Environment and Natural Resources Trust Fund
2014 Request for Proposals (RFP)

Project Title: **ENRTF ID:** **013-A**

Redesigned Updating of State and County Forest Inventories

Category: A. Foundational Natural Resource Data and Information

Total Project Budget: $ 1,794,640

Proposed Project Time Period for the Funding Requested: 3 Years, July 2014 - June 2017

Summary:

Pilot forest inventory redesign updating 350,000 acres of DNR and County lands with a multi-pronged approach including: targeted data collection; modeling for imputation and projections; and new tools and technologies.

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Sponsoring Organization: MN DNR

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Location

Region: Central, Northwest, Northeast, Southeast

County Name: Aitkin, Becker, Beltrami, Carlton, Cass, Clearwater, Cook, Crow Wing, Hubbard, Itasca, Koochiching, Lake, Lake of the Woods, Pine, St. Louis

City / Township:

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ Employment	_____ TOTAL _____%

PROJECT TITLE: Redesigned Updating of State and County Forest Inventories

I. PROJECT STATEMENT

Since the early 1980s, DNR has maintained its current stand (polygon)-level forest resource inventory on approximately 5 million acres of DNR forestlands. The members of the Minnesota Association of County Land Commissioners (MACLC) include 15 counties (Aitkin, Becker, Beltrami, Carlton, Cass, Clearwater, Cook, Crow Wing, Hubbard, Itasca, Koochiching, Lake, Lake of the Woods, Pine, St. Louis). These counties are responsible for maintaining similar inventory data on 2.8 million acres of forestland. This inventory is *THE* principle dataset used by DNR and Counties to establish and monitor conditions (e.g., forest composition, age- and size-class structure, spatial patterns, invasive species and forest pests, growth rates and wood volumes) related to diverse forest management objectives including wildlife habitat, water quality, biodiversity, forest health and productivity, and meeting third-party forest certification standards.

The current stand-level inventory system was developed decades ago and much has changed since then, including inventory methods, technology, resource management issues, user needs, and available budgets and staffing. Despite annual investments and updates by the DNR and Counties, data gaps and current design features leave the current inventory system struggling to meet modern needs, and support efficient data sharing and cross-ownership evaluations (e.g., integrating Native Plant Community (NPC) information, addressing wildlife habitat and watershed protection opportunities). New, more cost-effective approaches are available and need to be applied to help keep a wide range of forest resource information current, relevant and broadly available for multiple users and purposes.

Project Goals:

- Improve the quality, quantity, reliability, utility, scope and timeliness of forest resource information (status and change) in Minnesota
- Reduce costs and facilitate greater sharing and use of data for diverse benefits, including wildlife habitat management and restoration, forest condition monitoring, watershed and water quality protection, diversified recreation opportunities, and job creation.

Project Outcomes:

- Pilot inventory redesign and updating on 250,000 acres of DNR and 100,000 acres of County stand-level forest inventory information using a multi-pronged approach that includes:
    - Targeted field and map data collection
    - Modeling for imputation , projections and planning (timed to utilize the outcomes of a currently funded LCCMR project *"Rapid Forest Ecosystem & Habitat Inventory by Imputation")*
    - New tools & technologies (e.g., data capture tools, remote sensing, e.g., LiDAR)
- Best practices, cost estimates, and strategies for expanding the improved systems statewide.

II. DESCRIPTION OF PROJECT ACTIVITIES

Activity 1: Design and develop plot-based data collection system. **Budget: $460,000**

DNR, counties and other partners will identify standards and methodologies for key data that would be collected (e.g., over-story, understory, shrubs, forbs). IT staffs will work with project partners to design and develop a flexible database system and county level alternatives to which collected data would be stored, accessed, shared, and processed to characterize habitat and forest resource conditions. Field data recorders will be purchased and programmed for efficient data collection and processing.

Outcome	Completion Date
1. Develop data standards for vegetation & site data, i.e., site, trees, shrubs, forbs & habitat	December 31, 2014
2. Design, develop & test an integrated plot-based database system	July 1, 2015
3. Acquire & program field data recorders for collection of plot data	July 1, 2015

Activity 2: Pilot redesigned inventory approach & data collection technologies **Budget: $975,000**
DNR and counties will identify project pilot areas, including priority watersheds and habitat restoration opportunities. DNR Resource Assessment will acquire and apply available remote sensing technologies as needed to update map boundaries of stand polygons. DNR and MACLC members will process RFPs for contract work (as needed) to collect field data. Training will be provided to staff and contractors in data collection standards and methodologies, including the use of field data recorders.

Outcome	Completion Date
1. Identify pilot areas (e.g., priority watersheds, habitat restoration opportunities, etc)	December 31, 2014
2. Assemble available remote sensing images and map forest stand polygons	July 1, 2015
3. Award contracts, and train field staff and contractors in methodology and data collection	December 31, 2016
4. Field data collection & ongoing QA/QC	July 1, 2017
5. Complete data processing and systems implementation.	July 1, 2017

Activity 3: Apply design, modeling & imputation findings from recent research **Budget: $359,640**
This activity is timed to correspond to the availability in July 2015 of the results and methodology of the LCCMR Project "Rapid Forest Ecosystem & Habitat Inventory by Imputation".

Outcome	Completion Date
1. Review methodology & preliminary results of LCCMR imputation project	July 1, 2015
2. Apply research results and methodology to pilot area	July 1, 2016
3. Identify field data collection priorities to strengthen and extend imputation results	December 31, 2016

III. PROJECT STRATEGY

A. Project Team/Partners

Jon Nelson (DNR Forest Policy & Planning Supervisor) is the project manager, and will work closely with MACLC members through Dovetail Partners (Kathryn Fernholz). The project team will vary by activity, and will include inventory experts with the University of Minnesota Dept. of Forest Resources, USDA Forest Service (FIA program), DNR, counties and other major forest landowners. DNR and county IT staff will be engaged in database design and development. DNR staff and counties will contribute in-kind staff time in project oversight, development and implementation. Partners receiving funds include the DNR and MACLC.

B. Timeline Requirements

The proposed project is expected to last 36 months, from July 1, 2014- June 30, 2017. Activity 2 is dependent on seasonal field conditions for the collection of data (e.g., collecting plant data would best occur in early- to mid-summer; access to some plot locations requires frozen conditions). Activity 3 is timed to correspond to outcomes of a previously funded LCCMR project.

C. Long-Term Strategy and Future Funding Needs

The full value of this project will be realized over time as the collection of plot-base data grows (i.e., strengthening imputation, more frequent updates, cost savings). Once proven, additional funding will be sought from multiple sources, including state and county operating funds, additional LCCMR requests, and other state funding sources currently supporting other potentially parallel inventory systems. The level of future funding needs will be better known once the current project is underway.

2014 Detailed Project Budget

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IV. TOTAL ENRTF REQUEST BUDGET 3 years

BUDGET ITEM	AMOUNT
Personnel:	$ -
Contracts: **Pass-through Grant to MACLC to engage MACLC member counties in the project, including piloting activities. Funds to be spent on software, hardware, and equipment investments as well as contracts for services and direct investments in inventory development and piloting activities (e.g., approximately 100,000 acres of county-managed lands to be engaged in inventory piloting over the 3 year grant period)**	$500,000
IT Services (MN.IT service agreements) for systems design, development, testing & implementation.	$250,000
DNR Resource Assessment (service agreements) for remote sensing acquisition, mapping, inventory design, training, field data collection contract oversight and quality control.	$400,000
P/T contracts (with external vendors) for collecting field plot data	$300,000
P/T contracts for Activity 3	$200,000
Equipment/Tools/Supplies: **DNR equipment and supply purchases, primarily field data recorders and GPS units.**	$ 100,000
Acquisition (Fee Title or Permanent Easements):	$ -
Travel: DNR associated travel expenses	$ -
Additional Budget Items:	$ -
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND $ REQUEST =	$ 1,794,640

V. OTHER FUNDS

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State $ Being Applied to Project During Project Period: Includes budget allocations and investments from MACLC members over the three year grant period. Includes investments in software, hardware, and other equipment as well as contracts for services and direct expeditures	$ 500,000	*Secured*
Other State $ Being Applied to Project During Project Period: General Fund	$ 75,000	*Secured*
In-kind Services During Project Period: Includes staff time from MACLC members over the three year grant period. Includes forester personnel as well as GIS specialist and other staff that are directly involved with inventory data collection, analysis, updating, and maintenance.	$500,000	*Secured*
From DNR, staff time (and related expenses) for project management, inlcuding design, development and oversight. Also field staff time (and related expenses) in collecting, processing and analyzing field plot data; and product review and quality control.	$1,000,000	*Secured*
Remaining $ from Current ENRTF Appropriation (if applicable):	$ -	
Funding History: **ENRTF for linked project "Rapid Forest Ecosystem & Habitat Inventory by Imputation"**	$ 262,000	*Secured*

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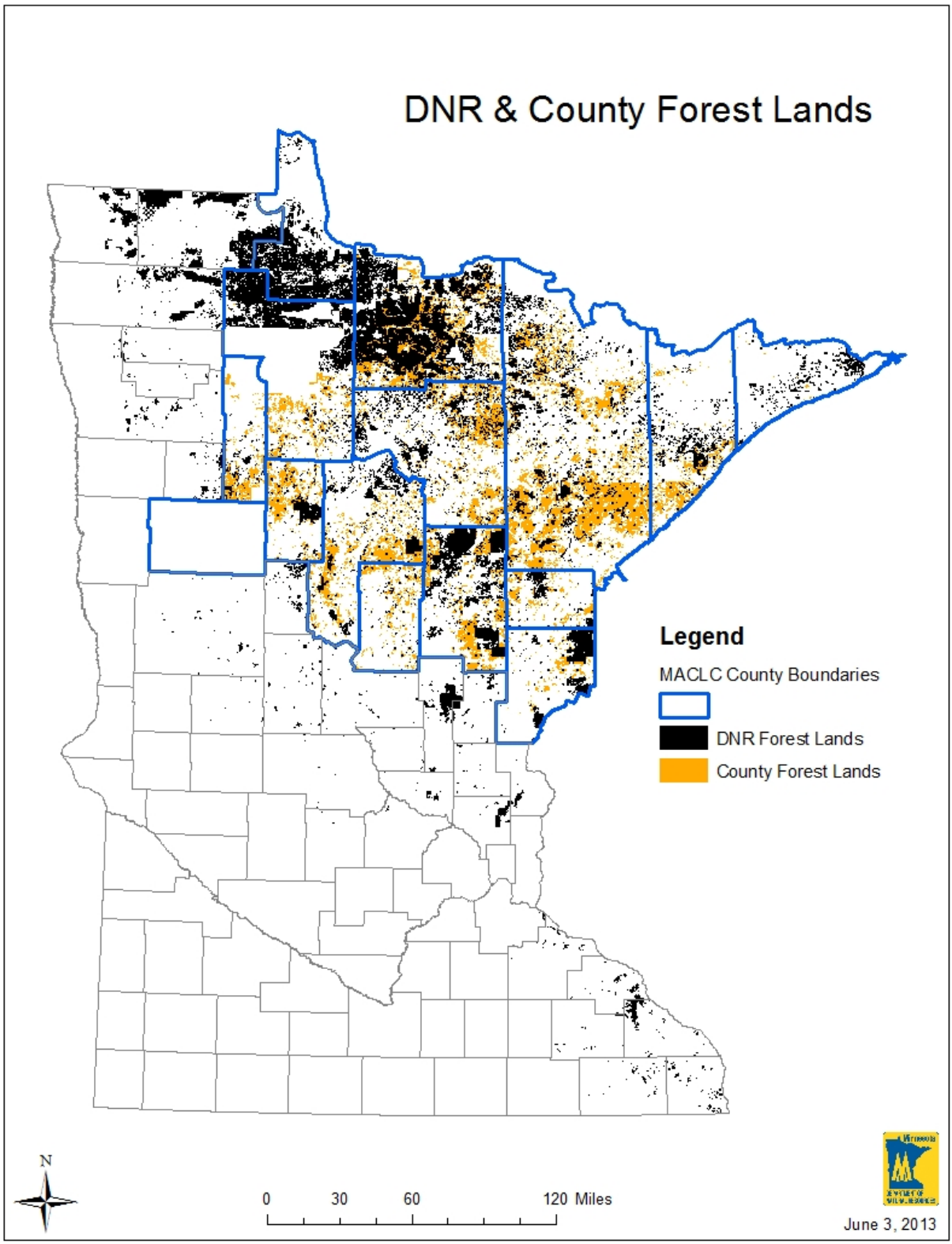

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Project Manager Qualifications

Project Manager: Jon Nelson
Affiliation: Department of Natural Resources, Division of Forestry
Telephone Number: 651-259-5278
Title: Forest Policy and Planning Supervisor

Jon Nelson has over 30 years of experience working for the DNR Division of Forestry in various professional and supervisory positions, most of which involved various aspects of forest management planning (i.e., strategic and operational), forest management policy analysis, project development and implementation, and interdisciplinary coordination on forest management issues. Currently he manages the division's Forest Policy and Planning, Forest Certification, and Forestry Information Systems programs. He spent several years in the field collecting forest inventory data on DNR lands and was the acting supervisor for the DNR Resource Assessment unit (located in Grand Rapids) in 2011.

Organization Description
The Minnesota Department of Natural Resources' overall mission is to work with citizens to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.

The Division of Forestry manages 58 state forests and 4.2 million acres of land for multiple forest resources, maintains over 2,000 miles of state forest roads that provide access to state and other forest lands, is responsible for protecting people, property and natural resources from wildfire on 45.5 million acres of land in Minnesota and works with private landowners, partner organizations, and consulting foresters to promote sustainable management on 5.7 million acres of non-industrial private forestland.

The DNR maintains a forest inventory for DNR administered forest lands under the authority of M.S.§84.03 that directs the commissioner to "collect and arrange statistics and other information in reference to the lands and general and specific resources of the state;" under M.S.§90.041 that directs the commissioner to "make thorough inquiry into the extent, character and value of the timber on all state lands;" and under M.S.§89A.07 that directs the commissioner to "establish a program for monitoring broad trends and conditions in the state's forest resources."