406,110	This study determine how invasive earthworms affect movements of sediment, pollutants, and nutrients from land to wetlands or other water bodies. The scientific findings will inform water resource managers.	U of MN	Yoo, Kyungsoo	- What are invasive earth worms? Is there really a water quality issue with them?	- Budget includes designated contract: \$15,000 for Stephen Sebestyen - Budget includes capital expenditures over \$5,000: \$43,000 for alpha spectrometer
86	074-B	0		52	Automated Lake and Groundwater Measurements	\$368,194	Real-time monitoring of Minnesotas lake-level and groundwater responses to climate and land-use change with new, automated, "smart" sensor technologies; expanding and improving upon volunteer lake-level network; mapping lake contamination susceptibility.	U of MN	Wickert, Andrew	- Not sure we need this much automation and subject to set a standard.	- Budget includes \$2,000 for journal publication fees. - Budget includes potentially ineligible expenses: \$1,200 for internet service.
87	079-B	0		48	Development of Models for Oil Spill Trajectory Prediction	\$300,000	We propose to develop a computer simulation tool for oil slick trajectory prediction in lakes, for Minnesota to be better prepared for hazardous water contamination events such as oil spill.	U of MN	Shen, Lian	- Not needed.	
88	081-B	0		46	Variable Winter Thermal Regimes and Managing Trout Streams	\$641,907	We will develop predictive models relating to thermal regimes in trout streams during winter, will refine new molecular techniques to identify trout winter diets, and develop outreach and communication programs.	U of MN	Ferrington, Leonard		- Budget includes \$6,000 for journal publication fees. - Travel budget includes both vehicle rental and vehicle mileage fee.
89	084-B	0		45	Mercury in Minnesota Ducks, Potential for Consumption Advisories	\$358,403	There is potential that ducks reared in mercury-contaminated areas of Minnesota are contaminated. We propose to determine the extent of contamination, and suggest the appropriateness of consumption advisories for Minnesotans.	U of MN	Simcik, Matt		

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90	085-B	0		45	Characterization of Glacial Lake Clay for Mitigative Uses	\$363,925	Characterize glacial lake clay from the western Lake Superior watershed to assess its potential as a low-permeability geotechnical material for Superfund/brownfield site restoration/redevelopment projects and for sulfide-bearing stockpile mitigation applications.	U of MN - Duluth NRRI	Zanko, Lawrence		- Budget includes \$1,800 for conference attendance.
91	087-B	0		41	Integrated Water Management for Hugo, Lino Lakes, Rosemount	\$698,700	Research and develop Integrated Water Management Plans for the Cities of Hugo, Lino Lakes, and Rosemount by evaluating water reuse pilot studies, groundwater modeling, economic implications, and emerging regulations.	City of Hugo, Lino Lakes, and Rosemount	Wallerstedt, Jamie	- Not appropriate for LCCMR.	- Project manager is not employed by sponsoring organizations. - Not clear who recipient of funds is intended to be; it appears to be a single consultant: WSB & Associates.
92	C. ENVIRONMENTAL EDUCATION (31 Proposals / Subtotal = \$8,599,103)										
93	092-C	12		70	Youth-Led Energy Action Projects in 50 Minnesota Communities	\$450,500	Youth Energy Summit (YES!) expands state-wide to complete over 200 new youth-led climate change mitigation and adaptation projects in over 50 Minnesota communities, culminating in a state-wide competition.	Prairie Woods Environmental Learning Center	Foster, Shelli-Kae	- This proven effective program has a good home with Prairie Woods ELC.	- Related open appropriations: ML 2014 - Youth-led Sustainability Initiatives in 40 Greater Minnesota Communities = \$350,000 (expires 06/30/16) - Budget includes designated contract: \$50,000 for St. John's University; \$50,000 for Laurentian Environmental Learning Center - Budget includes request for \$40,000 for school district reimbursement of costs for substitute teachers and transportation costs.
94	090-C	10		75	Minnesota Conservation Apprentice Academy	\$433,000	This program builds upon previous success, placing 30 students as interns in SWCD offices state-wide each year for two years, facilitating knowledge sharing between experienced professionals and students.	Board of Water and Soil Resources	Gieseke, Jenny		- Related open appropriations: ML 2014 - Minnesota Conservation Apprenticeship Academy = \$392,000 (expires 06/30/17) - Budget includes designated contract: \$427,000 for Conservation Corps MN
95	099-C	8	1	53	Expanded Wolves at our Door program	\$240,012	An expansion to all of Minnesota for the successful Wolves at our Door classroom education program.	International Wolf Center	Kline, David	- Very popular program.	- Related open appropriations: ML 2014 - Wolf Management Education = \$120,000 (expires 06/30/16)
96	105-C	8		45	Promoting Stewardship through Student Mentoring and River Monitoring	\$39,490	A partnership for inquiry-based learning focused on water quality, connecting agriculture and stewardship. University undergraduates mentor high school and middle school students who serve as citizen scientists monitoring local rivers.	Southwest Minnesota State University	Deaver, Emily		- Request includes approximately \$6,000 for bus transportation.
97	093-C	7		67	Hunters Choice: Alternative Ammunition	\$133,054	We will provide hunters with information on alternative hunting ammunition options and promote voluntary choice to use nontoxic ammunition and protect Minnesota's wildlife.	U of MN	Ponder, Julia	- Emerging issues candidate.	

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98	112-C	7		35	Master Water Steward Program Expansion	\$116,000	This program trains community volunteers to work with neighbors to install water management projects. We have certified 90 stewards and are receiving requests to expand outside the metro area.	Freshwater Society	Knapp, Peggy	- The water steward who graduated from the initial program have grown to be known community leaders with a water focus. This is the kind of program that can really help.	- Equipment/Tools Supplies budget has inadequate detail: \$5,000 for "program materials".
99	094-C	6		60	Standards-Based Dakota Indian Land Curriculum for 1,250 Students	\$197,104	Improve the capacity of 1,250 students to be better stewards of the land in Minnesota by learning about Dakota Indian values and environmental principles through a standards-based experiential multi-media curriculum.	Dakota Wicohan	Peterson, Teresa		- Budget includes designated contract: \$48,000 for Darlene St. Clair; \$24,000 for Teresa Peterson; \$18,000 for Heather Peters; \$10,000 for MN Valley History Learning Center; \$5,000 for MN Humanities Center; \$5,000 for St. Cloud State University; \$16,000 for Smythe Graphics
100	096-C	6		57	Creating Southwest Minnesota High School Student Wildlife Champions	\$147,400	The Zoo will engage high school students in critical prairie conservation projects by using its unique animal collection and state-of-the-art technology to deliver hands-on learning in 12 southwestern Minnesota schools.	Minnesota Zoo	Strecker, Carol	- The zoo events I have seen in outstate MN have been very well received and popular. They bring a lot of resources to this type of education.	
101	111-C	6		39	"Toasted" Birdhouse Market Readiness Test	\$117,846	To verify the performance and market readiness of bird nest boxes made from thermally modified Minnesota ash wood, while collecting pertinent bird conservation data, and delivering environmental education statewide.	U of MN - Duluth NRRRI	Hueffmeier, Ryan		
102	120-C	6		25	Connecting Every 4th Grader in State Parks	\$508,740	Connect Minnesota 4th graders to the outdoors and inspire a new generation to experience their states natural, cultural and recreation heritage, complimenting the NPS Every Kid in a Park program.	MN DNR	Conrad, Jennifer	- Transportation is the biggest barrier and might be a good investment for this age kids.	- Budget includes designated contract: \$40,000 for Conservation Corps MN - Request includes approximately \$460,000 for bus transportation. - Budget includes \$8,740 for "Direct and Necessary Expenses" - Final proposal did not submit budget document or respond to request to provide one. Draft version of budget used.
103	091-C	4		72	Improving Outdoor Classrooms for Education and Recreation	\$766,563	This new approach to outdoor classroom management will increase school-based environmental education, create healthy and safe spaces to learn outdoors, and reach 43,000 students and 2,200 teachers statewide.	MN DNR	Kerber, Amy Kay		- Budget includes designated contract: \$440,000 for Conservation Corps MN - Budget includes \$20,363 for "Direct and Necessary Expenses"
104	095-C	4		59	Environmental Education Best Practices Review	\$80,000	Environmental Education Best Practices Review will analyze Minnesotas investment in connecting youth to public lands and natural resources. Researchers will evaluate environmental education effectiveness and recommend best practices.	Wilderness Inquiry	Storck, Julie	- I'm interested to know if this is something that education leaders concerned with outdoor Ed and outdoor activity think they need. May be a critical need? Maybe not?	- Budget includes designated contract: \$70,000 for UMN

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105	101-C	4		50	The New Prairie Sportsman Statewide Broadcast Video Project	\$300,000	Engage the statewide community to cultivate conservation ethics and generate activities to slow invasive species, improve water quality in agricultural areas and encourage safe outdoor experiences for youth and families	Pioneer Public Television	Bakken, Timothy	- I think these types of programs are popular and this seems to be an economical and effective group.	
106	118-C	4		30	Native Youth Plant a Pollinator Meadow	\$55,487	DWH will provide hands-on educational and cultural experiences for American Indian youth in our programs to learn about pollinators, and establishment and maintenance of pollinator habitat and native plants.	Dream of Wild Health	Wilson, Diane		- Budget includes potentially ineligible expense: salary for executive director = \$3,377. - Pollinators
107	102-C	3		50	Bird City Minnesota-Good for Birds and People	\$343,943	Bird City Minnesota is a community education program that guides and recognizes communities for fulfilling concrete actions to improve bird habitat, reduce threats and engage citizens in bird conservation.	Audubon Minnesota	Eckles, Joanna		- Budget request for travel includes per diem and lodging rates that may exceed allowable MMB rates.
108	109-C	3		40	Teaching High School Students to Build Soil Health	\$160,000	Existing Environmental Science curriculum will prepare Minnesota high school FFA students to implement soil health principles in agriculture.	Sustainable Farming Association of Minnesota	Mesko, John		
109	117-C	3		31	Nature Walk at Como Park Zoo and Conservatory	\$9,300	Nature Walk empowers teens to share Como's unique animal and plant collections with visitors. Requested funding would create a Monarch Station to teach visitors about the value of butterfly conservation.	Como Friends	Van Blaircom, Susie		- Budget includes capital expenditures over \$5,000: \$6,000 for "interpretive cart"
110	100-C	2		51	Extension Master Gardeners Expand Habitats for Minnesota's Pollinators	\$171,734	Extension Master Gardener Volunteers will educate their communities and promote the use of native plants in small-scale landscapes as an important way to address pollinator decline.	U of MM - MN Landscape Arboretum	Yetka, Leslie		- Budget includes potentially ineligible expenses: \$6,500 for kick-off event with meals for attendees; \$8,000 for culmination event that includes meals for attendees. - Pollinators
111	104-C	2		49	Resilient Living Minnesota Television Series and Conference	\$334,975	Inform and educate Minnesotans about sustainable practices, leading to lifelong habits and business opportunities. Motivate a wide audience through public television, telling stories of innovators who live and work sustainably.	Happy Dancing Turtle	Hunt, Joe		- Budget includes designated contract: \$80,750 for Lakeland TV
112	098-C	1		55	Root for a Tree - Minnesota State Fair Exhibit	\$82,860	The public will learn about the vital role of trees and their roots in providing clean water by exploring an engaging walk-through exhibit at the Minnesota State Fair.	MN DNR	Lanahan-Lahti, Kim		- Entire budget of \$82,860 is for designated contract: \$82,860 for Split Rock Studios

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113	106-C	1		45	Public Benefits of Metropolitan Community Agricultural Land Access	\$147,017	Securing land tenure takes on core challenges to agricultural resource stewardship in urban regions. Our network of food producing sites demonstrates education, recreation, and habitat benefits of urban agricultural land.	Twin Cities Agricultural Land Trust	Liebman, Alex		- Budget includes designated contract: \$20,100 for Farmers Action Legal Aid Group; \$2,000 for Urban Farm and Garden Alliance; \$2,000 for City of Lakes Community Land Trust; \$2,000 for Hispanic Advocacy and Community Empowerment through Research; \$5,000 for Storymobile
114	113-C	1		34	Pilot/Bench-Scale Wetlands to Mitigate Potential Aqueous Contaminants	\$37,250	CWTSs for passive water treatment can mitigate contaminants in industrial influenced waters. Students will increase application of the scientific process using CWTSs for supplemental research projects within critical resource-management degrees.	Vermilion Community College	Tedrow, ONiell		- Request appears to be a \$37,250 capital project to build a greenhouse and wetland treatment system to be used for education. RFP category description indicates "Funding for capital projects will not be considered."
115	114-C	1		33	Southwestern Minnesota Youth Environmental Education and Training Partnership	\$415,000	Through a college/city partnership, college students will train to become entry-level professionals through service-learning opportunities and faculty mentorship to provide environmental education programs to preK-12 student communities.	Mankato State University	Ceurvorst, Robyn		- Budget includes \$150,000 for K-12 bus transportation and \$150,000 service fee to City of Mankato to use Elk Nature Center facility and grounds. - Activity budget breakdown does not appear to be accurate - equally divided between activities whereas bulk of costs would appear to be in Activity 2.
116	115-C	1		32	Developing Connections and Conservation Ethics through Nature Play	\$710,140	Nature play areas address a growing need to provide children opportunities to engage with the natural world through unstructured, independent play which creates long-lasting conservation values for the next generation.	MN DNR	Smith, Stacy		- Request includes \$545,000 for site construction. RFP category description indicates "funding for capital projects will not be considered." - Budget includes \$10,140 for "Direct and Necessary Expenses".
117	116-C	1		32	Student Outdoor Environmental Education Program	\$96,600	This project will expand an existing student environmental education program at the Tamarac National Wildlife Refuge from 3000 to 6000 student visits per year.	Friends of Tamarac National Wildlife Refuge, Inc.	Vlasak, Raymond		- Request includes \$9,600 for bus transportation. - Proposal is to staff and equip new Federal nature center.
118	119-C	1		29	Visualizing Flow: Education on Flow Sources to Rivers	\$39,647	Educate citizens on the timing of flow in ditches, ravines, tiles, fields, and rivers using trail cameras to link visuals to existing water quality and hydrology data using interactive hydrographs.	Mankato State University - Water Resources Center	Von Korff, Ben		
119	097-C	0		55	Outdoor Learning Engages Youth: A Model Collaborative	\$442,218	Improve youth environmental literacy, academic achievement, connection to place, and stewardship of our treasured natural resources in the Lake Superior basin through a model collaborative of strong community partners.	U of MN	Geissler, John		- Budget includes designated contract: \$65,000 for Great Lakes Aquarium; \$65,000 for Hartley Nature Center; \$65,000 for Hawks Ridge Bird Observatory; \$30,000 for UMN-Duluth - Equipment/Tools Supplies budget has inadequate detail: \$23,800 for "project implementation equipment and supplies". - Request includes \$37,200 for bus transportation.

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120	103-C	0		50	Building Environmental Stewardship Through Sustainable Farm Ecosystem Exploration	\$824,900	A collaboration between Youth Farm and Minneapolis Public Schools centered around a farm education campus that provides experiential education about sustainable ecosystems, teaching environmental literacy, conservation, and sustainable lifestyle skills.	Youth Farm	Stoelb, Amanda		- Request includes \$20,250 for bus transportation; \$20,000 for liability insurance; \$50,000 for tractor; \$51,775 for unclear expenditures related to "field trips". - Project length is unclear; proposal states both 3 years and 5 years at different points in the proposal. - Budget includes designated contract: \$30,000 for UMN Healthy Food Healthy Lives
121	107-C	0		41	Next Generation Watershed Connections	\$246,444	650 elementary and 100 high school students will connect through engagement in experiential education and outdoor learning activities designed to enhance their understanding of watershed connections and stewardship.	International Water Institute	Halvorson, Danni		- Request includes \$4,500 for bus transportation; \$3,000 for purchase of 6 kayaks; \$2,100 for kayak trailer. - Budget includes designated contract: \$10,000 for Houston Engineering
122	108-C	0		40	Developing Intellectual and Scientific Infrastructure for Clean Waters	\$475,000	The overall goals are to: 1) Improve water quality; 2) Increase understanding of N losses from freshwaters; 3) Develop intellectual and scientific infrastructure to understand N cycling.	U of MN	Cotner, Sehoya		- Request appears to include \$140,000 for capital infrastructure. RFP category description indicates "funding for capital projects will not be considered." - Budget includes capital expenditures over \$5,000: \$100,000 for gas analyzer; \$40,000 for flow-through systems with temperature controls.
123	110-C	0		40	"Real Wildlife, Real Conservation, Real Impact"	\$476,879	We will provide environmental education programs to over 14,000 metro students using ambassador wild animals to illustrate the interface between natural and human systems, and our impact upon these systems.	Wildlife Science Center	ONEill, Danielle		- Budget includes potentially ineligible expenses: \$5,000 for "marketing support"; \$18,750 for liability insurance; undesignated portion of \$65,000 for "vehicle"; and undesignated portion of \$65,000 for "insurance to transport animals".
124	D. AQUATIC AND TERRESTRIAL INVASIVE SPECIES (14 Proposals / Subtotal = \$10,216.759)										
125	121-D	12		86	Minnesota Invasive Terrestrial Plants and Pests Center - Phase 3	\$5,000,000	Funding is requested to accelerate priority research that will protect Minnesota's prairies, wetlands, forests, and agricultural resources from terrestrial invasive plants and pests, including non-native weeds, pathogens, and insects.	U of MN	Venette, Dr. Robert	- Too expensive, are they really gaining ground? - Critical issue with a good focus.	- Related open appropriations: ML 2014 - Invasive Terrestrial Plants and Pests Center = \$1,450,000 (expires 06/30/22); ML 2015 - Minnesota Invasive Terrestrial Plants and Pests Center = \$5,000,000 (expires 06/30/23) - Terrestrial Invasive Species
126	124-D	12		76	White Nose Bat Syndrome Biological Control - Phase 2	\$452,532	Phase 2 continuation of research towards discovery and optimization of biocontrol for White Nose Bat Syndrome. Work scope is expanded to additional statewide hibernacula, and characterization of total bat microbiomes.	U of MN	Salomon, Christine		- Related open appropriations: ML 2013 - Harnessing Soudan Mine Microbes: Bioremediation, Bioenergy and Biocontrol = \$838,000 (expires 06/30/16) - Budget includes \$1,500 for journal publication fees. - Terrestrial Invasive Species
127	128-D	11		73	Elimination of Target Invasive Plant Species - Phase 2	\$752,100	To prevent environmental and economic damage, we will: 1) Train people to find target invasives; 2) Survey for infestations; and 3) Control these species before they spread.	Minnesota Department of Agriculture	Chandler, Monika		- Related open appropriations: ML 2013 - Elimination of Target Invasive Plant Species = \$350,000 (expires 06/30/16) - Budget includes designated contract: \$175,000 for Conservation Corps MN; \$22,500 for St. Croix River Association - Budget includes potentially ineligible costs: \$8,000 for 20 tablet computers. - Terrestrial Invasive Species

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128	122-D	8		79	Using Membranes to Treat Lake Superior Ballast Water	\$151,091	We will develop a filtration system to treat Lake Superior ballast water. The filtration system will remove >90% of suspended pathogens, invasive species, and contaminants.	U of MN	Romero-Vargas Castrillón, Santiago	- Inexpensive, but make sure necessary	- Budget includes potentially ineligible expense: \$1,120 for computer. - Ballast water - Aquatic Invasive Species
129	123-D	5		76	Advancing Microbial Invasive Species Monitoring from Ballast Discharge	\$368,995	We will identify bacteria in ship ballast water and St. Louis River Estuary sediments, assess the risk of introducing invasive bacteria, and evaluate techniques for their removal from ballast water.	U of MN	Hicks, Randall		- Budget includes designated contract: \$44,500 for Northeast-Midwest Institute - Budget includes \$2,045 for journal publication fees. - Support letter from PCA and DNR. - Ballast water - Aquatic Invasive Species
130	131-D	3		68	Winning the Dutch Elm Disease Battle - Phase 2	\$330,187	This project will identify and test 50 native elms from throughout Minnesota for resistance to Dutch elm disease so hardy disease resistant trees can be made available to the public	U of MN	Blanchette, Robert		- Related open appropriations: ML 2014 - Finding Disease Resistant Elm Trees in Minnesota = \$200,000 (expires 06/30/16) - Terrestrial Invasive Species
131	134-D	3		48	Invasive Carp Applied Research in Lake Nokomis Subwatershed	\$189,936	Application of current invasive carp research to management of an entire subwatershed, to improve water quality, increase aquatic vegetation, and provide additional guidance for large-scale carp management.	Minneapolis Park and Recreation Board	Arvidson, Adam	- Low cost, so may consider, it does have merit.	- Budget includes designated contracts: \$89,959 for WSB Engineers; \$26,000 for Blue Water Science. - Aquatic Invasive Species
132	126-D	2		74	Tamarack in Decline: The Resurgence of Larch Casebearer	\$344,900	Larch casebearer weakens tamarack and makes is susceptible to eastern larch beetle. This proposal examines the recent failure of biological control of larch casebearer.	U of MN	Aukema, Brian		- Budget includes designated contract: \$5,000 for Mike and Jana Albers. - Budget includes capital expenditures over \$5,000: \$80,000 for (4) growth chambers.
133	125-D	1		75	Modeling AIS Spread to Evaluate Management Options	\$264,141	This project will describe and mathematically model the spatial distribution and pathways of AIS in Minnesota to predict future spread, estimate risk and evaluate the impact of control interventions.	U of MN	Phelps, Nicholas		- Budget includes \$5,000 for conference attendance, possibly involving out-of-state travel. - Aquatic Invasive Species
134	127-D	1		73	Optimizing Chemical Management of Emerald Ash Borer	\$600,000	This project optimizes the ongoing chemical management of emerald ash borer while protecting pollinators and other insects. Close collaboration with cities will ensure resulting guidelines are workable and effective.	Minnesota Department of Agriculture	Abrahamson, Mark		- Terrestrial Invasive Species
135	129-D	1		70	Treating Invasive Species in Laker Ballast Water	\$347,840	The project will further development of a ballast water treatment system for Great Lakes freighters. Outcomes include refinement and testing of a treatment neutralization process using vessel engine emissions.	Izaak Walton League of America - Minnesota Division	Henquinet, Jeffrey		- Project manager is not employed by sponsoring organization. - Budget includes designated contract: \$93,840 for USGS; \$133,000 for UMN - Budget includes capital expenditures over \$5,000: \$45,000 for "prototype" - Ballast water - Aquatic Invasive Species

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136	130-D	1		69	Cover It Up! Using Plants to Control Buckthorn	\$307,703	We will develop management tools to limit buckthorn re-colonization following its removal, by identifying cost-effective methods of establishing dense cover of preferred plant species that will suppress buckthorn regeneration.	U of MN	Reich, Peter		- Terrestrial Invasive Species
137	132-D	1		61	PlayCleanGo: Stop (Terrestrial) Invasive Species In Your Tracks	\$609,266	By engaging more recreationists and recreational organizations in actions that prevent the spread of terrestrial invasive species, the Minnesota outreach campaign PlayCleanGo will help protect Minnesota wetlands, prairies and forests.	MN DNR	Burks, Susan		- Budget includes \$24,266 for "Direct and Necessary Expenses". - Terrestrial Invasive Species
138	133-D	1		55	Rapid Response Mobile Ballast Water Treatment System	\$498,068	Project will demonstrate a rapid response mobile ballast water treatment system to prevent invasive species introductions into Minnesotas Lake Superior ports. Project outcomes include three shipboard efficacy trials.	Izaak Walton League of America - Minnesota Division	Henquinet, Jeffrey	- This needs to be funded. We are totally exposed to the risk.	- Project manager is not employed by sponsoring organization. - Budget includes designated contracts: \$148,000 for Glosten Marine Engineers; \$53,136 for Grand Portage Band; and \$180,000 for Great Ships Initiative. - Budget includes capital expenditures over \$5,000: \$45,000 for "construction of second prototype system" - Ballast water - Aquatic Invasive Species
139 E. AIR QUALITY, CLIMATE CHANGE, AND RENEWABLE ENERGY (19 Proposals / Subtotal = \$12,690,897)											
140	140-E	9		61	Cheap Solar Cells from Simple Roll-to-Roll Advanced Manufacturing	\$388,762	This project is to develop cheap clean solar energy by simple roll-to-roll advanced manufacturing technology. Perovskite is a new photovoltaic material, very economical while maintaining high power conversion efficiency.	U of MN	Cui, Tianhong		- Budget includes potentially ineligible item: some portion of \$21,200 for computer server; some portion of \$6,800 for refreshments. - Potential patent and/or related future income to ENRTF per 116P.10.
141	151-E	7		46	Waste Heat Recovery with Efficient Thermoelectric Energy Generators	\$404,427	Almost 55% of energy consumed in the US is discharged as waste heat. We propose transforming waste heat into electricity through thermoelectrics to ameliorate climate change and reduce air pollution.	U of MN	Kortshagen, Uwe	- Efforts to reuse the waste has a big impact on our energy profile. A good investment.	- Equipment/Tools Supplies budget has inadequate detail: \$40,000 with no indication of what the money is for; \$30,000 for "lab supplies"
142	153-E	7		38	Solar Solutions to Minnesota Energy Poverty	\$490,429	This project reduces carbon emissions, produces clean energy and changes the energy assistance landscape by installing a 200 kW solar array and distributing electricity to Minnesotans qualifying for energy assistance.	Rural Renewable Energy Alliance	Edens, Jason	- Might be interesting and cost effective.	- Request is to build community solar garden. RFP category description indicates "funding for capital projects will not be considered." - Budget includes capital expenditure over \$5,000: \$211,311 for photovoltaic solar module; \$73,032 for ground-mount racking; \$32,080 for Sunergy inverters; \$23,527 for electrical systems; \$31,820 for helical piles; \$35,243 for fencing. - Budget includes designated contract: \$3,500 for Gausman and Moore; \$7,500 for Meyer Borgman and Johnson

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143	144-E	6		56	Geotargeted Distributed Clean Energy Initiative	\$1,850,000	This project will determine the potential for geographically targeted clean, distributed energy resources to replace planned transmission and distribution upgrades by testing the concept in three communities.	Center for Energy and Environment	Nelson, Carl	- This could provide leadership and demonstrate how a new era of distributed energy will work in Minnesota. - Activity 1 only.	- Budget includes designated contract: \$200,000 for Energy Systems Consulting, LLC
144	141-E	4		61	Clean Vehicles Fueled by Hydrogen from Renewable Ammonia	\$842,849	Renewable ammonia from wind can be used to fuel vehicles. Technology will be developed to reduce emissions from diesel engines and to power fuel cell cars using hydrogen from ammonia.	U of MN	Northrop, Will		- Budget includes capital expenditures over \$5,000: \$20,000 for test engine; ~\$45,000 for building ammonia decomposition reactor prototype; ~\$60,000 for construction of fuel cell electric vehicle refueling system, and more (breakdown is confusing). - Potential patent and/or related future income to ENRTF per 116P.10.
145	148-E	4		51	Utilization of Dairy Farm Wastewater for Sustainable Production	\$1,451,125	This project will develop and demonstrate an integrated facility to recycle nutrients from dairy farm wastewater as well as simultaneously produce "green" energy, clean water, food, and livestock feed.	U of MN	Heins, Bradley	- May be too expensive.	- Request is to build integrated dairy farm wastewater recycling system. RFP category description indicates "funding for capital projects will not be considered." - Budget includes capital expenditures over \$5,000: \$35,000 for automatic calf feeder; \$146,500 for aquaponic facility; \$221,500 for algal cultivation system. - Budget includes \$9,000 for journal publication fees. - Potential patent and/or related future income to ENRTF per 116P.10.
146	149-E	4		51	Innovative Solar Energy Utilization for Minnesota Swine Farms	\$928,478	Swine facilities will be energy-optimized using solar generation for innovative cooling and heating. Optimized systems should reduce water usage while lowering odor, greenhouse gases, dust emissions, and the carbon footprint.	U of MN	Johnston, Lee		- Related open appropriations: ML 2014 - Transitioning Minnesota Farms to Local Energy = \$500,000 (expires 06/30/17) - Request involves capital construction; RFP category description indicates "funding for capital projects will not be considered." - Budget includes capital expenditures over \$5,000: \$70,000 for 7 chiller/air source heat pumps; \$80,000 for 10 electric heating systems; \$100,000 for 20 kW solar photovoltaic system; \$32,600 for 2 heating and cooling system controls.
147	150-E	4		47	BMPs for Sustainable Biomass Production for Clean Energy	\$191,077	This project will compile information to develop Non-Forest Biomass Guidelines to ensure sustainable siting and management of bioenergy feedstocks while supporting wildlife, water quality, soil health, and carbon sequestration.	U of MN	Current, Dean		
148	136-E	3		73	Improving Health and Environment by Mitigating Airborne Pollutants	\$630,614	This project quantifies and maps primary emissions of toxic airborne pollutants, traces their effects on air quality, identifies ecosystem and human exposure, and develops policy recommendations.	U of MN	Thomas, Brenda		- Budget includes potentially ineligible item: \$4,000 for 4 computers

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149	138-E	3		68	Atmospheric Transport of Antibiotic Resistance Genes	\$449,325	Antibiotic resistance is a growing problem in the world, and Minnesota. We propose to characterize agricultural operations and wastewater treatment plants as sources of antibiotic resistance genes to the atmosphere.	U of MN	Simcik, Matt		- Budget includes designated contract: \$12,000 for UMN Genomics Center
150	142-E	3		60	Making Solar Energy Cheaper than Carbon-Based Energy	\$664,180	We will demonstrate inexpensive thin-film devices that can bring the cost of solar energy in Minnesota below carbon. The device operates by capturing different parts of sunlight in different layers.	U of MN	Campbell, Stephen	- Expensive and what does this all mean - "cheaper"?	- Budget includes capital expenditures over \$5,000: \$60,000 for components to build prototype device. - Potential patent and/or related future income to ENRTF per 116P.10. - Total dollars being requested is not clear: cover page = 664,180; Activity budget total = \$339,906; Budget page = \$443,180
151	135-E	2		75	High Resolution Climate Projections to Aid Planning Efforts	\$411,389	Minnesota's climate is changing and local scale climate projections are needed to ensure the development of sound adaptation strategies to help protect and sustain Minnesota's environment, infrastructure, economy, and health.	U of MN	Snyder, Peter		- Budget includes potentially ineligible item: \$20,000 for data server and data drives. - Budget includes \$6,000 for journal publication fees.
152	139-E	2		64	Managing for "Climate-Smart" Trees and Forests	\$380,026	Measure tree growth responses to climate throughout Minnesota to identify climate-resilient species for each region to promote through management; and develop an on-line forest management tool for climate change adaptation.	U of MN	Reich, Peter		
153	145-E	2		55	Expanding Biofertilizers for Responsible Nitrogen Application	\$659,512	This project aims to develop a broad-application biofertilizer to accomplish in crops like corn and wheat a relationship similar to what nature evolved in soybeans to fix atmospheric-nitrogen.	U of MN	Barney, Brett		- Budget includes \$3,000 for journal publication fees. - Potential patent and/or related future income to ENRTF per 116P.10.
154	146-E	2		55	Modified Terrace System for Climate Adaptive Agricultural Landscapes	\$665,037	Incorporate modified terraces with woody perennials and native prairies into agricultural systems. Test responsiveness to climate change (flood, drought, weather extremes) and improvements to water quality, soil, and pollinator habitat.	U of MN	Schweser, Greg		- Budget includes designated contract: \$4,500 for Camphill Village - Budget includes potentially ineligible item: \$1,000 for computer; \$2,500 for cattle fencing
155	147-E	2		55	Revolutionizing Ammonia Emission Reduction/Nutrient Recovery from Manure	\$558,539	This project develops a revolutionary technology to reduce 70% ammonia emission from animal manure during storage and land application and recover the nutrients (70% N and 90% P) as fertilizer	U of MN	Wu, Xiao	- Good for livestock.	- Potential patent and/or related future income to ENRTF per 116P.10.
156	143-E	1		60	Management to Prevent Biofuels from Becoming Invasive Species	\$257,837	Biofuel are an important invasive species threat in Minnesota and we will evaluate three potential crop options (Miscanthus, switchgrass and native prairie) to determine optimal management practices to prevent invasions	U of MN	Forester, James		- Not clear how proposal is different from previous invasive biofuels crop projects: ML 2010-7b - Sustainable Biofuels = \$221,000; ML 2011-6c - Evaluation of Switchgrass as Biofuel Crop = \$120,000

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157	152-E	1		45	Identifying Best Seed Sources for Forest Tree Planting	\$396,843	Climate change threatens Minnesota's future forests by stressing young seedlings. This project improves forest productivity and ecological services by determining the best seed sources for future reforestation efforts.	U of MN	David, Andrew		- Budget includes potentially ineligible expenses: \$88,000 for fencing; \$16,929 for tractor.
158	137-E	0		71	Assessing Climate Effects on Wetlands Water and Species	\$1,070,448	We will use integrated, cutting-edge methods to provide resource managers a field assessment of how wetland water availability and dependent species are responding to climate on 50 state conservation areas.	U.S. Geological Survey	Sadinski, Walt		- Budget includes potentially ineligible item: \$37,500 for computer server - Budget includes \$9,000 for conference attendance.
159 F. METHODS TO PROTECT, RESTORE, AND ENHANCE LAND, WATER, AND HABITAT (20 proposals / Subtotal = \$23,679,305)											
160	154-F	10		79	Seeding Between the Lines: Permanent Habitat Within Rowcrops	\$179,400	Establishing prairie forbs and alfalfa as permanent cover strips in the bare soil between selected rows of corn/soy to create pollinator, monarch and gamebird habitat without removing land from production.	Science Museum of Minnesota - St. Croix Research Station	Schottler, Shawn	- Interesting - Adding habitat to crop land is a brilliant idea to help stop the decline of areas where critters can live.	- Budget includes designated contract: \$20,000 for Willow Lake Farm - Budget includes capital expenditures over \$5,000: \$25,000 for custom planter for 30 inch strips
161	155-F	9		77	Bee Pollinator Habitat Enhancement - Phase 2	\$387,085	Our goal is to provide floral resources for pollinators in areas currently dominated by turfgrass, to protect and enhance Minnesota natural resources and support the nutritional needs of all bees.	U of MN	Spivak, Marla		- Related open appropriations: ML 2014 - "Enhancing Pollinator Landscapes" = \$864,000 (expires 06/30/2019) - Pollinators
162	162-F	7		61	Measuring Prairie Fragment Connectivity: Pollen and Seed Dispersal	\$556,000	Habitat connectivity is unknown in prairie fragments. Our project measures plant movement by pollen and seeds, determines connectivity, and informs agencies and the Prairie Conservation Plan how far species move.	U of MN	Sullivan, Lauren	- An overlooked aspect of restoration planning and ecology.	- Pollinators
163	159-F	5		68	Controlling Reed Canary Grass to Regenerate Floodplain Forest	\$218,500	Floodplain forests are not regenerating due to invasive species. LCCMR funding will determine the most effective regeneration methods to best utilize existing funding from other sources for tree regeneration projects.	Audubon Minnesota	Schlagenhaft, Tim		- Budget includes designated contract: \$97,700 for UMN graduate research assistant; \$54,000 for UW-La Crosse graduate research assistant
164	160-F	5		67	CREP III Implementation - Phase 1	\$8,686,320	Assistance through SWCDs will be provided to 1,500 landowners to implement 40,000 acres of permanent protection through the Conservation Reserve Enhancement Program (CREP), leveraging \$240 million of federal CRP funding.	Board of Water and Soil Resources	Hoek, Tabor	- Too expensive and not LCCMR appropriate. Maybe Legacy?	- Related open appropriations: ML 2013 - Conservation Program Technical Assistance = \$3,000,000 (expires 06/30/16); ML 2015 - Acceleration of Minnesota Conservation Assistance - Final Phase = \$1,000,000 (expires 06/30/18)

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165	168-F	5		52	Agricultural Runoff Water Quality Treatment Analysis - Phase II	\$295,010	Building on successes from LCCMR funded conservation practices, Phase II will validate agency requests to refine results. Phase I was more successful than anticipated, showing significant water quality benefits.	Blue Earth County Drainage Authority	Austinson, Craig	- Continue, supported in last phase.	- Budget includes designated contract: \$195,000 for Chuck Brandel, ISG
166	169-F	5		52	Restoration/Monitoring of Winona's 40-acre Blufflands Natural Area	\$99,427	WSU will restore critical Blufflands oak savannah (97% lost in MN) and dry bluff prairie (99% lost) by goat grazing, replanting native species, monitoring recovery, and creating/delivering demonstration workshops.	Winona State University	Mundahl, Neal	- Pay to just monitor? Doesn't make sense.	- Budget includes designated contract: \$20,000 for Driftless Land Stewardship; \$13,000 for Conservation Corps MN - Did they apply to Conservation Partners?
167	161-F	4		65	Prioritizing Walleye Spawning Habitat Restoration in Minnesota Lakes	\$288,205	This project will enhance efforts to increase natural reproduction of walleye in Minnesota lakes by assembling easily accessible information on wave energy and near-shore spawning habitat.	U of MN	Herb, William		- Budget includes \$945 for conference attendance. - Fisheries
168	165-F	4		55	Forest Management for Mississippi River Drinking Water Protection	\$350,000	A SWCD north central Minnesota pilot source water and watershed approach using forest stewardship plans, tax incentive programs, and targeted riparian forest restoration projects on public and private lands.	Crow Wing Soil and Water Conservation District	Barrick, Melissa	- Interesting, but want to know if practical to do along the river.	- Budget includes designated contract: \$200,000 for Todd, Morrison, and Cass SWCD's - but there is no breakdown of allocations per individual SWCD
169	166-F	4		55	Restoring our Metro Lands and Waters: MeCC IX	\$509,000	Greening will restore 153ac and 0.15mi of significant habitat throughout the metro area, engage 650 volunteers; apply innovative techniques, conduct evaluations, and implement corrective actions to advance restoration practices.	Great River Greening	Buck, Wiley		- Related open appropriations: ML 2013 - Metropolitan Conservation Corridors (MeCC) - Phase VII: Restoring Our Lands and Waters = \$208,000 (expires 06/30/16); ML 2014 - Upland and Shoreline Restoration in Greater Metropolitan Area = \$300,000 (expires 06/30/17); ML 2015 - Metro Conservation Corridors Phase VIII - Enhancing Restoration Techniques for Improved Climate Resilience and Pollinator Conservation = \$400,000 (expires 06/30/18)
170	157-F	3		71	Pollinator & Habitat Enhancement Program	\$1,767,950	Enhance 2,550-acres of permanently protected habitat for pollinators, monarchs and grassland birds. Engage RIM easement holders to upgrade grassland habitat by completing pollinator plots, invasive tree removal & diversity seeding.	Pheasants Forever	Holland, Matt	- Expensive, but okay to have Pheasants Forever do.	- Pollinators
171	173-F	3		30	Restoring the City of Champlins Northern Gateway	\$2,000,000	Restoring Champlins Northern Gateway: A three phase project to improve habitat and water quality through Conservation, Protection and Restoration. Phase II to Restore Deep Water Habitat in the Mill Pond.	City of Champlin	Tuominen, Todd		- Dollar amount being requested is unclear: cover page says \$2.0 million, activity budgets add up to \$9.63 million, and incomplete budget lists \$320,000. - Project time period is unclear: cover page says 2.5 years, main proposal says 1.5 years, and budget lists 2 years. - Proposal was not correctly filled out. - \$3.0 million proposal submitted to LSOHC for 2016. Inquiry made about relationship to this proposal and to provide clarity on budget - no response received.

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172	156-F	2		73	Riparian Management Practice Guidelines for Minnesota's Waterways	\$103,594	Riparian areas provide filtration, stream bank stability and habitat benefits. Guidance will be developed to maximize their benefits through a variety of management practices focusing on four study watersheds.	U of MN	Lenhart, Christian		- Unknown what funding available in FY16-17 buffer initiative appropriations. - Water
173	158-F	1		71	A Treatment Wetland Strategy for Nutrient Reduction Goals	\$338,097	A treatment wetland strategy will be developed to address state nutrient reduction goals while considering ecological restoration priorities. Monitoring of wetlands will provide a scientific backing for the strategy.	U of MN	Lenhart, Christian		- What are outcomes of \$312,000 of Clean Water Legacy funding that are cited? - Water
174	167-F	1		53	Implementing/Showcasing Shoreline BMP's on Parks and Trails Lands	\$1,035,491	Streams and lakes in southern and western MN fall below water quality standards. This proposal will improve water quality by restoring shoreline at 25-30 sites managed by the division.	MN DNR	Quinn, Edward	- Too much money.	- Budget includes designated contract: \$102,000 for MN Historical Society; \$135,000 for Conservation Corps MN - Budget includes \$35,491 for "Direct and Necessary Expenses".
175	171-F	1		47	Functionalized Nanomaterials to Enhance Performance of Pervious Concrete	\$131,728	This study aims to develop innovative pervious concrete using nanotechnology for mitigating climate change impact and enhancing ecosystems resilience in Minnesota's environment and natural resources.	North Dakota State University	Lin, Zhibin	- Out of state, but very interesting concept to allow water through concrete. Should do, if possible. It will help with development concerns.	- Request includes funding for faculty and graduate students in North Dakota. - Potential patent and/or related future income to ENRTF per 116P.10?
176	163-F	0		58	Comprehensive Wetland Planning Framework and Mitigation Pilot	\$5,600,000	The Statewide Wetland Planning Framework will improve targeting, quality, and functional benefits of wetland mitigation and a Mitigation Pilot will provide for new, innovative wetland mitigation actions in Northeast MN.	Board of Water and Soil Resources	Lemm, Les	- Too much money.	
177	164-F	0		57	Identifying Optimal Soil Conditions for Sustainable Forest Management	\$412,000	Quantify factors that control optimal soil conditions with historic data and experimental manipulations. Develop strategies and tools to expand acceptable harvesting conditions while minimizing impacts to soil and water.	U of MN	Slesak, Robert	- Unrealistic. Forests will grow in what soils that are there?	- Budget includes capital expenditures over \$5,000: \$25,000 for mobile soil pressure apparatus
178	170-F	0		51	Sustaining Long-lived Pines on Minnesota's Landscape	\$443,576	Diplodia poses a major threat to red pine. Strategies will be developed and field-tested for sustaining older pines on the landscape long-term, better coordinating red pine and white pine management	U of MN - North Central Research and Outreach Center	Hoganson, Howard		- Budget includes designated contract: \$49,210 for Itasca Community College; \$23,067 for MN Forest Resources Council; \$33,217 for MN DNR
179	172-F	0		35	Genetic Analysis of Minnesota's Most Endangered Tree Species	\$277,922	Seedlings derived from mature native Minnesota Eastern hemlock will be evaluated for genetic diversity, inbreeding and growth rates in three seasons. Information gathered will inform management of this endangered species.	U of MN	Hokanson, Stan C		- Budget includes designated contract: \$19,200 for Levy Tree Care - Budget includes \$1,000 for journal publication fees.

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180 G. LAND ACQUISITION FOR HABITAT AND RECREATION (11 Proposals / Subtotal = \$36,704,768)											
181	175-G	11		75	SNA Acquisition, Restoration, Enhancement & Public Engagement	\$9,324,826	Sites of biodiversity significance will be permanently protected as state designated Scientific and Natural Areas, their quality improved, and public support for and involvement in their conservation will be increased.	MN DNR	Booth, Margaret (Peggy)	- Acquisition only. - Way too expensive.	- Related open appropriations: ML 2014 - Scientific and Natural Area Acquisition, Restoration, Improvement and Citizen Engagement = \$2,540,000 (expires 06/30/17); ML 2015 - SNA Acquisition, Restoration, Enhancement and Public Engagement = \$4,000,000 (expires 06/30/18) - Budget includes \$321,626 for "Direct and Necessary Expenses", of which \$123,730 is for division and regional program management. - Budget includes designated contract: \$535,500 for Conservation Corps MN - \$9.0 proposal submitted to LSOHC for 2016 OHF for WMA & SNA acquisition. Split unknown based on proposal. - Fee title
182	174-G	9		78	State Parks and State Trails Land Acquisitions	\$2,000,000	Acquire the highest priority State Park and State Trail land in-holdings statewide from willing sellers with significant ecological, historic and recreational attributes to protect, preserve and enhance Minnesotas environmental stewardship.	MN DNR	Christie, Jennifer	- Bonding money - not LCCMR. Too expensive.	- Related open appropriations: ML 2015 - State Parks and State Trails Land Acquisitions = \$1,500,000 (expires 06/30/18) - Fee title.
183	178-G	8		62	Mesabi Trail Segment Highway 135 to Embarrass	\$1,200,000	For environmental, engineering and trail construction work to complete a 10' wide, bituminous surfaced trail, 6 mile long segment of the Mesabi Trail from Highway 135 to Embarrass.	St. Louis and Lake Counties Regional Railroad Author	Manzoline, Robert	- Maybe, reduce cost.	- Related open appropriations: ML 2014 - Mesabi Trail Development - Soudan to Ely Segment = \$1,000,000 (expires 06/30/17); ML 2015 - Mesabi Trail Development Soudan to Ely - Phase II = \$1,000,000 (expires 06/30/18) - Dollar amount being requested is unclear: Activity budgets = \$1,530,000; cover page and budget = \$1,200,000. - Related ENRTF funding history not indicated in budget.
184	177-G	7		64	Preserving the Avon Hills with Reverse-Bidding Easements	\$1,307,000	Use the MMAPLE reverse-bid and conservation easement ranking system to protect 450-600 acres. Final test using ENRTF of MMAPLE's precision-conservation, market-based approach. Also, landowners pay MN Land Trust's stewardship costs.	Saint Johns University	Kroll, Thomas	- Interesting concept of buying land. Is this expanding elsewhere? - This approach gives landowners the opportunity to decide what their motives are for land preservation; it is not always money. A great example of forward thinking and finding an economical way to advance conservation.	- Related open appropriations: ML 2013 - Preserving the Avon Hills Landscape - Phase II = \$772,000 (expires 06/30/16) - Joint proposal with MN Land Trust: Saint Johns University request = \$44,000; MLT request = \$1,263,000 - Request is to pay landowner a standard base payment of \$30,000 above their bid - reason for additional base payment is not clear. In previous years the number of bids received and dollars requested exceeded the dollars available (i.e., there was competitive demand). - Conservation Easements
185	179-G	7		57	Minnesota Point Pine Forest SNA Addition Project	\$500,000	This project consists of the acquisition of 10.35 acres of land to be added to the existing Minnesota Point Pine Forest SNA located along the shores of Lake Superior.	Duluth Airport Authority	Werner, Tom		- Proposal is for one government unit purchasing from another government unit. - Parcel also appears in SNA proposal parcel list and could be funded under that proposal. - Fee title

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186	180-G	7		49	Wilder Forest Acquisition for Conservation, Preservation and Education	\$6,320,000	MFA will purchase 539 acres of diverse, critical habitat, pristine lakes and 3.2 miles of shoreline, protecting it from development and preserving the rural heritage of Washington County for generations.	Minnesota Food Association	Otey Wold, Hilary		<ul style="list-style-type: none"> - Proposal activity budgets exceed the total dollars requested. - Request appears to be only for cost of fee title acquisition; however, section C indicates potential other expenses not clear if those are to be paid for from other funds or are intended as part of this request. - Dollars being requested are inconsistent: Cover page and budget indicate \$6,320,000 and activity budget indicates \$10,533,000. - ENRTF-funded conservation easement exists on part of property. - Fee title
187	182-G	7		42	Otter Tail River Protection and Recreation Trail Acquisition	\$500,000	One million dollar purchase of 16.624 acres of former MidAmerican Dair property, currently partially industrial and agricultural. For tot lot, Barefoot Park expansion, splash plad and river protection.	City of Fergus Falls	Hydukovich, Gordon		<ul style="list-style-type: none"> - Parks and Trails Fund grants? Local park grant. - Fee title.
188	176-G	4		69	Native Prairie Stewardship and Prairie Bank Easement Acquisition	\$10,999,942	Native Prairie Bank conservation easements will be acquired on 1600 acres, habitat management will occur on 1000 acres of protected prairie and landowner stewardship will increase through assistance and workshops.	MN DNR	Schulte, Judy	- Much, much, too much money.	<ul style="list-style-type: none"> - Related open appropriations: ML 2015 - Native Prairie Stewardship and Prairie Bank Easement Acquisition = \$3,325,000 (expires 06/30/18) - Budget includes \$418,000 for conservation easement stewardship account - Budget includes \$650,942 for "Direct and Necessary Expenses", of which \$118,961 is for division and regional program management. - \$9.0 million proposal submitted to LSOHC for 2016 OHF. - Conservation easement
189	181-G	4		46	Long-Term Drinking Water Supply Protection, Recreation, Habitat Plan	\$2,500,000	Long-term drinking water supply protection plan effectuated through permanent controlled ownership placing vulnerable lands into conservation use with benefits of drought resistance, contamination elimination; promoting habitat, recreation; retaining tax bases.	Lincoln Pipestone Rural Water System	Johnson, Mark	- Maybe, reduce cost.	<ul style="list-style-type: none"> - Clean Water Fund? Wellhead protection. - Fee title.
190	183-G	2		26	Tower Historic Harbor Nature Trail/Kayak Route	\$1,430,000	This project consists of the construction of a nature trail, layout of a kayak route and construction of a boat/kayak/canoe landing along the shores of the East Two Rivers.	City of Tower	Keith, Linda	- Too costly.	- Parks and Trails Fund? Water Access grants? Local park grant?
191	184-G	2		24	Babbitt Recreation Area Water Protection Project	\$623,000	This project will prevent drainage flow along the entrance road and parking area and to construct a rain garden to prevent debris, sediment and pollution from entering Birch Lake.	City of Babbitt	Bissonette, Cathy		- Project outcomes are unclear as to whether request is to build a rain garden or to rebuild boat access parking lot.

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192	H. OTHER (2 Proposals / Subtotal = \$270,250)										
193	185-H	1		Not Evaluated	Contract Agreement Reimbursement	\$135,000	This appropriation would provide continued contract management services (grant agreements, amendments, reimbursements, fiscal monitoring, etc.) to pass-through recipients of ENRTF dollars appropriated to the commissioner of natural resources.	MN DNR	Graeber, Amanda		- Related open appropriations: ML 2014 - Contract Agreement Reimbursement = \$135,000 (expires 06/30/16); ML 2015 - Contract Agreement Reimbursement = \$135,000 (Expires 06/30/17) - For assigned duties as fiscal agent for contracts non-state entity appropriations. - LCCMR staff did not evaluate.
194	186-H	0		Not Evaluated	Roseau Lake Watershed: Targeted Water Quality Improvement	\$135,250	Advanced geospatial modeling in conjunction with local professional knowledge will identify the top 100 field scale Best Management and Conservation Practices to improve water quality in the Roseau Lake watershed.	MN DNR	Van Offelen, Henry		- LCCMR staff did not evaluate. - Received after deadline on 8/1/15 due to provision allowing late submission passed by 2015 Legislature.