DEPARTMENT OF NATURAL RESOURCES

MINNESOTA 2020 STATE FOREST ACTION PLAN

PART 2 OF 2: STRATEGIES, STAKEHOLDERS, SUCCESSES AND NATIONAL PRIORITIES

07/09/2020

Figure 1 – North Shore Lake Superior. Source: DNR.

The US Department of Agriculture Forest Service (USFS) is a partner with the Minnesota DNR in this effort.

DEPARTMENT OF NATURAL RESOURCES

Letter from the Minnesota State Forester

July 9, 2020

Dear Minnesota forest stakeholder:

It is with great pleasure that I present to you the Minnesota 2020 State Forest Action Plan (SFAP). Minnesota has always had a strong and active forestry community working together to manage our forests sustainably. Developing this plan has been a collaborative effort between the Minnesota Department of Natural Resources (DNR), and the US Department of Agriculture Forest Service, with input from stakeholders and partners including Minnesota's National Forests, tribal forest land managers, county land departments, Minnesota Forest Resources Council, Board of Water and Soil Resources (BWSR), State and Private Forestry advisory committees, forest industry representatives, university forestry advisors, conservation organizations, and private forest landowners. The 2020 SFAP builds upon both the Minnesota 2010 SFAP, and updates identified in a 2015 SFAP review.

Federal approval of this plan and alignment of program goals with the final plan, is a requirement for eligibility to receive funds from the US Forest Service State and Private Forestry program, under the authority of the federal Cooperative Forestry Assistance Act.

Examples of these federal funds include grants to support the following: Landscape Scale Restoration (LSR), Great Lakes Restoration Initiative (GLRI) and Wildfire Risk Reduction (WRR). Although the US Forest Service State and Private Forestry program itself is not the primary driver for forestry activity or economic development in the state, Minnesota DNR regards these funding sources as critical seed funding for many aspects of sustainable forestry. Considerable State and Private Forestry work and initiatives would be lost or incomplete without this foundation and partnership between Minnesota DNR Forestry and the US Forest Service.

The Minnesota 2020 SFAP is comprised of two documents: **Part 1: Assessment and Trends**; and **Part 2: Strategies, Stakeholders, Successes and National Priorities**. It is important to note that these documents are a broad overview of Minnesota's forest conditions and trends, with general strategies to guide sustainable forest management across all ownerships within Minnesota. Existing data sources include US Forest Service Forest Inventory Analysis, Northern Institute for Applied Climate Science, DNR Resource Assessment, DNR Climatology, BWSR, National Woodland Owners Survey, among many others. Data gaps are also identified within the documents to assist both Minnesota DNR and the US Forest Service to guide investments in new forestry related data products, and to continually improve the accuracy of information.

As Minnesota State Forester, I am proud to share all of our collective forestry accomplishments, future challenges, and opportunities described in the 2020 SFAP with you, our forestry partners, stakeholders and all Minnesotans. We, at DNR, are committed to work together with all our forestry community, to address these future challenges and opportunities in the coming months and years, in order to protect and ensure the health and sustainability of our precious and abundant forest resources.

Forrest Boe – State Forester 

Table of Contents

Table of Figures

Table of Tables

Chapter 1 Introduction

The 2008 federal Farm Bill (Title VIII: Forestry) set out new priorities and planning standards for the USDA Forest Service (USFS) State and Private Forestry (S&PF) program and adjusted cooperative relationships for federal, state, and private forest systems. This effort, referred to as the S&PF Redesign, was in response to increased impacts on the nation's forests and decreased federal S&PF funds and resources. Under the S&PF Redesign, all 50 states are required to analyze their forest conditions and trends in a *Statewide Forest Resource Assessment.* The bill recognized the need for forest planning by requiring the 50 states to complete the statewide assessment every 10 years to receive federal funds under the Cooperative Forestry Assistance Act (CFAA). Federal law requires that the State Forest Action Plan be reviewed every 5 years, with a full revision due every 10 years.

Further, based on the statewide assessment, a *Statewide Forest Resource Strategies* document is also required to qualify for federal funds under the CFAA. The strategies document acts as a foundation for formulating S&PF competitive project proposals and future guiding of S&PF program direction. The first iteration of the strategies document was completed alongside the statewide assessment document in June 2010. Together, these two documents comprise the Minnesota *State Forest Action Plan.* In 2010, the state of Minnesota chose to complete the SFAP in two documents: (1) Minnesota Forest Resource Assessment: Important Facts, Information, Trends and Conditions About Minnesota's Forests and (2) Minnesota Forest Resource Strategies: Positioning the State of Minnesota for Forest Resources Sustainability 2010-2015. The 2020 revision follows the same format, as well as the 2018 US Forest Service guidelines for state forest action plans.

The Minnesota 2020 SFAP primarily serves as a funding plan document for the state's Cooperative Forest Management (CFM) programs supported by US Forest Service S&PF such as Forest Stewardship, Forest Legacy, Urban and Community Forestry, Forest Health, Forest Utilization and Marketing, and Fire Management. This plan also provides useful context for the management of public lands in a landscape context. The plan is not meant to be an overall specific state forest management plan for timber or forest management, which are outside the scope of these documents.

Chapter 2 National Priorities and Objectives

The 2008 Farm Bill established three national priorities and associated objectives for the USDA Forest Service S&PF program. Under the federal S&PF Redesign, national and statewide forest resource assessments and strategies are used to develop competitive proposals for S&PF funds. To receive these federal funds under the S&PF Redesign program, projects must follow the annual direction developed by the US Forest Service, and directly address one or more of the three national priorities and 11 objectives as laid out below.

Conserve and Manage Working Forest Landscapes for Multiple Values and Uses

Identify and conserve high priority forest ecosystems and landscapes

Actively and sustainably manage forests

Protect Forests from Threats

Restore fire-adapted lands and-or reduce risk of wildfire impacts

Identify, manage, and reduce threats to forest and ecosystem health

Enhance Public Benefits from Trees and Forests

Protect and enhance water quality and quantity

Improve air quality and conserve energy

Assist communities in planning for and reducing forest health risks

Maintain and enhance the economic benefits and values of trees and forests

Protect, conserve, and enhance wildlife and fish habitat

Connect people to trees and forests, and engage them in environmental stewardship activities

Manage trees and forests to mitigate and adapt to global climate change

Guidance from National Association of State Foresters (NASF)

Historically, the federal Forest Stewardship Program (FSP), has been one of the primary private forest landowner assistance programs administered by US Forest Service S&PF in partnership with the states. This program serves as a "gateway" through which landowners can gain access to a variety of assistance and programs including USDA cost-share, state property tax and financial incentives, forest certification, and other services. At their September 2018 annual meeting, the National Association of State Foresters (NASF) endorsed the following guidance for states to use when developing and implementing priorities for Forest Stewardship including:

States will identify geographic priority areas for delivering landowner assistance. States will strategically deploy federal assistance to address one or more of the following critical issues: 1) protecting water resources, 2) enhancing wildlife habitat, 3) supporting jobs in the woods, and 4) reducing wildfire risk to communities.

- All federal stewardship dollars will be spent within geographic priority areas. State matches can occur elsewhere.
- New measures will be developed to better communicate federal investment outcomes.
- A new allocation methodology will be developed to reflect this strategic focus of federal dollars.

NASF also provided guidance on how states can identify their Forest Stewardship Program Geographic Priority Areas as part of the SFAP revision process including:

- Priority Area(s) need to be specific geographic areas, not more than 50 percent of the total eligible lands for state Forest Stewardship.
- More than one priority area is acceptable, but collectively: 1) areas must be of a reasonable size, reflecting that these are truly areas where focused attention should be dedicated; and 2) areas must be responsive to one or more of the above identified issues.
- The selection and delineation of priority areas needs to show a clear strategy aimed at achieving progress on the identified issues within an area where this achievement is most needed and-or likely to occur.

Chapter 3 State Issues, Strategies, and Resources Needed

Under the 2008 Federal Farm Bill, all states are required by the USDA Forest Service to develop strategies to address priority issues and priority landscape areas. Minnesota's list of priority issues and strategies were developed for the Minnesota 2010 State Forest Action Plan (SFAP), from a combination of the three US Forest Service S&PF national priorities and 11 objectives (approved in 2008 by the S&PF Redesign Implementation Council and NASF), with input and edits from the DNR State Forester, S&PF Program Leads and Forestry Management Team (DMT). These strategies were reviewed and updated in 2015. For the 2020 revision of the SFAP, Minnesota has developed a series of integrated strategies to address the priority issues and landscape areas outlined in the Minnesota Forest Resource Assessment document. These strategies cross all levels of ownership and are generally accepted by all parties as posing continued or future threats to the long-term viability of healthy and sustainable forests. Through the implementation of the strategies listed in the SFAP, the state of Minnesota and its partners will continue to proactively and comprehensively address the three national themes established in the US Forest Service Redesign process.

The following pages of this chapter outline new and updated strategies that Minnesota intends to address regarding the issues and opportunities identified in the Assessment section of the 2020 SFAP. The following tables include many abbreviations. Please see the Acronyms section at the end of this document for a list of acronyms.

1. Conserve and Manage Working Forest Landscapes for Multiple Values and Uses

1.1 Identify and Conserve High Priority Forest Ecosystems and Landscapes

Historically, Minnesota has enjoyed a large forest land base, with over one third of the state forested. Keeping forested lands forested is a high priority for the state. Collaboration with like-minded partners in sustaining and preserving forests is a key to a healthy forest land base in the state. Two administrative programs that address forest conservation include the federal Forest Legacy Program, which provides matching federal funds to state funds for purchasing forest lands or conservation easements, and the state Forests for the Future Program, which gives landowners a way to sell conservation easements on their land. Since 2000, public and private funding sources have provided more than $92 million to protect more than 360,000 acres of forest with permanent easements and fee title. Over 60 percent of the funding came from state funds, 20 percent from private funds, and 18 percent from federal funds. See Table 1 for details.

	Strategy	Key Stakeholders	Partners	Resources Needed
1	Work with partners to identify opportunities for forest protection, enhancement and restoration. Examples could include using TNC Resilient and Connected Lands analysis to prioritize key landscapes for climate resiliency.	Private landowners, federal, state, local govt's, forest industry landowners, NGOs	MFRC, USFS, NRCS, Tribes, USFWS, DNR, FSA, NPS, BWSR, SWCD, SFI-SIC, TNC, MDH,UMN	Landscape stewardship projects such as FSP, DNR Working Lands Initiative, Forest Legacy Easement Program, EQIP, CRP, CREP, CSP, WHIP, BWSR – RIM, SWCD, ACUB – Camp Ripley, RCPP, others from Farm Bill in 2018
2	Implement Forests for the Future (MFF) program.	Private landowners, federal, state, local gov'ts, forest industry landowners	Outdoor Heritage Council, USFS, TNC, MLT, TCF, TPL, FLP	Conservation easement funding (L-SOHC, TNC, Blandin Foundation, Forest Legacy, Bonding, LCCMR), SWCD
3	Identify and acquire key priority forest lands through fee-title acquisitions and through identification and research of 'refugia' areas or wildlife corridors most valuable for climate resiliency.	Federal, state, local gov'ts, Minnesota public	Outdoor Heritage Council, TNC, MLT, TCF, TPL, UMN	MN Outdoor Heritage Fund, Bonding, LCCMR, MFF
4	Promote and support landowner participation in tax law and incentive programs that support, encourage, and reward forest land retention and enhancement.	NIPF landowners, SWCD, private consultants	FSP, Tree Farm, Minnesota Forestry Association, SWCD, Dept. of Revenue, consulting foresters, UMN Extension, county land departments	FSP, SWCD, SFIA, 2c, Rural Preserves
5	Encourage retirement and reforestation of appropriate marginal, erodible farmlands including riparian areas.	Private landowners, MFRP, federal, state, local gov'ts, MFRC Landscape Program	NRCS, Tribes, DNR, FSA, SWCD, MDA, BWSR, TNC,USFS, NIACS	FSP,CRP,CREP, SWCD, RIM, CRP
6	Target forest stewardship services to critical watersheds as supported through federal, state, local programs and agencies.	NIPF landowners, Minnesota public	USFS, EPA, MPCA, FSP, MFA, BWSR, SWCD, MDH	Clean Water Legacy, FSP

	Strategy	Key Stakeholders	Partners	Resources Needed
7	Ensure that forest stewardship plans include guidance and information for forest management, harvesting, regeneration, climate change risks and potential adaptation actions.	NIPF landowners	DNR, consulting foresters, SWCD, MDH, Stewardship Committee, NIACS	DNR PFM database, FSP, MFRC voluntary site level guidelines
8	Support and expand sustainable practices on working private forested lands.	NIPF landowners	DNR, MFRC, SWCD, MLEP, loggers, private consultants, FSP, other private landowner assistance programs	FSP, MFRC voluntary site level guidelines
9	Increase understanding of the magnitude, causes, and impacts of forest land fragmentation and parcelization in the state. Assess general public's understanding of issues and develop targeted outreach and education programs including the benefits of forest land protection for the publics' drinking water in the state.	Minnesota public	DNR, MFRC, MFRP, MDH, SWCD, UMN Extension	MFF, Wild Rice watershed project, MFRC
10	Assess and analyze a broad and integrated set of policy tools to mitigate the adverse effects of forest parcelization and provide recommendations to the state legislature.	NIPF landowners, state legislature, Minnesota public	DNR, MFRC, UMN, state legislature	MFF, ACUB project, MFRC
11	Provide forest products marketing assistance to private landowners to improve landowner income.	NIPF landowners, wood industry	DNR, USFS, NRCS, UMN, State Technical Committee, SWCD	USDA S&PF

Table 1 – Strategies for Addressing the Issue "Identify and Conserve High Priority Forest Ecosystems and Landscapes."

1.2 Actively and Sustainably Manage Forests

Minnesota forest agencies are among the nation's first and largest public land managers to have their lands certified by both the Forest Stewardship Council® (FSC) and the Sustainable Forest Initiative® (SFI). Minnesota has approximately 8 million acres of certified forests across private and public ownerships and DNR holds the largest single FSC® Forest Management Certificate in the United States. Certification provides unique market access to support and sustain healthy and diverse forests. These forests support industries that produce certified products including lumber, siding, office paper, magazines, windows, furniture and cabinets. To maintain certification, all certified landowners (certificate holders) go through annual audits to review their conformance to and recommend improvements to indicators of sustainable forest management.

In 2019, the state of Minnesota and the US Forest Service developed an agreement for Shared Stewardship that supports the national vision of actively and sustainably managing forests through a landscape-scale approach that crosses all ownership boundaries and works collaboratively through partnerships to address many forest challenges and opportunities. The core elements of Shared Stewardship is to determine management needs on a state level, do the right work in the right places at the right scale and use all available tools for active, outcome-focused management. See Table 2 for details.

#	Strategy	Key Stakeholders	Partners	Resources Needed
1	Work with partners to identify opportunities for forest protection, enhancement, and restoration.	Private landowners, federal, state, local, gov'ts, forest industry landowners, NGOs	MFRC, USFS, NRCS, Tribes, USFWS, DNR, FSA, NPS, BWSR, SWCD, SFI-SIC	Landscape stewardship projects such as FSP, DNR Working Lands Initiative, Forest Legacy Easement Program, EQIP, CRP, CREP, CSP, WHIP, BWSR – RIM, SWCD, ACUB – Camp Ripley
2	Identify and acquire key priority forest lands through fee-title acquisitions and identify lands that are 'refugia' or wildlife corridors most advantageous for climate adaptation goals.	Federal, state, local gov'ts, Minnesota public	Outdoor Heritage Council, TNC, MLT, TCF, TPL	MN Outdoor Heritage Fund, Bonding, LCCMR, MFF
3	Continue to support assistance to private landowners for enrollment in group certificate programs.	NIPF landowners, Certification "chain-of-custody" businesses, SWCD	FSC, SFI, UMN, consulting foresters	Aitkin County SWCD private certification program

#	Strategy	Key Stakeholders	Partners	Resources Needed
4	Support logger education, training, and retention programs.	NIPF landowners, forest industry, private consultants, loggers, Minnesota Logger Education Program (MLEP)	MLEP, MFA, MFI, loggers	DNR, UMN Extension
5	Maintain public and expand private land third-party certification.	Forest industry, forest managers	Counties, MFA, MFRC, consulting foresters, SWCD	Funding, technical assistance
6	Maintain strong wood industry technical and wood supply information and assistance.	Forest industry	USFS, UMN, NRRI, DNR-U&M Program, SWCD	Funding, technical assistance
7	Provide forest and forest industry-related information and education to the public and other key audiences. Include information on climate change including the difference between biogenic and fossil carbon, climate change risks, and adaptation.	Forest industry, forest managers, Minnesota public	DNR, USFS, UMN, wood industry, SWCD, SFI-SIC	FSP, SWCD, funding, technical assistance, mapping
8	Support collaborative development of new or improved markets and products including wood as climate solutions for greenhouse gas emissions primarily carbon dioxide in regards to mass timber panels, cellulosic biofuels, and lignin and cellulose bio chemicals.	Forest industry, forest managers	DNR-U&M Program, UMN, NRRI	Funding, technical assistance, mapping, spatial data (e.g., aerial photography, lidar)
9	Provide wood marketing and utilization assistance to forest product companies to increase industry health and promote efficient wood utilization and greater use of underutilized species and resources. Also encouraging forest product companies to explore research and development to promote greater use of species expected to increase with climate change.	Forest industry, forest managers	DNR-U&M Program, UMN, NRRI	Funding, technical assistance

#	Strategy	Key Stakeholders	Partners	Resources Needed
10	Assist with continuous development of skilled forest industry workers through engagement with partner training efforts.	Forest industry	DEED, MLEP, UMN Extension, DL&I	DEED, MLEP, UMN Extension
11	Develop a service model that provides forest practitioners with a full range of services to support family forests throughout Minnesota.	Forest managers, NIPF landowners, consulting foresters	DNR, USFS, UMN, MFRC, SWCD, forest industry, NRCS, BWSR, MNFSC	Funding, technical assistance
12	Improve the consistency and quality of forest management projects implemented in family forests.	Forest managers, NIPF landowners	DNR, USFS, UMN, MFRC, SWCD, Private forest consultants, forest industry, NRCS, BWSR, MFA, FSC	Funding, technical assistance
13	Build greater information and technology capabilities to support family forest landowners and service providers in Minnesota.	Forest managers, NIPF landowners	DNR, USFS, UMN, MFRC, SWCD, Private forest consultants, forest industry, NRCS, BWSR., MFA, FSC	Funding, technical assistance

Table 2 – Strategies for Addressing the Issue "Actively and Sustainably Manage Forests."

2. Protect Forests from Threats

2.1 Restore Fire-adapted Lands and Reduce Risk of Wildfire Impacts

The state of Minnesota has forestry and emergency response professionals with extensive long-term experience in preventing and fighting forest fires, which was borne out of historic deadly wildfires dating back to the late 1800s and early 1900s. Protecting life, property, and natural resources on more than 45 million acres of public and private land from fire and other natural disasters is a core part of the state's resource management mission. Minnesota has embraced the National Firewise Program for many years, resulting in over 330 communities operating under 10 Community Wildfire Protection Plans. The state is a major partner in the Minnesota Incident Command System (MNICS), which is a collaborative effort involving federal, state, county, local community, and tribal fire-fighting personnel. Agreements with federal agencies including USFS, USFWS, BIA, NPS, and the MN-DPS, allow for the sharing of personnel and fire-fighting equipment, resulting in quick initial responses to wildfires throughout the state. In addition, these partnerships are also called upon for prescribed burning management purposes. When fire danger is low in Minnesota, resources are made available to assist other partners through the National Interagency Coordination Center (NICC) and the Great Lakes Forest Fire Compact (GLFFC). In the summer of 2019, state staff supported interagency efforts in Alaska as part of the Eastern Area Type 2 Incident Management Team, supported the state of Washington with firefighter leadership to expand their resource capabilities, and deployed a state-contracted Fire Boss to Michigan. The state also provides the physical location for the Northeast Interagency Incident Support Cache, which supplies a wide range of firefighting equipment both in-state and for 20 northeastern states. See Table 3 for details.

#	Strategy	Key Stakeholders	Partners	Resources Needed
1	Develop and maintain interagency workforce capacity to meet the wildfire needs of all cooperating agencies and Tribes.	MNICS, state fire chiefs	USFS, USFWS, BIA, Tribes, NPS, DNR, MN DPS-HSEM, GLFFC, NMSFA, NASF, MDH, FEMA, MN Fire Chiefs Association	MIFC, Annual Fire Academy, out of state training and wildfire assignments, cooperative agreements
2	Maintain and enhance current interagency cooperative partnerships with other wildland fire emergency management agencies.	MNICS agencies, state fire chiefs, National Wildfire Mobilization System, NMSFA, NASF, GLFFC	USFS, USFWS, BIA, Tribes, NPS, DNR, MN DPS-HSEM, GLFFC, NMSFA, NASF, MDH, FEMA, MN Fire Chiefs Association	Cooperative agreements, federal excess property and firefighter property programs, MIFC

#	Strategy	Key Stakeholders	Partners	Resources Needed
3	Monitor and adjust the scope of wildfire protection coverage, necessary planning levels, and suppression resources required to support wildfire and all hazard missions. This should include and account for changing fire conditions and risks due to climate change.	MNICS partners, forest landowners, forest industry	USFS, USFWS, BIA, Tribes, NPS, DNR, MN DPS-HSEM, GLFFC, NMSFA, NASF, MDH, FEMA , MN Fire Chiefs Association	MIFC Information and Intelligence units, MNICS partners, SEOC
4	Enhance wildfire risk reduction, prevention and enforcement efforts to minimize wildfire impacts and reduce human-caused ignitions. Educate prosecutors and the courts on the impacts of arson on forests.	MNICS partners, GLFFC, forest landowners, forest industry, MN taxpayers	DNR Enforcement, county sheriffs	Local, regional, statewide and national prevention programs, Firewise, Fire Adapted Communities, CWPPs
5	Improve utilization of available technologies in wildfire prevention and suppression efforts.	MNICS partners, GLFFC, NMSFA, NASF	MN State Fire Marshal, GLFFC, MNICS	DNR and MNICS agency GIS specialists, RAWS, CFFDRS, NFDRS, resource ordering and tracking systems
6	Develop or redesign business systems specifically to enhance fire management and, accountability, and to reduce costs.	MN Legislature, USFS NE, MN taxpayers, MNICS partners	MNICS, REMA, GLFFC, NMSFA, NASF	DNR Forestry Fire Business Manual, FEMA grants
7	Promote the role of fire in the ecosystem by strengthening all agency and tribal prescribed burns programs.	MNICS partners, GLFFC, NMSFA, NASF, TNC	USFS, BIA, USFWS, DNR, MNICS, Tribes, TNC	DNR Statewide Prescribed Fire Committee, MNICS Rx Fire WT, NWCG Rx Fire Qualifications Standards

Table 3 – Strategies for Addressing the Issue "Restore Fire-adapted Lands and Reduce Risk of Wildfire Impacts."

2.2 Identify, Manage, and Reduce Threats to Forest and Ecosystem Health

Minnesota's forests and trees are critical to the ecological health and financial economy of the state. Ensuring healthy ecosystems, productive forests and quality trees that will exist well into the future is a collaborative goal between federal, state, tribal, and county agencies, and private and public community partners throughout the state. Forest health programs including the Forest Pest First Detectors, and collaborations among agencies such as US Forest Service, DNR, and Minnesota Department of Agriculture (MDA), are vital to manage the spread of invasive species. For example, emerald ash borer (EAB) is of urgent concern as Minnesota has over 1 billion black ash trees, more than any other state. Ash trees make up seven percent of the forest cover and 30 percent of urban tree cover. On-going education efforts in both urban and rural communities are alerting the public to be vigilant and help to keep the state's forest resources healthy for future generations. These strategies can also be considered climate adaptation actions to increase forest resiliency and reduce the impacts of threats on forests. See Table 4 for details.

#	Strategy	Key Stakeholders	Partners	Resources Needed
1	Identify high-risk, low-volume stands and create prescriptions to increase stocking and health.	Public and private forest landowners	USFS, DNR, counties, industrial landowners, NIPF, UMN, SWCD, BIA, Tribal natural resources departments, MPCA	FMIA, Bonding, LSOHC, LCCMR, FSP, USFS S&PF, USFWS, UMN, funding, technical assistance
2	Reduce average age of even-aged managed cover types and promote vigorous young forest stands through harvesting.	Public and private forest landowners	USFS, DNR, counties, industrial landowners, NIPF, UMN, SWCD, BIA, Tribal natural resources departments, MPCA	FMIA, LSOHC, LCCMR, FSP
3	Develop and maintain a better-balanced and complete age class distribution for plant communities managed primarily with even-aged silviculture systems, while at the same time allowing some stands to transition to older growth stages.	Public and private forest landowners	USFS, DNR, counties, industrial landowners, NIPF, UMN, SWCD, BIA, Tribal natural resources departments, MPCA	FMIA, LSOHC, LCCMR, FSP
4	Thin overcrowded stands to improve vigor and reduce competition.	Public and private forest landowners, loggers, industry	USFS, DNR, counties, industrial landowners, NIPF, UMN, SWCD, BIA, Tribal natural resources departments, MPCA	FMIA, Bonding, LSOHC, LCCMR, FSP

#	Strategy	Key Stakeholders	Partners	Resources Needed
5	Match tree species and management techniques and suitability to individual sites. Consider anticipated climate change conditions through the use of DNR Ecological Classification System (ECS), NIACS Climate Change Field Guide for Northern Minnesota Forests: Site-level considerations and adaptation, and USFS' Climate Change Tree Atlas; in managing species.	Public and private forest landowners	DNR, counties, USFS, industrial landowners, NIPF, UMN, SWCD, BIA, Tribal natural resources departments, MPCA	FMIA, LSOHC, LCCMR, FSP, G&F Heritage Enhancement
6	Promote species diversity in community and urban plantings.	Public and private forest landowners, communities	USFS, DNR, Tribes, MnSTAC, UMN, SWCD, MPCA	Bonding, LSOHC, LCCMR, SWCD, funding, technical assistance
7	Use eradication, suppression, and outreach to respond to new and expanding invasive species populations in the state.	Public and private forest landowners, communities	DNR, MDA, USFS S&PF, Tribes, USFS National Forests, counties, APHIS-PPQ, SWCD, landowner groups, MFRC and MFRP, GMSTS, Co Ag Inspectors, MPCA, UMN Extension	LSOHC, LCCMR, SWCD, funding, technical assistance, G&F Heritage Enhancement
8	Encourage and carry out small research trials, case studies, and pilot projects on climate change adaptation practices using guidance from DNR Operational Order 124 on plant material and assisted migration standards for native plant communities. Establish long-term monitoring plots to include evaluation of climate change impacts, as well as, long-term effectiveness of adaptation actions. Continue to collaborate with university researchers to improve forest health management and policy for natural resources managers.	Federal and state agencies	DNR, MDA, Tribes, USFS, Universities, MPCA	Northern Research Station, funding, FMIA, LSOHC, LCCMR, FSP, G&F Heritage Enhancement

#	Strategy	Key Stakeholders	Partners	Resources Needed
9	Identify and develop partnerships with public and private stakeholders, and community groups to develop the relationships and infrastructure needed to support integrated early detection and rapid response efforts to respond to the threat of EAB. Develop a collaborative prevention approach, and a unified outreach effort.	Public and private forest landowners, communities	DNR, MDA, S&PF, USFS Nat Forests, USFWS, BIA, Tribes, NPS, counties, APHIS-PPQ, SWCD, landowner groups, MFRC and MFRP, MPCA, UMN Extension	USFWS, NEPA, USDA, LSOHC, LCCMR, SWCD, funding, technical support
10	Develop new and expand existing markets for ash to provide the means and incentives to manage forest stands ahead of multiple invasive species infestation and to address tree mortality when infestations occur.	Public forest landowners and managers, wood industry, municipalities, private homeowners	DNR, USFS, UMN, MFI, MLEP, MPCA, MnSTAC, MDA, USFS, S&PF, UMN Extension	LSOHC, LCCMR, funding, technical assistance
11	Encourage communities and local governments to formally inventory their ash resource on public and private lands so they know what is at risk and can more effectively take preventative actions where needed.	Municipalities and private homeowners	DNR, MnSTAC, MDA, USFS, S&PF, MPCA	LSOHC, LCCMR, funding, technical assistance, mapping and spatial data (e.g., aerial photography, lidar)
12	Implement ash management strategies in ash stands to maintain forested communities in predominate ash types at risk from EAB. Consolidate outcomes from trials (USFS, Fond du Lac Band, DNR), and incorporate recommendations for continued supplemental planting in ash stands.	Public and private forest landowners, communities	USFS S&PF, DNR, MDA, USFS National Forests, USFWS, BIA, Tribes, NPS, counties, APHIS-PPQ, SWCD, landowner groups, MFRC and MFRP, SWCD, MLEP, MPCA, UMN Extension	USFWS, NEPA,USDA, LSOHC, LCCMR, SWCD, funding, technical support

#	Strategy	Key Stakeholders	Partners	Resources Needed
13	Develop restoration guidelines for both urban and rural lands forests, and modify landowner assistance program to support restoration. Consolidate outcomes from trials (USFS, Fond du Lac Band, DNR), and incorporate recommendations for continued supplemental planting in ash stands.	Public and private forest landowners, communities	DNR, counties, USFS, industrial landowners, NIPF, UMN, SWCD, BIA, Tribal natural resources departments, MPCA	FMIA, LSOHC, LCCMR, FSP
14	Work with private campgrounds, resorts, and other agencies to explore and implement the means to minimize the movement of unregulated firewood.	MNLA, other private nurseries	DNR, MDA, USFS S&PF, UMN, MPCA	LCCMR
15	Explore revenue sources and opportunities to ensure that EAB and other invasive species preventative efforts are adequately funded.	Public and private forest landowners, communities	DNR, MDA, USFS , S&PF, APHIS-PPQ, MnSTAC, MFRC, MFRP, Tribes, MPCA	USDA, USFS, USFWS, LSOHC, LCCMR, funding, technical assistance
16	Support research into biological-control, chemical-control, tree resistance, and "slowing the spread" for EAB and other threats.	Public and private forest landowners, communities	DNR, MDA, USFS , S&PF, APHIS-PPQ, USFWS, MnSTAC, MFRC , MFRP, GMSTS, MPCA, NRCS, Tribes	USDA, USFS S&PF, USFWS, LSOHC, LCCMR, UMN, NRCS CIG funds, technical assistance
17	Develop risk assessment for oak wilt in Minnesota and prioritize outreach efforts based on risk.	Public and private forest landowners, communities	DNR, USFS , S&PF, Aphis-PPQ, UMN, MPCA, Tribes	USDA, USFS S&PF, USFWS, LSOHC, LCCMR, UMN, funding, technical assistance
18	Support early detection and rapid response to control new invasive plants before they become established. Use risk assessment models to prioritize survey and treatments.	Public and private forest landowners, communities	DNR, USFS, UMN, SWCD, MDA, MPCA, Tribes, UMN Extension	USDA, USFS S&PF, USFWS, LSOHC, LCCMR, Heritage Enhancement, UMN, funding, technical assistance

Table 4 – Strategies for Addressing the Issue "Identify, Manage, and Reduce Threats to Forest and Ecosystem Health."

3. Enhance Public Benefits from Trees and Forests

3.1 Protect and Enhance Water Quality and Quantity

Minnesota has abundant water supplies in both surface and underground systems. However, demand for water is increasing faster than population growth, which presents challenges to balancing water quality and consumptive needs. Coupled with deforestation and climate change threats of increased storm severity, runoff, flood damage, and drought, the protection and sustainable management of the state's forest lands are a critical component in ensuring that clean water supplies will continue to be available in the future. Changing land use and population growth also threaten aquatic habitats in the state. Protecting and maintaining high-quality aquatic habitats and healthy water ecosystems are essential for sustaining not only human water needs and quality of life, but also the multi-million dollar hunting, fishing, and tourism industries that are large economic drivers for which the state is well known. Minnesotans have invested in legislative initiatives such as the Clean Water, Land and Legacy Amendment and the Environmental and Natural Resources Trust Fund to insure that Best Management Practices (BMPs) are put in place during forest management activities and to assess the implications of implementing these BMPs, or not, for the best forest management results. See Table 5 for details.

#	Strategy	Key Stakeholders	Partners	Resources Needed
1	Protect and manage forests and wetlands in forested areas (ag/prairie excluded) under identified MPCA watershed restoration and protection strategies by working with key partners and stakeholders to contribute to high-quality aquatic habitats and ensure that healthy eco-systems remain viable.	NIPF landowners, adjacent landowners, Minnesota public	USFS, MPCA, BWSR, NPS, USFWS, BIA, Tribes, MFA, Watershed Managers, DNR, MFRC, NRCS, SWCD	EPA, State Clean Water Legacy Fund, FSP, Site-level Guideline monitoring program, USFWS Partners for Wildlife program, DU, DNR Long-range Duck Recovery Plan, DNR Aquatic Management Area Acquisition Plan, TNC MN Lake Conservation Portfolio, RIM, WRP, CSP, CREP, CRP, SWCD
2	Protect and enhance critical riparian corridors in key watersheds (to include water quality practices, conservation easements and erosion control).	NIPF landowners, adjacent landowners	USFS, NRCS, MPCA, DNR, MFA, MFRC, Inter-Agency work group (BWSR, MDA, MNDOT, DNR, NRCS), SWCD	State Clean Water Legacy Fund, "Sustaining Minnesota Forest Resources" resource guide, FSP, CPR, CREP, RIM, NRCS, GLRI, SWCD

#	Strategy	Key Stakeholders	Partners	Resources Needed
3	Protect high-quality aquatic habitats within healthy watersheds and encourage riparian buffers through tree or vegetative planting, as per Minnesota's Buffer Law.	NIPF landowners, adjacent landowners, Minnesota public	USFS, MPCA, BWSR, NPS, USFWS, BIA, Tribes, Watershed Managers, DNR, MFRC, Midwest Glacial Lakes Partnership, SWCD	Outdoor Heritage Fund, State Clean Water Legacy Fund, National Fish Habitat Action Plan, Minnesota Environmental and Natural Resources Trust Fund, Wild Rice Lakes project, NRCS, GLRI
4	Ensure protection and maintenance of safe source water through sustainable forest management practices transfer to resources in urban areas by evaluating and improving current programs (LID, BMPs, TMDL compliance).	Urban & rural communities	MnSTAC, LMC, DNR, FSA, SWCD, Interagency work group (BWSR, DNR, MPCA, MDH, MDA)	State Clean Water Legacy Fund, EPA, BWSR, SWCD, FSP, NRCS, GLRI
5	Enact a forest/water quality media campaign and education package.	NIPF landowners, Minnesota public	DNR programs including "Healthy Rivers" and "Gateway Initiative," MN Master Naturalist, SWCD, MFI, lake associations, watershed districts, USFS watershed education program	State Clean Water Legacy Fund, EPA, MPCA, BWSR, SWCD
6	Map and monitor forested watersheds for potential impairments (TMDLs) and participate in the development of strategies for solutions to maintain water quality through Watershed Restoration and Protection Strategy (WRAPS).	NIPF landowners, Minnesota public	USFS, MPCA, DNR, SWCD, Tribes	State Clean Water Legacy Act
7	Target forest stewardship services and conservation easements to critical watersheds as supported through federal, state, and local programs, and agencies.	NIPF landowners, Minnesota public	USFS, EPA, MPCA, DNR, FSP, FLP, SWCD, BWSR, MFF, Tribes	State Clean Water Legacy Act, FSP, FLP, MFF

#	Strategy	Key Stakeholders	Partners	Resources Needed
8	Evaluate, refine and apply regulatory tools that conserve water supply and promote forest land and water-use practices that protect water quality.	Forest land managers, private forest and shore land owners, Minnesota public	MPCA, BWSR, SWCD, DNR, MDH, state legislature, county boards	State Clean Water Legacy Act, State Shore Land Standards
9	Support research and programs that seek to increase public understanding, acceptance and implementation of aquatic habitat stewardship practices and their relationship to watershed protection.	Forest land owners, youth, Minnesota public	State Shoreland Habitat Restoration Program, State MinnAqua Program, DNR, NPS, SWCD, UMN Extension, public schools	U of M, Research Institutes, *Undetermined: needs funds and technical assistance*
10	Promote and implement planning requirements for SFIA, Rural Preserves, Green Acres, and 2C.	NIPF landowners, counties, municipalities	DNR, SWCD, consulting foresters, DOR	FSP, Technical assistance capacity, cost-share dollars
11	Support continuing monitoring of implementation and effectiveness of Site-Level forest management guidelines especially water quality guidelines.	Forest land managers, MFRC, DNR	DNR, MFRC, UMN, SWCD, MLEP	*Undetermined: Needs ongoing funding for monitoring*
12	Support continuing education programs like MLEP and SFEC which provide Forest Management Guideline implementation training.	Loggers, foresters, landowners, land managers	MLEP, SFEC, MFRC, DNR, MFI	MLEP, SFEC, DNR, MFRC

Table 5 – Strategies for Addressing the Issue "Protect and Enhance Water Quality and Quantity."

3.2 Improve Air Quality and Conserve Energy

Minnesota's forests have one of the highest rates of carbon storage per acre in the nation at approximately 1.6 billion metric tons of carbon. In the future, carbon sequestration could be a new source of income for the state's forests. Opportunities to boost carbon storage include: creating new forests; using more harvested wood for furniture, lumber and other products that store carbon; planting faster growing trees; reducing disturbance of forest soils; leaving trees on the landscape longer before harvest; and planting more trees per acre. At present, carbon storage is valuable ecosystem service for the state. Abundant peatlands and wetlands abound and could provide additional carbon storage, if managed correctly. Mapping and monitoring of our forest carbon resources will require spatial data acquisition and analyses (e.g. aerial photography, satellite imagery, and lidar). This is an emerging field of study and the state could explore the following strategies for the future: 1) Support and promote best practices and protocols for calculating, monitoring, and verifying carbon storage in Minnesota's various forest types; 2) Support incentive programs that reward private landowners for carbon storage above and beyond common practice; and 3) Collaborate with neighboring states on regional greenhouse gas markets and carbon offset protocols for forests. (Discussion with NIACS staff Nov. 2019)

Pressure to find local, renewable alternatives to petroleum-based fuels and chemicals provides the state with new opportunities, especially in light of the downturn of traditional lumber and paper demands stemming from the 2007-2008 collapse of the housing market and the continued downward market trend of printing and writing paper products. Sustainable use of the state's forest resources can meet the demands of emerging wood markets while supporting the traditional forest products industry. In addition to pulp and paper, trees can be used to make building products, sawn products, thermal energy, electricity, renewable chemicals, and liquid fuels. The development and harvest of underutilized, diseased, damaged and fire-prone species must be pursued as part of a broader strategy to create well-managed, healthy, and productive forests. The utilization of wood for the emerging wood cellulosic bio-economy must be considered in the context of environmental, economic, and policy goals of the state. See Table 6 for details.

#	Strategy	Key Stakeholders	Partners	Resources Needed
1	At the request of industry, facilitate woody biomass industry projects synergistically "fitting" existing industry and resources.	Forest industry, forest managers, Minnesota public	DNR U&M Programs, USFS, UMN, wood industry, MLEP, US Climate Alliance	Funding, technical assistance
2	Follow biomass harvest guidelines as laid out in the current version of "Sustaining Minnesota Forest Resources Guidelines."	NIPF landowners, land managers, loggers, consulting foresters, MFA	MN FSP, MFA, MLEP, MFRC, biofuels industry	FSP foresters and list of registered stewardship plan holders, MFRC site level guidelines

#	Strategy	Key Stakeholders	Partners	Resources Needed
3	Monitor the implementation and effectiveness of biomass harvesting guidelines.	Industry, forest managers, NIPF landowners, Minnesota pubic	MFRC, DNR, UMN, MLEP	Funds received through UMN. On-going funding for research and monitoring, mapping, spatial data (e.g., aerial photography, lidar)
4	Contribute to attainment of broad ambient air quality goals, including regional haze attainment goals for northern Minnesota.	Industry, forest managers, NIPF landowners, Minnesota public	MPCA, EPA, DEED-Green Enterprise Assistance	Contingent upon business development needs
5	Avoid increases in net demand for water in locations where water resources are not adequate to meet project demand.	Industry, forest managers, NIPF landowners, Minnesota public	MPCA, EPA, DNR, DEED-Green Enterprise Assistance	Agency coordination
6	Minimize the thermal and chemical loadings on surface or ground water.	Industry, forest managers, NIPF landowners, Minnesota public	MPCA, EPA, DEED-Green Enterprise Assistance	Agency coordination
7	Support community development, economic development and investment goals and needs, through partnerships to attract firms or expand biomass use for retention and expansion of jobs and future wealth creation.	NIPF landowners, Minnesota Forestry Association, Tree Farm, rural communities	DNR U&M Program, DEED-Green Enterprise Assistance, biofuels industry, MFRC, MFRP, SFEC, MLEP, MFA, rural communities, chambers of commerce	Shared Stewardship, technical assistance, FSP
8	Focus on applications (for woody biomass) for which other renewable energy resources are not well suited.	NIPF landowners, MFA, Tree Farm, rural communities	DNR, DEED-Green Enterprise Assistance, biofuels industry, MFRC, MFRP, SFEC, MLEP, MFA, rural communities, chambers of commerce	Agency coordination and natural resource staff allocation to business development issues, mapping, spatial data (e.g., aerial photography, lidar)

#	Strategy	Key Stakeholders	Partners	Resources Needed
9	Encourage applications that efficiently utilize the BTUs contained within the wood product.	NIPF landowners, MFA, Tree Farm, rural communities	DNR, DEED-Green Enterprise Assistance, biofuels industry, MFRC, MFRP, SFEC, MLEP, MFA, rural communities, chambers of commerce	Agency coordination and natural resource staff allocation to business development issues
10	Create new income from non-traditional sources, such as carbon storage or biomass production, through working lands conservation opportunities for farmers.	NIPF landowners, MFA, FSP	DNR, NRCS, FSA	FSP, NRCS (via EQIP), FSA (via CRP), mapping, spatial data (e.g., aerial photography, lidar)
11	Take advantage of synergies and complimentary characteristics in systems that mix woody biomass and agricultural crops.	NIPF landowners, MFA, FSP, agricultural communities	DNR, NRCS, DEED-Green Energy businesses, Green Enterprise Authority	NRCS programs and practices that support agroforestry and silvi-pasture type farming systems
12	Develop, promote, and facilitate market solutions to fuel management issues and needs, e.g., expanded markets for brush and small diameter material.	Rural landowners, forest managers, wood industry, biofuels industry	USFS, DNR, counties, UMN	Funding, technical assistance, promotion

Table 6 – Strategies for Addressing the Issue "Improve Air Quality and Conserve Energy"

3.3 Increase Environmental Services by Creating and Maintaining Healthy Urban and Community Forests

Community forests are unique ecosystems that provide vital environmental services such as mitigating stormwater and cleaning the air. Maintaining shade in communities reduces energy consumption and impacts of heat island effects. Trees in community forests strengthen social cohesion and add economic value to homes and businesses. Climate change and the increasing threats of invasive species require continuing research and education for both public and private practitioners, to safely continue best management practices and to maintain trees for environmental services. See Table 7 for details.

#	Strategy	Key Stakeholders	Partners	Resources Needed
1	Promote trees and forests as public assets and infrastructure critical to environmental quality and public health, to justify greater investments.	Minnesota Shade Tree Advisory Committee (MnSTAC), local units of government (LUGs), Minnesota public	MnSTAC, DNR, UMN, MDA, MDH, MPCA, Tribes	USFS Urban Forest Inventory Analysis, iTree tools, spatial data (e.g., aerial photography, lidar)
2	Improve coordination and promotion to plan, monitor and implement state investments in invasive pest and plant control (emerald ash borer (EAB), gypsy moth, etc.) to foster resilience, restoration, and sustainability of urban and community forests.	MnSTAC, LUGs, Minnesota public	DNR, MDA, USDA, USFS, Tribes, UMN Extension	State and federal funds for invasives management, agency coordination, all stakeholder organizations
3	Promote trees as green infrastructure to manage stormwater runoff, cool urban heat islands, and provide recreational spaces for the public.	MnSTAC, LUGs, Minnesota public	DNR, SWCDs, Watershed Districts, MPCA, MDH, City Planners, Tribes	Great Lakes Restoration Initiative (GLRI) grant, Clean Water Fund, Watershed Districts
4	Maintain and increase urban and rural community forest canopy to meet greenhouse gas reduction goals.	MnSTAC, LUGs, Minnesota public	DNR, MPCA, UMN, MDH, Tribes	USFS Urban and Community (U&CF) Forestry grant

#	Strategy	Key Stakeholders	Partners	Resources Needed
5	Prioritize and implement work in area of greatest human health disparities and areas with populations most vulnerable to climate change.	MnSTAC, LUGs, Minnesota public	DNR, MDH, MPCA, Tribes, non-profits	USFS Urban Forest Inventory Analysis, iTree Tools, spatial data (e.g., aerial photography, lidar)
6	Foster environmental justice by prioritizing urban and community forestry projects that increase equity and accessibility.	MnSTAC, LUGs, Minnesota public	DNR, LUGs, Tribes MDH, MPCA, non-profits, Minnesota Society of Arboriculture (MSA)	US Environmental Protection Agency (EPA)
7	Clarify and communicate Urban and Community Forestry roles among state agencies pertaining to needs and interests. Examples of needed clarification include forest pest management, grants, and education.	MnSTAC	DNR, MDA, MPCA	State funds, agency coordination, all stakeholder organizations
8	Educate and engage the public on the benefits of trees and how they contribute to community sustainability and resiliency.	MnSTAC, LUGs, Minnesota public	DNR, UMN, Tribes, non-profits, UMN Extension	USFS Urban Forest Inventory Analysis, iTree tools, spatial data (e.g., aerial photography, lidar)
9	Assist public entities and the public in planning for, mitigating, and adapting to climate change and the impacts of climate change.	LUGs, MDH, Minnesota pubic	DNR, LUGs, Tribes, MPCA, UMN, MSA, Climate Subcabinet	USFS U&CF grant
10	Create resilient community forests through increased biodiversity and tree preservation.	LUGs, MDH, Minnesota pubic	DNR, LUGs, Tribes, MPCA, UMN, MSA	USFS U&CF grant
11	Integrate community forest management in sustainable community planning and development.	MnSTAC, MFRC	DNR, LUGs, Tribes, UMN, UMN Extension	USFS U&CF grant

#	Strategy	Key Stakeholders	Partners	Resources Needed
12	Facilitate and coordinate solutions to urban wood utilization, wood waste management, and greater availability of diverse quality tree stock.	MFRC	DNR, wood products and utilization industry, UMN, LUGs, MSA, Minnesota Nursery and Landscape Association (MNLA), MDA	USFS U&M grants
13	Facilitate the development and encourage the use of inventory analysis and canopy assessment as a tool for management planning.	MnSTAC, LUGs	DNR, UMN, USFS, Tribes	USFS Urban Forest Inventory Analysis, iTree tools, spatial data (e.g., aerial photography, lidar)
14	Facilitate adoption of standards in local community planning efforts such as model tree ordinances, best management practices, and contract specifications.	LUGs, private consultants	DNR, UMN, Tribes	USFS U&CF grant
15	Elevate professional standards and knowledge to improve urban and community forest management, maintenance, and arboricultural practices by involving public and private tree practitioners in statewide education efforts.	Private Tree Care companies, LUGs, MnSTAC	Minnesota Department of Labor and Industry, DNR, MSA, Tree Care Industry Association, MNLA, MDA, UMN, MnSTAC, Tribes	USFS U&CF grant
16	Build local capacity through education and technical, and financial assistance to manage community forests.	LUGs, UMN Extension	DNR, UMN, Tribes	USFS U&CF grant
17	Improve community forestry practices by encouraging participation in model programs such as Arbor Day Foundation's Tree City USA.	MnSTAC, LUGs, Minnesota public	Arbor Day Foundation, DNR, MPCA, UMN, Tribes	USFS U&CF grant

Table 7 – Strategies for Addressing the Issue "Increase Environmental Services by Creating and Maintaining Healthy Urban and Community Forests."

3.4 Maintain and Enhance the Economic Benefits and Values of Trees and Forests

Minnesota is a leader in timber production in the continental US, harvesting between 2.7 and 3.1 million cords annually with a total economic output effect of over $17 billion. The forest products industry is the fifth largest manufacturing sector in the state by employment, and impacts over 64,000 jobs. However, since the last recession, there has been a significant number of mills and paper machines that have closed, which requires the continued need for re-investment to maintain strong and diverse markets for forest products, and opportunities to accomplish sustainable forest management goals. It is anticipated that the state will need to work with private industry to assess near-term and long-term risks from climate change, to harvest operations, and the supply chain. Climate change is affecting all forest lands and it will be necessary for all forest landowners including public, industrial, private, mill owners, truckers, loggers, and other segments of the forest industry to work collaboratively and proactively to adjust to climate change conditions. See Table 8 for details.

#	Strategy	Key Stakeholders	Partners	Resources Needed
1	Support pilot projects that facilitate forest management across multiple ownerships, enhancing the ability of forest landowners to achieve management goals.	NIPF landowners, forest industry, forest managers, Minnesota public	DNR, USFS, UMN, counties, MLEP, MFA, MFI, Tribes, loggers	Funding, technical assistance
2	Support projects that increase or maintain Minnesota's forest industry's competitive position as measured by forest product manufacturing direct value added Gross State Product (GSP) per capita.	Forest industry, NIPF landowners, public forest landowners, loggers	USFS, DNR- U&M Program, MFI, UMN, NRRI	Funding, technical assistance
3	Provide marketing assistance to private landowners to improve management, increase wood supply for industry, and improve landowner income.	NIPF landowners, forest industry	USFS, NRCS, State Technical Committee, DNR, RC&Ds, SWCD	FSP, funding, technical assistance
4	Encourage utilization of tree species and other woody resources that both minimize competition with existing industry, and enhance the ability of forest landowners to achieve management goals.	NIPF landowners, forest industry, forest managers, Minnesota public	DNR U&M Program, USFS, UMN, wood industry, MLEP	Funding, technical assistance

#	Strategy	Key Stakeholders	Partners	Resources Needed
5	Explore carbon market project opportunities for private forest owners. Leverage existing PFM and CFM programs and explore new policy/funding opportunities to help reduce cost barriers. Provide technical assistance and cost/benefit analysis to help estimate financial returns from project investment.	NIFP landowners, forest industry, forest managers	USFS, NRCS, State Technical Committee, DNR, RC&Ds, SWCD	FSP, funding, policy, technical assistance, mapping, spatial data (e.g., aerial photography, lidar)
6	Encourage utilization of diseased, damaged, fire-prone, and underutilized tree species to minimize fire hazard, natural disaster damage, and tree mortality on the landscape, and enhance the ability of forest landowners to achieve management goals.	Forest industry, NIPF landowners, forest managers, Minnesota public	DNR U&M Program, USFS, UMN, wood industry, MLEP	Funding, technical assistance
7	Maintain strong forest industry technical and wood supply information and assistance.	Forest industry	USFS, UMN, NRRI, DNR U&M Program, SWCD	Funding, technical assistance
8	Support timely and consistent FIA and TPO programs implementation to include detailed pulpwood survey data collection and verification.	NIPF landowners, forest industry, forest managers, DEED, DNR, Minnesota public	USFS TPO Program	Funding, staff support
9	Provide forest and forest-industry related information and education to the public and other key audiences. Include information on climate change highlighting the difference between biogenic and fossil carbon, climate change risks, adaptation strategies and wood products as natural climate solutions.	Industry, forest managers	DNR U&M Program, USFS, UMN, forest industry, SWCD	FSP, SWCD, funding, technical assistance

#	Strategy	Key Stakeholders	Partners	Resources Needed
10	Support collaborative development of new or improved markets and products including wood as climate solutions for long-term carbon storage in mass timber panels, cellulosic biofuels and lignin and cellulose bio chemicals or other substitutes for fossil fuel products (energy, insulation, foam packaging, etc.).	Forest industry, forest managers	DNR U&M Program, UMN, NRRI	Funding, technical assistance, mapping, spatial data (e.g., aerial photography, lidar)
11	Support state production incentives, grant programs or legislation that aims to attract or expand industries that utilize wood, wood products or wood as a natural climate solution	Forest industry, forest managers	DNR U&M Program, UMN, NRRI, DEED, forest industry	Funding, technical assistance
12	Support core funding request by NMSFA Utilization and Marketing Committee.	Forest industry, forest managers, DNR U&M Program	USFS	Funding
13	Provide wood marketing and utilization assistance to forest product companies to increase industry health and promote efficient wood utilization and greater use of underutilized species and resources.	Forest industry, forest managers	DNR U&M Program, UMN, NRRI	Funding, technical assistance
14	Encourage investors to pursue projects, that don't undercut the ability of existing value-added industries to procure wood fiber for their production and livelihood.	NIPF landowners, MFA, Tree Farm, rural communities	DNR U&M Program, DEED-Green Enterprise Assistance, biofuels industry, MFRC, MFRP, SFEC, MLEP, MFA, rural communities, chambers of commerce	Agency coordination and natural resource staff allocation to business development issues
15	Assist with continuous development of skilled forest industry workers through engagement with partner training efforts.	Forest industry	DEED, MLEP, UMN Extension, DL&I	DEED, MLEP and UMN Extension

#	Strategy	Key Stakeholders	Partners	Resources Needed
16	Strategically provide financial assistance to forest product companies that are important for maintaining forest management through markets.	Forest industry, forest land managers	USFS	Funding, technical assistance
17	Market low-grade wood material for increased income for all land managers.	NIPF landowners, public land managers, DNR, UMN, USFS	USFS, NRCS, State Technical Committee, MFA, FSP, SWCD	FSP, SWCD
18	Concentrate management resources on productive forest land by investing in stand improvement activities to increase the productivity of species in high demand and likely to do well under anticipated climate scenarios (e.g. red pine, oak, black walnut) where higher returns will justify the investment.	NIPF landowners, public land managers, DNR, UMN, USFS, MFI	USFS, NRCS, State Technical Committee, MFA, FSP, SWCD	FSP, SWCD
19	Support projects that increase young forest for enhanced habitat for dependent wildlife species and create additional forest management opportunities.	NIFP landowners, forest industry, forest managers, private consultants, NGOs, loggers	USFS, DNR, UMN, NRRI, NGOs, counties, MLEP, MFA, MFI, loggers	Funding, technical assistance
20	Support public forest road and bridge maintenance and improvement to maintain and increase transportation infrastructure for recreation use and forest products mobility.	NIPF landowners, forest industry, forest managers, loggers, recreation groups, Minnesota public	USFS, DNR, counties, MFA, MFI, loggers, recreation groups	Funding, technical assistance

Table 8 – Strategies for Addressing the Issue "Maintain and Enhance the Economic Benefits and Values of Trees and Forests."

3.5 Protect, Conserve, and Enhance Wildlife and Fish Habitat

Minnesota is committed to identifying, protecting, monitoring, and maintaining rare species and ecological systems that contribute to the state's biodiversity and viability of forest ecosystems and healthy watersheds. Efforts such as forest certification, the State Wildlife Action Plan (SWAP), the Minnesota Buffer Law, the DNR Native Plant Community field guides, the DNR Minnesota Biological Survey (MBS), plus resources such as the Ecological Classification System (ECS), coupled with federal and non-profit identification and restoration efforts, provide guidance for preservation of rare ecological features and systems for the future of forests within the state. See Table 9 for details.

#	Strategy	Key Stakeholders	Partners	Resources Needed
1	Develop, maintain and continually improve tools necessary to clearly identify where rare ecological features and resources are located in forest systems to help forest landowners manage for them.	NIPF landowners, forest managers, consulting foresters	DNR, NRCS, FSA, Tree Farm, TNC, USFS, USFWS, Tribes	FLP, MFF, FSP, LCCMR, DNR NHIS & MBS
2	Identify SGCN habitats and apply management or protection efforts that complement the State Wildlife Action Plan (SWAP).	NIPF landowners, forest managers, consulting foresters	DNR, USFS, TNC, USFWS, Audubon, NPS, Tribes	USFWS, Outdoor Heritage Fund, LCCMR
3	Provide technical assistance on rare ecological features to interested individuals and organizations.	NIPF landowners, forest managers, consulting foresters	DNR, USFS, TNC, USFWS, Audubon, NPS	USFWS, TNC, FSP, Audubon, Outdoor Heritage Fund, DNR
4	Manage to reduce the spread of invasive species; manage to control and reduce existing invasive species populations (see also Forest Health and Productivity).	NIPF landowners, forest managers, consulting foresters, Minnesota public	USFS, TNC, USFWS, DNR, MFRC, NPS, BIA, Tribes	FSP, MIPN, CWMAs, existing laws (noxious weeds), best mgmt. practices
5	Use the best available information to protect and manage federal and state listed species according to state and federal law.	NIPF landowners, forest managers, consulting foresters	USFS, TNC, USFWS, NPS, DNR EWR, BIA, Tribes, NRRI	USFWS, Outdoor Heritage Fund, ENRTF
6	Identify and incorporate emerging issues affecting specific SGCN populations into stewardship plans.	NIPF landowners, forest managers, consulting foresters	USFS, USFWS, NPS, BIA, DNR	USFWS, Outdoor Heritage Fund

#	Strategy	Key Stakeholders	Partners	Resources Needed
7	Advance learning goals and use prescribed fire to maintain fire-dependent forests and rare features associated with fire disturbance.	NIPF landowners, forest managers, consulting foresters	USFWS, DNR, USFS, NPS, NRCS, Tribes, TNC, Cloquet Forestry Center, Forest Stewards Guild	NRCS cost-share on prescribed burns within program guidelines
8	Encourage forest habitat management to incorporate climate change planning and adaptation including planting vegetative buffers along degraded waterways, where appropriate. Reference 2013 NRCS State Technical Committee Forestry Subcommittee 'Recommendations for Tree and Forest Establishment and Management in Minnesota's Prairie Region.'	NIPF landowners, forest managers, consulting foresters	DNR, USFS, NRCS, USFWS, BIA, USACE, Tribes, TNC	FSP, NRCS cost-share restoration programs for specific habitats (e.g. oak savannahs)
9	Maintain and update information management systems for inventory and monitoring of rare ecological features and delivery of such data to partners.	NIPF landowners, forest managers, consulting foresters	TNC, Audubon, DNR, USFWS, UMN	USFWS, Outdoor Heritage Fund, spatial data (e.g., aerial photography, lidar)

Table 9 – Strategies for Addressing the Issue "Protect, Conserve, and Enhance Wildlife and Fish Habitat."

3.6 Connect People to Trees and Forests, and Engage in Environmental Stewardship Activities

Minnesota has always had a strong tradition of nature-based outdoor recreation with participation in outdoor activities well above the national average, especially in hunting, fishing, boating, hiking, swimming, and skiing. These activities, including bird and wildlife watching, geocaching, motorized and non-motorized activities all rely on access and interaction with abundant natural resources such as forest lands, lakes, rivers, bluff lands, grasslands and parks and recreation facilities. The state is committed to preserving and enhancing outdoor recreation use for both present and future generations to enjoy. Training and education are key elements to accomplish these goals through programs such as PlayCleanGo, Arbor Month Program, Project Learning Tree and the Minnesota School Forest Program. Making forest stewardship accessible for increasingly urban populations through these and other educational programs, such as public science projects, career and mentoring connections for youth and community members, and volunteer watershed education experiences, creates a powerful connection between people and the state's natural forest resources. See Table 10 for details.

#	Strategy	Key Stakeholders	Partners	Resources Needed
1	Ensure landowners follow Minnesota's Voluntary Site-level Forest Management Guidelines and consider recreation, aesthetics, and cultural resource protections when managing their lands.	Forest landowners, Minnesota public	MFA, Tribes, federal and state agencies	USFS S&PF grants, other grants
2	Create and promote print and online landowner handbooks.	Forest landowners, Minnesota public	MFA, Tribes, federal and state agencies	USFS S&PF grants, other grants
3	Ensure that the Forest Legacy Easement and Minnesota Forests for the Future programs consider recreational access when ranking and scoring potential acquisitions.	Various user groups (trail users, both motor and non-motor), hunters, hikers, skiers, etc., general recreational public	FSC, MFF Advisory Committee, DNR PAT	PTLF, FL AON
4	Continue to conduct and attend discussions where Minnesotans and recreation user groups can share ideas about improving recreational opportunities on forest lands.	MN Deer hunters Assn, All-Terrain Vehicle Assn of MN, MN Audubon, Sierra Club, International Mountain Bike Assn, Other Assn's	DNR recreation program leads, USFS, county land departments, Tribes	MFRC landscape program, county recreation departments
5	Increase use of trail systems and outdoor recreation opportunities.	Minnesota public, user groups	USFS, NPS, USACE, USFWS, BIA, Tribes, counties, municipalities, DNR PAT	Funding, technical assistance

#	Strategy	Key Stakeholders	Partners	Resources Needed
6	Improve connectivity of multi-agency trail systems and access to outdoor recreation opportunities.	Minnesota public, user groups	USFS ,NPS, USACE, USFWS, BIA, Tribes, counties, municipalities, DNR PAT	Funding, technical assistance
7	Pursue recreation investments that help create recreation opportunities and long-term job prospects while protecting the ecosystem health of forests and water resources.	Natural resource management agencies, lakeshore owners associations, zoning authorities, Minnesota public	State legislature, DNR, USFS, NPS, USACE, USFWS, communities, chambers of commerce, user groups, counties	Funding
8	Develop long-term funding that will assure maintenance and replacement of recreation infrastructure on all state forest lands (e.g., campgrounds, boat launches, trails, etc.).	Minnesota public, user groups	USFS, DNR, USACE, state legislature	Funding
9	Promote harmony among forest users by searching for ways to help exclusive use activities to co-exist with other activities that compete for the same space.	Minnesota public, user groups	User groups, natural resource management agencies, forest managers, DNR, counties, USFS, Tribes	Undetermined
10	Measure and monitor recreational use impacts to determine if ecosystems or recreation sites are being negatively affected.	Minnesota public, user groups	DNR, USFS, USACE, user groups, counties, Tribes	Funding
11	Investigate partnerships among government agencies (federal, tribal, county, municipal) for providing recreational opportunities.	Minnesota public	USFS, USFWS, NPS, USACE, MDA, DNR, Tribes	Undetermined

#	Strategy	Key Stakeholders	Partners	Resources Needed
12	Maintain a Minnesota forest presence through social media, traditional media, presentations, products such as *Standing Tall* magazine, and programs like PlayCleanGo and Arbor Month to generate long-term support for forestry, forest recreation, and forestry appreciation.	Legislators, families, teachers, school districts, students, Minnesota public	DNR, Media outlets	Funding for sustained outreach and education
13	Promote and invest in long-term education programs such as School Forests program, Project Learning Tree, Arbor Month, Master Woodland Owner, and Tree Care Advocate that help connect schools, children, families, and landowners with the outdoors. Use additional national resources such as NAAEE Guidelines for Excellence in Environmental Education and US Forest Service Citizen Science.	Legislators, families, teachers, school districts, students, Minnesota public	MDE, UMN, DNR, Minnesota schools and nature centers	Funding for sustained outreach and education
14	Increase private forest management outreach and education for family forest landowners and service providers.	Forest landowners, forest managers	DNR, USFS, UMN, MFRC, SWCD, Private forest consultants, industry, NRCS, BWSR, UMN Extension, MFA, MN FSC	Funding, technical assistance

Table 10 – Strategies for Addressing the Issue "Connect People to Trees and Forests, and Engage Them in Environmental Stewardship Activities."

3.7 Manage Trees and Forests to Mitigate and Adapt to Global Climate Change

Climate change is a global phenomenon that is impacting the current and future health of Minnesota forest resources. Foresters, land managers and landowners are considering how to adapt to changes that have already occurred and how to evaluate risks for particular sites now and into the future. Many current climate change scenarios show the greatest change in forests that are stressed with disease, pests, ground compaction or altered hydrology, and could result in reduced timber quality, water, and wildlife habitat.

The state is committed to working with partners to mitigate and adapt to climate change. DNR operates a state forest nursery with collected native seeds to guarantee genetic diversity and produces over 6 million native tree seedlings annually for use in statewide public and private forest planting activities. Each year, the state uses 2.5 million seedlings for reforestation, while 0.5-1 million seedlings are purchased by counties, tribal governments, and other public agencies. Another 2.5 million seedlings are purchased by landowners to reforest private lands. Demand for local, native tree seedlings is expected to increase as climate change impacts Minnesota forest resources. Afforestation, and-or, reforestation efforts will continue to be administered on DNR lands to increase stocking volume based on cover type, species diversity, and forest carbon stocks.

The state nursery is investigating the use of tree species, (not currently produced by the nursery), that may be suitable for Minnesota under on-going changing climate conditions and expanding genetic diversity. This could be accomplished by increasing the geographic size of seed collection zones for assisted migration of tree species. The state nursery could partner with universities and private industry to collect seed, grow, and distribute additional species from disparate locations to address plant material condition changes occurring with climate change. See Table 11 for details.

#	Strategy	Key Stakeholders	Partners	Resources Needed
1	Apply scientifically rigorous allometric equations, other tools developed under the UNFCCC framework, or both for quantifying net GHG emissions reductions and removals. Evaluate, choose, and apply an activity-based monitoring approach to quantify changes in forest carbon.	Forest managers, Forest landowners, future participants in carbon markets, UMN, AURI, US Climate Alliance	DNR-Climate Team, Climate Change Subcabinet, NRRI, USFS, NIACS, MFRC, MPCA	LCCMR grant proposals, One Million Acre study (MFRC), MPCA carbon value reporting for US Climate Alliance, CDM guidance on monitoring, reporting and verifying emissions reductions and removals, mapping, spatial data (e.g., aerial photography, lidar)
2	Enhance carbon stocks through improved forest management. Monitor, report and verify carbon stock changes based on IFM activities.	Forest managers, forest industry, policy makers, UMN, DNR, USFS	DNR, NRRI, USFS, Tribes, NIACS	LCCMR grant proposals, mapping, spatial data (e.g., aerial photography, lidar)

#	Strategy	Key Stakeholders	Partners	Resources Needed
3	Explore project opportunities that will increase GHG emissions reductions/removals at a landscape scale. Project types will be selected based on 'approved' methodologies under an accounting framework that provides quantification guidance on measurable GHG emission reductions/removals.	Forest managers, forest landowners, RC&Ds, NRRI, UMN, AURI, DEED, MDA	DNR, Climate Change Subcabinet, MFRC, MFRP, USFS, Tribes, NIACS	GHG accounting standards, LCCMR grant proposals
4	Explore carbon market project opportunities by ownership class and sectoral scope. Assess barriers and determine feasibility of listing a GHG project plan to generate verifiable carbon credits ($USD/tCO2e).	Forest managers, forest landowners, RC&Ds, NRRI, UMN, AURI, DEED, MDA, corporate investors, intermediates for carbon finance (e.g. 3degrees).	DNR, MFRC, MFRP, USFS, NIACS	GHG accounting standards, compliance and voluntary carbon market regulatory standards californiacarbon.info, LCCMR grant proposals
5	Develop tools to examine the effects of improved forest management implementation on forest carbon stocks.	Forest managers, policy makers, UMN, DNR, USFS	DNR MFRC, MFRP, USFS, Tribes NIACS	LCCMR grant proposals, mapping, spatial data (e.g., aerial photography, lidar)
6	Help to develop markets for biofuels that offset consumption of fossil fuels.	Forest managers, forest landowners, Minnesota public, RC&Ds, NRRI, UMN, AURI, DEED, IRRR, MDA	DNR, Climate Change Subcabinet, MFRP, MFRC, EPA, USFS, MDA	Undetermined: needs funds & technical assistance, RFS funding Interagency cooperation

#	Strategy	Key Stakeholders	Partners	Resources Needed
7	Develop, promote and facilitate market solutions to climate change assisted migration management issues and needs, e.g., expanded markets for species of greatest adaptation likelihood.	Forest landowners, forest managers, wood industry	DNR, USFS, UMN	Funding, technical assistance
8	Maintain healthy, vigorous and viable native plant communities.	Forest landowners, forest managers, forest industry, loggers, fish and game interests	DNR, USFS, USFWS, Tribes, TNC, Audubon, forest industry, biofuels industry, loggers	FSP, funding for non-commercial management activities; support for forest management infrastructure (loggers, working forests, industry)
9	Explore planting diverse tree species and genotypes from more southerly ranges to ensure healthy forests through assisted migration in the future. Expand nursery capacity to collect, grow, and distribute seedlings from southerly forests including establishing new seed orchards to expand seed production from known seed sources.	Forest landowners, forest managers, timber industry	USFS, DNR, Tree Farm, UMN, Tribes, counties, private industry	Technical assistance
10	Continually monitor the rapidly growing body of climate change science and incorporate the best available science relating to climate change species viability when deciding which tree species and genotypes to promote or establish.	Forest landowners, forest managers, timber industry	USFS, DNR, Tree Farm, UMN, Tribes, NIACS	Technical assistance
11	Contribute to renewable energy and GHG emission reductions goals.	NIPF landowners, MFA, Tree Farm, state legislature	FSP, MFA, Tree Farm Program, NRCS, DNR Climate Change Subcabinet	FSP registered stewardship plan holders, NRCS cost-shares for afforestation and reforestation (tree planting) projects

#	Strategy	Key Stakeholders	Partners	Resources Needed
12	Train and provide continual support to staff to address climate change as part of ongoing forest management efforts. Incorporate strategies from DNR Operational Order 131 guidelines on climate change adaptation/mitigation into DNR Forestry work plans.	All landowners, forest managers, timber industry	DNR, USFS, USFWS, S&PF, NIACS	SFEC training programs, FSP
13	Expand climate and climate impact monitoring and reporting efforts.	All landowners, forest managers	DNR, Climate Change Subcabinet, S&PF, USFS, USFWS, Tribes, NRCS, UMN, NRRI, SWCD, MN State Climatologist	Rain gauge and temperature network
14	Identify new planting sites for reforestation projects to increase forest carbon stocks.	NIPF landowners, carbon market participants	MFRC, NRCS, DNR, Tribes, consulting foresters, industrial forest landowners, NIPF landowners	MFRC carbon study to state legislature, several NRCS programs cost-share afforestation and reforestation activities, mapping, spatial data (e.g., aerial photography, lidar)
15	Initiate a carbon sequestration aggregation program in Minnesota	NIPF landowners	DNR and Tree Farm	FSP, Tree Farm Program
16	Identify suitable “climate refugia” to retain boreal and northern species and forest types.	All landowners, forest managers	USFS, Tribes, DNR, TNC, NIACS, counties	LCCMR, USFS

Table 11 – Strategies Addressing the Issue “Manage Trees and Forests to Mitigate and Adapt to Global Climate Change.

Chapter 4 Implementing

State Strategies through Collaborative Partnerships

The purpose of this chapter is to provide a general description of how the DNR Forestry will implement the Minnesota 2020 SFAP both internally, and in collaboration with partners. The SFAPs are 10-year funding guidance documents, which identify desirable outcomes that demonstrate measurable progress on key issues within critical locations over time. The strategies outlined in Chapter 3 of this document are intentionally broad, long term, and flexible in nature. This chapter provides an operational framework for the further refinement of Private Forest Stewardship strategies into a cohesive series of implementation actions over the next 10 years. While the implementation strategies described in this chapter primarily pertain to the Forest Stewardship and Forest Legacy programs, many other efforts are ongoing in these programs and others to address strategies developed in Chapter 3 of this document.

Minnesota's Approach to Implementation of State Strategies for Forest Stewardship

Minnesota's approach to implementing the state strategies in the SFAP includes coordination at the project and strategy level, with the broad array of landowners, NGOs, associations, and government institutions described throughout the plan. Minnesota intends to build upon the many years of successful coordination with partners on implementing the 2010 SFAP. Minnesota accomplishments are in many cases tied to cross- agency, or cross-landowner collaboration. Minnesota benefits from some unique programmatic relationships across natural resources disciplines, as well as programs that serve different landowners. These partnerships have led to successful collaborative projects, and Minnesota is committed to using lessons learned from past accomplishments to inform implementation of the 2020 SFAP.

In 2008, the US Forest Service created the Landscape Stewardship Initiative to address the increasingly complex challenges facing the management of private woodlands across the nation. A steering committee was formed with the mission of developing guidance tools, approaches, and strategies, that will enable the forestry community to dramatically expand the reach and effectiveness of services to private woodland owners. One of the main outcomes of this initiative was the publication of the US Forest Service document, Landscape Stewardship Guide. The work of the MFRC Landscape Program, through the regional committee structure helped to advance landscape stewardship approaches in Minnesota, and in some cases served as a model for others across the nation.

DNR Forestry, in conjunction with the MFRC and partners on the regional landscape committees has been working for over 15 years to create and shape processes for implementing landscape stewardship approaches into its service delivery. More than $3.5 million of federal, state, and local funding resources have been secured since 2010, to support the coordination and implementation of 12 landscape stewardship projects across the state. These collaborative projects seek to increase and enhance services to private woodland owners while at the same time increase public benefits that come from public lands such as water quality protection and wildlife habitat.

Federal funds from the US Forest Service are providing partners in Minnesota with critical coordination capacity to put forward a collaborative infrastructure across multiple agencies and organizations. The federally funded projects are helping Minnesota develop integrated systems that will allow partners in the region to more effectively leverage millions of state, local and private funding focused on implementation, to link forest and water quality projects. Through landscape approaches, this critical partnership is resulting in a coordinated forestry and water quality protection strategy, that will bring partners together, to coordinate and integrate efforts that maximize benefits to forest management and water resources in the state. These benefits can also extend to the management of fish, wildlife, recreation, and community development.

Landscape stewardship approaches are helping DNR Forestry better address priority issues and opportunities, and the related priority areas identified in the SFAP. These collaborative projects are also helping to reframe a series of programmatic issues and challenges facing the DNR Forestry PFM program, through the Private Forest Management System Framework (attached as Appendix C in this document), a plan to guide the future delivery of services to private woodlands owners across the state. The growing partnerships supported by the MFRC Landscape Program are continually helping partners across the state accomplish their goals by encouraging collaboration among all stakeholders within a priority area, including private forest landowners.

By working collaboratively through landscape stewardship approaches, the forestry community can more effectively keep forests as working forests, and ensure continued contributions to forest management, clean water, climate change mitigation, and the many other benefits forests provide. DNR Forestry and partners are committed to proactively implementing the SFAP to advance the successful implementation of national priorities in Minnesota.

Minnesota is addressing the NASF guidance for Forest Stewardship in an ongoing manner through four operational frameworks that include: 1) Protecting Water Resources; 2) Enhancing Wildlife Habitat; 3) Promoting Forest Based Economic Development; and 4) Reducing Wildfire Risks to Communities.

Protecting Water Resources

Forests play a critical role in keeping water clean by absorbing and filtering water, preventing erosion through soil stabilization, and allowing for groundwater recharge. Clean water is vital to the ecological, economic, and social health of Minnesota. The National Association of State Foresters (NASF) recognized the connection of healthy forests to clean water by its policy statement: “Water, in all its uses and permutations, is by far the most valuable commodity that comes from the forest land that we manage, assist others to manage, and-or regulate.” (Source: NASF).

As described in SFAP Part 1: Assessment; land ownership in Minnesota is a complicated maze of county, state, tribal, federal and industry lands interspersed by family-owned lands. While public forest lands are professionally managed on an ongoing basis (supported annually by public funding; and use proceeds from the sale of timber, aggregate, and other natural resources), managing private forest lands is complicated by the large number of decision makers, (more than 191,000 private landowners), and the large number of independent entities that provide services to landowners. Of Minnesota's 6.8 million acres of family owned forest lands, an estimated 920,000 acres have current (10 years old or less) registered stewardship plans. Management of these acres is guided by approximately 6600 individual plans.

Watersheds in northern Minnesota are mostly forested, relatively undisturbed, and publically-owned so water quality is high, and often pristine. The primary risk to water quality is on private lands, because they are more likely to be converted or developed, which if not managed well, can result in increased stormwater runoff and declining water quality. Increasing private forest stewardship at landscape-scales, is a way to encourage private

landowners to use forest management to generate income from the forest and keep forests forested. In that way, targeted stewardship can help protect water quality.

DNR Forestry is working together with BWSR, MDH, and project partners to protect water quality, through the development and implementation of watershed-based landscape stewardship plans in the forested regions of the state. These plans identify and prioritize private landholdings down to the parcel level, to encourage forest land protection and sustainable forest management, including timber harvesting. Minnesota has many robust informational resources to use and experts to partner with in this effort. For example, BWSR's One Watershed One Plan (1W1P) program develops comprehensive watershed management plans, which are a basis for guiding forest-based watershed and forest protection strategies.

The watershed-based landscape stewardship plans provide critical context for the development of comprehensive water management plans. As described in *Minnesota Statutes,* section 103B, plans created through BWSR's 1W1P Program, are called comprehensive watershed management plans. These plans must address: 1) Surface water and ground water quality protection, restoration, and improvement; 2) Restoration, protection, and preservation of natural surface water and groundwater storage and retention systems; 3) Promotion of groundwater recharge; 4) Minimization of public capital expenditures needed to correct flooding and water quality problems; 5) Wetland enhancement, restoration, and establishment; 6) Identification of priority areas for riparian zone management and buffers; and 7) Protection and enhancement of fish and wildlife habitat and water recreational facilities.

The map below (Figure 2) illustrates participating watersheds in the 1W1P Program as of November 2019. It is anticipated that all 81 watersheds in the state will have an approved 1W1P within the next 10 years. Approximately 30 watershed-based landscape stewardship plans in the forested regions of the state will be developed to support the development and implementation of the 1W1Ps.

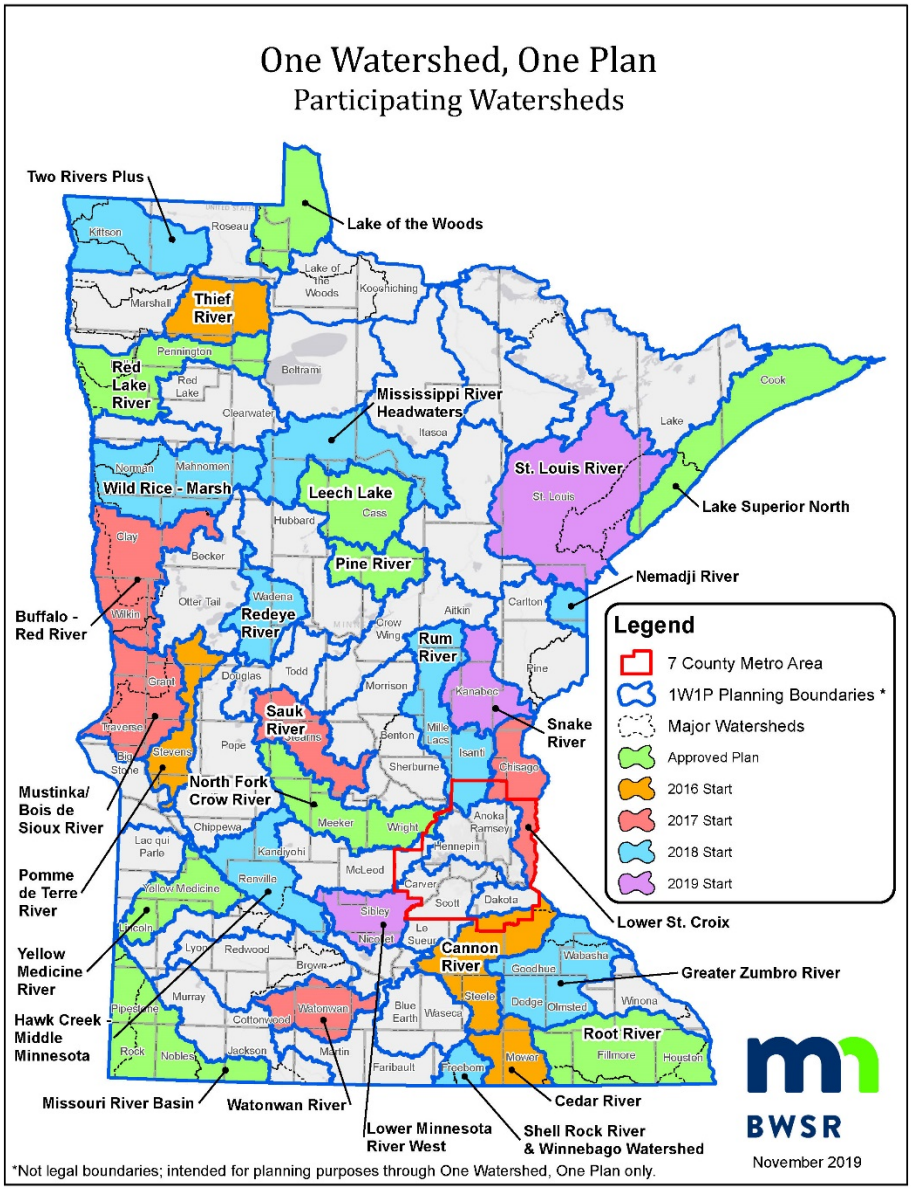

Figure 2 – One Watershed One Plan Status Map.

The concept 'Prioritize-Target-Measure' (PTM) in 1W1P is a practical, science-based methodology to plan for and implement effective conservation projects. *To prioritize* is to recognize that not all valued resources and identified issues can be addressed at the same time. Some items will be addressed before others. *To target* is to take a closer look at priority areas and issues and identify specific cost-effective and measurable actions necessary to achieve goals and address issues. *To measure* is the ability to demonstrate progress towards the achievement of restoration and protection goals over time.

DNR Forestry and BWSR are working with local partners and have developed a watershed assessment methodology that connects forest land cover and water quality based on research developed by DNR Fisheries. Fisheries periodically measures the percent of the watersheds, with permanent forest protection, to illustrate this transformation on a graphic dial like a speedometer. This measurement and assessment is called 'moving the needle towards watershed protection.' The watershed-based landscape stewardship plans are helping to support PTM thinking by all service providers in a collaborative manner (e.g., Figure 3 and Figure 4). This intentional and measurable planning process enhances opportunities for the collaborative implementation of both plans over time.

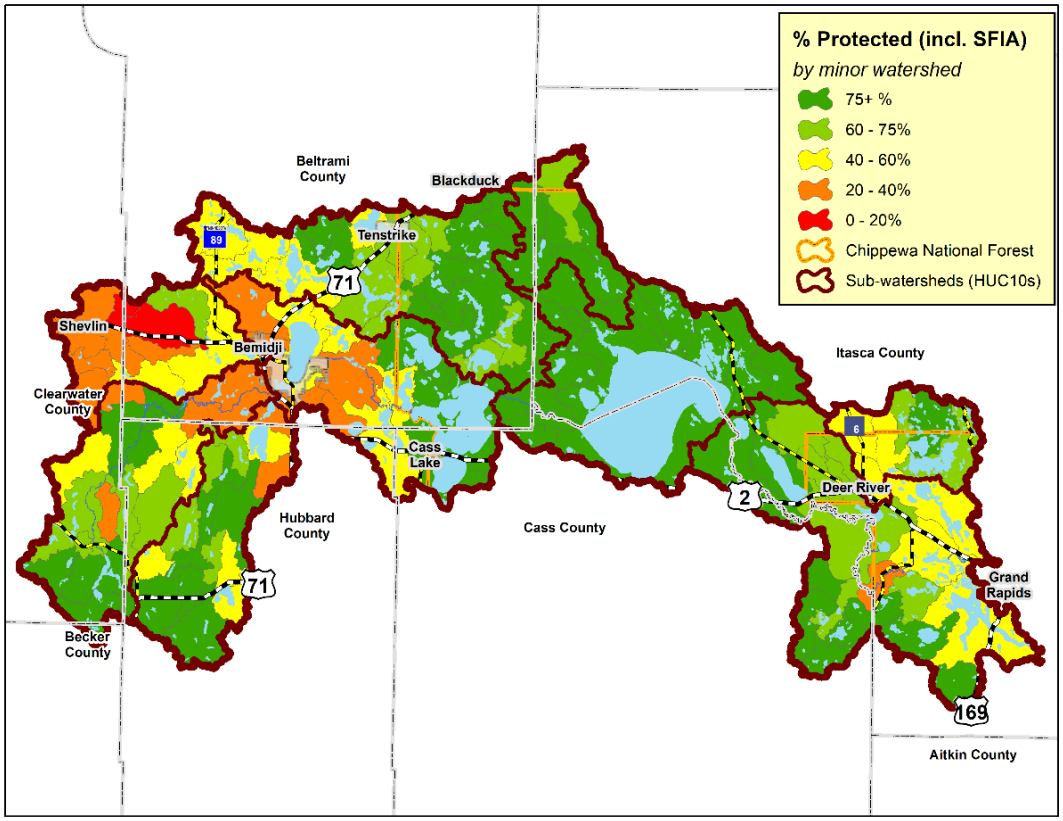

Figure 3 – Percent of Protected Watersheds in Mississippi River Headwaters. Source: BWSR.

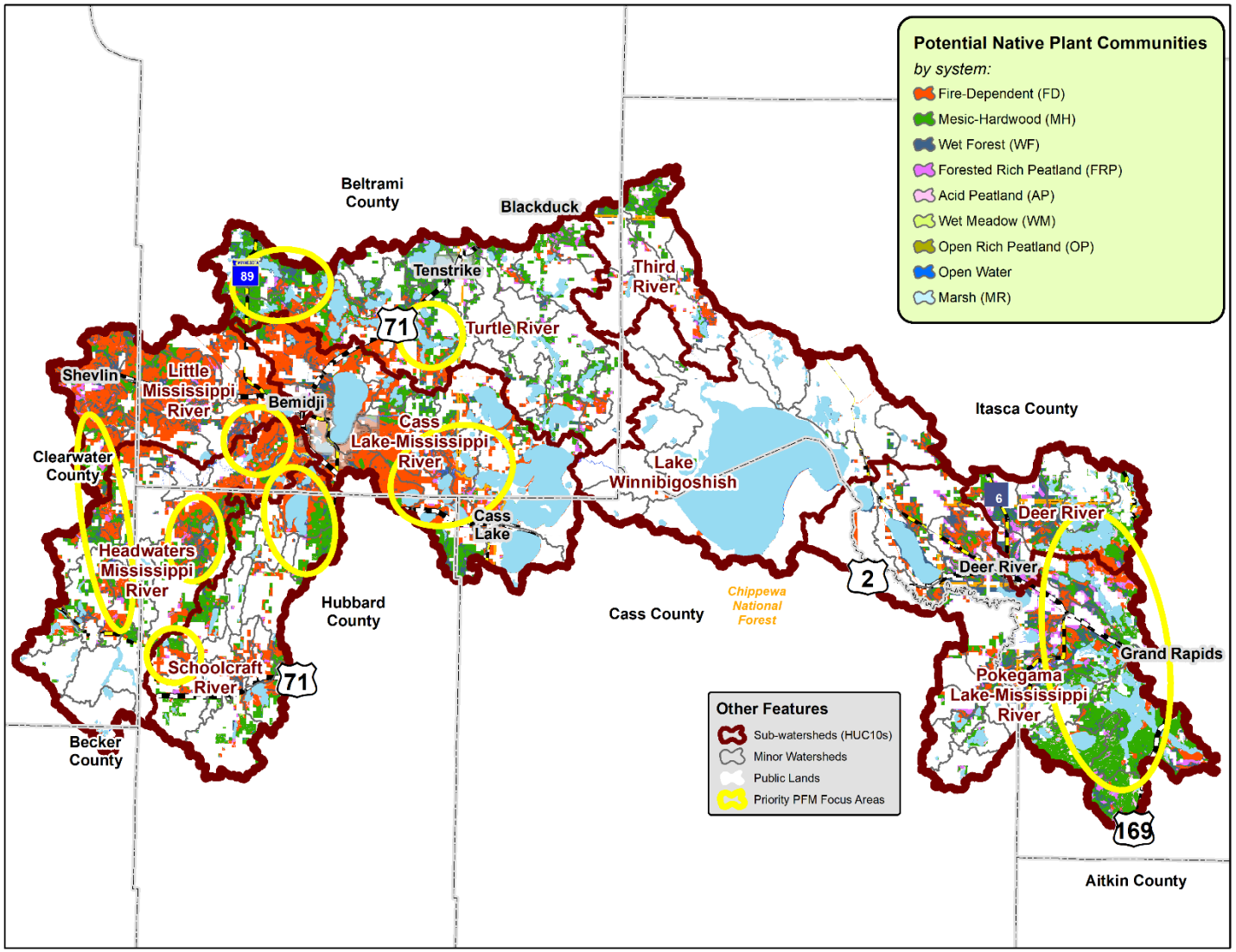

Figure 4 – Priority Focus Areas for Forest and Watershed Protection in the Mississippi River Headwaters. Source: BWSR.

This framework outlines the major steps that partners in Minnesota are taking towards proactively increasing the strategic delivery of services to private forest landowners on a watershed basis to protect water resources. Partners include DNR, BWSR, Soil & Water Conservation Districts (SWCDs), consulting foresters, NRCS, and environmental organizations are committed to this process. Partners have been developing this watershed assessment and PTM methodology for over 10 years. Each partner brings their own unique set of skills and resources to the table to serve private landowners. The implementation tool box for private forest management as described in the US Forest Service document Landscape Stewardship Guide, is a primary organizing concept or tool for the project teams to sort roles and mutually agree to each partner's work areas.

A parallel public benefit that forest land protection provides is safe drinking water for all Minnesotans. Through the development of the watershed based landscape stewardship plans and 1W1P framework, DNR, and BWSR are building collaborative working relationships with the Minnesota Department of Health (MDH), to determine the amounts of public and private forest land ownership in the state's surface water Source Water Assessment (SWA) areas and groundwater based vulnerable Drinking Water Supply Management Areas (DWSMAs). Through these integrated planning and implementation processes, MDH is partnering with DNR foresters, BWSR, local water resource partners, and SWCDs, to prioritize and protect existing forest land in state approved vulnerable surface and groundwater Source Water Protection (SWP) areas in Minnesota. Figure 5 depicts state forest cover overlain with SWAs and High Vulnerable DWSMAs in 2020. Robust research and analyses on the connection between forest land cover and management at the watershed scale, and the effectiveness of best management practices on water quality and quantity are considered a data gap, which needs further exploration.

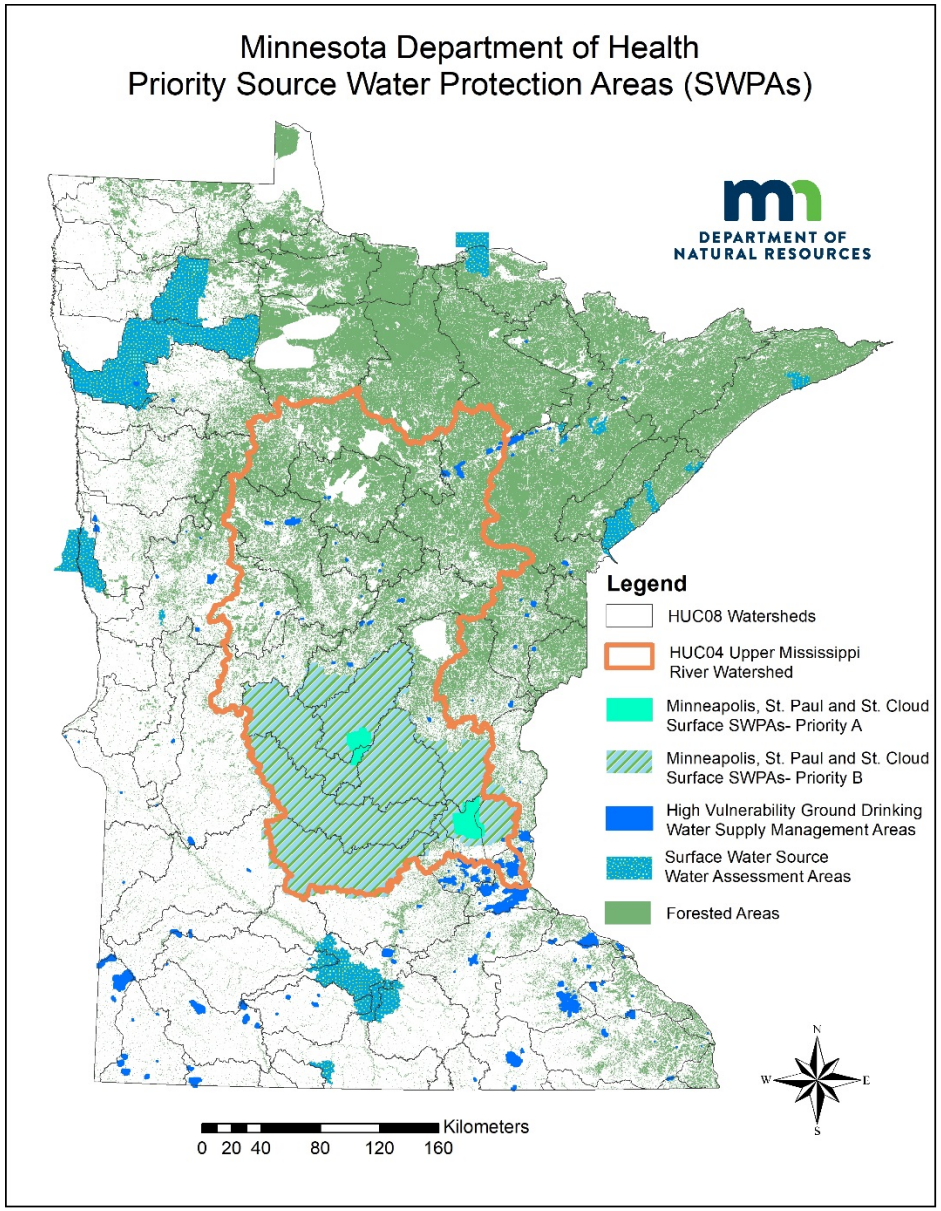

Figure 5 – Priority Source Water Protection Areas in Minnesota in 2020.

Implementing the 2020 MN SFAP through Leveraging Minnesota Legacy Amendment Funding

Minnesota is one of only a few states that have a voter-approved mechanism to provide dedicated funding for conservation. In 2008, Minnesota voters passed the Clean Water, Land and Legacy Amendment (Legacy Amendment) for water quality, habitat and conservation, parks and trails, and the arts. The Legacy Amendment increases the state sales tax by three-eighths of one percent beginning on July 1, 2009, and continuing until 2034. The additional sales tax revenue is distributed into four funds as follows: 33 percent to the clean water fund; 33 percent to the outdoor heritage fund; 19.75 percent to the arts and cultural heritage fund; and 14.25 percent to the parks and trails fund. More than $480 million is generated for outdoor land and habitat protection, restoration, and enhancement every two years, which can significantly leverage implementation funding for forestry-related projects.

Protecting Clean Water

Thirty-three percent of the state sales tax revenue from the Legacy Amendment is allocated to the Clean Water Fund. The Clean Water Council provides recommendations to the Governor and Legislature on the use of those funds, which can only be spent to protect, enhance, and restore water quality in lakes, rivers, and streams and to protect groundwater from degradation. At least five percent of the Clean Water Fund must be spent to protect drinking water sources. Protecting Minnesota's waters is a joint effort between seven partner agencies, who collaborate and partner on Minnesota's water resource management activities under the Clean Water Fund. Funding for planning and coordination through S&PF has been critical to support this effective cross boundary approach, and in leveraging significant amounts of state implementation funds.

Enhancing Wildlife Habitat

The Outdoor Heritage Fund, one of four funds created by the Legacy Amendment, receives 33 percent of the money raised by the tax increase. The Minnesota Legislature established the Lessard-Sams Outdoor Heritage Council (LSCHC) after 2008 and gave it responsibility of providing annual funding recommendations to the legislature on the use of Outdoor Heritage Fund. The use of Outdoor Heritage funding focuses on three primary approaches for habitat: protect, restore, and enhance on permanently protected lands, (both on public lands and private lands) across the state (forests, prairies, wetlands).

The Legacy Amendment required the LSOHC to develop a long-range funding plan to guide the investment of the Outdoor Heritage Fund. The LSOHC requested that the MFRC and its sister organization the Minnesota Forest Resources Partnership (MFRP) develop a vision document to guide the investment of legacy funds for forest habitat over the 25-year life of the amendment.

In response, the MFRP and the MFRC worked as partners in over a 9-month period to develop the forest habitat vision document, "*25-Year LSOHC Forest Habitat Implementation Vision.*" The Vision included two primary parts: 1) statewide vision and 2) regional priorities. The overall vision in the 2010 document was created by a team of MFRC and MFRP members and approved by both of the full boards and included the following:

Protect and restore forest cover in riparian areas. Restore and enhance fish, game, and other wildlife habitat: 1) by conducting silvicultural and other forest habitat and land management work outside the scope of commercial forestry; and 2) by conducting habitat work in priority areas.

Funding Priorities in LSOHC Northern Forest Section - Protect Minnesota forests and forest wildlife habitat via permanent conservation easements. Fee acquisition or land exchanges in this section can take place where willing buyer or seller transactions allow for the consolidation of ownership, address critical habitat needs consistent with the LSOHC mission, and have significant public support in the region.

Funding Priorities in Other Sections - Protect contiguous forest complexes (and enlarge complexes when ecologically appropriate). This should be done by permanent easements or fee acquisition, combined with forest restoration in current forest complexes, and on lands contiguous to those complexes. Focus is on protecting areas with high game populations, as well as, areas with high levels of biodiversity. This conservation fund source also presents opportunities to work with an array of partners for forest habitat projects in priority areas.

Forest-Based Tourism Economy

Tourism is a major economic driver in Minnesota. Promoting forest-based recreation is an identified strategy in Minnesota's 2020 SFAP and also 'supports jobs in the woods.' Federal funding sources can support the use of state funds for this purpose. The Parks and Trails Fund receives 14.25 percent of the sales tax revenue resulting from the Legacy Amendment. These funds may only be spent to support parks and trails of regional or statewide significance, of which many are already existing in forested areas of the state.

Reducing Wildfire Risk to Communities

Integrating wildfire management projects with the three previous operational frameworks (Protecting Water Resources, Enhancing Wildlife Habitat, and Promoting Forest Based Economic Development), is an opportunity to advance sound forest management while also reducing the risk, cost, and severity of wildfire impacts in the state. Minnesota has interested partners, fire dependent forest types, and a robust wildfire response program, thereby presenting opportunities to advance community wildfire protection plan goals in a collaborative fashion.

Public Lands

Minnesota's 2020 SFAP serves as a broad strategic planning document to guide other DNR forestry activities and helps to clarify the state's priorities in forest management on a landscape level. Through the collaborative development of the plan and the projects within, DNR Forestry program managers can work with partners to develop grant proposals and project plans, to support the proactive implementation of this plan to simultaneously achieve local, state and national goals. The National Association of State Foresters (NASF), also use the program to facilitate shared stewardship by working across landscapes and land ownerships to address key forest resource issues. Minnesota is a leader on landscape approaches and is in the process of signing a final 'Agreement for Shared Stewardship' in 2020, with the US Forest Service. The Shared Stewardship initiative is being supported federally across the nation.

Chapter 5 Stakeholder Engagement

Minnesota is a national leader in stakeholder involvement regarding forest resources. In 1995, the Minnesota Legislature adopted the Sustainable Forest Resources Act (SFRA), one of the most significant forestry laws in the state. Under *Minnesota Statute*, 89A.06, the act required the establishment of the Minnesota Forest Resources Council (MFRC), a 17-member organization working to promote the long-term sustainable management of forest resources across all ownerships throughout the state. The act also specifies several comprehensive sustainable forestry practices to be implemented through citizen-based regional landscape committees. These practices include management of timber harvesting on private forest lands, forest management guidelines, monitoring practices, biomass and riparian advances, continuing education, and landscape-level forest resources planning and coordination among all forest groups and stakeholders regardless of ownership.

Since 1997, forested landscapes have been divided into six regions, to support the State and Private Forestry program and Private Forest Management, including the execution of stewardship plans. Regional landscape plans complement state and private forestry and provide an avenue for stakeholders, particularly private landowners to identify projects and apply for grants and funding. The regional landscape plans are in continuous use and are at various stages of refinement over 10-year increments. They serve as the basis of coordination for all stakeholder groups concerned with the sustainable use and management of the state's forested landscapes.

Stakeholders in this process serve as the foundation on which the Minnesota SFAPs have been built. Minnesota has a long and respected history of forestry excellence in several arenas, and this is due to the unique level of cooperation among all levels of government, tribal governments, private and public entities, foresters, loggers and industry representatives, private forest and farm landowners, outdoor recreation representatives, resort and recreation business owners, environmental and conservation organizations, local elected officials, US Forest Service, DNR, SWCDs, and other natural resource professionals, and representatives from federal, tribal, state, and county land managers. Stakeholder involvement is tailored to each forested region and current issues. The Minnesota Forest Resources Council Landscape Committees acts as the coordinator and provides staff and supplies for committee meetings. Meetings are held on a quarterly basis and provide the forum for all stakeholders to work cooperatively on projects, and apply for funds to implement sustainable forest management practices in the state. Figure 6 represents the collaborative projects done by the six landscape committees over the past 13 years, and Figure 7 represents the six landscape committee priorities moving forward.

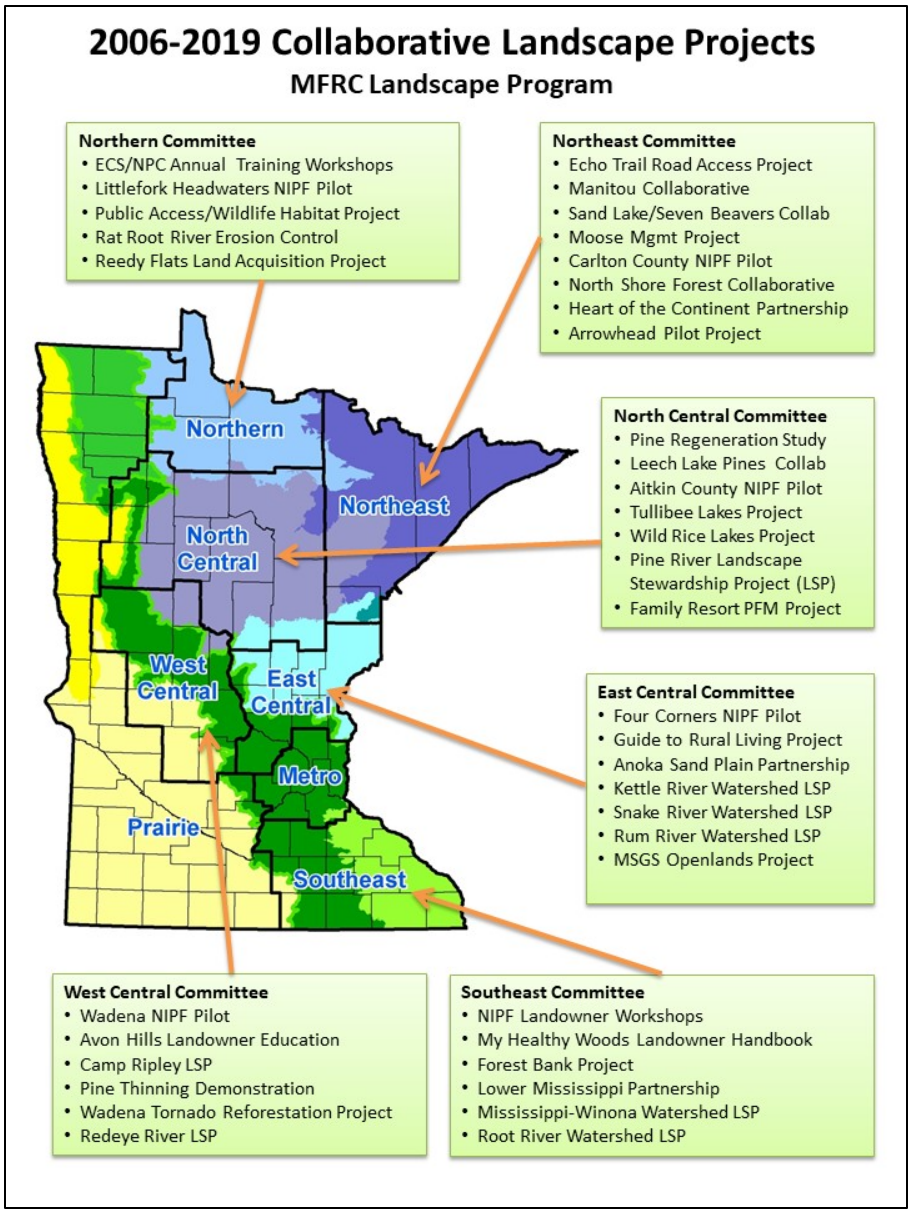

Figure 6 – Collaborative MFRC Landscape Projects in Six Minnesota Forest Regions from 2006-2019. Source: MFRC.

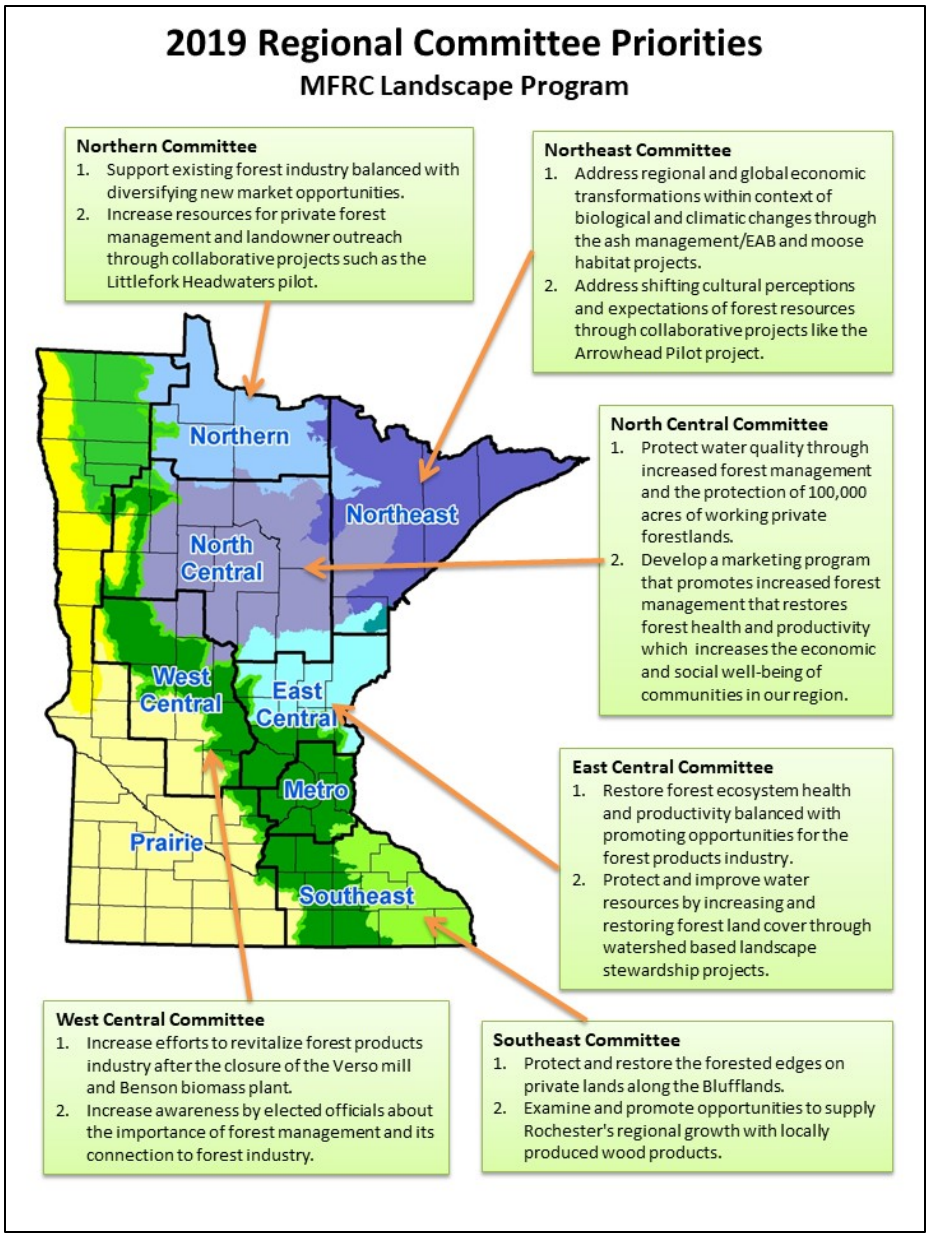

Figure 7 – Regional MFRC Landscape Committee Priorities in Six Minnesota Regions for 2019. Source: MFRC.

The 2010 SFAP relied on this unique stakeholder system to garner input and support for strategies that were included in the plan. The stakeholders were also asked to rank the major issues that were identified for the 2010 SFAP and again for the 2020 SFAP. Results of both rankings can be found in the following section below. The numerical scores read from 1 through 10 with 1 being the highest score and 10 being the lowest score. See Table 12 thru Table 17 for details.

Rankings Comparison from 2010 and 2020

East Central (EC) Regional Landscape Committee

Forest Resource Issues	2010 Ranking	2020 Ranking
Forest health and productivity	2	3
Maintenance of Minnesota's forest land base/parcelization	4	1
Support of a healthy forest products industry	3	2
Maintenance and protection of water quality and quantity	1	9
Use of woody biomass for energy	5	5
Maintenance and enhancement of rare ecological features	10	4
Recreational use of forest lands	9	10
Reducing wildfire risks	6	7
Mitigation and adaptation to climate change	8	6
Urban and community forestry	7	8

Table 12 – Priority Rankings by the East Central Regional Landscape Committee.

Northern (N) Regional Landscape Committee

Forest Resource Issues	2010 Ranking	2020 Ranking
Forest health and productivity	1	2
Maintenance of Minnesota's forest land base/parcelization	2	4
Support of a healthy forest products industry	3	1
Maintenance and protection of water quality and quantity	4	3
Use of woody biomass for energy	5	5
Maintenance and enhancement of rare ecological features	6	6
Recreational use of forest lands	7	7
Reducing wildfire risks	8	9
Mitigation and adaptation to climate change	9	8
Urban and community forestry	10	10

Table 13 – Priority Rankings by the Northern Regional Landscape Committee.

North Central (NC) Regional Landscape Committee

Forest Resource Issues	2010 Ranking	2020 Ranking
Forest health and productivity	1	3
Maintenance of Minnesota's forest land base/parcelization	3	2

Forest Resource Issues	2010 Ranking	2020 Ranking
Support of a healthy forest products industry	2	4
Maintenance and protection of water quality and quantity	5	1
Use of woody biomass for energy	8	7
Maintenance and enhancement of rare ecological features	4	5
Recreational use of forest lands	7	6
Reducing wildfire risks	9	10
Mitigation and adaptation to climate change	6	8
Urban and community forestry	10	9

Table 14 – Priority Rankings by the North Central Regional Landscape Committee

Northeast (NE) Regional Landscape Committee

Forest Resource Issues	2010 Ranking	2020 Ranking
Forest health and productivity	1	1
Maintenance of Minnesota's forest land base/parcelization	4	4
Support of a healthy forest products industry	3	3
Maintenance and protection of water quality and quantity	2	2
Use of woody biomass for energy	7	7

Forest Resource Issues	2010 Ranking	2020 Ranking
Maintenance and enhancement of rare ecological features	9	9
Recreational use of forest lands	5	8
Reducing wildfire risks	6	5
Mitigation and adaptation to climate change	8	6
Urban and community forestry	10	10

Table 15 – Priority Rankings by the Northeast Regional Landscape Committee

Southeast (SE) Regional Landscape Committee

Forest Resource Issues	2010 Ranking	2020 Ranking
Forest health and productivity	3	2
Maintenance of Minnesota's forest land base/parcelization	1	3
Support of a healthy forest products industry	4	4
Maintenance and protection of water quality and quantity	2	1
Use of woody biomass for energy	7	7
Maintenance and enhancement of rare ecological features	5	6
Recreational use of forest lands	9	5
Reducing wildfire risks	10	10

Forest Resource Issues	2010 Ranking	2020 Ranking
Mitigation and adaptation to climate change	6	8
Urban and community forestry	8	9

Table 16 – Priority Rankings by the Southeast Regional Landscape Committee

West Central (WC) Regional Landscape Committee

Forest Resource Issues	2010 Ranking	2020 Ranking
Forest health and productivity	3	2
Maintenance of Minnesota's forest land base/parcelization	1	3
Support of a healthy forest products industry	4	4
Maintenance and protection of water quality and quantity	2	1
Use of woody biomass for energy	6	7
Maintenance and enhancement of rare ecological features	5	6
Recreational use of forest lands	8	5
Reducing wildfire risks	7	10
Mitigation and adaptation to climate change	9	8
Urban and community forestry	10	9

Table 17 – Priority Rankings by the West Central Regional Landscape Committee

Southeast Landscape Committee Project Integration Example with the 2020 Forest Action Plan

In 2015, with the addition of new federal requirements to include three national priorities, the stakeholder groups were again asked to comment and provide input into plan strategies. This process was extended for the 2020 SFAP. The regional stakeholder committees have been instrumental in providing input for the 2017 updated Forest Legacy Assessment of Need (AON) which was approved by the US Forest Service in August 2019 and is included in its entirety in the 2020 SFAP Appendix B. Regional stakeholder input has also been instrumental in providing 'Success Stories' for both the 2015 and 2020 SFAPs. A new addition to the 2020 SFAP, is the inclusion of an example of where strategies can be used to further a regional forested landscape in moving forward for grant applications, or implementation of specific strategies that are a priority for that region. The recommendations below are from the 2019 final report for the project "Finding Wood in a Forested Landscape" (also referred to as "Finding Local Wood"), an undertaking of the Southeast Landscape Committee of the Minnesota Forest Resource Council. The report was reviewed by project partners and submitted to the DNR.

The goal of the "Finding Local Wood" project was an examination of wood supply and demand in southeastern Minnesota and opportunities for the forest products industry in this region. The *Southeast Landscape Plan* completed in 2014 included a number of recommendations that are referenced within the project report. In addition, the "Finding Local Wood" project offered recommendations for consideration by forest industry, public agencies, economic development authorities, and others.

The three national priorities identified in the 2010 and 2015 SFAPs include: 1) Conserve and Manage Working Forest Landscapes for Multiple Values and Uses; 2) Protect Forests from Threats; and 3) Enhance Public Benefits from Trees and Forests. Many of the associated strategies align well with the recommendations identified by the Southeast Landscape Committee and the activities associated with the "Finding Local Wood" Project. Recent and current activities in southeast Minnesota support the priorities to Conserve Working Forest Landscapes, Protect Forests from Threats, and Enhance Public Benefits from Trees and Forests. Examples include the development of landscape stewardship plans, landowner outreach, technical assistance, plan writer training, monitoring activities, and partnerships for promoting active forest management on private forest lands.

The following strategies and activities are based on the 2015 SFAP update and focus on components that most closely connect to southeast Minnesota priorities and activities (Table 18 thru Table 20).

National Priority 1: Conserve and Manage Working Forest Landscapes for Multiple Values and Uses

Forest Action Plan Strategy	Finding Local Wood Project Activities
Identify opportunities for forest protection, enhancement, restoration	Forest Stewardship Plans - Preparation of plans for the Forest Bank project, including engagement with landowners and plan writers

Forest Action Plan Strategy	Finding Local Wood Project Activities
Implement Forests for the Future program and acquire key priority forest lands through fee-title acquisitions	Development of proposal for funding to support forest land protection as guided by the Mississippi River-Winona Landscape Stewardship Plan and the Southeast Landscape Plan
Landowner participation in tax law and incentive programs	Landowner outreach, assistance and cost-share participation
Target forest stewardship services to critical watersheds	Mississippi River – Winona Watershed Landscape Stewardship Plan
Ensure that forest stewardship plans include guidance for forest management, harvesting regeneration	Plan Writer Training – workshop coordinated by Southeast Committee and DNR Forestry for plan writers in the southeast landscape region
Support and expand sustainable practices on working private forest lands	Educational opportunities for landowners, field days, and forestry events; "Call Before You Cut" program
Provide forest products marketing assistance to private landowners	Updating of Southeast Minnesota Logger Directory
Work with partners to identify opportunities for forest protection, enhancement, restoration	Partners convened in collaborative work through the Southeast Landscape Committee
Maintain strong wood industry technical and wood supply information and assistance	Finding Local Wood evaluation of wood flows in the region; Update of Southeast Conditions and Trends Report (compiling of FIA data)
Provide forest and forest-industry related information and education to the public and other key audiences	Development of brochure, PowerPoint, reports, and communication strategy
Support collaborative development of new or improved markets and products	Evaluation of State Wood Innovation Team (SWIT) and State Wood Energy Team (SWET) activities

Table 18 – SE Landscape Activities Related to MN SFAP National Priority 1 and Strategies

National Priority 2: Protect Forests from Threats

Forest Action Plan Strategy	Finding Local Wood Project Activities
Identify high-risk, low-volume stands and create prescriptions to increase stocking and health	Cost-share programs and assistance with tree planning, including use of direct seeding
Develop and maintain a better balanced and completed age class distribution	Promotion of active forest management on private forest lands
Thin overcrowded stands to improve vigor and reduce competition	Cost-share programs and technical service providers
Use eradication, suppression, and outreach to respond to new and expanding EAB and gypsy moth populations	Local training in EAB identification and reporting; Forest Pest First Detector program
Develop new and expanding existing markets for ash	Ash utilization in Rochester demonstration projects

Table 19 – SE Landscape Activities Related to MN SFAP National Priority 2 and Strategies

National Priority 3: Enhance Public Benefits from Trees and Forests

Forest Action Plan Strategy	Finding Local Wood Project Activities
Protect and manage forests and wetlands in forest areas under identified MPCA WRAPs with key partners and stakeholders to ensure high-quality aquatic habitats and healthy eco-systems remain viable	Forest Edge Buffer Forest Management
Protect and enhance critical riparian corridors in key watersheds	Forest Edge Buffer Forest Management
Target forest stewardship services and conservation easements to critical watersheds as supported through federal, local programs and agencies	Priority Conservation Opportunity Areas identified in watershed-based Landscape Stewardship Plans have guided implementation of Healthy Forests for Healthy Waters, and Forest Bank projects.

Forest Action Plan Strategy	Finding Local Wood Project Activities
Evaluate, refine and apply regulatory tools that conserve water supply and promote forest land and water-use practices that protect water quality	Policy Framework evaluation
Support research and programs that seek to increase public understanding, acceptance and implementation of aquatic habitat stewardship practices and their relationship to watershed protection	Active partnerships supporting research and public outreach
Promote and implement planning requirements for SFIA, Rural Preserves, Green Acres, and 2C	Targeted outreach programs have provided assistance to landowners in applying to appropriate tax and incentive programs.
Support continuing monitoring of implementation and effectiveness of site-level forest management guidelines especially water quality guidelines	Monitoring conducted in southeast Minnesota
Support continuing education programs like MLEP and SFEC, which provide forest management guideline implementation training	Trainings held in southeast Minnesota
Support community development goals and needs to pursue economic development and investments through partnerships to attract firms or expand biomass use for retention and expansion of jobs and future wealth creation	Discussions with industry after completion of Finding Local Wood project
Focus on applications (for woody biomass) for which other renewable energy resources are not well suited	Exploration of woody biomass for poultry production and other agricultural applications
Create new income through working lands conservation opportunities for farmers	Forest Bank and industry discussions
Identify key habitats and apply management and protection efforts to complement the State Wildlife Action Plan	Targeted geographies/protection and restoration, management
Provide technical assistance on rare ecological features to interested individuals and organizations	Provided cost share assistance for forest management plans to priority landowners

Forest Action Plan Strategy	Finding Local Wood Project Activities
Use prescribed fire and other practices to maintain habitat for rare ecological features associated with fire disturbance	TNC is currently working with DNR partners in southeast Minnesota to help increase the use of prescribed fire as a forest management tool
Encourage habitat restoration efforts	Targeted geographies/protection and restoration, management
Invest Clean Water, Land and Legacy funds in high priority, sustainable projects that efficiently deliver a broad variety of recreational uses of forest lands	Southeast Minnesota Protection and Restoration program funded through Outdoor Heritage Fund has protected more than 7,000 acres
Maintain healthy, vigorous, and viable native plant communities	Southeast Minnesota Protection and Restoration program funded through Outdoor Heritage Fund has completed of 900 acres of habitat restoration and enhancement projects
Modify resource management plans and management activities to help forest systems resist, be resilient to, or respond to anticipated effects of changes in climate	Enhanced stewardship plans & forest bank project

Table 20 – SE Landscape Activities Related to MN SFAP National Priority 3 and Strategies

Chapter 6 Success Stories

Every five years, states are required to submit a report that describes Minnesota SFAP implementation success stories that contribute to each national priority. The following stories highlight some of the successes Minnesota has had, related to the implementation of the SFAP. Each story is grouped under the national priority to which it contributes. Stories present a snapshot of positive forestry management implementation in the state. Project contributions were submitted from the following sources: USDA Forest Service State and Private Forestry, Chippewa National Forest, Superior National Forest, DNR Forestry, Board of Water and Soil Resources, Aitkin County, and Camp Ripley.

National Priority 1: Conserve and Manage Working Forest Landscapes for Multiple Values and Uses

Figure 8 – Morrison County Conservation Easement. Source: DNR.

Forest Legacy—A Powerful Partnership: Protecting Minnesota's Northwoods

Submitted by Minnesota Department of Natural Resources Forest Legacy Program

Among the shining stars in Minnesota's recent efforts to protect and conserve high priority forest ecosystems and landscapes for posterity is the Minnesota Forest Legacy Partnership, which completed more than 330,000 acres of forest protection in northern Minnesota, far exceeding its initial goal of 75,000 acres (Figure 8). The partnership, which is made up of nine public, private and non-private entities including the Blandin Foundation, the Grand Rapids Chamber of Commerce, Minnesota Deer Hunters Association, Minnesota Forest Industries, Minnesota Forest Resources Council, The Conservation Fund, The Nature Conservancy, the Trust for Public Land, and the Minnesota Department of Natural Resources has raised more than $24 million in private funds to match over $56 million in state and federal grants since 2005.

Formed in 2005 with a lead grant of $6.25 million from the Blandin Foundation, the Partnership worked with industrial forest landowners to purchase working forest conservation easements. The easements keep the land in private hands and on the tax rolls while ensuring timber is harvested sustainably and the forests remain open for public recreation.

One of the highlights is the Upper Mississippi Forest project, the largest conservation effort in state history and a signature project for the Clean Water, Land and Legacy Amendment. With support from the Partnership, the Conservation Fund and DNR negotiated an easement, which protected 188,000 acres of forest land in northern Minnesota.

Easements protect not only working forest lands but also protect many miles of undeveloped lake and river shoreline, thousands of acres of intact wetlands, and include multiple recreational opportunities for the public including hunting, fishing, and trail access. These permanent easements are an enduring conservation legacy for generations to come (Figure 9).

Figure 9 – Forest Legacy Landowner and Sign. Source: DNR.

Koochiching County: SWCD Exceeds Conservation Enrollment Goals for Forested Private Lands

Submitted by Minnesota Board of Water and Soil Resources

The Koochiching Soil & Water Conservation District (SWCD) coordinates the Little Fork Headwaters Non-industrial Private Forest land project and serves as its fiscal agent. By late summer 2019, when the second of two US Forest Service grants wrapped up, 40 landowners had acquired DNR-approved management plans for 6,250 acres. Those tracts were like islands in an otherwise intensively managed forest, scattered throughout the 1 million-acre headwaters region that spans parts of Koochiching, Itasca and St. Louis counties. “The concern was that you didn’t have continuous management,” said

Koochiching SWCD Administrator Pam Tomevi. “So you’ve got these pockets where maybe forest stands and types are similar. But when you have a break in how they’re managed, then it’s not always the best for the (resource).”

Fragmentation increases the threat of development or conversion to cropland. Unmanaged forests pose risks, too. Open areas can be susceptible to invasive plant species. Overly mature stands can fall prey to forest pests. When timber harvest occurs on private lands, a lack of best management practices can lead to soil erosion, especially in riparian areas.

The Minnesota Pollution Control Agency (MPCA), in 2010, deemed stretches of the Little Fork River impaired for turbidity. Work on the first NIPF project started in 2011 with a $45,000 federal grant and a $37,000 match. The MPCA’s Watershed Restoration and Protection Strategy (WRAPS) prompted Koochiching SWCD in 2016, to expand its second phase funded by a $40,000 federal grant and a match exceeding $106,000, to focus on riparian areas. Thomas Wyrobek’s land qualified. For years, Wyrobek had hunted deer here with friends. He still fills the freezer with venison. But in summer 2018 he was mulling forestry management plans for his 175-acre property. He might stabilize eroding stretches of his 1,350-foot-long riverfront. He might plant hazelnuts or pollinator habitat. Wyrobek planned to do much of the work himself. He expected to have more free time after he transferred ownership of his nanotech company. He discussed possibilities during an August 2018 visit with James Aasen, Koochiching SWCD forest resource specialist. “The way I’m going to use it is to commit to improving it,” Wyrobek said of the land he’d enrolled. Aasen’s role in the NIPF project included contacting the owners of prioritized parcels to explain the details. “The stewardship efforts with the DNR are the perfect way to connect with those landowners and get them engaged,” Aasen said of the DNR’s Private Forest Management program. “Throughout northern Minnesota, you’re seeing land-use priorities changing. There’s a lot of fallow fields that were farmed, and now there’s invasive weeds that have taken over. Those could be replanted and become productive again.”

Those who signed on were reimbursed for half the cost of hiring a private forester to develop a long-term management plan. Foresters met with landowners, walked their land and considered their goals, which ranged from preserving white pines to attracting songbirds. Implementation was optional. Those who registered their forest stewardship plans with the DNR and followed suggestions could receive tax breaks through programs including the Sustainable Forest Incentive Act (SFIA). “You’re a landowner and you’re not really thinking about your property 300 miles away. But now you might,” Tomevi said. Wyrobek elaborated on his reasons for enrolling: “Trying to do a good job at understanding what a steward of the land is. Because I’m blessed to own it, and possession’s obliged. That’s my mother’s phrase, and I believe that. If you’re going to have it, if you don’t take it seriously, you’re going to lose (everything) anyway.”

Losing contiguous tracts of forest land also would affect wildlife, including wolves, moose, bobcats, bears and fishers, which require large tracts of uninterrupted habitat. The Little Fork River itself is known for sturgeon, muskies, walleye, small-mouth bass and northerns. “It’s one of the wildest rivers outside of the Boundary Waters. There’s huge stretches that are undeveloped,” Aasen said.

Government agencies manage the county, state, and federal forests that comprise 52 percent of the watershed. Companies manage industrial forests for sustainable timber production. Private property owners, many of them absentee landowners who only hunt here, may lack forestry knowledge. Koochiching SWCD increased its outreach efforts when it leveraged $30,000 or $10,000 a year for three years, in Clean Water Fund local capacity dollars from BWSR, to hire Aasen in 2016, and to make a temporary water resources specialist position full-time. The Little Fork Headwaters Non-industrial Private Forest Land project exceeded its acreage enrollment goals and its matching contributions. The two-phase project aimed for 5,000 acres and ended up

enrolling 6,250 acres. The project budgeted $60,000 to match the Phase II grant, but produced nearly $106,370 in cash and in-kind contributions. The Koochiching SWCD's efforts to manage sustainable, healthy forests continue through its involvement in the county water plan, adopted in 2018. "As we work with the county in partnership to implement the plan, it makes perfect sense that we work with private landowners. In a county that's as forested as Kooch, you have DNR working on state land. You've got county working on county land. Federal lands take care of their own," Tomevi said. "Who does a private landowner turn to? That's the niche that is the soil and water. So when we talk about resources, we don't just stop at soil and water. We think about a renewable resource that impacts both of those, and that is forestry." (Figure 10).

Figure 10 – Koochiching SWCD Staff and Private Landowner Discuss Forest Management on Property Overlooking Little Fork River. Source: BWSR.

Saving Forest Cover, Saving Lakes

Submitted by Minnesota Board of Water and Soil Resources

In the heart of Minnesota lakes country, Crow Wing and Aitkin Soil & Water Conservation Districts (SWCDs) staff are unrolling a plan to protect cold-water fisheries through voluntary conservation. The project strives to maintain and improve the water quality of 25 at-risk lakes by permanently protecting forest cover on private lands within the lakes' watersheds. A $750,000 award from the Environment and Natural Resources Trust Fund (ENRTF) will help to keep at least 75 percent of a targeted lake's watershed forested.

The Minnesota Department of Natural Resources (DNR) discovered that phosphorus runoff, which feeds the algae that turns lakes green, spikes when more than 25 percent of a lake's watershed is deforested. "We have these fisheries. The question is: Are we going to keep them?" said Dan Steward, Minnesota Board of Water and Soil Resources' (BWSR) forestry management coordinator. "Over time, we tend to open up these forested watersheds more and more," Steward said. "We reduce that element of infiltration, and we start running that water across the surface of the ground where it picks up more nutrients. As you harden the surfaces, (lakes move) from groundwater-fed to hard-surface-fed. That's a step backwards."

Property owners have two options. They can enroll land in a permanent Reinvest in Minnesota (RIM) conservation easement, which is processed by Crow Wing SWCD and administered by BWSR staff. Or, with a 20-acre minimum they can enroll in the Sustainable Forest Initiative Act (SFIA) for an 8-, 20-, or 50-year term. SFIA is administered by the Minnesota Department of Revenue and checked by the DNR. Both options keep land in private ownership and on the tax rolls. Enrolled property remains working land open to forestry management and timber harvest. SWCD staff, private consultants and DNR private forest management foresters can write forest stewardship plans for interested landowners with at least 20 acres. "Landowners choose," Steward said. "The state is not making decisions. The county's not, either. Landowners are. How much conservation is right for them? It's their choice."

Crow Wing and Aitkin counties identified 880 high-quality lakes of statewide importance within their borders. The 25 were chosen based on phosphorus sensitivity, cold-water fisheries, forest cover, and habitat. "We've really zoned in on some unique, high-quality lakes that we want to protect," said Steve Hughes, Aitkin SWCD manager. "If you look at some of these lakes, all you're going to see is a beautiful water body where the lakeshore looks pretty good," Hughes said. "Conveying the urgency of protection is a little harder." The ENRTF award is a start. The first round of applications are due May 1. SWCD staff intensified outreach efforts in February.

Sheila Boldt of Crow Wing SWCD handles outreach and, with Jake Granfors, a Pheasants Forever biologist in Aitkin County, will process easements. In February she notified 430 landowners whose property scored at least 6 of a possible 10. One challenge is that absentee landowners comprise about half of the potential audience. A technical committee will rank applications based on the quality of a property, whether it is riparian, and whether it's adjacent to public lands.

How quality is defined will be decided locally. For example, the presence of wild rice might boost a score. Lakeshore property may be discouraged because of its high cost. Steward said property adjacent to public land would compound benefits. "We have a limited number of conservation dollars. I think we owe it to the taxpayers to get as many conservation benefits out of the dollar as possible," Steward said (Figure 11).

Those who enroll in RIM will receive payments for conservation easements. Those who receive forestry plans will have a management blueprint. Another potential benefit is peace of mind knowing the land will be protected from development. "No one apologizes when they say, 'I'm going to develop this.' Because that's an allowed land use. Neither should we have to apologize for saying, 'I don't want this to be developed.' Development is a permanent land-use decision, too. Why are we so uncomfortable with permanent conservation but not permanent development?" Steward said.

Figure 11 – High-quality Forests and Stream in North-central Minnesota. Source: DNR.

Forest Certification—Minnesota's Model of Leadership

Submitted by Minnesota Department of Natural Resources Forest Certification

In 1997, DNR and Aitkin County Land Department pursued and obtained third-party forest certification for about 150,000 acres of state and 220,000 acres of county-administered forest lands within Aitkin County. These were the first public forest lands to be certified to the Forest Stewardship Council® (FSC) in the United States, thereby establishing DNR and Aitkin County as nation-wide leaders in forest certification.

Since 1997, interest, recognition and support for forest certification continued to grow among natural resource managers, forest product manufacturers, builders, policy makers, consumers of sustainable products, and the public. In response to this increased market demand and the 2007 '*Governor's Task Force Report on the Competitiveness of Minnesota's Primary Forest Products Industry*', DNR committed to, and successfully obtained, dual Forest Stewardship Council® (FSC) and Sustainable Forestry Initiative® (SFI) third-party forest certification on all DNR Forestry and most Division of Fish and Wildlife administered lands in December of 2005 (example shown in Figure 12). DNR currently manages nearly 5 million acres of certified lands, the largest single FSC® certificate in the US. In addition, nearly 3 million acres of certified lands are held by counties, industry, and other entities in the state. In 2015,

DNR became the first state to become a member of the Forest Stewardship Council®, and in 2018 was appointed to the FSC® US Board of Directors, the first government in the world to be appointed to a FSC® Board.

Forest certification of state-administered forest lands has led to a sustainable supply of forest products and services from healthy, diverse and productive ecosystems, independently recognized attention to sustainability, continuously improved forest management practices, and improved interdisciplinary coordination and communication. Maintaining forest certification demonstrates and re-affirms DNR's dedication to sustainable and responsible forest management.

Given the current stresses of invasive species, climate change, and other factors, managing sustainably is crucial for ensuring a long-term flow of forest products and timber revenue from Trust lands and other DNR-administered lands. Forest certification has not changed DNR's priorities or management objectives, but has rather focused attention on mission-driven work and prompted action on managing sustainably by addressing biodiversity, water quality, and other issues to which DNR was already committed. In some cases, forest certification is likely to lead to increased future products and revenue as a result of improved ecological and forest health conditions. For DNR, forest certification is critical to assure Minnesotans that the agency is practicing forestry, including timber harvest, in a sustainable manner. Certification has helped improve the market competitiveness of Minnesota's certified forest products. Forest certification builds strong markets for Minnesota's forests, thereby maintaining the state's ability to effectively manage forests, while also supporting the economic vitality of many of Minnesota's forest dependent rural communities.

As the standards have evolved, DNR has shown leadership in continuing to improve the way we sustainably manage forests. An example to this is the development of an annual Internal Program Review process. The Internal Program Review uses an interdisciplinary team of program leaders to evaluate how effectively the department processes and policies are being implemented. This proactive approach engages staff through a field review of land management practices implemented by our Forestry, Fish and Wildlife, and Ecological and Water Resources divisions. The Internal Program Review encourages an open dialogue on what is functioning well and where there are opportunities for improvements in the way the department's policies and processes are being implemented. These recommendations are then vetted through the Forest Certification Implementation Team (FCIT) and annually submitted in a report to DNR department leadership. In recent years, this process has led to improvements in guidance on managing School Trust Lands, High Conservation Value Forests, the conservation of state-listed species in greatest conservation need, and a number of other operational policies and processes.

Figure 12 – Example of a Certified Forest in St Louis County, Minnesota. Source: DNR.

Minnesota Study Completed: Highlighting the Economic Feasibility of Mass Timber Manufacturing

Submitted by Minnesota Department of Natural Resources Forest Utilization and Marketing Program

Mass timber construction is a growing national building trend that has been established in Europe for over a decade. Mass timber products are being used for prefabricated wall, floor, and roofing systems for commercial, public and residential buildings. Produced and cut in manufacturing plants, these systems have the potential to change the way commercial buildings are being constructed, often competing with steel and concrete as an alternative green material for structures in tall wood construction projects**.**

Mass timber products are a value-added class of engineered wood products that are designed for structural applications. Emerging products like cross-laminated timber (CLT), nail laminated timber (NLT), dowel laminated timber and mass plywood panels (MPP) could be produced from Minnesota species like red and jack pine, spruce, and balsam fir. These structural products are being increasing used in timber construction across the United States. While there is a cluster of projects in the Pacific Northwest, there are more and more projects in the Midwest. The trend is nationwide. In Minnesota, the T3 building is a great example of mass timber construction, produced from glulam columns and beams and NLT panels (Figure 13).

Figure 13 – Mass Timber Construction Project. Source: DNR.

To become part of the mass timber construction and production movement, Minnesota needed to better understand this industry and to develop a strategy for advancing. Tamara Lowney, of The Area Partnership for Economic Development (APEX) and now the Executive Director with Itasca Economic Development Corporation, secured project funding and managed the 2018-2019 project. University of Minnesota Duluth's Bureau of Business and Economic Research (BBER) and Center for Economic Development (CED) were the research partners on the study, supported by subject matter experts with the Minnesota Department of Natural Resources (DNR), US Forest Service (USFS), and industry partners. This team connected with CLT industry leaders, local sawmills, forestry professionals, and others to ensure successful completion of the study. The study contained three sections Market Demand, Lumber Availability and the Economic Impact Analysis and was successfully completed in March of 2019. The study showed that Minnesota would have excellent potential to support new value-added manufacturing, strong construction markets, and suitable lumber for producing CLT. The study information as of March 2019 is being used to determine a Minnesota strategy of attraction, outreach, and education around mass timber and the opportunities in the state.

Private Forest Management (PFM) Program: Increasing Capacity

Submitted by Minnesota Department of Natural Resources Forest Stewardship Program

In 2016, the Minnesota Legislature appropriated additional state funds to escalate assistance to private forest landowners in an effort to increase private forest land that are sustainably managed. The Division of Forestry used the funds to hire an outreach specialist and additional foresters to work with woodland owners across the state. Funds were also used to create a cost-share program to help private woodland owners complete woodland stand improvement projects and get a Woodland Stewardship Plan.

DNR now has 18 fulltime Cooperative Forest Management (CFM) foresters dedicated to working with private woodland owners, communities, and School Forests. This is an increase of 14 FTEs from 2008-2016. The CFM Outreach Specialist was hired in November of 2018.

Cost-share program: The PFM cost-share program provides financial assistance to woodland owners for completing projects to practice good forest stewardship on their land. A typical project is between 3 and 20 acres but could be smaller or larger. Some examples of projects include creating or maintaining wildlife habitat, planting trees, removing invasive species, thinning undesirable trees, and constructing trails. See Figure 14 and Table 21 below.

Description	FY17 Number	FY17 Amount Spent	FY18 Number	FY18 Amount Spent
Stewardship Plans	444	$133,200	467	$140,100
Project Plans	418	$624,148	506	$481,489
Seedlings planted	452,650	$161,660	577,336	$194,351
Seedlings protected	156,320	$73,520	7,639	$27,339
Acres of site prep	360	$30,120	533	$50,172
Acres of timber stand improvement	550	$51,285	297	$27,881
Acres of invasive species	1,514	$199,370	608	$105,199
Feet of roads/trails	178,730	$79,840	70,576	$37,300

Description	FY17 Number	FY17 Amount Spent	FY18 Number	FY18 Amount Spent
Acres of prairie and brushlands	2,240	$12,885	135	$6,473
Oak wilt treatments	4	9,105	n/a	n/a
Acres of seedings	n/a	n/a	69	$12,070
Trees pruned	n/a	n/a	14,975	$5,129
Other	n/a	$6,363	n/a	$7,148

Table 21 – Fiscal Years 2017 and 2018 Accomplishments for the PFM program.

Figure 14 – Before and After Photos of Two Crop Releases. Source: DNR.

Private Forest Management Workshops: CFM foresters, along with consulting foresters, industry foresters, SWCD foresters, and non-profit organizations have planned and hosted workshops targeting woodland owners that live in the Twin Cities area but own woodland in northern Minnesota. The purpose of the workshops are to encourage the development or improvement of wildlife habitat by using a timber harvest. In 2018, 85 woodland owners attended one workshop. In 2019, 115 woodland owners attended two workshops. Two out of the three workshops sold out. Attendees indicated they enjoyed attending the workshop and increased their knowledge of woodland management, and expressed interest in attending future workshops.

Chippewa National Forest Signs Agreement with Leech Lake Band of Ojibwe on Shared Stewardship

Submitted by Chippewa National Forest, US Forest Service

On October 4, 2019, US Forest Service Acting Regional Forester Bob Lueckel and Leech Lake Band of Ojibwe Chairman Faron Jackson Sr. signed a memorandum of understanding as part of a unique federal-tribal relationship that presents opportunities to balance the social, economic and cultural well-being of the Band, while addressing the agency's multiple-use mission. "We will work together to identify shared priorities and implement shared projects focused on forest and watershed restoration, fish and wildlife habitat improvement and preserve socially and culturally significant places," Lueckel said. "The overlap of boundaries and jurisdiction provides us with an opportunity to implement shared stewardship practices and enhance our partnership with the Band" (Figure 15).

The agreement provides a framework for cooperation between the Forest Service and the Band for natural resource management, economic development and employment, training and education, maintaining Ojibwe cultural lifeways, and regulatory jurisdiction on National Forest System and trust lands within the boundaries of the Leech Lake Reservation.

The Chippewa National Forest was created by statute in 1908. Before that, it was designated as the Minnesota Forest Reserve (1902-1908). Approximately 90 percent of the reservation is found within the Forest boundaries of the forest and approximately 45 percent of the forest is within the reservation. This unique overlap of boundaries provides the opportunity to implement a shared stewardship strategy and enhance the relationship between the Forest Service and the Tribe. "The challenges we face today, such as wildfire and invasive species, go beyond the shared forest and Reservation boundaries and effect people beyond the jurisdiction of any single agency or organization," Lueckel said. "This necessitates working closely together to find new ways of doing business at a greater pace and scale for the greatest benefits to resources and people." The shared decision-making model outlines a joint planning process incorporating the National Environmental Policy Act Cooperating Agency status, intensive tribal consultation and collaboration, and the concept of legal dispute resolution. The shared decision-making draft is modeled after one between the Fremont-Winema National Forest and the Klamath Tribes in Oregon.

Figure 15 – Staff from the U.S. Forest Service Chippewa National Forest and the Leech Lake Band of Ojibwe. Source: CNF.

Superior National Forest Good Neighbor Authority

Submitted by Superior National Forest, US Forest Service

On February 1, 2016, Regional Forester Kathleen Atkinson and Minnesota Department of Natural Resources Commissioner Tom Landwehr signed a 'Good Neighbor' Master Agreement. This agreement provided the framework for the Superior National Forest and the State of Minnesota Department of Natural Resources to cooperatively conduct forest, rangeland and restoration services on and off National Forest System (NFS) lands for the benefit of NFS lands.

Subsequent Supplemental Project Agreements (SPA) incorporate specific projects and operating procedures expected of both parties as well as a financial plan for agreed to activities. To date (2019), the primary activities conducted by the state have been timber sale preparation, sale advertisement, award, and sale administration for commercial timber sales on NFS lands.

To date, the state has prepared, advertised and awarded five individual timber sales with the following attributes:

- An estimated 1,436 acres to be treated
- 35,513 cords (16,933 MBF) of mixed hardwood, aspen and conifer
- Sold value of $1,180,972.00

In addition to these sales, the state has prepared one timber sale that has not yet been awarded:

- An estimated 417 acres
- 8,335 cords (4,151 MBF) of mixed hardwood, aspen and conifer.

All income generated by these timber sales is held by the state of Minnesota and any revenue in excess of the minimum deposits to the Forest Service are available as Program Revenue for the state to conduct additional approved restoration activities.

While the primary restoration activities currently conducted by the state are related to timber sales on NFS lands, future activities may include; writing silviculture prescriptions; post-sale activities such as site preparation and planting; prescribed fire preparation and implementation; and agreed upon wildlife and watershed restoration.

The state's involvement under the Good Neighbor Authority has and will continue to be integral to increasing the capacity of the Superior National Forest to meet its goals and objectives identified in the Land and Resource Management Plan.

Arrowhead Landscape Pilot Project in Northeast Minnesota

Submitted by Superior National Forest, US Forest Service

The Minnesota Forest Resources Council (MFRC), a state of Minnesota sponsored collaborative forest management organization, is initiating the Arrowhead Landscape Pilot Project (Arrowhead Project). The Arrowhead Project takes an all-lands approach to vegetation management covering approximately 500,000 acres of federal, state, county, tribal, industrial, and private lands in northeast Minnesota (Figure 16). The Superior National Forest

will support, encourage, and participate in this collaborative effort and will use a shared stewardship approach to improve forest conditions from planning through implementation.

The Arrowhead Project will showcase a collaborative, shared decision-making approach among regional natural resource managers, stakeholders, and land owners to address urgent forest landscape risks associated with an aging forest, including wildlife habitat loss, catastrophic wildfire threats, invasive species expansion, and weakening of economic and community values expected from the forest. Forest management treatments will address identified landscape-wide natural resource priority objectives across multiple land ownership acreages.

Collaborative partners include St. Louis County, the Fond du Lac Band, the 1854 Treaty Authority, US Forest Service-State and Private Forestry (S&PF), MFRC, DNR, NRCS, the Superior National Forest, TNC, the forest products industry (MFI), and likely additional parties to be identified such as private landowner organizations. Public engagement will also occur which will include environmental organizations, user groups, and the general public.

Goals of the Arrowhead Project include: identification of common resource management themes among land managers and stakeholders; strengthening the relationships and structures to institutionalize an all lands approach as a regular way of doing forest management in northeast Minnesota; sharing and improving technical data (by using spatial data such as aerial photography and lidar); improving forest conditions, including wildlife habitat, watershed, and ecosystem services; reducing hazardous fuels; and providing forest products. The intent is to achieve more on the landscape across all ownerships using an all lands approach.

The Superior National Forest will continue to encourage, support, and participate in the Arrowhead Landscape Project Collaborative. In 2019, the US Forest Service began to initiate a NEPA project for national forest acres in the project area using a flexible implementation approach (condition based management).

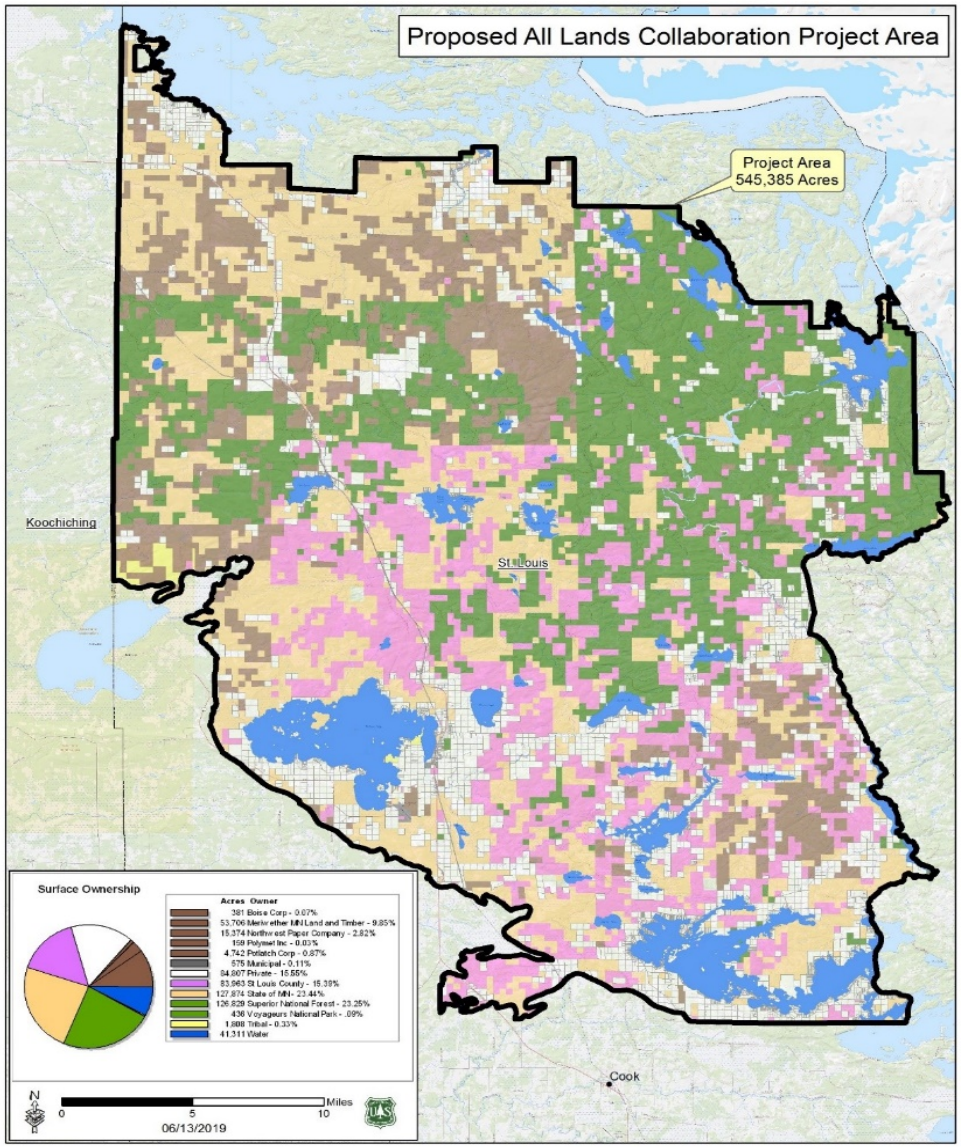

Figure 16 – Proposed Project Area for the Arrowhead Project. Source: SNF.

Buffering Camp Ripley: Agriculture and Forest Easements Aid Habitat, Mission

Submitted by Minnesota Board of Water and Soil Resources

Conservation easements on Camp Ripley's perimeter are preserving fish and wildlife habitat while protecting the Minnesota National Guard's 52,830-acre regional training center from development that could impede its operations. A partnership between Morrison Soil & Water Conservation District and Camp Ripley has funneled $37.9 million into Morrison, Crow Wing and Cass counties over the past 12 years, working with 232 landowners and 27,800 acres. Thirty-eight more easements are in the works.

The Army Compatible Use Buffer program minimizes infringement within a 3-mile radius of Camp Ripley by purchasing development rights through permanent conservation easements. Landowners receive a per-acre sum and retain the right to continue current land-use, which may include farming and hunting. "The corn doesn't complain at 2 o'clock in the morning when the great big howitzers go off. And the cattle don't complain. And the trees don't complain. The people do," said Dan Steward, Minnesota Board of Water and Soil Resources private forest management program coordinator.

Camp Ripley operates 24 hours a day, training about 30,000 military personnel and civilians a year including firefighters, emergency responders, law enforcement officers, and snowplow operators. Housing developments not only bring people closer to the noise of small-weapons training, tanks, planes and helicopters, and the dust of convoys on gravel roads, but also consume more wildlife habitat. "These military installations were becoming islands for threatened and endangered species. So it was really impacting what the military could do on their own lands," said Josh Pennington, Camp Ripley's environmental supervisor.

The Mississippi River defines 18 miles of Camp Ripley's eastern border and; the Crow Wing River marks about 11 miles of its northern boundary. The forest, prairie and wetland habitats support wolves, red-shouldered hawks, and the threatened northern long-eared bat. Sixty-five Species in Greatest Conservation Need (SGCN) live within its borders. "The military goals are to prevent incompatible development. You're starting to see more emphasis on protecting critical habitat so we don't just become an island of diversity," Pennington said.

The US Department of Defense's Readiness and Environmental Protection Integration program has put nearly $34 million into ACUB at Camp Ripley. Nearly 650 landowners have expressed interest since the program started in 2006. A January informational meeting drew 190 people and garnered 80 new sign-ups. When ACUB was introduced in 2004, suspicion of a state or federal land-grab fueled opposition that nearly derailed the program. The effort took a local contact to work with landowners, and a partner agency to execute easements to make ACUB work. Camp Ripley found them in longtime Morrison SWCD Manager Helen McLennan, and in BWSR-administered Reinvest in Minnesota easements. McLennan retired in late October. "Helen has been a key to the program. The easement program that we do through BWSR being executed through the local soil and water conservation district has been a massive success with over 25,000 acres to date," said Jay Brezinka, environmental program manager for the Minnesota Army National Guard. "It's a formula-based, very streamlined program. She's just got an amazing relationship with landowners. They trust Helen and respect her decisions." Lance Chisholm, Morrison SWCD's ACUB/water plan coordinator, worked directly with landowners to secure easements. "Between Helen and Lance, they've been an excellent team and they apparently have the ability to put landowners at ease," Steward said. "The results speak for themselves. That long landowner waiting list speaks volumes about the quality of the service that the district is providing, and they're doing that primarily through Lance and Helen."

ACUB brought the first working-lands easements to Minnesota. Originally designed as compensation for retiring marginal farmland, RIM was reworked by BWSR staff and modified by the Legislature to fit ACUB. Because landowners relinquished only development rights, RIM rates were lower at 50 percent of township average land value, compared with 90 percent for farmland. The money went further. “It has stayed strong for Camp Ripley even though now there’s over 60 military bases with programs. The reason we’ve stayed strong is our ability to execute,” McLennan said.

Doug John enrolled 278 acres in the program a few years ago. “I know that if I die tomorrow, it isn’t going to be broken down into little homesteads,” John said. While the RIM easement eliminated concerns about paying taxes, John, 72, a retired clinical psychologist, who later managed his parents’ restaurant; became a taxidermist; and then a rural mail carrier. He said he enrolled primarily to keep the Morrison County farm his grandparents had worked to expand over the years, intact for the future. John moved his family into the house he built on the 360-acre property about 17 years ago. He rented the fields for a few years, and then enrolled the farmland in the Conservation Reserve Program (CRP). He’s since planted about 80,000 trees. “I have a little forest. I don’t want it destroyed. I don’t want to sell it to somebody and have them tear up all the trees and plant corn,” John said. John doesn’t expect his two grown children, who live in Washington, D.C., and Los Angeles, will move back. “But I do foresee, whenever this comes up for sale, I believe the person who’s going to buy it after I die will be a person who hunts and fishes,” John said.

Many of those who enrolled through the ACUB program sought a way to pass their land to the next generation. Especially for older landowners with mounting expenses, McLennan said RIM payments could mean the difference between selling or staying. Since it was modified to fit the ACUB program, RIM has expanded to help protect northern Minnesota wild rice habitat and lands within the 400-mile-long Mississippi River headwaters region. “It’s had a ripple effect in allowing us to broaden the tool to fit the forested zone better,” Steward said. “One of the benefits of taking the RIM program into the trees, so to speak, is land values are so much lower. The money goes much, much further. Land values are about one-fifth to one-sixth what they are in the prairie part of the state.”

Protecting the forest surrounding Camp Ripley has brought $5.7 million in Lessard-Sams Outdoor Heritage Fund investments since 2010, buffering about 4,800 acres, including land surrounding the Little Nokasippi Wildlife Management Area and the confluence of the Little Nokasippi River. “When we take an easement on wooded land with Lessard dollars, we’re protecting one of the best small-mouth bass fisheries in the state in the Mississippi River. It’s also one of the best muskie fisheries in the state. It’s the Mississippi flyway, so it’s huge for waterfowl migration. We’re protecting that corridor. Songbirds also follow the Mississippi River in their migrations, so we’re protecting that. Sixty-five SGCNs, (defined by the DNR as being at risk because they depend upon rare, declining or vulnerable habitat), live at Camp Ripley.

Perhaps the most important goal is that we’re also contributing to the protection of Minneapolis-St. Paul and St. Cloud drinking water supply,” Steward said. The 480-acre Little Nokasippi River WMA in Crow Wing County was established in 2006 through Camp Ripley’s ACUB program, in partnership with DNR and The Nature Conservancy (TNC). “Now the wildlife management area is protecting the Nokasippi River, it’s a public accessible hunting place, and it’s buffered with RIM easements so it’s not encroached on. That residential encroachment can have a negative impact on the public resource of a wildlife management area,” said TNC’s Todd Holman who is Camp Ripley’s Sentinel Landscape coordinator.

ACUB’s success led Camp Ripley in 2016 to become the sixth federally designated Sentinel Landscape in the United States and the first at a National Guard facility. Sentinel Landscapes sustain compatible land use for military operations while providing conservation and working-land benefits. The ACUB program now operates within that designated landscape. The designation brought more federal funds, more partnerships and a broader focus within a 10-mile

radius of Camp Ripley. “How do you create a Sentinel Landscape? Camp Ripley is the poster child,” Holman said. “How you work with RIM through BWSR is still being written. BWSR has been willing to recraft RIM to fit this big, national objective.” In 2017 the Sentinel Landscape partnership received $2.8 million through the federal NRCS Regional Conservation Partnership Program (RCPP). A Baxter-based NRCS forester has been hired. Partnering with the National Park Service could lead to recreational opportunities or cultural resource protection. Collaboration with the Bureau of Land Management, which owns islands in the Mississippi River, has yet to be explored.

The seventh phase of acquisitions planned for this year would add 440 acres of high-quality habitat through seven easements along the Crow Wing, Gull, Nokasippi and Mississippi river corridors, acquire 117 acres from Tiller Corporation and add that land to the Little Nokassippi River WMA through a fee title transfer. “Over those 15-some years, they’ve been able to execute more conservation easements than any ACUB installation in the entire country and in the entire Department of Defense,” Pennington said (Figure 17).

Figure 17 – Partnerships and Easements of Forested Land Habitat Benefits - While Preserving National Guard Regional Training Mission at Camp Ripley. Source: BWSR.

Aitkin County Land Department Recognized at Joint Forestry- Wildlife Meeting

Submitted by Aitkin County Land Department

Minnesota chapters of The Wildlife Society (TWS) and the Society of American Foresters (SAF) gathered for a joint annual meeting on February 19-21, 2019, by Lake Superior in Duluth. In attendance were staff from the Aitkin County Land Department (ACLD). During the meeting, the ACLD was honored with the Minnesota Chapter TWS Conservation Award, which is given to an organization or institution that has shown an outstanding commitment to Minnesota's natural resources. DNR Assistant Wildlife Manager Jodie Provost presented the award and made some comments about the many accomplishments of ACLD with regard to both sustainable forest management and wildlife habitat conservation (Figure 18). Provost is past president of the north central section TWS and represents DNR Wildlife on the North Central MFRC Landscape Committee.

Provost prefaced her comments with a description of the land managed by ACLD. She provided context to help attendees understand why the land management activities being recognized are important to the north-central region of the state. Provost commented, "Aitkin County is a natural resource and wildlife habitat gem. Established in 1857, named after English fur trader William Aitkin, its 365 lakes and over 700,000 acres of forest land, 103 miles of winding Mississippi River, peat lands, hay fields and pastures provide wildlife habitat, clean air and water, recreation and forest products. It is home to over 40 species that are rare, threatened, endangered, special concern, or species in greatest conservation need. As manager of tax-forfeited lands, ACLD oversees 224,000 acres. Their accomplishments are many and impressive."

Provost listed a number of specific accomplishments that contributed to her nomination, saying the list was by no means exhaustive. Some of these accomplishments include:

- Adoption of a 100-year Strategic Forest Management plan.
- A 5-year tactical forest management plan.
- Support for the Minnesota Forest Resources Council North Central Landscape Committee planning process.
- Support for and integration of Minnesota Forest Resources Council site-level timber harvest and forest management guidelines.
- Thoughtful consideration of both coarse and fine filter approaches to managing ecosystems with habitat objectives that provide for a range of forest and habitat types, and use native plant communities to guide management.
- An effort to restore or abandon ditches where feasible to restore hydrology.
- A continually updated inventory database and GIS applications to monitor the presence and condition of Aitkin County's major habitats and rare wildlife and plant communities.
- The first county in the United States to be certified "well managed" under strict standards of the Forest Stewardship Council® (FSC).
- Three proposed model forests which qualify as High Conservation Value Forest (HCVF), of which two became the first forests in the Lake States formally designated as HCVF by the Forest Stewards Guild.
- Collaboration in bat conservation including northern long-eared bat research, a bat-friendly forestry workshop, and a bat-friendly forestry video.
- Collaboration in bird conservation, such as Breeding Bird Studies with the University of Minnesota Natural Resources Research Institute (NRRI), enhancement of brushland habitats for sharp-tailed grouse, prescribed burns with DNR, projects with American Bird Conservancy, and a Forestry for Lake States Birds Workshop.

- ACLD's outreach to the public and youth, to encourage and give all the opportunity to access, appreciate, and support Minnesota's great outdoors, habitats and wildlife, including many trails and Long Lake Conservation Center in the town of Palisade.

The DNR, the Forest Stewards Guild, TWS and SAF echoed many of the same sentiments for the ACLD and listed similar accomplishments in their letters supporting Provost's nomination.

Figure 18 – ACLD Land Commissioner Rich Courtemanche and Staff Members Accepting the 2019 Minnesota Chapter TWS Conservation Award. Source: DNR.

National Priority 2: Protect Forests from Threats

Creating a Demonstration Forest for Climate Adaptation: DNR Foresters Try Something New!

Submitted by Minnesota Department of Natural Resources Forestry

Since the beginning of time, forests have changed rather predictably. Young forests consist of mostly fast-growing, pioneer species that give way to studier, intermediate species. These species then grow to stately old-growth forests, which inevitably return to youth after a disturbance such as fire or wind. Nature's processes have worked pretty well over time. To meet demands for wood and fiber, foresters have learned to work with nature's rhythms to harvest trees sustainably while maintaining forest health. Forest management is an ever-evolving science, and forest researchers work hard to improve their craft.

Today, the state faces a new variable: climate change. This presents an opportunity to try something new. By now most people have heard about the emerald ash borer (EAB) beetle now munching its way through Minnesota's vast acres of ash trees. EAB larvae feed on the phloem and cambium tissues located under the bark, which cuts off the tree from nutrients and inevitably kills it. As the effects of climate change grow more pronounced, warmer and shorter winters kill fewer beetles and allow more generations to thrive during a longer growing season. Once EAB takes hold, no cost-effective way to eradicate it exists. Consequently, the state expects to lose most of the ash trees cover-types within the next couple of decades. Northern Minnesota has more than 170,000 acres of forest dominated by ash. Experts worry that when the beetle arrives, these forests will become graveyards of skeleton trees, unable to absorb water through their roots. Fewer roots may translate into more standing water, erosion, or other consequences not yet considered. Without management, these forests may become too wet for trees to survive, which could result in a conversion to cattails, lowland brush, and grasslands.

Research suggests that diversifying tree species may be the best way to mitigate environmental damage caused by EAB. To get ahead of the problem, a group of DNR foresters led by Wesley Habedank is trying something new in Cromwell even though no EAB have been detected in the area yet (Figure 19). The test site is 23 acres of mostly ash trees that is easily accessible from Kettle Lake Road. The foresters inventoried the vegetation before harvest and designed a timber sale that would leave behind clumps of hardwood (such as American elm) and scattered conifer trees (such as white cedar and spruce), to provide a non-ash seed source for the future forest. Following the harvest, 12 native tree species were planted across the site including red maple, white spruce, black spruce, tamarack, balsam fir, paper birch, bur oak, trembling aspen, hackberry, silver maple, swamp white oak, and cottonwood. The last four species are commonly found in southern Minnesota and may be better adapted to handle a future warmer climate. DNR field staff, along with researchers from the University of Minnesota, will monitor the site to see which species do best. As the seedlings grow, researchers will continue to monitor and collect data. After 10 years, foresters should have enough data to analyze results and see whether diversifying species is the way to go. The data will also help foresters determine whether southern species can adapt to northern conditions in the future.

For more information on this study as it progresses, visit the Great Lakes Silviculture Library, where this study will be shared.

Figure 19 – DNR Demonstration Forest for Climate Change Adaptation. Source: DNR.

State and Federal Forestry Staff Get Annual Checkup on Forest Health

Submitted jointly by Chippewa National Forest and Minnesota Department of Natural Resources Forest Health Programs

Figure 20 – Minnesota's Tamarack Forests Decimated by Eastern Larch Beetles Attributed to Effects of Climate Change. Photo from Marc Roberts, US Forest Service.

Before you can manage forests for insects and pathogens, you need a meeting of the minds. Such were the thoughts behind the 20th Annual Forest Health Workshop hosted jointly by the Chippewa National Forest and the DNR Forestry on February 4, 2020, in Walker, Minnesota. One hundred and eighty-two forestry, wildlife, and eco-resources staff and practitioners from several agencies met to discuss applied research, insects, pathogens, and the '*how-to's'* of field diagnosis (Figure 20). As with many conferences, networking was a crucial aspect of the event. Between sessions, forest managers from the US Forest Service, DNR, Tribes, counties, industry, and private forestry consultants discussed many ideas on protecting and strengthening the state's forests.

Speakers from the US Forest Service, DNR, University of Minnesota, and the Minnesota Department of Agriculture (MDA) covered a variety of topics including recent EAB and gypsy moth news, seedling health management at the Minnesota state forest nursery, identification of important mushrooms that are commonly seen in the woods, fascinating fungi facts, and current issues affecting Minnesota's forests such as eastern larch beetle, oak wilt, and widespread flooding damage. This year has been one of the wettest recorded in Minnesota since 1871, and significant flooding damage occurred in some

parts of the state. All but two years since 1970 have been some combination of warm and wet compared to 20th century averages. Increases in precipitation are expected to continue into the 21st century (Figure 21).

Figure 21 – Flooding Damage in Minnesota Forests Increased Dramatically in 2019. Source: DNR.

Figure 22 – Artist's Conk Mushroom (*Ganoderma applanatum*). Source: DNR.

Attendees also learned about "the not-so-good, the bad, and the just plain ugly" of important root diseases that can cause progressive losses of vigor or mortality in red pine plantations. The first disease covered was *Leptographium*, an insect vectored pathogen that is the cause of "red pine pocket mortality" The next disease discussed was *Armillaria* or "shoestring root rot" that can weaken and kill trees. There are six to eight species in the Lake States, and some are more damaging than others. The final disease covered was *Heterobasidion* root disease (HRD). This pathogen has only been detected once in Minnesota in Winona County, but it is a serious threat to red pine plantations. Importantly, a range of management options was presented for each disease. Maintaining stand vigor is essential for controlling both *Leptographium* and *Armillaria*, and protection of stumps after harvest is key to preventing future HRD infections in Minnesota.

The Forest Health workshop wrapped up with a presentation that highlighted a new invasive plant mapping tool developed for Minnesota's Tactical Invasive Plant Management Plan. The plan is a joint effort created by the University of Minnesota and Minnesota Department of Agriculture. The mapping tool aims to improve access to shared invasive plant data and decision tools as well as increase coordination of state and local management efforts. There are currently 13 statewide maps of invasive species, most of which are on the state's noxious weed lists. The maps utilized the Early Detection and Distribution Mapping System (EDDMapS) and US Forest Service Forest Inventory and Analysis (FIA) data to depict predicted current distributions of the species.

This annual joint Forest Health Workshop is continuing to grow both in popularity and in terms of emerging forest health issues (Figure 22). Adaptation and mitigation research and methods related to climate change stressors is becoming an increasing important component of this annual workshop. The 2021 Forest Health workshop shows no sign of slowing down in popularity and will continue to provide forest practitioners and researchers with the necessary information to successfully identify and manage any changing forest conditions year after year.

Spreading the Word on Invasive Species from Minnesota to the Continent—Protecting Forests from Harm with PlayCleanGo

Submitted by Minnesota Department of Natural Resources Invasive Species Program

Through the support of US Forest Service grants, DNR Forestry launched PlayCleanGo: Stop Invasive Species In Your Tracks® in 2012. The primary goal of the branded outreach campaign is to disrupt the link between human behaviors and the spread of terrestrial invasive species (TIS).

PlayCleanGo came out of the recognition that everyone has the potential to spread invasive species. While DNR Forestry was doing their best to prevent the spread of invasive by their own staff and vendors, they were doing little to address potential spread by other forest land users, such as recreationists, hunters and producers of non-traditional forest products. Focusing initially on trail users, PlayCleanGo spoke to the passion folks have for the great outdoors by encouraging responsible recreation to protect our natural resources. PlayCleanGo looked to Stop Aquatic Hitchhikers! (SAH) as a model for success and borrowed a few of their concepts (thanks to the US Fish & Wildlife Service, who manages SAH, for their support and assistance).

The bright, modern look of the designs, positive messaging, flexibility of the brand and associated imagery, and the quick and easy action steps met the need of a large number of like-minded organizations and was adopted by many. The campaign provided a turn-key way for smaller organizations to utilize branded outreach materials to expand their reach and influence across property lines. The flexible branding allowed larger organizations to take existing PlayCleanGo materials and customize the messaging to reach out to a wide range of audiences saving them time and money. The consistent look and feel of the campaign builds public recognition and awareness, as well as serving as a reminder to clean our outdoor gear. In six short years, the campaign enrolled over 550 partner organizations across North America, including one in Mexico and a large number in Canada.

By 2017, the PlayCleanGo campaign had outgrown Minnesota, so DNR Forestry began to look for a new home for the campaigning. The organization needed to be national in scope and not-for-profit in its design. The North American Invasive Species Management Association (NAISMA) fit the bill and negotiations began. At the same time, the Canadian Council on Invasive Species (CCIS) began to explore the possibility of a Canadian campaign. The first step was to translate PlayCleanGo messaging into French. The next step was an agreement between the three organizations to split the existing campaign into two parallel campaign and to transfer management duties to their respective members. With lots of pieces and parts to transfer, the transition took all of the next year. In January 2019, The Canadian campaign was launched, and DNR Forestry handed the keys over to NAISMA. With federal support, DNR Forestry took PlayCleanGo, a Minnesota program and made it international. From Manitoba to Mexico City to Maine, PlayCleanGo is educating outdoor enthusiasts of their role in protecting the land they enjoy (Figure 23).

With the national program now managed by NAISMA, DNR Forestry can focus on strengthening the PlayCleanGo campaign here in Minnesota. In 2019, DNR Forestry created a new position, the PlayCleanGo Outreach Specialist, who will use a combination of methods to promote effective prevention measures among forest land users. Through partnerships, science and education, DNR Forestry is achieving goals outlined in Minnesota's SFAP.

Figure 23 – PlayCleanGo Informational Signage Strategically Set in Forests and Boat Ramp Locations. Source: DNR.

Slowing Emerald Ash Borer's Spread Gives Managers Time to Explore Operations

Submitted by US Forest Service Forest Health Program Federal Award: 17-DG-11420004-275

The Challenge

The emerald ash borer (EAB) is an invasive insect native to Asia that kills ash trees in North America. It was first detected near Detroit, Michigan, in 2002. Since then, the borer has spread, killing tens of millions of ash trees in 35 states, the District of Columbia and parts of Canada. It kills 99 percent of trees that it infests. EAB can decimate woodlands dominated by ash, leaving in its wake dead forests and fuel for wildfires.

Minnesota is home to approximately 1 billion ash trees. EAB arrived in the city of Duluth in 2015, just south of massive tracts of ash-dominated forests in the northern half of the state. Program managers needed to act quickly to slow down the insects' spread.

The Solution

The Minnesota Department of Agriculture (MDA) received a $70,000 grant from the US Forest Service with a 1:1 funding match to combat emerald ash borer in the city of Duluth. The department helped the city manage EAB by treating or removing infested ash trees as well as doing public outreach. They contracted with the city directly to have them conduct the work.

The municipality removed 508 infested ash trees and treated another approximately 416 trees within Duluth, a community of roughly 86,000 people. The city also hung leaflets on doors to inform residents about the problems posed by EAB (Figure 24).

Figure 24 – Workers Remove Infested Ash Trees in Duluth (Courtesy photo by city of Duluth). Source: US Forest Service.

Resulting Benefits

Intervention efforts have slowed the spread of EAB in Duluth as well as elsewhere in Minnesota. The recent cold winter also reduced insect populations as temperatures plunged to more than 30-°F in the city. Removing trees harboring EAB while treating other ash trees also lowers the insect population.

Workers used woodpecker feeding damage as signs of early EAB infestation. Educating residents about EAB increased public support for the effort. This initiative has reduced the EAB population and slowed its spread compared to other parts of the United States.

Sharing Success

Intervention efforts are being supplemented with biological control measures. The US Department of Agriculture (USDA) is deploying a parasitoid insect that preys on EAB, which Minnesota is using to further help control EAB. The MDA and the Minnesota Department of Natural Resources are also reaching out to resource managers about how to use an integrated pest management approach. The grant recipient has been approved for a second round of funding. View more information on the MDA Emerald Ash Borer Program website.

Minnesota Wildfire Academy Concludes a Successful Week of Training

Submitted by Minnesota Department of Natural Resources- Minnesota Interagency Fire Center

The Minnesota Incident Command System (MNICS) located in Grand Rapids, wrapped up another successful Minnesota Wildfire Academy (Academy) on June 7, 2019. More than 800 students, trainers and incident management team personnel gathered at the Itasca Community College in Grand Rapids, to participate in the Academy events. The weeklong Academy offered 27 courses in campus classrooms and nearby field sites. Training sessions ranged from basic firefighting operations and resolving medical and traumatic incidents during wildland fire suppression, to public information and the coordination of meals for response personnel during a wildfire (Figure 25).

Figure 25 – Students Working Through Trust Building Exercises in the 2019 Followership to Leadership Course. Source: DNR.

Dating back 19 years, the Academy has hosted thousands of developing wildland firefighting professionals. Participants train with seasoned wildland firefighting instructors using coursework and hands-on simulations. “After doing this for 35 years, I see the value and the need for training my replacements,” said Pete Leschak, Academy training instructor with the DNR. “Training is so critical to the wildland firefighting mission. We are always in need of firefighters. Providing training like this through the Academy assures that we can offer students the courses they need to have a successful career,” said Leschak.

Each training course is geared toward preparing wildland firefighters for active wildfire suppression, working with incident command teams in both wildfire and all hazard and incorporating community needs when strategizing fire operation efforts. The 2019 Academy attendees represented 14 states. Local Minnesota firefighters included professionals from state, federal and Tribal land management organizations, along with 19 Minnesota fire departments. Often, local fire departments and wildland firefighters work closely together to protect homes, property, and valuable natural and cultural resources for Minnesota’s rural communities.

This weeklong Academy incorporates training developed for the incident command system by the National Wildfire Coordinating Group (NWCG) and Federal Emergency Management Agency (FEMA). The Academy includes many of the factors that wildland firefighters encounter during their careers, including leadership, working with incident management teams, and a wide variety of tools and equipment both on the ground and in the air.

Figure 26 – Students Develop Power Chainsaw Skills Through Hands-on Training. Source: DNR.

Itasca Community College and University of Minnesota North Central Research/Outreach Center hosted the 2019 Academy. The college campus and University of Minnesota Research Center land, provided an ideal setting for classroom space, open fields to conduct air operation simulations, and a forest environment to practice with chainsaws, pumps, hose, and controlled fire. (Figure 26 and Figure 27).

The Academy is organized by an interagency group of state and federal partners that cooperate to manage wildfire and all-hazard incidents not only in Minnesota, but also nationally, and in special circumstances, internationally. This week-long event required incredible logistical planning and support to assure classrooms and trainers were equipped with the tools they needed to teach, meals and snacks for participants, and lodging for over 800 people. MNICS assigned an Incident Management Team (IMT) to coordinate the planning and logistics efforts. The IMT ran the Academy similar to how an actual wildfire or all-hazard incident would be organized and managed. An incident commander oversaw staff who provided public information, worked with community businesses and local government organizations, assured safety for the Academy attendees, and planned for the operations of training sessions. The IMT managed the logistics of course materials, meals, and the coordination of field activities. The IMT also provided an air operations branch that planned for the helicopters and air support used in the live field training simulations. The simulations included water bucket drops and a mock medical evacuation.

Figure 27 – Basic Firefighting Course Field Station. Source: DNR.

The Minnesota Wildfire Academy is one of 14 academies offered throughout the United States. The significant efforts involved with the coordination and outstanding participation of wildland fire organizations and rural fire departments, instructors and students truly make this a successful event. MNICS looks forward to many more successful years training firefighters and developing the future of wildland firefighting.

National Priority 3: Enhance Public Benefit from Trees and Forests

Mississippi River Headwaters Habitat, Recreational Resource Gain Protection through Private Landowners

Submitted by Minnesota Board of Water and Soil Resources

Along his secluded stretch of riverfront in Crow Wing County, Dick Schuh has encountered bears, caught five different species of fish in three hours of fishing off the dock, and watched a massive insect hatch rise like fog from the Mississippi River. Bobcats turn up on the trail camera. Timber wolves roam here and deer abound. “This is just pristine, and we’d like to keep it that way,” Dick said as he worked on his dock, where the view is all water and trees. The nearest houses are a mile in one direction, a half-mile in the other. By protecting more than a half-mile of shoreline and 166 acres from development with a Reinvest in Minnesota (RIM) easement, Dick and Barb Schuh have preserved the habitat that inspired them to buy the property 11 years ago. By linking public lands, their easement maintains a high-quality fish and wildlife corridor. The Crow Wing County property is exactly the sort of critical habitat the Mississippi Headwaters Habitat Corridor Project (MHHCP) aims to protect through RIM easements and fee-title acquisitions. The project draws from three Outdoor Heritage Fund awards totaling more than $8.5 million. The eight-county, 400-mile headwaters reach runs from Itasca State Park through Morrison County. The unbroken tracts vital to fish, mammals, migratory waterfowl and nesting birds also attract anglers, hunters, and people simply seeking seclusion with a water view.

In Crow Wing County, a two-hour drive from the Twin Cities, shoreland properties accounted for 53 percent of the total value of taxes payable in 2018. The county ranked No. 1 in Minnesota for cabin ownership in 2018, as defined by the Minnesota Department of Revenue as non-commercial, seasonal recreational residential parcels valued at $10,000 or more. Cass County, which is more than twice the size, ranked No. 2. Tim Terrill, the Mississippi Headwaters Board’s (MHB) executive director, has seen the progression: Property owners convert seasonal cabins to year-round residences. Houses pop up, first around the larger lakes, then the smaller lakes, and then the rivers. Development breaks up the contiguous habitat some animals require to hunt, forage, spawn, mate or nest. “Habitat will fragment way before water quality will degrade. Eventually wildlife will be affected first because it wants to follow the river,” said Dan Steward, BWSR’s forestry management coordinator.

BWSR administers the RIM easements, with ownership remaining in private hands and on the tax rolls. The Trust for Public Land (TPL) handles fee-title acquisitions, with final ownership by the local county or DNR. The MHB serves as the project coordinator. Staff from the eight SWCDs make initial landowner contacts, and help process RIM easements. Participation is voluntary; landowners choose which option to pursue. So far, landowners working through the MHHCP have protected 13 miles of shoreline and 1,731 acres through 10 easements and three fee-title acquisitions. Nearly 65 percent of the 400-mile-long, 500-foot-wide corridor is protected, mostly through publicly owned local, state, or federal land.

Eligible lands may border the Mississippi River, its major tributaries or reservoirs along the 400-mile stretch. “The primary purpose of the program and the reason it’s funded by the Outdoor Heritage Council, is to protect critical fish and wildlife habitat along the first 400 miles of the river. Whenever you protect habitat, you’re going to get clean-water benefits and vice versa,” said Paula West, MHHCP coordinator. Migratory waterfowl and neo-tropical birds rely on the Mississippi River flyway. Downstream cities rely on the Mississippi River as a drinking water source. “When we protect some habitat along the river, which is the primary goal of the funding, we also are helping protect Minneapolis-St. Paul’s source water. That is by far the state’s largest source water,” Steward said. Minneapolis’ Water Treatment Distribution Services pumps 21 billion gallons of water from the Mississippi River a year, according to a 2017 public works department report. About 62 percent of it provides drinking water to residents of Minneapolis and surrounding suburbs.

The MHB follows a DNR water-quality guideline that generally applies to lakes, which states that 75 percent of a lake’s watershed should be protected to maintain its quality. One of the MHB’s greatest successes to date was in a 3,420-acre sub-watershed northwest of Crosby, where the amount of protected land has increased from 35 percent to 73 percent over the past few years, primarily through fee-title acquisitions, RIM easements and Sustainable Forest Incentive Act (SFIA) enrollments. Sheila Boldt, who works directly with landowners through Crow Wing SWCD, has noticed the program tends to appeal to landowners for one of two reasons. “They want it preserved. They don’t want their kids to think about developing,” Boldt said. “Another side is the ones that genuinely are already using the property for just hiking and hunting, and they’ve got forest management already.” The easement option made sense for the Schuhs. “We were not planning on building. So if they’re going to pay us not to build and if they want to preserve the area, that’s very much fine with us because we’re never looking to expand or sell off or anything. That was not our goal,” Dick said. “We love nature and we think this is the way the Mississippi should be kept, as natural as possible,” Barb said (Figure 28).

Figure 28 – Protection of Mississippi Headwaters through Private Forest Easement Program Benefits Minneapolis-St. Paul Drinking Water Supply. Source: BWSR.

Fire Adapted Leadership in Ely, Minnesota

Submitted by Minnesota Department of Natural Resources Minnesota Interagency Fire Center (MIFC)

A community's interest in working to reduce wildfire risk is often directly proportional to the volume of smoke in the air. The Firewise Minnesota program works with communities to minimize risk and improve wildfire resilience before lives and property are threatened. In Minnesota, the program has seized the unfortunate momentum, often afforded by a large wildfire, to connect with those who have the privilege and responsibility of living, working, and recreating "up north."

The northern community of Ely, has been a shining example of how the program, working with a local “spark plug,” can grow Firewise and Fire Adapted Communities programs. Having experienced a significant blow-down event in 1999, the 2011 Pagami Creek Fire, and the 2012 Highway 1 Fire that directly threatened Ely, the area began working with DNR Firewise Communities Specialists, to secure grant funding, to increase recognition of and address wildfire issues.

Following the introduction of the Fire Adapted Communities program to the area in 2012, an active, creative local committee has coordinated numerous homeowner workshops, educational events, and in-depth evaluations of high risk areas. In 2017, a day-long "Living with Fire" workshop was presented by non-profit, local, state, and federal partners, to help seasonal and permanent residents better understand the fire ecology of the area, fuels reduction strategies, Firewise best practices, and how large wildfires are managed. The event enjoyed great attendance and resulted in the production of two 7-minute videos to capitalize and build upon its success. Home demonstrations continue to be a huge success in the area. Future Firewise grants will focus on other communities in the area capitalizing on the momentum of these projects to help residents recognize the potential fire hazards, and act to mitigate them in their landscape (Figure 29). This will all help to ease the burden on firefighting resources when homes and property are threatened by wildfire.

Figure 29 – Successful Firewise Containment on Rural Minnesota Property. Source: DNR.

Urban Partnership: Getting More Done with Federal Funds

Submitted by Minnesota Department of Natural Resources Urban and Community Forestry Program

The DNR Urban and Community Forestry Program accomplishes more with federal funds by partnering with the University of Minnesota's Department of Forest Resources (UMN) using a pass-through grant. This collaboration, along with matching funds from the UMN, allows the following to occur:

- Train and certify each year more than 850 Minnesota Tree Inspectors who provide nearly 100 cities and six county agencies throughout Minnesota with assistance in managing tree diseases and insect problems, and recommendations for tree health and care.
- Train an average of 78 volunteers per year around the state in tree care management, including properly planting and pruning techniques, forest health assessment, invasive species identification and management, and tree identification, that contribute 4,493 hours on average each year to help make communities and the state a healthier place to live.

- Engaged more than 1,350 youth in basic tree science, tree identification, tree climbing, and arboriculture by hosting programs and summer camps and attending one day events during 2018.
- Coordinate, deliver, and manage statewide urban forestry outreach materials, technology transfer, programs, and venues for the Minnesota Shade Tree Advisory Committee, Minnesota Shade Tree Short Course, and youth programming.

The DNR Urban and Community Forestry Program obtained state grant funds to mobilize citizen volunteers to protect, improve, and maintain local forests in communities around the state by training volunteers in monitoring for forest health, tree identification, tree pruning, and tree planting, watering, and mulching.

- Funding from the Environmental and Natural Resources Trust Fund and Great Lakes Restoration Initiative, and work from multiple partners allowed 20 communities to educate and train volunteers that contributed 10,518 hours in three and a half years, a $292,000 value, by planting, watering, and mulching 5,082 trees, monitoring the health of 2,886 trees, and pruning 1,344 trees (Figure 30).

DNR Urban and Community Forestry Program works in collaboration with the Minnesota Shade Tree Advisory Committee, which is the state's urban and community forest council, to meet and share information with neighboring state councils. These meetings have strengthened councils by offering opportunities to share ideas, concerns, and strategies for their community forest work.

Figure 30 – Members from Minnesota Conservation Core Planting a Tree with Citizen Volunteers. Source: DNR.

Connecting Kids to Nature: Improving Outdoor Classrooms

Submitted by Minnesota Department of Natural Resources Forestry Education and Outreach Program

With a 3-year, $440,000 grant from the Minnesota Environment and Natural Resources Trust Fund, the DNR contracted with the Conservation Corps of Minnesota and Iowa (CCMI) to create, improve, and enhance outdoor classrooms in School Forests. School Forests involved ranged in size from less than half an acre to more than 300 acres and from as far north as Baudette, to Mankato in the south. This project successfully wrapped up in June 2019 (Figure 31). While the program aimed to reach 60 schools, it actually completed 67 projects before the grant ended. With so many sites scattered around the state and each needing significant help, this was no easy task. However, staff took on the challenge, including:

- Reviewing school applications (applications were selected for larger complicated projects that schools felt were difficult to achieve on their own).
- Reviewing school forest stewardship plans and working closely with foresters to align projects with stewardship plan goals and priorities.
- Coordinating with Conservation Corps of Minnesota and Iowa (CCMI) staff, who provided most of the labor.
- Scheduling project work with foresters, CCMI crews, and schools.
- Making sure that schools ordered materials (lumber, woodchips, etc.) on time and did their prep work.
- Engaging students in service-learning related to the project; and conducting on-site, long-term management training for school staff and volunteers.
- Organizing four hands-on regional summits for school staff and volunteers across the state on topics related to long-term care and management of their School Forest.

Completed projects included:

- Boosting forest health by weeding, pruning, and mulching seedlings; controlling invasive species (primarily buckthorn); clearing storm and logging debris; protecting trees from beaver; thinning stands; removing grapevine; removing dead/diseased trees; and controlling erosion along trails and streambanks.
- Improving safety by removing hazard trees and poison ivy; repairing unsafe structures such as benches, stairs, and bridges; and digitally mapping trails.
- Enhancing comfort by installing accessible outdoor classroom spaces with picnic tables, wood benches, podiums, and chalkboards.
- Adding interest with bird feeders, turtle logs, native vegetation, nature play features, and a deer exclosure for an experimental learning laboratory.
- Helping volunteers create a “nature playhouse” as a safe outdoor space for students with special needs such as autism or learning disabilities.

This grant gave 3,314 students service-learning experiences in their school forests. Additionally, the project trained 412 staff and volunteers in land management skills. While the grant provided $380,000 for CCMI labor, schools contributed $57,226 to buy materials (lumber, cement, gravel, etc.) plus much more in time and in-kind resources.

Helping school staff take ownership in managing their site was another overarching goal. Staff who take care of their school forest are more likely to take students outdoors. A post-evaluation suggested as much. Project staff asked school staff about the value of the project: 77 percent felt their School Forest was more accessible, 74 percent thought students had a better connection to the School Forest, 69 percent thought more students got outside, and 67 percent felt it made their outdoor classroom healthier. Many projects also strengthened relationships between schools and their DNR forester. When asked, 100 percent of the participating Cooperative Forest Management (CFM) foresters valued their experiences, mostly because the project strengthened their relationships with their schools.

DNR foresters played a critical role in the success of this project. Fifteen CFM foresters and 12 additional foresters helped schools apply, plan, and implement projects. They created or updated stewardship plans, helped prioritize projects, helped the CCMI create project plans, and checked in on crews during the progress. Many foresters also worked with students and teachers during the project, leading service-learning lessons or teaching land management skills. They assisted in the regional summits, discussed specifics with individual sites, presented content, and provided hands-on training in tree care or other management topics. Some foresters even took the lead on their school's CCMI project and helped in every aspect along the way (Figure 32).

Figure 31 – CCMI Crew Poses on Rock Amphitheater They Installed at Parkview School Forest, Roseville. Source: DNR.

Figure 32 – Rockford School Forest, Middle School Students, and DNR Forester Andy McGuire. Source: DNR.

Acronyms

Acronym	Definition
2c	2c Managed Forest Land
ACUB	Army Compatible Use Buffer
AON	Assessment of Need
APHIS-PPQ	Animal Plant & Health Inspection Service Plant Health, Plant Protection & Quarantine
ATFS	American Tree Farm System
AURI	Agricultural Utilization Research Institute
BIA	Bureau of Indian Affairs
BMP	Best Management Practices
BWSR	Board of Water & Soil Resources
CAR	Corrective Action Request
CFAA	Cooperative Forestry Assistance Act
CFFDRS	Canadian Forest Fire Danger Rating System
CFM	Cooperative Forest Management
CoC	Chain of Custody
CREST	Climate and Renewable Energy Steering Team
CRP	Conservation Reserve Program
CREP	Conservation Reserve Enhancement Program
CSP	Conservation Security Program (pre-2009) and Conservation Stewardship Program (2009 to present)
CWMA	Cooperative Weed Management Area
CWPP	Community Wildfire Protection Plans
DEED	Department of Employment and Economic Development
DEM	Digital Elevation Model
DL&I	Department of Labor and Industry
DNR	Department of Natural Resources
DOR	Department of Revenue
DU	Ducks Unlimited
DWSMA	Drinking Water Supply Management Area
EAB	Emerald Ash Borer
ECS	Ecological Classification System
ENRTF	Environmental and Natural Resources Trust Fund

Acronym	Definition
EPA	Environmental Protection Agency
EQIP	Environmental Quality Incentives Program
FEMA	Federal Emergency Management Agency
FIA	Forest Inventory and Analysis
FLP	Forest Legacy Program
FMIA	Forest Management Investment Account
FSA	Farm Service Agency
FSC	Forest Stewardship Council
FSP	Forest Stewardship Program
GLFFC	Great Lakes Forest Fire Compact
GLIFWC	Great Lakes Indian Fish & Wildlife Commission
GLRI	Great Lakes Restoration Initiative
GMSTS	Gypsy Moth Slow the Spread Foundation
LCCMR	Legislative Citizens Commission of Minnesota Resources
LID	Low Impact Development
LMC	League of Minnesota Cities
LSOHC	Lessard-Sams Outdoor Heritage Council
LUG	Local Units of Government
MACF	Minnesota Association of Consulting Foresters
MBS	Minnesota Biological Survey
MCCAG	Minnesota Climate Change Advisory Group
MDA	Minnesota Department of Agriculture
MDE	Minnesota Department of Education
MDH	Minnesota Department of Health
MN EWR	Minnesota Ecological and Water Resources
MN PAT	Minnesota Parks and Trails
MFA	Minnesota Forestry Association
MFF	Minnesota Forests for the Future
MFI	Minnesota Forest Industries
MFRC	Minnesota Forest Resource Council
MFRP	Minnesota Forest Resource Partnership
MIFC	Midwest Interagency Fire Center
MIPN	Midwest Invasive Plant Network

Acronym	Definition
MLEP	Minnesota Logger Education Program
MLT	Minnesota Land Trust
MMLC	Minnesota Master Logger Certification
MN DOT	Minnesota Department of Transportation
MNICS	Minnesota Incident Command System
MNLA	Minnesota Nursery and Landscape Association
MnSTAC	Minnesota Shade Tree Advisory Committee
MPCA	Minnesota Pollution Control Agency
MSA	Minnesota Society of Arboriculture
NASF	National Association of State Foresters
NFDRS	National Forest Danger Rating System
NFF	National Forest Foundation
NGOs	Non-Governmental Organizations
NHIS	Natural Heritage Information System
NIACS	Northern Institute of Applied Climate Science
NICC	National Interagency Coordination Center
NIPF	Non-Industrial Private Forests
NLCS	National Land Cover Data Set
NMSFA	Northeast-Midwest State Foresters Alliance
NPS	National Park Service
NRCS	Natural Resource Conservation Service
NRRI	Natural Resources Research Institute
NWCG	National Wildfire Coordinating Group
PFM	Private Forest Management
PTLF	Parks and Trails Legacy Fund
RAWS	Remote Automated Weather Systems
RC&D	Resource Conservation & Development
RIM	Reinvest in Minnesota
RMZ	Riparian Management Zone
SAF	Society of American Foresters
SEOC	State Emergency Operations Center
SFEC	Sustainable Forests Education Cooperative
SFIA	Sustainable Forestry Incentive Act

Acronym	Definition
SFI	Sustainable Forestry Initiative
SFI-SIC	Sustainable Forestry Initiative State Implementation Committee
SFRA	Sustainable Forest Resources Act
SGCN	Species in Greatest Conservation Need
S&PF	State and Private Forestry
SFAP	State Forest Action Plan
SS	Shared Stewardship
SWA	Source Water Assessment
SWAP	State Wildlife Action Plan
SWCD	Soil and Water Conservation District
SWET	State Wood Energy Team
SWIT	State Wood Innovation Team
TCF	The Conservation Fund
TI	Tree Inspector
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
TPL	Trust for Public Lands
TPO	Timber Products Output
UF&C	Urban & Community Forestry
U&M	Utilization & Marketing Program
UMN	University of Minnesota
USACE	US Army Corps of Engineers
USDA	US Department of Agriculture
USFS	US Forest Service
USFWS	US Fish and Wildlife Service
WCA	Wetland Conservation Act
WFCE	Working Forests Conservation Easements
WHIP	Wildlife Habitat Incentive Program
WMA	Wildlife Management Area
WRP	Wetlands Reserve Program

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Note: Unless otherwise stated, references in the Minnesota 2020 SFAP are available by linking on text within the reports. Most references are available through the DNR or the USFS State and Private Forestry web sites.

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MFRC Landscape Committees:

- **East Central Committee:** Bob Tomlinson (Chair): Includes representatives from private forest landowners, consulting foresters, forest industry, Audubon, EC Woodland Owners Council, MN Sharptail Grouse Society, St Croix River Association, TNC, SWCDs, counties, BWSR, DNR Forestry, Wildlife, Eco-Water Resources, NPS, NRCS, USFWS.
- **Northern Committee:** James Aasen (Chair): Includes representatives from private forest landowners, consulting foresters, forest industry, counties, SWCDs, MPCA, DNR Forestry, Wildlife, Eco-Water Resources, BWSR, USACE, NPS (Voyageurs), BIA, Bois Forte Band, Red Lake Band.
- **North Central Committee:** Rich Courtemance (Chair): Includes representatives from private forest landowners, consulting foresters, forest industry, forest products, Audubon, Jack Pine Coalition, CM Woodlands Chapter, Mississippi Headwaters Board, MN Deer Hunters Association, MLEP, TPL, Leech Lake Watershed Foundation, counties, SWCDs, BWSR, DNR Forestry, Fisheries, Wildlife, Eco-Water Resources, Bemidji State University, UMN-Cloquet Forestry Center, Chippewa National Forest, Leech Lake Band, Mille Lacs Band.
- **Northeast Committee:** John Bathke (Chair): Includes representatives from private forest landowners, consulting foresters, forest industry, forest products, MLEP, Northshore Stewardship Association, North Shore Forest Collaborative, Minnesota Power, American Bird Conservancy, Sierra Club, TNC, counties, SWCDs, Laurentian RC&D, DNR Forestry, Fisheries, Wildlife, Eco-Water Resources, NRRI, UMN Extension, Superior National Forest, Fond du Lac Band.
- **Southeast Committee:** David Schmidt (Chair): Includes representatives from private forest landowners, consulting foresters, Audubon, MN Land Trust, TPL, TNC, counties, SWCDs, Hiawatha Valley RC&D, BWSR, UMN Extension, DNR Forestry, Wildlife.
- **West Central Committee:** Rick Pierce (Chair): Includes representatives from private forest landowners, consulting foresters, forest industry, Snowy Pines Reforestation, counties, SWCDs, BWSR, DNR Forestry, Fisheries, Wildlife, Camp Ripley (National Guard), TNC, USFWS, NRCS.

The following committees and partners were consulted, collaborated with, provided research, or engaged with the Minnesota 2020 State Forest Action Plan revision process over the past several years. The 2020 chairs of each committee or partnership are listed for reference.

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Appendices

The following section includes required documents by the US Forest Service for approval:

- Appendix A: USFS Letter of Approval for the Forest Legacy Assessment of Need
- Appendix B: Forest Legacy Program Assessment of Need Document
- Appendix C: Private Forest Management Strategic Plan Document: A System Framework for Minnesota's Family Owned Forests

Appendix A: USFS Letter of Approval for the Forest Legacy Assessment of Need

Forest Service | Washington Office | 1400 Independence Avenue, SW
Washington, D.C. 20250

File Code: 3360 **Date:** AUG 15 2019
Route To:

Subject: Minnesota Forest Legacy Assessment of Need Amendment Approval

To: Bob Lueckel, Acting Regional Forester Region 9

This is in response to your letter of October 23, 2017 regarding the proposed amendment request to the Minnesota Forest Legacy Assessment of Need.

The proposed amendment captures local knowledge of private forest issues, includes major Forest Legacy Area (FLA) changes, and reflects regional landscape goals. Our staff has reviewed the amendment, and I approve.

John Phipps

JOHN PHIPPS
Deputy Chief, State and Private Forestry

cc: Neal Bungard, Mark Buccowich, Scott Stewart

Appendix B: Forest Legacy Program Assessment of Need Document

Minnesota's Forest Legacy Program Assessment of Need

Updated August 1, 2017

DEPARTMENT OF NATURAL RESOURCES

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Acronyms

AON	Assessment of Need
BMP	Best Management Practices
CCC	Civilian Conservation Corps
CFAA	Cooperative Forestry Assistance Act
DNR	Minnesota Department of Natural Resources
FAP	Forest Action Plan
FLA	Forest Legacy Area
FLP	Forest Legacy Program
FSP	Forest Stewardship Program
GIS	Geographic Information System
HUC	Hydrologic Unit Code
IBA	Audubon Important Bird Area
MBS	Minnesota Biological Survey
MDA	Minnesota Department of Agriculture
MFF	Minnesota Forests for the Future Program
MFRC	Minnesota Forest Resource Council
NWR	National Wildlife Refuge
SFSCC	State Forest Stewardship Coordinating Committee
USDA	United States Department of Agriculture

Definitions

Traditional forest uses

Traditional forest uses in Minnesota include: harvesting timber for lumber, veneer, pulp, and firewood; gathering of materials and foods, such as honey, maple sugar, nuts, berries, and plant parts and roots; pursuing recreational activities such as hunting, fishing, sight-seeing, nature study, skiing, hiking and camping; providing for well-regulated motorized recreation, such as snowmobiles on established trails; providing sites for scientific research to increase our knowledge of forest; providing the opportunity to view unique or outstanding natural features, such as old growth trees, rare species, and habitats of statewide significance; and providing a chance to experience solitude in forested areas

Environmentally Important Forest

Environmentally Important Forest in Minnesota are those that sustain productive, high quality forest ecosystems which can support the commercial forest industries and other traditional economic enterprises or which contain forest resources deserving of protection. Such forests deserving of protection include those which harbor rare species of plants, animals and communities, contribute to carbon sequestering, maintain fish and wildlife habitat, stream or lake buffers, scenic resources, protect known cultural resources and contribute to public recreation opportunities. Such ecosystems and uses can best be sustained within large blocks of forest cover, which are reasonably intact.

Threat of conversion

Threat of conversion in Minnesota is forestland which contains characteristics which make such land attractive to changes such that the traditional uses and values of the property are reasonably expected to be at risk. These characteristics include, but are not limited to: close proximity to roads; short travel time from population centers; the existence of water resources such as streams, rivers, ponds, and lakes; scenic values and the presence of outdoor recreation opportunities.

Contents

Preface

Minnesota's Forest Legacy and Forest for the Future Programs protect public values on privately-owned, important forestland facing threat to conversion to non-forest use. Federal or state grants provide funds for the purchase of development rights on eligible forestlands through conservation easement or, in special cases, fee-title acquisition held by public ownership. The purpose is to ensure working forests, both for market/commodity and environmental benefits, continue into the future. This program is voluntary for private landowners and a management plan is a requirement.

Minnesota originally entered the federally sponsored Forest Legacy Program in 2000, with approval of an Assessment of Need (AON) by the USDA Secretary of Agriculture. This update, along with the updated Minnesota Forest Action Plan (estimated in 2019), is being submitted as Minnesota's demonstration of need for federal Forest Legacy Program involvement. An update is needed as key factors and strategies have changed.

Significant changes to this planning document from the original 2000 AON include:

1) Inclusion of the Minnesota's Forests for the Future program goals, implementation strategies, and spatial analysis;
2) Newly defined Forest Legacy Areas incorporate complementary landscape level protection goals outlined in state conservation plans, such as: State Wildlife Action Plan, Fish Habitat Plan, Duck Recovery Plan, Outdoor Recreation Plan, Regional Forest Landscape Committee Management Plans, State Forest Plans (such as Richard J. Dorer Memorial Hardwood Forest Action Plan) and joint ventures such as the Midwest Glacial Lakes Partnership, the Minnesota Headwaters Fund, Driftless Area Restoration Effort, and the Upper Mississippi and Great Lakes Region Projects. It is our belief that the five new Forest Legacy Areas, based on landform and regional attributes, represent statewide priorities;
3) Incorporation of local input gathered at planning meetings with the six Minnesota Forest Resource Council Regional Forest Landscape Committees in 2016 and 2017;
4) Incorporation of updated Geographic Information Systems data, including remote sensing showing forested land cover, analysis highlighting critical blocks of unprotected forest land, more complete Minnesota Biological Survey data identifying areas of high ecological integrity and connectivity, and watershed mapping for water quality and fish habitat;
5) New evidence documenting threat of conversion and parcelization of forested land in Northern Minnesota;
6) Updated program eligibility criteria, prioritization, and process of ranking applications.

Forest Legacy Program: Minnesota's Participation

Minnesota's Forest Legacy Program (FLP) is designed to identify and protect environmentally important private forest lands that are threatened by conversion to non-forest uses. The federally funded FLP provides for up to 75 percent of the costs of a conservation easement or fee-simple acquisition, including the costs of appraisals, surveys, closing costs, title work and insurance, and other associated costs. The remaining cost must be matched by either the landowner or an assisting entity, such as a non-profit organization or non-federal governmental entity.

The FLP was established under the authority of the Cooperative Forestry Assistance Act (CFAA) of 1978, as amended in the 1990 Farm Bill (Food, Agriculture, Conservation and Trade Act [P.L. 101- 624; 104 stat. 3359]) and the 1996 Farm Bill (Federal Agricultural Improvement and Reform Act, [16 U.S.C. 2103c et. seq.]). The CFAA grants authority to the U.S. Secretary of Agriculture (Secretary) to provide financial, technical, educational, and related assistance to states, communities and private forest landowners. The 1996 Farm Bill authorizes the Secretary, at the request of a participating state, to make a grant to the state to carry out the FLP in that state, including the acquisition of lands and interest in lands.

In 1991, Governor Arne Carlson designated Minnesota Department of Natural Resources (DNR) Division of Forestry as the lead agency to implement a Forest Stewardship Program (FSP) for the State of Minnesota, with Gerald Rose, State Forester, acting as the official state representative. Minnesota's FSP Committee created a Forest Legacy Subcommittee in 1993 to evaluate the potential benefits of participating in the FLP. On the recommendation of the FSP Committee and State Forester Rose, on March 13, 1995 Governor Carlson designated the DNR Division of Forestry as the lead agency to conduct activities related to conservation easements in general and the FLP in particular. The U.S. Department of Agriculture, Forest Service granted the State funds to complete an AON and establish a FLP in Minnesota.

The AON was prepared by DNR in consultation with the FSP Committee. On September 19, 1999, the FSP Committee approved the AON and elected to exercise a state grant option. Under the state grant option, all FLP acquisitions shall be transacted by the state or its designated representatives with title vested in the State or designated unit of local government. On February 29, 2000, US Secretary of Agriculture Dan Glickman approved the AON which established the FLP in Minnesota.

The 2000 AON described specific goals and objectives to be accomplished, guidelines to determine project priorities, eligibility criteria, and the specific Forest Legacy Areas (FLA) for designation.

The 2000 AON focused on the following priorities:

- Locations where large (500+ acres) continuous blocks of forest remain
- Maintaining a large, stable forest base for the continued health of the timber industry
- Forests containing high biodiversity sites and/or endangered/threatened/species of special concern

Fifteen Candidate FLAs were proposed as locations to focus conservation interest and land acquisition. Activation of individual Candidate FLA by public review was needed to use federal funds for projects. Minnesota activated seven Candidate FLA through a formal process including public meetings, news releases, and commenting periods. Activated FLAs include Rice County Big Woods, Brainerd Lakes-Walker, North Duluth, Lower St. Croix, Grand Rapids, Wabasha Blufflands and Koochiching. Additionally, two FLAs received minor adjustments in the boundaries (North Duluth and Brainerd Lakes-Walker). For the next seventeen years, Minnesota's FLP applied for funding to complete land transactions within the

activated FLA. During this time, 34 tracts were completed, resulting in the protection of over 145,665 acres of environmentally important forestland.

Minnesota Forests for the Future Program

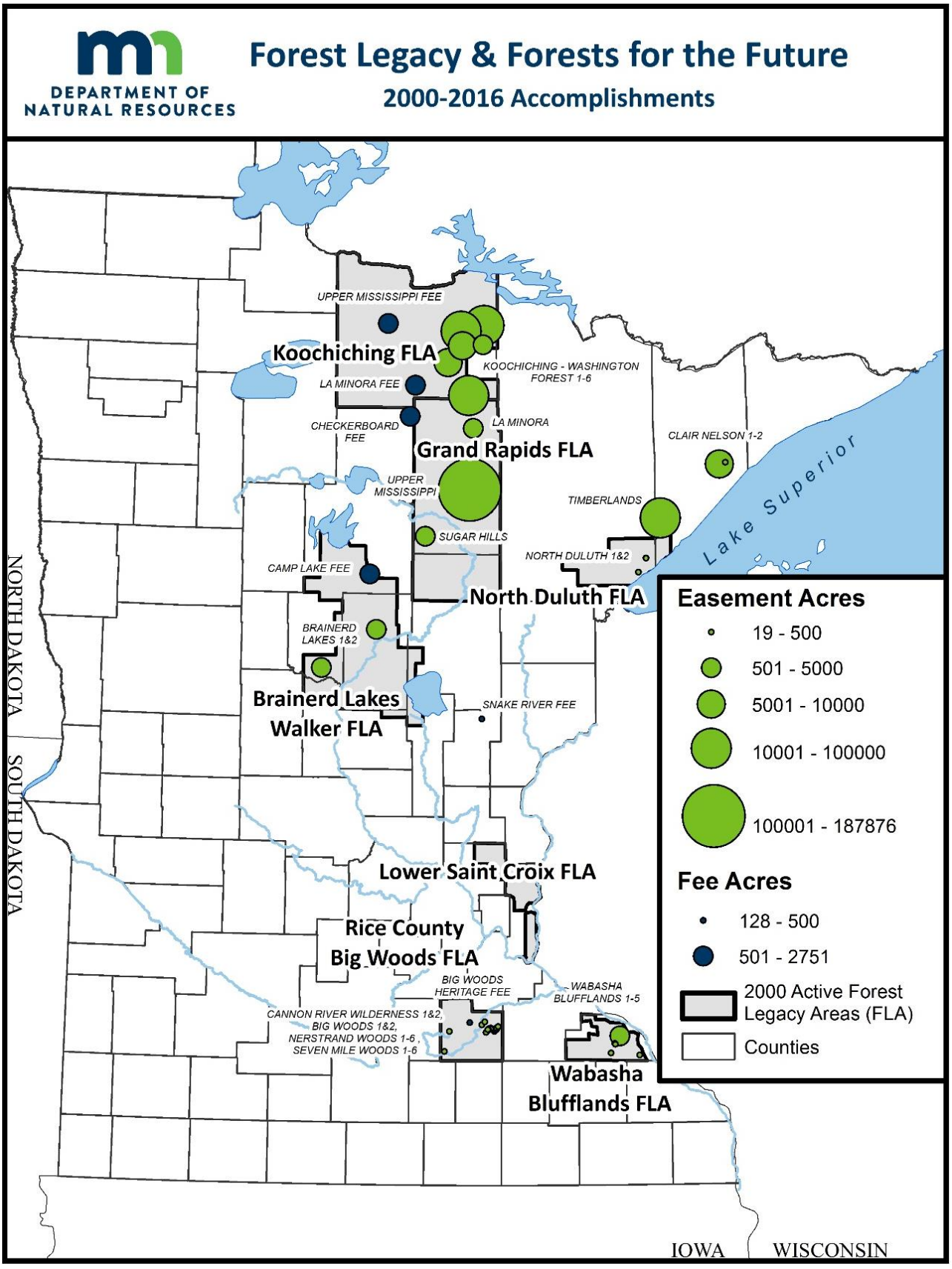
Minnesota Forests for the Future Program (MFF) is the state counterpart to the Minnesota FLP. While the FLP relies on federal funding and federal guidelines, MFF is a state funded program and is amenable to situations unique to Minnesota. MFF was conceived by the Forest Legacy Advisory Team, formed in July 2007 by DNR Commissioner Mark Holsten. The Forest Legacy Advisory Team reviewed Minnesota's past forest conservation easement activities and recommended creation of a state program that would work with partners in the public and private sectors using tools such as conservation easements to retain Minnesota's working forests. The Strategic Report of the Forest Legacy Advisory Team (***Minnesota Forests for the Future: Conserving Minnesota's working forest lands to meet the state's future recreation, economic, and ecological needs***) was released in April 2008 and made several key recommendations, including the establishment of a state forest easement program.

The MFF was approved by the State Legislature in 2008. Under MS 84.66, the commissioner of natural resources shall establish and administer the MFF. The MFF plan also specifies that land selected for the program shall be evaluated on the land's potential for:

1) producing timber and other products;
2) maintaining forest landscapes;
3) providing public recreation and;
4) providing ecological, fish and wildlife habitat and other cultural and environmental values consistent with working forest lands.

The DNR Commissioner's Advisory Committee on the MFF completed the Implementation Report (***Minnesota Forests for the Future: Implementation Report of the 2009-2010 DNR Commissioner's Advisory Committee on the Minnesota Forests for the Future Program***) for the MFF in February 2011 which summarized the Advisory Committee's work and made recommendations toward achieving the goals listed in the Strategic Report. One of the implementation items in the report was a recommendation to merge the FLP and MFF programs. The report states that the MFF shall be Minnesota's overarching program for the protection of private forest lands using conservation easements, fee-title acquisition and other conservation tools. To the extent possible, the two programs should operate with similar goals, policies, procedures and practices, differing only where individual program guidelines or policies require separate direction. From 2008-2016, 13 tracts have been completed with a combination of donation, partner support, and MFF state funding. An additional 214,920 acres was protected by MFF in that time period, for a total of 360,585 acres.

A FORESTS FOR THE FUTURE PROJECT FUNDED BY THE LESSARD-SAMS OUTDOOR HERITAGE COUNCIL. FOREST LEGACY COORDINATOR RICHARD PETERSON PICTURED WITH LANDOWNER BY A SIGN IDENTIFYING THE CLEAN WATER LEGACY FUNDING SOURCE.


DEPARTMENT OF NATURAL RESOURCES
Forest Legacy & Forests for the Future
2000-2016 Accomplishments
UPPER MISSISSIPPI FEE
Koochiching FLA
KOOCHICHING - WASHINGTON FOREST 1-6
LA MINORA FEE
CHECKERBOARD FEE
LA MINORA
Grand Rapids FLA
CLAIR NELSON 1-2
UPPER MISSISSIPPI
TIMBERLANDS
SUGAR HILLS
NORTH DULUTH 1&2
CAMP LAKE FEE
North Duluth FLA
Lake Superior
BRAINERD LAKES 1&2
Brainerd Lakes Walker FLA
SNAKE RIVER FEE
NORTH DAKOTA
SOUTH DAKOTA
Lower Saint Croix FLA
Rice County Big Woods FLA
BIG WOODS HERITAGE FEE
WABASHA BLUFFLANDS 1-5
CANNON RIVER WILDERNESS 1&2, BIG WOODS 1&2, NERSTRAND WOODS 1-6 , SEVEN MILE WOODS 1-6
Wabasha Blufflands FLA
IOWA
WISCONSIN
Easement Acres
19 - 500
501 - 5000
5001 - 10000
10001 - 100000
100001 - 187876
Fee Acres
128 - 500
501 - 2751
2000 Active Forest Legacy Areas (FLA)
Counties

Program Integration and Priorities

The amended 2008 Farm Bill requires a Statewide Forest Resource Assessment and Long-term Forest Resource Strategy (Forest Action Plan) to receive funds under the CFAA. This includes both FLP project and administrative funds. The 2008 Farm Bill also states that, once approved, the Forest Action Plans "shall be deemed to be sufficient to satisfy all relevant State planning and assessment requirements". As a result, the previous FLP planning requirements that were manifested in the AON must now be incorporated into the Forest Action Plan. Because Minnesota had recently conducted extensive planning related to MFF, it was determined at that time the FLP requirements would be incorporated "as is" with the FLP continuing under the original 2000 AON guidance.

On June 13, 2014, the FSP Committee discussed updating the FLP AON and integrating it within the Forest Action Plan. The FSP Committee decided the best opportunity for this would be with the 10 Year Forest Action Plan update, a process that began in April 2016 and is estimated to conclude in 2020. The FLP AON will be integrated with the updated Forest Action Plan, meeting the 2008 Farm Bill requirement. In addition, necessary updated FLP planning elements have been incorporated to the body of the document.

Goal

The goal of the Minnesota FLP and MFF is:

Protecting private forest lands throughout the state that, in combination with public forest lands, provide exceptional value in three core areas: public recreational access; timber production and other economic opportunities; and ecological values, including air and water quality, soil health, and wildlife habitat. (from the Strategic Report for MFF).

There are two categories of forest land ownership that are enrolled, private nonindustrial forest land and industrial forest land. Minnesota's traditional forest land use limits public access on non-industrial forested land, and much of the land is "posted" for no trespassing. Industrial forest land has traditionally allowed public access and, because of this, public access is necessary to meet easement program requirements.

Acreage Target

During the 2008 MFF planning process, a protection goal of 530,000 acres was identified using spatial analysis. This acreage target is to be completed by 2033.

Program Priorities

The following priorities were developed by the MFF Advisory Team:

- Locations where large (greater than 500 acres) continuous blocks of forest remain, focusing on a large, stable forest base for the continued health of the timber industry.
- Providing access and buffering of state, federal, and industry lands for forest management purposes. Acquiring access to landlocked blocks of state land or acquiring land to reduce state boundary with private land.

- Forests containing high biodiversity sites and/or habitats of species identified as endangered, threatened, or of special concern.
- Protection of aquatic habitat including trout streams, wild rice lakes, cold water fish communities, and lakes with high and outstanding biological significance for fish.
- Areas with active conservation initiatives, for example: Manitou Collaborative, Upper Mississippi Forest Project, Camp Ripley Sentinel Landscape, Big Woods Heritage Forest, Cannon River and Root River Watersheds.
- Protection of municipal drinking water sources identified as sensitive to deforestation, such as the St. Lawrence and Decorah Edge formations of the Driftless Area, the Upper Mississippi Headwaters, Anoka Sand Plain, and Pineland Sands.

Strategies

Implementation strategies to achieve private land protection include, but are not limited to, the following:

- Working with partners to identify and protect high priority forestlands.
- Acquiring key priority forest lands through fee-title acquisitions.
- Focusing efforts on large, intact blocks of contiguous forest that will result in the greatest amount of consolidation and linkage of protected forest lands.
- Acquiring development rights on all tracts. This would limit landowner rights to subdivide, construct buildings, and build infrastructure such as utility right of way and development of permanent access roads.
- In large projects (500 acres and greater) emphasize protection and conservation of working forests that sustainably produce wood products, directly support Minnesota jobs and industries, and ensure healthy ecosystems.
- In smaller projects (less than 500 acres), focus on protecting wildlife and fish habitat, high biodiversity areas, and threatened and endangered species habitat including critical riparian corridors, forests in key watersheds, and high-quality aquatic habitats.
- Promoting sustainable forest management through State Forester (or designee) approved Forest Stewardship Plans or similar comprehensive, multi-resource management plans, adherence to best management practices, and third-party certification.
- Considering public access to outdoor recreation opportunities and trail connectivity of public trail systems while protecting forest land.
- Continuing the comprehensive easement stewardship program, which includes annual monitoring of defined parameters, to ensure the maintenance and protection of conservation values.

State Grant Option

Minnesota implements the FLP through a State Grant Option, by which the State of Minnesota holds title to all lands or interests in lands acquired with Federal FLP funds. The Minnesota Department of Natural Resources Division of Forestry is the lead agency for this program in consultation with the State Forest Stewardship Committee. Minnesota DNR may elect to delegate management and administration of individual tracts of land within the program to another division within the DNR. However, the DNR Division of Forestry is the only party that can hold and enforce the terms of the conservation easement, following USDA guidelines.

Means for Protecting Private Forest Lands

Conservation Easements

The Forest Legacy Program will primarily use working forest conservation easements to protect important public values on privately owned forest land. In addition, the FLP seeks to provide continuation of traditional forest uses of land. While no site can support all uses, the idea of multiple compatible uses taking place in a single forest is a valid management framework, and one supported by the FLP. Acquisition will be targeted toward important public values on land supporting continued traditional forest uses, including:

- maintenance of forest ecosystems and their biological resources in order to sustain their full array of biodiversity and ecological functions;
- maintenance of fish, game, and nongame wildlife and plant populations;
- providing habitats for at risk species;
- production wood products and non-timber products;
- providing quality outdoor recreational experiences including hunting, fishing, and trapping and the ability to establish and maintain camps;
- improving and protecting soil productivity;
- protecting water quality and quantity;
- enhancing the biological diversity and aesthetic qualities of the landscape.

Each conservation easement is specific to the protection needs of the conservation values present on a tract of land. The following issues are considered when limiting land use to protect conservation values and prevent conversion of forest to non-forest:

1) Type of ownership: residential, commercial, industrial use
2) Existing or planned structures, improvements and utilities
3) Subdivision
4) Excavation, mining and surface disturbance
5) Existing roads and trails
6) Presence of waste and hazardous materials
7) Development rights
8) Existing Stewardship Plan or state-approved multi-resource management plan and applicable Minnesota Site Level Guidelines (BMPs)
9) Traditional forest use, including: harvesting timber for lumber, veneer, pulp, and firewood; gathering of materials and foods, such as honey, maple sugar, nuts, berries, and plant parts and roots; pursuing recreational activities such as hunting, fishing, sight-seeing, nature study, skiing, hiking and camping; providing for well-regulated motorized recreation, such as snowmobiles on established trails; providing sites for scientific research to increase our knowledge of forest; providing the opportunity to view unique or outstanding natural features, such as old growth trees, rare species, and habitats of statewide significance; and providing a chance to experience solitude in forested areas
10) Public Access to pursue outdoor recreation

A Baseline Property Report will be created at the time of purchasing the conservation easement and will be the basis for determining compliance with easement terms and changes in the property conditions. Easement Stewardship, including monitoring of the easement terms and conservation values as required

by the ***Conservation Easement Stewardship Plan of the Division of Forestry*** (DNR Operational Order 128), will take place annually. At the annual meeting, the owner or their representative provides:

- Forest management activities accomplished over the previous year;
- Forest management activities proposed for the upcoming year;
- Other changes in the baseline property conditions as described in the Baseline Property Report, such as planned ownership changes and updates to the forest management plan.

Remote sensing, such as using satellite imagery or air photos, may be used to supplement site visits. A third party certification program may be part of the evidence used to determine adherence to sustainable forestry practices. Monitoring visits are documented with written description and georeferenced photographs. Any changes or issues that arise are noted and enforcement, if needed, is conducted as suggested by Conservation Easement Stewardship Plan of the Division of Forestry.

Fee Title

In exceptional cases, the FLP will acquire full-fee title ownership for key parcels resulting in the consolidation of public land. Additional reasons for fee title acquisition is to gain management access or public access to landlocked public lands, or if there is a critical need for management oversight of the property to achieve other specific conservation goals.

Application Process and Project Prioritization

Requesting and receiving grant funding for a FLP project is a process that takes multiple years and steps. Individual FLP applications go through a rigorous and highly competitive review. Defined criteria are used to develop a prioritized list of projects. Top ranking projects, with the help of partners and landowners, are then developed into grant applications for appropriate funding sources. If funding is requested from the federal program, a national ranking process is used by the Forest Legacy Program National Review Panel for consideration in the President's Budget.

Project Eligibility Criteria

Applying to the FLP or MFF is voluntary. Applications are available online at the Minnesota DNR website, or can be obtained by calling the Forest Legacy Coordinator. Applications for federal projects must meet the following eligibility criteria:

1. Project must meet one or more of Minnesota's FLP goals.
2. Land must be privately owned (non-federal, State, or local government).
3. Forest must be in a delineated FLA.
4. Project must be at least twenty (20) acres in size.
5. Project must include a minimum 25% cash or in-kind, non-federal match. The FLP will fund up to 75% of total program costs (acquisition costs plus other allowable expenses). A landowner that does not meet the match percentage as stated in their application by the closing date of a Forest Legacy acquisition will not be eligible to apply for FLP funding until the non-federal match has been met.
6. Project must be 75% forestland (land with at least 10% canopy cover of trees or formally had such tree cover and is not currently developed).
7. Mining activities and other uses that result in extensive surface disturbance are incompatible with the FLP and are prohibited. Limited extraction of rocks, sand and gravel for on-site use on roads and trails that does not impact the conservation values is allowed. Properties with severed mineral rights that are owned by the State are ineligible for the FLP. Properties with

severed mineral rights not owned by the state may be eligible for the FLP if a qualified geologist has determined that the likelihood of surface mineral activity or development is "so remote as to be negligible."

8. Landowners agree to follow federal FLP requirements and implementation rules including:
    a. Accepting an appraisal that meets standard federal appraisal guidelines.
    b. Managing the property through an approved management plan such as a Forest Stewardship Plan approved through the Minnesota FSP.
    c. Signing a perpetual conservation easement with the State of Minnesota, with the stated purposes of maintaining, enhancing, and/or conserving in perpetuity the forestland and conservation values of the property.
    d. Allowing annual monitoring for conservation easement compliance.
    e. Following applicable best management practices and site level guidelines such as Voluntary Site-level Forest Management Guidelines for Landowners, Loggers and Resource Managers (MFRC, 2013).

The MFF is state funded, and, as such, has requirements that differ from the federal program. MFF will entertain applications for important forests outside federally approved Forest Legacy Areas. The required federal match does not apply to the state program, though match will make an application more competitive. State of Minnesota appraisal guidelines will be followed for the MFF. All other FLP guidelines are applicable to the MFF, including forest cover, mineral requirements, and implementation rules.

Application Evaluation

As funding is highly competitive and limited, project selection requires ranking applications. Only the most significant forest properties are likely to receive federal program dollars. State funding is also highly competitive, but forests included do not need to reach nation-wide importance. Top priority for selection is given to working forests that are threatened by conversion to non-forest uses, managed forests that best contribute to protection of water quality and fish and wildlife habitat, and forests that enhance connective landscapes and contribute to ecological benefits. Program history suggests that only one or two properties will be protected each year. The potential for donated easements is much broader. FLP and MFF grant funding can be applied to the transactional costs associated with donations of working forest conservation easements, however, the same eligibility standards need to be met.

A list of priority parcels for funding consideration is developed annually in consultation with the FSP Committee. This process strives to provide a clear, easily articulated, and defensible ranking process; to ensure equitable and thorough review of all applications; and to establish a priority list of projects in anticipation of securing funding from various sources. Project selection is then determined or approved by the State Forester and projects are forwarded to the appropriate funding source, whether federal or state. Because funding may be limited in a given year, larger tracts may need to be broken into phases to adequately fund their acquisition.

Prioritization Process

In 2007, the advisory team for MFF suggested scoring criteria for use in evaluating applications. The team agreed on six major criteria: project size, strategic location, recreational opportunities, timber and other economic benefits, ecological and habitat values, and other considerations not covered. All projects limit the density and surface cover of trail and road systems, acknowledging that trails and road systems are necessary for forest management and certain types of recreation. Public access and recreational opportunities are public benefits and contribute to the scoring of projects. The advisory

team's suggested scoring criteria did not assign points. Points were later assigned to these criteria by the MFF, with emphasis on funding source priority (for example: clean water or fish and wildlife habitat).

The following questions represent the minimum criteria for the project review committee to consider to ensure project selection enhances the program's success.

1. What is the project size: 20-1000 acres, 1001-5000 acres, 5000+ acres?
2. Strategic location:
    a. Is the project adjacent to public or protected land or an inholding surrounded by public land?
    b. Does the project contribute to a corridor between tracts of public land or private conservation lands?
    c. Is the project part of a regional or statewide effort to conserve forest lands?
    d. Is the project an isolated tract?
    e. Does the project provide management access to public land?
    f. Is the project of such a size and location to provide unique public benefits?
3. Recreational opportunities:
    a. Is there good access to the property from existing public roads, trails, or waterways?
    b. Does the property provide public recreational access, including hunting and fishing?
    c. Does the property contain public recreational trails, including snowmobile trails?
    d. Are there opportunities to connect existing trails or to provide new trails or additional recreation corridors in the future?
    e. Does the project provide full or only limited access to the property?
    f. Does the property contain exceptional recreational resources?
4. Timber and other economic benefits:
    a. Is the property composed of a relatively high percentage of productive timberlands? What percentage of the property is unproductive/low productivity (e.g., swamps, bogs, non-forest types)?
    b. Does the project contribute to the resource-based economy of the area or region?
    c. Does the owner actively manage/harvest timber or other forest products?
    d. Is the timberland well stocked with merchantable species?
    e. Has the property owner demonstrated sound forest management, such as having a management plan, participating in the Forest Stewardship Program, or enrolling in a third-party certification system?
    f. Are there exceptionally valuable timber or non-timber forest products (e.g., sawtimber, high-site index aspen, veneer, black walnut) on the property?
5. Ecological and habitat values:
    a. Does the site have known individuals and/or habitat for state or federally designated rare, threatened, or endangered plants or animals, or species of greatest conservation need?
    b. Does the site contain unique forest communities and/or important fish and wildlife habitat as specified or documented by a wildlife or other natural resource plan?
    c. Does the property contains riparian areas, wetlands, lakes, shorelines, river systems, or other important water resources, and/or is it important as a source for public drinking water or as an aquifer recharge area?
6. Is the site located within a viewshed of a formally designated scenic feature or area (e.g., trail, river, roadway) or does it contain areas of scenic interest?
7. Are formally documented cultural or historical features located on the site?

8. Is the land predominantly natural, an area recognized by the Minnesota Biological Survey as having high or outstanding biological significance, without significant developments or improvements?
9. Are there ecological features of the property that are of exceptional quality or significance (e.g., federally endangered species endemic to a small area)?
10. Other considerations:
    a. Does the project provide matching funds?
    b. Is there strong public and partner support for the project?
    c. Is there a strong threat to the property that would result in forest parcelization and conversion?

Selecting Forest Legacy Areas

Eligibility criteria were developed to delineate geographic areas containing significant environmental values, or considered an "important forest area", while being threatened with conversion. These qualities were used to delineate each FLA. Acquisition of lands and interests in lands for the federal FLP can only occur within approved FLAs.

Public Values of Environmentally Important Forest Areas

Public values are the environmental, social, and economic public benefits gained from the protection of managed forest land. Containing one or more of these public values is necessary to be included in a FLA. The following public benefits were considered when defining the updated FLAs, with data source used following in parenthesis.

Timber and other forest commodities

- Parcel has the potential to enhance existing timber-based economy for a community or region (MFF Economic Value analysis)
- Parcel maintains timberland or access to timberland (GIS analysis)
- Landowner demonstrates history of sustainable forest management practices (Private Forest Management spatially referenced database)

Fish and Wildlife Habitat

- Provides for habitat connectivity and/or wildlife corridors (MFF Ecological Value analysis)
- Provides habitat for Species of Greatest Conservation Need (Wildlife Action Plan 2015-2025)
- Contains necessary or critical habitat: deer yards, mast stands, vernal pools, wild rice lakes (DNR GIS data layers)
- Contains State Significant Natural Communities (Minnesota Biological Survey maps)
- Forested protection of waters containing significant or important fish populations and/or aquatic species of concern (MFF Ecological Value analysis)
- Site is, or is part of, a large block of contiguous forest (GIS analysis)

Known Threatened and Endangered Species

- Contains known populations and/or habitat for federal or state designated rare, threatened, and endangered (RTE) species (National Heritage Information System)
- Site provides suitable habitat for reoccupation by RTE species-either naturally or through relocation (Ecological Classification System mapping and Wildlife Action Plan 2015-2025)

Scenic Resources

- The site is located within a viewshed of a formally designated state or federal scenic feature or area, such as a trail, river, or highway (MFF Recreation Value analysis, GIS analysis)

- Includes locally important and/or easily accessible scenic resources as identified in a local or regional plan where development would significantly alter the appearance of the landscape (designated Wild and Scenic Rivers, Scenic Byways)

Riparian Areas

- The site is important to, or has been identified for, protection of a public water supply (GIS analysis, mapped sensitive aquifer recharge areas)
- Contains streams, ponds, rivers, lakes, and/or wetlands, with special consideration for priority watersheds and imperiled waters (MFF Ecological Value analysis, DNR GIS data layers)
- Includes undeveloped shorelines (GIS analysis)

Known Cultural Resources

- Contains state or federally recognized significant cultural resources (GIS data layers)
- Contains known pre-contact archaeological site(s)
- Contains a National Historic Landmark site(s) (Minnesota Historical Society)
- Contains a National Natural Landmark (US National Park Service)

Public Recreation Opportunities

- Preserves hunting and fishing access (MFF Recreation Value analysis, GIS analysis)
- Parcel has the potential to enhance or maintain existing recreational opportunities through linkages or additional trail development (GIS analysis)
- Parcel contains forests that help maintain habitat for fishing on high quality lakes (DNR data layers)

Threat of Conversion

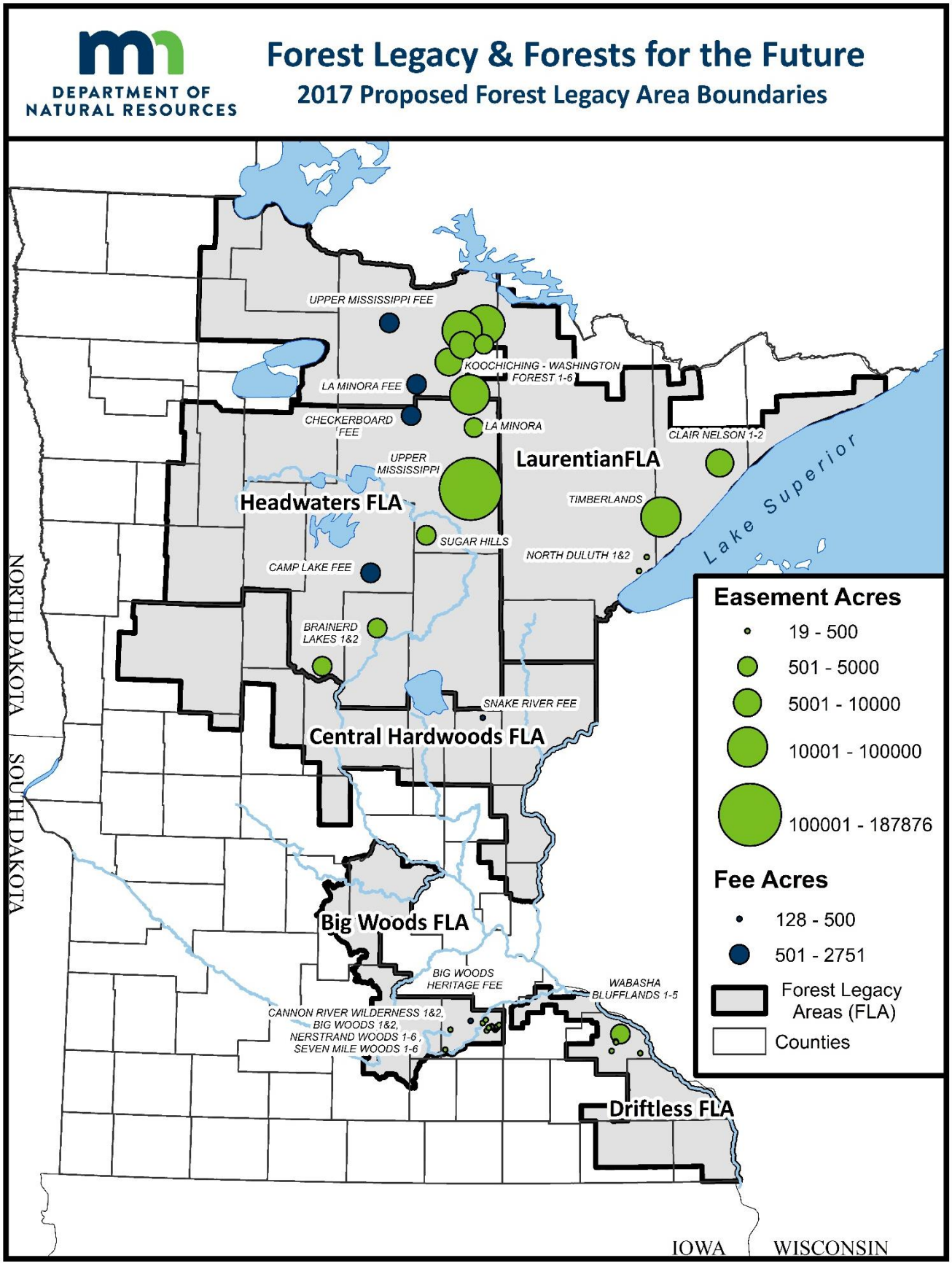
The threat of conversion to non-forested uses is an eligibility requirement for inclusion in a Forest Legacy Area. The following elements were considered when determining where private forestland in the state was threatened by conversion:

- Increasing residential development is occurring in the forested portions of the state, particularly where the presence of lakes and streams heighten recreational potential, and in parts of the state with rural character yet easy access to metropolitan areas. Demographic trends such as growth in population capture the potential for increased residential development. However, in some areas of the state, population growth maybe misleading when considering increased residential development. Seasonal residences are concentrated in forested counties and certain counties have over 45% of housing in this form, which would not be accounted for by changes in permanent population (Pesch and Bussiere 2014).
- Increasing property taxes and decreasing timber markets are putting forestlands at risk for conversion. Assessing land on the highest use value, rather than current use, pushes property taxes up, while, simultaneously, opportunity for timber income is decreasing due to mill closures. Private landowners are forced to sell, divide the ownership, or convert land to cover their annual ownership costs.
- An increased rate of property ownership transfer results in owners who have no long-term connection to the property and who are less interested in sustainable forestry practices and principles.
- Forest industry restructuring has resulted in companies focused on the investment return of forest land, including higher and better uses. Companies are actively selling off their land holdings, which intermingle with federal, state, and county managed forestland. This results in fragmentation, deforestation, and reduced access to forestland in Minnesota.

- Parcelization, the subdivision of land into smaller ownership parcels, is a leading indicator of eventual loss of forest to development. Parcelization in northern Minnesota is positively correlated with adjacency to public water and public roads (Block-Torgerson, et al., 2010). Parcelization fragments forest cover and reduces access to timber. Forestland thought to be low risk for development in the original 2000 AON, which looked at projected county population growth, is actually often at high risk for parcelization, as people seek isolated rural housing for their vacation or retirement homes.
- Conversion to agriculture will continue for forest land in the transition zone where infrastructure, policy, and available markets incentivize agricultural land use. Longer growing seasons, combined with agricultural technology advances, contributes to the expansion of row crops, which can be grown profitably all the way to the Canadian border. Conversion to agriculture at a large scale in the upper Midwest has shown to have large negative impacts on water quality and quantity, timber supply, and wildlife habitat.
  Climate change is expected to have widespread effects on forest ecosystems in Minnesota.
- Many factors influencing forest composition and distribution are expected to change, including seasonal temperatures, the timing and type of precipitation, soil moisture patterns, the severity and frequency of natural disturbances, and the abundance of pests and diseases. Minnesota DNR's objective is to minimize environmental stresses amplified by climate change. This includes preserving dispersal corridors linking current and future suitable habitats, retaining high quality, large block forests to maintain ecosystem resilience, and supporting viable fish and wildlife population goals through a network of large, connected conservation lands.
- Colonization and unrestrained growth of invasive species causes loss of biodiversity, interruption of normal hydrology, suppression of native vegetation, and significant aesthetic, human safety and economic impacts. The most effective strategy against invasive species is preventing introduction, including maintaining high quality plant communities that are healthy, connecting forest lands, and reducing forest edge where some invasive species proliferate to avoid an influx of aggressive, non-native plant and animal species.

Updated Forest Legacy Areas

As a result of the above changes, the recommended Forest Legacy Areas were updated to strategically complement important conservation areas already identified in the state. The newly mapped FLAs follow Minnesota Forest Resource Council (MFRC) regional landscape boundaries. These boundaries delineate forested areas with different ecological and commodity forest values and regional forest attributes. Greater understanding of the threats of forest conversion in Minnesota and its patterns has led to expanded FLAs. Development of the new FLAs has been reviewed and supported by the SFSCC and many partner organizations. In particular, stakeholders delineated the updated FLAs through discussion and suggestions at regional MFRC Regional Landscape Committee meetings in 2016 and 2017, and through review of this plan.


DEPARTMENT OF NATURAL RESOURCES
Forest Legacy & Forests for the Future
2017 Proposed Forest Legacy Area Boundaries
UPPER MISSISSIPPI FEE
KOOCHICHING - WASHINGTON FOREST 1-6
LA MINORA FEE
CHECKERBOARD FEE
LA MINORA
CLAIR NELSON 1-2
UPPER MISSISSIPPI
LaurentianFLA
Headwaters FLA
TIMBERLANDS
SUGAR HILLS
NORTH DULUTH 1&2
CAMP LAKE FEE
BRAINERD LAKES 1&2
SNAKE RIVER FEE
Central Hardwoods FLA
Big Woods FLA
BIG WOODS HERITAGE FEE
WABASHA BLUFFLANDS 1-5
CANNON RIVER WILDERNESS 1&2, BIG WOODS 1&2, NERSTRAND WOODS 1-6 , SEVEN MILE WOODS 1-6
Driftless FLA
Lake Superior
NORTH DAKOTA
SOUTH DAKOTA
IOWA
WISCONSIN
Easement Acres
19 - 500
501 - 5000
5001 - 10000
10001 - 100000
100001 - 187876
Fee Acres
128 - 500
501 - 2751
Forest Legacy Areas (FLA)
Counties

Laurentian Forest Legacy Area

Location and Vegetation Description

The Laurentian FLA contains peatlands and mesic forests developed in the former lakebed of Glacial Lake Agassiz and the exposed ancient rock of the "Arrowhead" region along the Canadian border and Lake Superior. This northernmost FLA is characterized by expansive areas of conifer forest and bogs and mixed hardwood forests, which are predominately intact. It has highly productive timberland, outstanding recreational opportunities, abundant wildlife, and some of the most pristine lakes in the United States (USEPA, 2009). The timber economy is supported by the working forest. Outdoor recreation contributes to the economy with Superior National Forest's Boundary Waters Canoe Area and Voyageurs National Park attracting local, international, and national tourists. The lakes and rugged forest of the north woods are fundamental to the identity of Minnesotans and have highly supportive and dedicated advocates.

Counties included or partially included: Roseau, Beltrami, Lake of the Woods, Koochiching, St. Louis, Lake, Carlton, and Cook

A RUSTIC HUNTING SHACK IN THE LAURENTIAN FOREST LEGACY AREA REPRESENTS A TRADITIONAL FOREST USE ON A WORKING FOREST CONSERVATION EASEMENT.

Public Benefits/Importance

Timber and other forest commodities:

- Supplies primary wood product mills: 6 mills with 3000 mbf+ used annually, 44 total mills, which products include: office paper, coated paper, DWP, toothpicks, siding, lumber, fiberboard (data from 9/2013, MDA)
- Community driven biomass energy projects (for example: Tofte, Finland, Grand Marais)
- Non-timber forest products: maple syrup, boughs, decorative spruce tops, willow, birch bark, firewood, berries, mushrooms
- 21 state forests practicing active timber management and producing third-party certified sustainable wood
- Timber management and ecological research on the Superior National Forest

Fish and Wildlife Habitat:

- Provides habitat for 128 Species of Special Concern located in the forested, wetland, and aquatic habitats of the Laurentian FLA
- Contains necessary critical habitat: deer yards, mast stands, vernal pools, and moose management zones
- Contains 1,700,000 acres of Natural Communities of Biodiversity Significance ranked moderate, high, or outstanding (all ownerships, MBS surveys)
- 87,700 acres of High Conservation Value Forests (on third party certified, state managed land)
- Forested protection of waters containing significant or important fish populations and/or aquatic species of concern
- Over 5,283 miles of DNR designated trout streams and 76 trout lakes
- Laurentian FLA contains 215 DNR identified wild rice lakes
- DNR has identified 175 lakes of biological significance in the Laurentian FLA
- DNR has identified 13 coldwater habitat refuge lakes, lakes that are predicted to withstand the effects of a climate-warmed Minnesota, in the Laurentian FLA
- Audubon Important Bird Areas included in Laurentian FLA: North Shore Peregrine Falcon Eyries, St. Louis River Estuary, Superior National Forest, Thief Lake, Voyageurs Kabetogama, Hawk Ridge Nature Reserve IBA, Sax-Zim Bog IBA, Lake of the Woods IBA, Big Bog IBA, South-Central North Shore IBA

Known Threatened and Endangered Species:

- The Laurentian FLA contains known populations of federally threatened Canada Lynx, Piping Plover, and Northern Long-eared Bat
- Federally designated Canadian Lynx Critical Habitat and Grey Wolf Critical Habitat
- Contains documented Northern Long-eared Bat maternity roost trees and/or Hibernacula
- There are 52 state endangered species and 70 state threatened species in the forest, wetland, and water features of the Laurentian FLA

Scenic Resources:

- Area includes federally designated Gunflint Trail National Scenic Byway and North Shore All-American Scenic Drive
- State Scenic Byways include: Lake Superior National Forest Scenic Byway, Skyline Drive Scenic Byway, Gunflint Trail National Scenic Byway, Veterans Evergreen Memorial Drive, Lady Slipper Scenic Byway, Waters of the Dancing Sky Scenic Byway

Riparian Areas:

- 14,200 acres of drinking water supply management areas with moderate to very high vulnerability
- Contains streams, ponds, rivers, lakes, and/or wetlands, with special consideration for priority watersheds and imperiled waters
- DNR lake protection strategies includes 11 watersheds requiring full restoration (30,000 acres), 1 watersheds of partial restoration (5,000 acres), 251 watersheds of protection (331,000 acres) (watersheds described at HUC 2 scale)
- High number of streams and rivers follow natural shoreline and lakes have undeveloped forested shorelines

Known Cultural Resources:

- Contains known pre-contact archaeological site(s)
- National Historic Landmarks include: Soudan Iron Mine, Grand Mound, Mountain Iron Mine, Hull-Rust-Mahoning Open Pit Iron Mine, Split Rock Light Station, and Grand Portage National Monument
- National Natural Landmarks include: Keeley Creek Natural Area, Lake Agassiz Peatlands Natural Area, and Upper Red Lake Peatland

Public Recreation Opportunities:

- Contains entire 325 miles of the federally designated Superior Hiking Trail
- Contains 7 state trails for 438 miles (includes multi-use trails)
- There are 60 segments of designated snowmobile trails for 4800 miles of trail
- 127 DNR hunter walking trails
- State water trails: Big Fork River, Littlefork River, Vermilion River, Cloquet River, St. Louis River, and Lake Superior State Water Trail
- Hunting for lake superior agates, the state rock, and fossils in limestone
- Superior National Forest including Boundary Waters Wilderness Area, the most visited wilderness area in the country
- Voyagers National Park
- There are 14 state parks, 5 state waysides, 2 state recreation areas included in the Laurentian FLA
- 444 public water access sites

Threats to Conversion

Disinvestment of Timber Investment Management Organizations/Real Estate Investment Trusts

Restructured timber companies sell parcels to maintain shareholder profits during years with low profitability from timber. While parcelized land is often used for hunting or other outdoor recreational uses, fragmenting ownerships can lead to limited access to public forest land by control of access points on the higher value road parcels. The private forest lands in this FLA are particularly attractive to recreational and hunting interests because of their close proximity to vast areas of public forests throughout the region, notably the Superior National Forest, Voyageurs National Park, and the numerous state and county forests.

Second Homes and Dispersed Residential Development

Dispersed residential development has become more common. Often occurring in the form of second homes, which are greater than 40% of the housing stock in several counties, forested land is targeted for

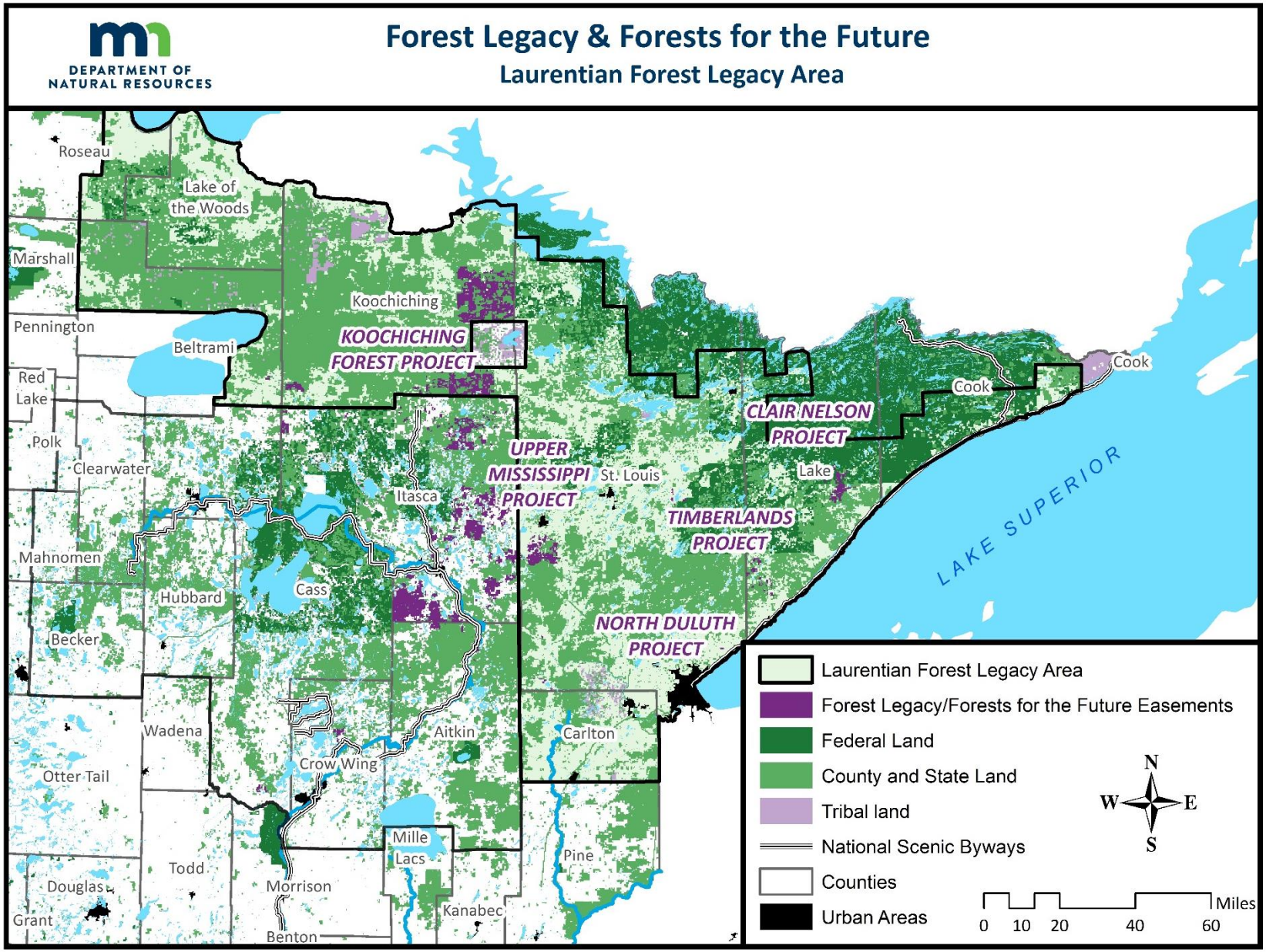
building lake cabins, deer hunting shacks, or future retirement homes (US Census Bureau, 2010). Dispersed development is a permanent change that can alter large parts of the landscape and results in habitat fragmentation, loss of connectivity, and reduced ability for fire to be used to manage the predominately fire dependent ecosystem.

Conservation Goals of the Laurentian Forest Legacy Area

- Maintain large-scale ecosystem functions and values, including sustainable harvest of forest products
- Maintain high quality, intact forest habitat, especially for interior forest species that are rare
- Provide buffer for public land to allow natural processes, especially fire and wind events, to occur
- Maintain high quality water resources and mitigate hydrologic events intensified by climate change
- Protect public access for recreational opportunities

Important Environmental Values of the Laurentian Forest Legacy Area

- Large blocks of forest
- Forest communities unique to the United States including: forested rich peatland, acid peatland, ash-dominated swamp, fire-dependent conifer forest, and mesic northern hardwoods
- Regionally and globally important habitat, supporting an array of species including interior forest birds such as Connecticut and Blackburnian warblers, mammals such as moose, wolves, bear, bobcats, and pine martens as well as many northern forest birds, for example: northern goshawk, red-shouldered hawk, and spruce grouse.
- Undeveloped lake shorelines, rivers following natural courses, walleye lakes, trout streams, and lake trout lakes.
- Rare and endangered plant and animal communities
- Non-developed areas for recreational opportunities (especially hunting and fishing), view sheds, trails and water access, including primitive wilderness area


DEPARTMENT OF NATURAL RESOURCES
Forest Legacy & Forests for the Future
Laurentian Forest Legacy Area
Roseau
Lake of the Woods
Marshall
Koochiching
Pennington
Beltrami
KOOCHICHING FOREST PROJECT
Red Lake
Polk
Clearwater
UPPER MISSISSIPPI PROJECT
St. Louis
Itasca
CLAIR NELSON PROJECT
Cook
Lake
TIMBERLANDS PROJECT
LAKE SUPERIOR
Mahnomen
Hubbard
Cass
Becker
NORTH DULUTH PROJECT
Wadena
Aitkin
Carlton
Crow Wing
Otter Tail
Mille Lacs
Pine
Todd
Douglas
Morrison
Kanabec
Grant
Benton
Laurentian Forest Legacy Area
Forest Legacy/Forests for the Future Easements
Federal Land
County and State Land
Tribal land
National Scenic Byways
Counties
Urban Areas
N
W
E
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Miles
0 10 20 40 60

Headwaters Forest Legacy Area

Location and Vegetation Description

The Headwaters Forest Legacy Area, located in the north central part of the state, contains the iconic forested lakeshores characteristic of Minnesota. It also surrounds the Mississippi River headwaters and protects the water quality of the river flowing 694 miles through Minnesota and 2,320 miles through the Midwest on its journey to the Gulf of Mexico. Its productive forests offer substantial timber volume to the third-party certified sustainable paper and board mills supporting northern Minnesota's economy. The woods are diverse, with pine, mixed woods, mesic hardwoods, and forested bogs and swamp contributing to wildlife and fish habitat, the productive timber industry, and the famous "Land of 10,000 Lakes" tourist destinations for premier fishing, hunting, wildlife watching, and outdoor recreation.

Counties included: Aitkin, Becker, Beltrami, Cass, Clearwater, Crow Wing, Hubbard, Itasca, Mahnomen, Polk

AN ACTIVE TIMBER SALE REPRESENTS A TRADITIONAL USE ON A WORKING FOREST CONSERVATION EASEMENT IN THE HEADWATERS FOREST LEGACY AREA.

Public Benefits/Importance

Timber and other forest commodities:

- Supplies 55 primary forest product producers in the Headwaters FLA, 12 produce 3000+ mbf annually (data from 9/2013, MDA), including producers of pulp and printing papers and lumber
- Landowners participate in sustainable forest management practices including the Forest Stewardship Program, American Tree Farm Program, and sustainable forestry tax programs
- 31 state forests actively managing timber, which is third-party certified
- Non-timber forest products: maple syrup, boughs, decorative spruce tops, willow, birch bark, firewood, berries, mushrooms
- Contains the Chippewa National Forest with active management and research, including the SPRUCE Project (Spruce and Peatland Responses under Climatic and Environmental Change Experiment) and the Climate Change Vulnerability Assessment

Fish and Wildlife Habitat:

- Provides habitat for 88 Species of Special Concern found in the forests and associated habitats of Headwaters FLA
- Contains necessary critical habitat for wildlife: deer yards, mast stands, vernal pools
- Contains documented Northern Long-eared Bat maternity roost trees and/or Hibernacula
- Contains 1,016,000 acres of Natural Communities of Biodiversity Significance ranked moderate, high or outstanding (all ownerships, MBS surveys)
- 58,800 acres of High Conservation Value Forests (on third party certified, state managed land)
- Forested protection of waters containing significant or important fish populations and/or aquatic species of concern
- Over 1300 miles of designated trout streams and 36 trout lakes
- 9 identified waterfowl feeding and resting areas and 638 wild rice lakes (605,953 acres)
- 528 lakes of biological significance, identified by DNR
- DNR has identified 84 coldwater habitat refuge lakes, lakes that are predicted to withstand the effects of a climate-warmed Minnesota, in the Headwaters FLA
- Audubon Important Bird Areas included in Headwaters FLA include: Chippewa Plains, Tamarac NWR, McGregor IBA, Itasca State Park, Northland Arboretum IBA, Camp Ripley-Pillsbury-Lake Alexander IBA, and Mille Lacs IBA

Known Threatened and Endangered Species:

- The Headwaters FLA contains known populations and/or habitat for federal threatened Northern Long-eared Bat and
- Harbors critical habitat for gray wolf and Canada lynx, both federally designated as threatened species
- Contains habitat for rusty patched bumble bee, a federally endangered species, which requires undisturbed soil for hibernating queens to overwinter
- There are 26 state endangered species and 40 threatened species in the forest, wetland, and water features of the Headwaters FLA

Scenic Resources:

- National Scenic Byways including the Edge of the Wilderness, Great River Road, Paul Bunyan Scenic Byway
- State Scenic Byways including the Avenue of the Pines and Lake Country Scenic Byway
- Includes locally important and/or easily accessible scenic resources as identified in a local or regional plan where development would significantly alter the appearance of the landscape

Riparian Areas:

- 771,000 acres of drinking water supply management areas with moderate to very high vulnerability
- Mississippi River Headwaters
- Contains streams, ponds, rivers, lakes, and/or wetlands, with special consideration for priority watersheds and imperiled waters
- DNR lake protection strategies including 154 watersheds requiring full restoration (375,000 acres), 4 watersheds with 20,000 acres requiring partial restoration, 820 watersheds requiring protection (789,000 acres) (watersheds described at HUC 2 scale)

Known Cultural Resources:

- Contains known pre-contact archaeological site(s)
- National Historic Landmark: Rabideau CCC Camp
- National Natural Landmarks including: Itasca Natural Area and Pine Point Research Natural Area

Public Recreation Opportunities:

- Contains 4 state designated trails for 230 miles
- There are 58 sections of snowmobile trails making up 5770 miles of trail
- 57 DNR hunter walking trails
- Minnesota water trails on the Pine River, Mississippi River, Crow Wing River, Otter Tail River, and Snake River for 920 miles
- There are 7 state parks and 2 state recreation areas included in the Headwaters FLA
- 827 public water access sites

Threats to Conversion

Growth in Residential Development, Especially Seasonal and Lake Housing

Seasonally occupied residences make up more than 31% of housing in north central Minnesota. This can be attributed to the quantity and quality of lakes and fishing opportunities, as fishing makes up the primary recreational activity for visits to this area. Growth among the seasonal communities of Brainerd, Park Rapids, and Nisswa have resulted in increased dispersed development around the growing towns, which can triple in size in the summer from tourists and seasonal residents.

Disinvestment of Timber Investment Management Organizations/Real Estate Investment Trusts

In years with low profitability from timber harvesting, restructured timber companies sell parcels to maintain shareholder profits. A result is fragmented ownerships, limited access to forest land, reduced timber management options, and potential encroachment. The private forest lands in this FLA are particularly attractive to recreational and hunting interests because of their close proximity to the vast water resources and areas of public forests, notably the Chippewa National Forest, Itasca State Park, and the numerous state and county forests.

High Property Taxes

Forestlands are being taxed at a “higher and better use” rate, which is often residential, lake frontage, or rural recreational. This is causing forested land to be parcelized and converted. The parcelization, frequently on frontage property, creates problematic situations for local residents, who traditionally had access for timber management and hunting.

Expansion of Agriculture

The flat, fertile, well-drained soil along the western border of this FLA has the potential to be converted to row crop agriculture. Corn and soybeans are ideal crops for this landscape and climate and have

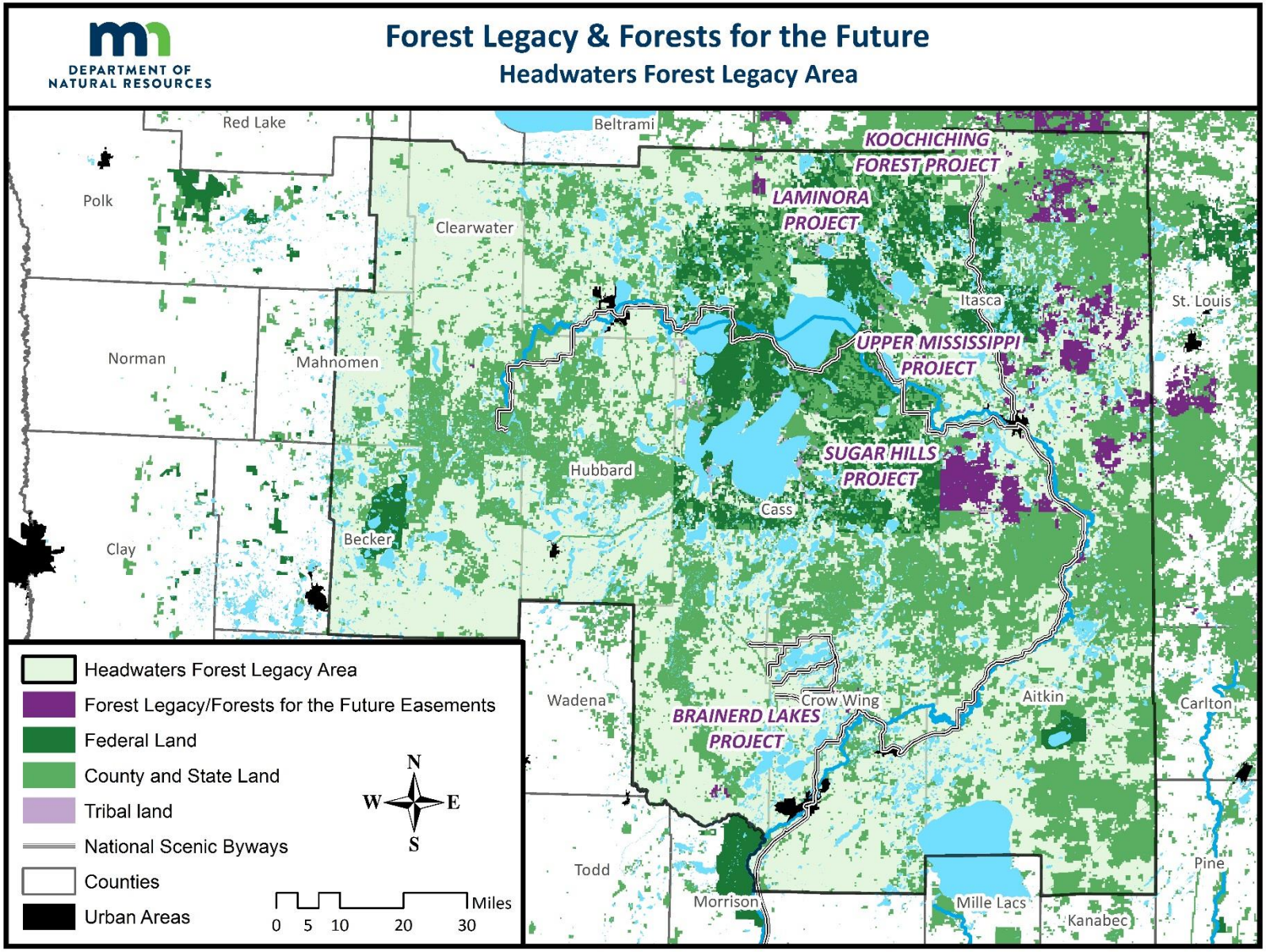
reached their highest level of land use to date (USDA Quick Stats 2.02012). In addition, expansion of corn and soybeans has displaced commercial potato growers, which have found new fields in the industrial pine cover type grown as both are grown in sandy soils. A result of agriculture expansion has been increased land prices, further incentivizing conversion to agriculture.

Conservation Goals of the Headwaters Forest Legacy Area

- Protect large, intact blocks of forest lands from conversion to development or agricultural uses
- Maintain large-scale ecosystem functions and values including sustainable harvest of forest products, especially in areas suitable for summer harvest
- Maintain high quality, intact forest habitat, especially for forest species that are rare
- Provide buffer for public land to allow natural processes, especially fire, to occur
- Maintain high quality water resources, especially for associated fish and wildlife habitat and drinking water sources
- Protect public access for recreational opportunities

Important Environmental Values of the Headwaters Forest Legacy Area

- Large blocks of productive forest communities including: mesic hardwood forests, fire-dependent pine forests, acid and rich forested peatlands, and floodplain forests
- Forest land suitable for summer timber harvest
- Regionally and globally important habitat, a diversity of communities that supporting interior forest birds, several mammals, such as wolves, bear, bobcats, and pine martens as well as many birds like northern goshawk and red-shouldered hawk.
- Important habitat for breeding song-bird populations including rare and endangered international migratory birds.
- Non-developed areas for recreational opportunities, including hunting and fishing.


DEPARTMENT OF NATURAL RESOURCES
Forest Legacy & Forests for the Future
Headwaters Forest Legacy Area
Red Lake
Beltrami
Polk
Clearwater
KOOCHICHING FOREST PROJECT
LAMINORA PROJECT
Itasca
St. Louis
Norman
Mahnomen
UPPER MISSISSIPPI PROJECT
SUGAR HILLS PROJECT
Hubbard
Cass
Clay
Becker
Wadena
Crow Wing
Aitkin
Carlton
BRAINERD LAKES PROJECT
Todd
Morrison
Mille Lacs
Kanabec
Pine
Headwaters Forest Legacy Area
Forest Legacy/Forests for the Future Easements
Federal Land
County and State Land
Tribal land
National Scenic Byways
Counties
Urban Areas
N
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0 5 10 20 30

Central Hardwoods Forest Legacy Area

Location Description

The Central Hardwoods FLA harbors oak, aspen, and birch forests growing on flat to rolling glacial till. This area, noted for its forest's importance to water quality and unique ecological landscapes, includes the Anoka Sand Plains and federally and state designated Camp Ripley Sentinel Landscape. The Central Hardwoods FLA hosts quality wildlife habitat, unique river systems, productive timberlands, and abundant lakeshore, all threatened by current and future land use change. Agriculture is concentrated in the western and southern portions and anticipated to expand. Residential development will continue to disperse, especially along transportation corridors to the metropolitan areas of Minneapolis/St. Paul and Saint Cloud.

Counties partially included: Pine, Kanabec, Mille Lacs, Morrison, Benton, Todd, Otter Tail, Douglas, Stearns, Chisago, Anoka, Washington, and Wadena

A WETLAND IN THE MISSISSIPPI RIVER WATERSHED PROTECTED BY A FORESTS FOR THE FUTURE WORKING FOREST CONSERVATION EASEMENT AND FUNDED BY THE LESSARD-SAMS OUTDOOR HERITAGE COUNCIL.

Public Benefits/Importance

Timber and other forest commodities:

- Contains productive timberland and access to productive timberland
- Includes 29 primary forest product producers (data from 9/2013, MDA)
- Landowners participate in sustainable forest management practices including the Forest Stewardship Program, American Tree Farm Program
- Non-timber forest products include: berries, mushrooms, firewood, decorative wood for carving, vines, bark
- 10 third-party certified state forests practicing active timber management
- Tourism is increasing in this FLA and centers around outdoor recreation: hunting, fishing, and camping

Fish and Wildlife Habitat:

- Forest and forested wetlands provide for habitat, habitat connectivity, and wildlife corridors
- Provides habitat for 117 Species of Special Concern located in the forested, wetland, and aquatic habitats of the Central Hardwoods FLA
- Contains over 620,000 acres of Natural Communities of Biodiversity Significance of moderate, high, and outstanding quality (all ownerships, MBS surveys)
- Contains 31,100 acres of High Conservation Value Forests (on third party certified, state managed land)
- Forest contains or benefits necessary critical habitat: mast stands, vernal pools, wild rice lakes (147 wild rice lakes documented by DNR, 4,100 acres of migratory waterfowl feeding and resting areas)
- Central Hardwoods FLA includes 154 lakes, ponds, and wetlands of moderate, outstanding, or high biological significance
- Known fisheries resources such as: one state designated trout lake and 682 miles of designated trout streams
- DNR has identified 11 coldwater habitat refuge lakes, lakes that are predicted to withstand the effects of a climate-warmed Minnesota, in the Laurentian FLA
- Area of Greatest Continental Significance to North America Ducks, Geese, and Swans (Prairie Hardwood Transition), International 2012 North American Waterfowl Management Plan
- Audubon Important Bird Areas included in Central Hardwoods FLA: Crane Meadows NWR – Rice Skunk Wetland Complex, Kettle River-Banning State Park, Camp Ripley-Pillsbury-Lake Alexander IBA, Mille Lacs IBA, Carlos Avery IBA, St. Croix – Wild River State Park IBA, St. Croix Bluffs IBA, Avon Hills IBA

Known Threatened and Endangered Species:

- Contains known populations and/or habitat for federal endangered Snuffbox, Spectaclecase, Higgins Eye, Sheepnose and Winged Mapleleaf mussels (St. Croix River)
- Contains documented Northern long-eared bat maternity roost trees and/or Hibernacula. Northern long-eared bat is a federally threatened species.
- Contains habitat for rusty patched bumble bee, a federally endangered species, which requires undisturbed soil for hibernating queens to overwinter
- Harbors a federally endangered insect (Poweshiek Skipperling) and a federally threatened insect (Dakota Skipper)
- Contains federally threatened gray wolf habitat
- Contains 39 state endangered and 58 state threatened species

Scenic Resources:

- Federally and state designated scenic byways: Great River Road National Scenic Byway, St. Croix State Scenic Byway, Veterans Evergreen Memorial Scenic Drive, Otter Tail State Scenic Byway
- Scenic resources include federally and state designated scenic rivers: St. Croix River (National Scenic River), Rum River and Kettle River (State Wild and Scenic Rivers)
- Includes locally important and/or easily accessible scenic resources as identified in a local or regional plan where development would significantly alter the appearance of the landscape

Riparian Areas:

- Contains 100,800 acres of drinking water supply management areas with moderate to very high vulnerability
- Contains streams, ponds, rivers, lakes, and/or wetlands, with special consideration for priority watersheds and imperiled waters – includes 283 watersheds (1,138,000 acres) of full restoration, 95 watersheds (469,000 acres) of partial restoration, and 121 watersheds (447,000 acres) needing protection (watersheds described at HUC 2 scale)
- Includes undeveloped shorelines, high quality wetlands, and healthy rivers and streams

Known Cultural Resources:

- Contains known pre-contact archaeological site(s)
- National Historic Landmark sites in Central Hardwoods FLA: Charles A. Lindbergh, Sr. House, Kathio Historic District, St. Croix Recreational Demonstration Area

Public Recreation Opportunities:

- Parcel has the potential to enhance or maintain existing recreational opportunities through linkages or additional trail development
- Central Hardwoods FLA includes: 126 miles of Minnesota State Trails, 5,126 miles of Minnesota Snowmobile Trails, 55 miles of hunter walking trails, and 960 miles of Minnesota Water Trails
- There are 10 state parks and 2 state waysides included in the Central Hardwoods FLA
- 312 public water access sites

Threats to Conversion

Residential Development and Parcelization

As land and housing prices increase in an expanding circle around the Twin Cities metro area, people increasingly seek comparatively cheap land and housing further away, trading off longer commutes to work. For example, the State Highway 10 and 371 corridors are transportation routes where this has been amplified, due to the efficient, well maintained road system and rural quality of life. This is repeated throughout the Central Hardwoods FLA. Even one strategically placed house or woodlot cleared for agriculture can cause notable disruption to the surrounding natural systems by creating edge effects.

Expansion of Agriculture

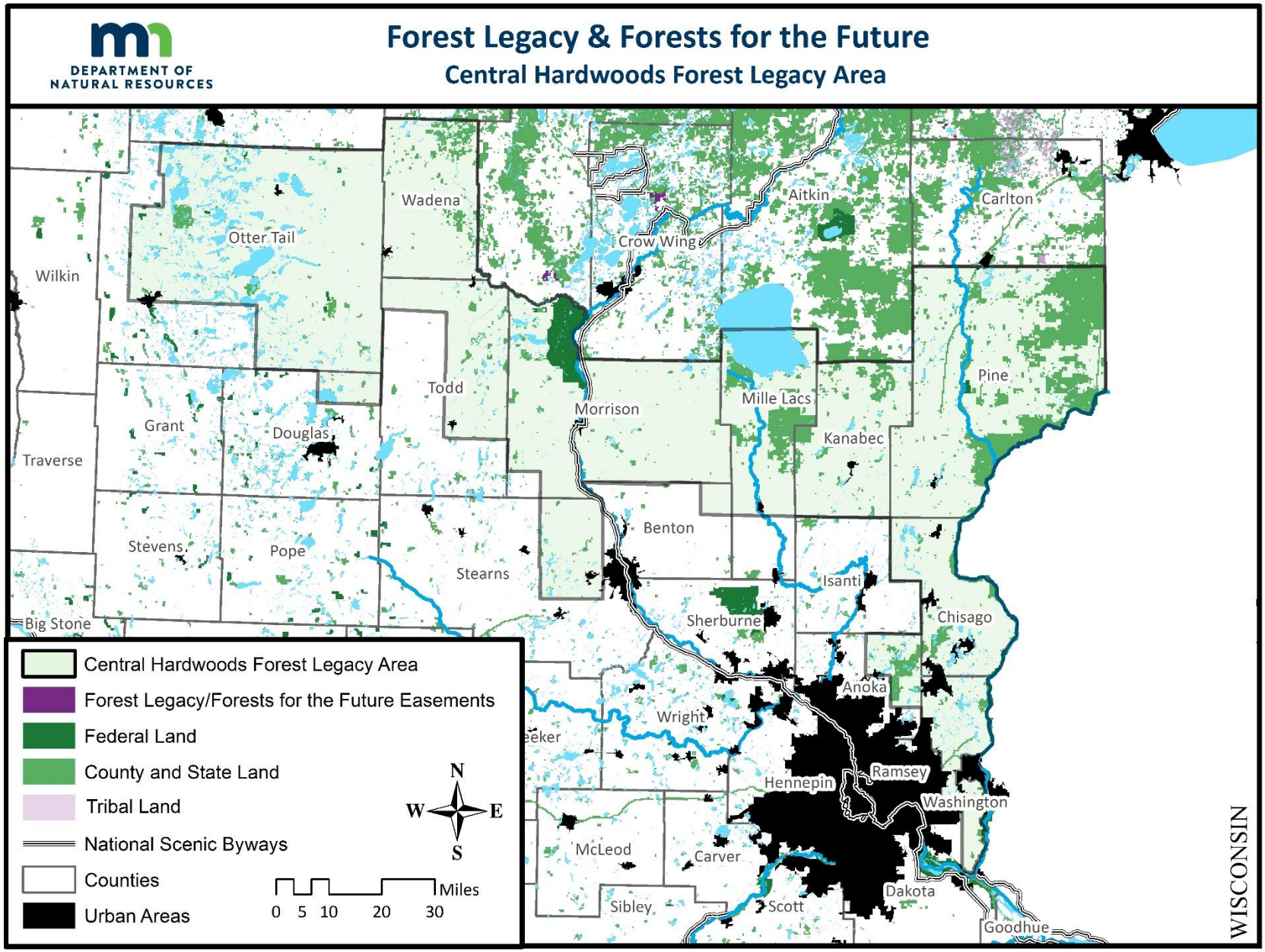
Flat, fertile soil in this FLA, including the Anoka Sand Plains, has the potential to be converted to row crop agriculture. Corn and soybeans are ideal crops for this landscape and climate and have reached record land use by area (USDA Quick Stats 2.02012). The result is high land prices which incentivizes conversion to agricultural use. In addition, there is demand and the infrastructure in this FLA for expansion of livestock containment operations, including nearby processing factories and local ground water availability.

Goals of the Central Hardwoods Forest Legacy Area

- Protect large, intact tracts of forest lands from conversion to developed or agricultural uses
- Provide buffers to public lands (including state and county forests)
- Support the protection of riparian corridors, especially those that are forested
- Protect water quality and associated drinking water quality in the upper Mississippi and Saint Croix watersheds
- Maintain or improve habitat connectivity for Species of Greatest Conservation Need, threatened and endangered species (supporting State Wildlife Action Plan)
- Promote forest health and aggressively manage invasive species

Important Environmental Values of the Central Hardwoods Forest Legacy Area

- Forest and associated habitat for wildlife
- Timber for harvest and non-timber forest commodities
- Critical landscape for both uncommon and rare species with noted “hot spots” of rare species
- Anoka Sand Plains and oak savanna plant communities in appropriate locations
- Wetlands and forest support aquatic habitat quality and source drinking water supply
- Lakes, rivers, and wetlands used for recreation


DEPARTMENT OF NATURAL RESOURCES
Forest Legacy & Forests for the Future
Central Hardwoods Forest Legacy Area
Wadena
Otter Tail
Wilkin
Crow Wing
Aitkin
Carlton
Pine
Todd
Morrison
Mille Lacs
Kanabec
Grant
Douglas
Traverse
Benton
Stevens
Pope
Stearns
Isanti
Chisago
Sherburne
Big Stone
Anoka
Wright
Ramsey
Hennepin
Washington
McLeod
Carver
Dakota
Sibley
Scott
Goodhue
WISCONSIN
Central Hardwoods Forest Legacy Area
Forest Legacy/Forests for the Future Easements
Federal Land
County and State Land
Tribal Land
National Scenic Byways
Counties
Urban Areas
N
W
E
S
0 5 10 20 30
Miles

Driftless Forest Legacy Area

Location Description

The Driftless FLA is a rugged region of bluffs and valleys in southeast Minnesota. Hardwood oak and maple forests cover the hills and are highly influenced by topography. River bottom forests grow along the major rivers and streams which feed into the Mississippi River. This stretch of the Upper Mississippi River Wetland Floodplains was designated as a Wetland of International Importance in 2010 due to its outstanding economic, social, and ecologic values (Ramsar 2017). The Driftless FLA contains numerous cold water trout streams, fed by springs associated with karst rock formations unique to Minnesota. Bluff prairies provide breaks in the habitat and are hot spots for endangered, threatened, and species of special concern. The Driftless Area is mainly rural, with farming a major land use. This area contains the majority of southern Minnesota's forest land, which is approximately 85 percent privately owned (MFRC Current Conditions and Trends, SE MN 2002).

Counties included or partially included: Houston, Fillmore, Winona, Wabasha, Olmsted, and Goodhue

FORESTED HILLSIDES IN THE DRIFTLESS FOREST LEGACY AREA WITH THE INTERNATIONALLY RECOGNIZED FLOODPLAIN FORESTS OF THE MISSISSIPPI RIVER VALLEY IN THE BACKGROUND.

Public Benefits/Importance

Timber and other forest commodities:

- Contains productive timberland and access to productive timberland
- 16 primary forest product producers are located in the Driftless FLA (data from 9/2013, MDA)
- Richard J. Dorer Memorial Hardwood Forest actively managed for third-party certified timber products
- Non-timber forest products include: berries, mushrooms, firewood, decorative wood for carving, vines, bark, roots
- Landowner participation in sustainable forest management practices including the Forest Stewardship Program, American Tree Farm Program

Fish and Wildlife Habitat:

- Provides for habitat connectivity and/or wildlife corridors
- Provides habitat for 110 Species of Special Concern
- Contains necessary critical habitat: deer yards, mast stands, vernal pools
- Contains 257,000 acres of Natural Communities of Biodiversity Significance of moderate, high, and outstanding quality (all ownerships, MBS surveys)
- Contains 13,200 acres of High Conservation Value Forests (on state land, certification requirement)
- Forested protection of waters containing significant or important fish populations and/or aquatic species of concern including 3,389 miles of designated trout streams
- Contains Audubon Important Bird Areas: Blufflands-Root River, Whitewater Valleys IBA, Vermillion Bottoms-Lower Cannon River IBA, Mississippi River – Lake Pepin IBA, Upper Mississippi NWR IBA

Known Threatened and Endangered Species

- Contains known populations and/or habitat for federal designated endangered species: Higgins Eye mussel, Sheepnose mussel, Winged Mapleleaf mussel
- Contains documented Northern Long-eared Bat maternity roost trees and/or Hibernacula. Northern long-eared bat is a federally threatened woodland species.
- Contained 48 state endangered species and 66 state threatened species
- Contains federally endangered Dwarf Trout Lily, found in mesic woodlands, federally threatened Leedy's Roseroot, prairie bush clover, and western prairie fringed orchid
- Contains Karner blue butterfly habitat: pine barrens and oak savannas on sandy soils and containing wild lupine, the only known food plant of the larvae
- Contains habitat of rusty patched bumble bee, a federally endangered species, which requires undisturbed soil for hibernating queens to overwinter

Scenic Resources:

- Contains federally and state designated scenic byways: Great River Road National Scenic Byway, Historic Bluff Country National Scenic Byway, Amish Buggy State Scenic Byway, Apple Blossom Drive State Scenic Byway, Laura Ingalls Wilder Historic Highway State Scenic Byway
- Contains the Cannon River, a state designated wild and scenic river
- Includes locally important and/or easily accessible scenic resources as identified in a local or regional plan where development would significantly alter the appearance of the landscape

Riparian Areas:

- Contains 24,200 acres of drinking water supply management areas with moderate to very high vulnerability
- Contains streams, ponds, rivers, lakes, and/or wetlands, with special consideration for priority watersheds and imperiled waters
- Harbors nine lakes of biological significance
- Contains permeable karst topography (sinkholes and springs) which allow ground and surface water to mix easily. The Decorah edge and Saint Lawrence edge are mostly forested geological layers that are recommended to remain forested for protection of water quality, since they are ground water recharge areas.

Known Cultural Resources

- Contains state or federally recognized significant cultural resources
- Contains known pre-contact archaeological site(s)
- There is a large concentration of Indian burial mounds in this area (Artz et al., 2013)

Public Recreation Opportunities

- Parcel has the potential to enhance or maintain existing recreational opportunities through linkages or additional trail development, including preserving hunting and fishing access
- 53 miles of multi-use Minnesota State Trails, 433 miles of Snowmobile Trails
- State Water Trails on the Root River, Zumbro River, Whitewater River, Cannon River, and Mississippi Rivers
- There are 7 state parks in the Driftless FLA
- 74 public water access sites

Threats to Conversion

Residential Development and Parcelization

Commuters to the urban areas of the Twin Cities, Rochester, Winona, and La Crosse, Wisconsin are willing to trade commutes for rural quality of life. Wooded land is less expensive than farmland and provides wildlife viewing and outdoor recreation opportunities. In this landscape, destruction of remaining prairie remnants and loss of forest habitat are a result of dispersed residential development, with development often taking place on the highly erodible tops of bluffs.

Expansion of Agriculture

Dairy livestock operations are common in this FLA and have the potential to be expanded. Forestland is often grazed and has the potential to be converted to pasture. High land prices and county property tax policy incentivizes conversion to agriculture, which provides annual income and lower property taxes.

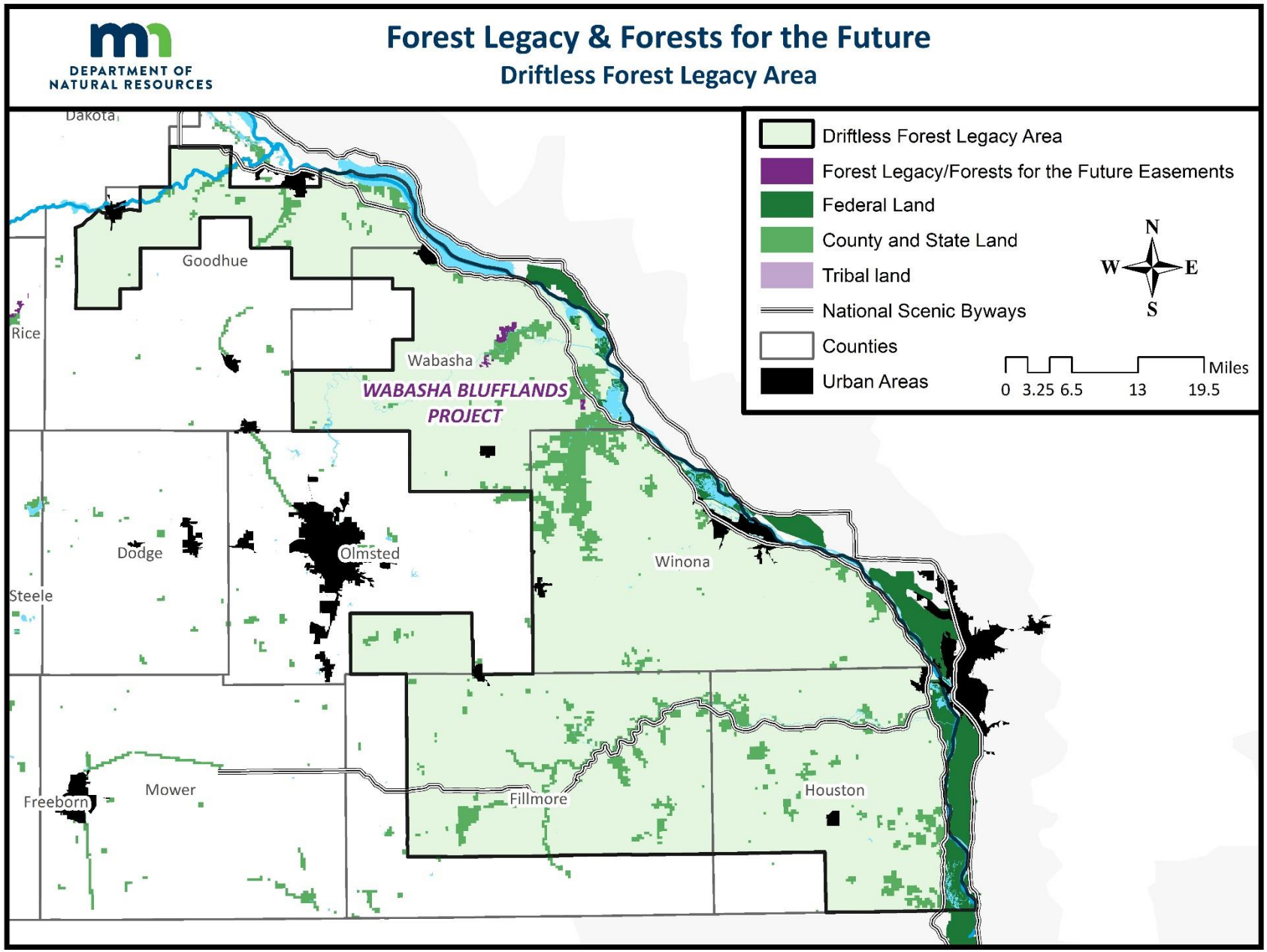
Goals of the Driftless Forest Legacy Area

- Protect forest lands, especially riparian forests from conversion to developed or agricultural uses
- Reduce forest fragmentation and enhance connectivity of forest tracts and other important habitats
- Protect drinking water quality and trout stream health
- Protect important habitat and create environmental corridors for migratory birds
- Protect rare and endangered species and communities, including protection of rare non-forest areas where appropriate
- Protect historical and cultural resources

- Complete multi-state projects, if possible

Important Environmental Values of the Driftless Forest Legacy Area

- Forest communities including: southern dry and southern dry mesic forest
- Important habitat for migratory birds
- Extensive floodplain forests including the internationally recognized Upper Mississippi Wetland Floodplains
- Unique geological landscapes with exposed sandstone and karst geologic formations
- Rare and endangered species and communities including bluff prairies and oak savanna
- National initiatives to restore and protect the Driftless Area such as the Driftless Area Landscape Conservation Initiative


DEPARTMENT OF NATURAL RESOURCES
Forest Legacy & Forests for the Future
Driftless Forest Legacy Area
Dakota
Goodhue
Rice
Wabasha
WABASHA BLUFFLANDS PROJECT
Dodge
Olmsted
Winona
Steele
Mower
Freeborn
Fillmore
Houston
Driftless Forest Legacy Area
Forest Legacy/Forests for the Future Easements
Federal Land
County and State Land
Tribal land
National Scenic Byways
Counties
Urban Areas
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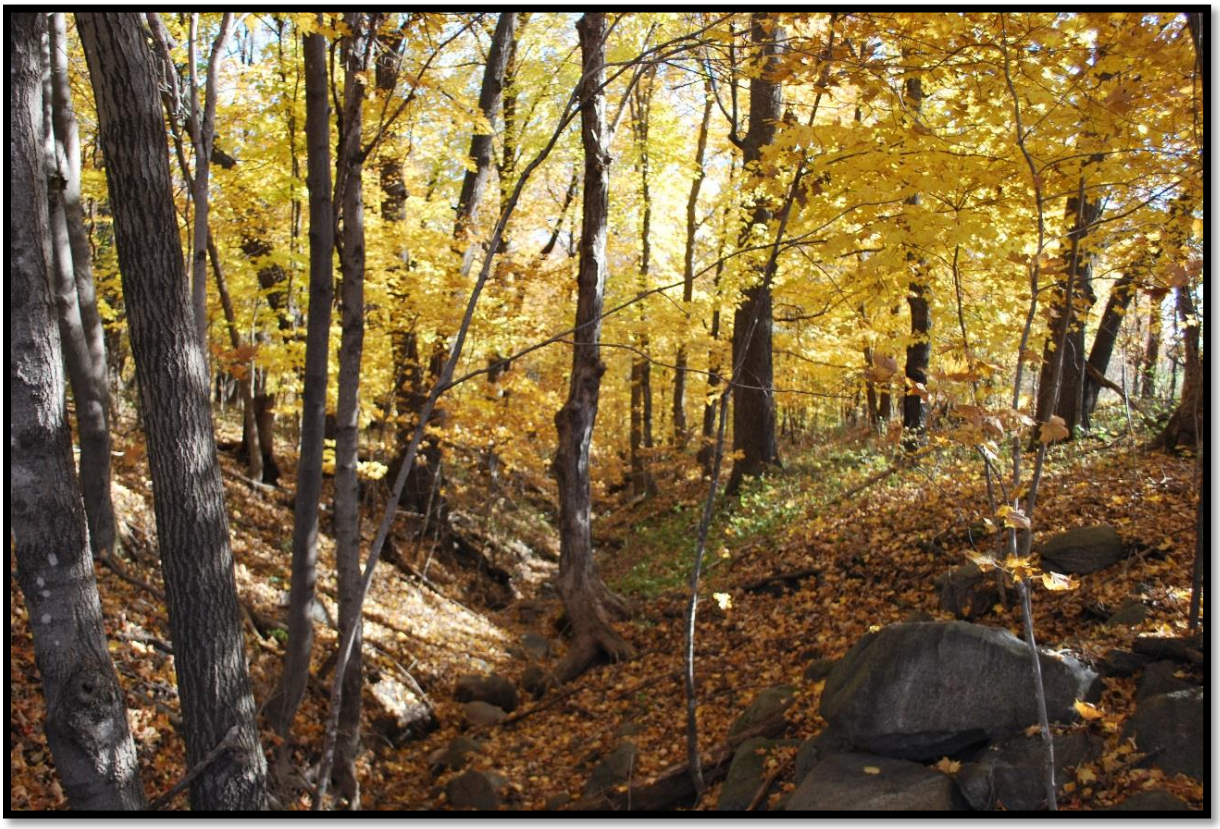
Big Woods Forest Legacy Area

Location Description

The Big Woods, from “Gran Bois”, the French explorers name for the area, is located in southcentral Minnesota. At the time of Euro-American settlement, the Big Woods was a large block of mesic deciduous forest. Now, the highly productive land has been fragmented and developed, both for agriculture and urban space. Forest makes up less than 10% of the area and development pressure continues to be the highest in the state. Northern red oak, sugar maple, basswood, and American elm were the most common tree species in this dominantly forested region, and are the major species found in the remaining forestland. The Minnesota River runs through the middle of the Big Woods, and contains bottomland forests in rich alluvial deposits. Most of the region is farmed and remaining woodlots are fragmented and privately owned.

Counties included: Wright, Meeker, McLeod, Sibley, Nicollet, Le Sueur, Rice, Blue Earth, and Waseca



A MAPLE BASSWOOD FOREST CHARACTERISTIC OF THE HIGHLY DEVELOPED BIG WOODS AND PROTECTED BY A FOREST LEGACY EASEMENT IN THE BIG WOODS FOREST LEGACY AREA.

Public Benefits/Importance

Timber and other forest commodities:

- Contains productive timberland and access to productive timberland
- Landowners participate in sustainable forest management practices including the Forest Stewardship Program, American Tree Farm Program
- 4 primary forest product producers are found in the Big Woods FLA
- Non-timber forest product include: maple syrup, burls and wood for carving, berries, mushrooms, roots

Fish and Wildlife Habitat:

- Forest and forested wetlands provide for habitat, habitat connectivity, and wildlife corridors
- Provides habitat for the 62 Species of Special Concern that have been identified as living in the forest, riparian, and water features
- Contains 43,431 acres of Natural Communities of Biodiversity Significance of moderate, high, and outstanding quality (all ownerships, MBS surveys)
- Contains 206 acres of High Conservation Value Forests (on state land)
- 19 designated trout streams for 38 miles
- Forest contains or benefits necessary critical habitat: mast stands, vernal pools, wild rice lakes (25 wild rice lakes documented by DNR in the Big Woods FLA)
- Big Woods FLA includes 36 lakes, ponds, and wetlands of moderate, outstanding, or high biological significance, 9 lakes noted for waterfowl feeding and resting
- Known fisheries resources such as: 115 stocked lakes and 1 stocked trout stream
- Audubon Important Bird Areas included in Big Woods FLA: Lake Maria State Park – Henry Larson County Forest, Pigeon Lake IBA

Known Threatened and Endangered Species:

- The Big Woods FLA and Ecological Subsection includes the following federally threatened (T) and endangered (E) species and their associated habitat: Northern Long eared Bat (T), Sheepnose mussel (E), Higgens eye mussel (E), Winged mapleleaf mussel (E), and Dwarf Trout Lily (E).
- Contains habitat of the federally threatened Northern Long-eared Bat, including maternity roost trees and/or Hibernacula
- Contains 21 state endangered and 38 state threatened species

Scenic Resources:

- Scenic resources include federally designated scenic byway, Minnesota River Valley National Scenic Byway, and state Wild and Scenic Rivers, the Cannon River and portions of the Mississippi River
- Includes locally important and/or easily accessible scenic resources as identified in a local or regional plan where development would significantly alter the appearance of the landscape

Riparian Areas:

- Contains 10,600 acres of drinking water supply management areas with moderate to very high vulnerability.
- Contains streams, ponds, rivers, lakes, and/or wetlands, with special consideration for priority watersheds and imperiled waters – includes 61 watersheds (111,000 acres) of full restoration, 133 watersheds (426,000 acres) of partial restoration, 2 watersheds (325 acres) of protection (watersheds described at HUC 2 scale)
- Includes undeveloped shorelines, high quality wetlands, and healthy rivers and streams

Known Cultural Resources:

- Contains known pre-contact archaeological site(s)
- National Historic Landmark site in Big Woods FLA: Thorstein Veblen Farmstead

Public Recreation Opportunities:

- Parcel has the potential to enhance or maintain existing recreational opportunities through linkages or additional trail development
- Big Woods FLA includes: 44 miles of Minnesota State Trails, 33 miles of Minnesota Snowmobile Trails, 2 water trails (Cannon River and Crow River, North Fork for 104 miles)
- There are 3 state parks and 1 state recreation area
- 203 public water access sites

Threats to Conversion

Residential Development/Urban Sprawl

Dispersed residential development is occurring and has the potential to continue and increase, especially near larger cities. Dispersed development is a permanent change that can alter large parts of the landscape resulting in habitat fragmentation and loss of habitat connectivity. This FLA surrounds the Minneapolis/St. Paul metropolitan area and contains Mankato, a fast growing regional center.

Expansion of Agriculture

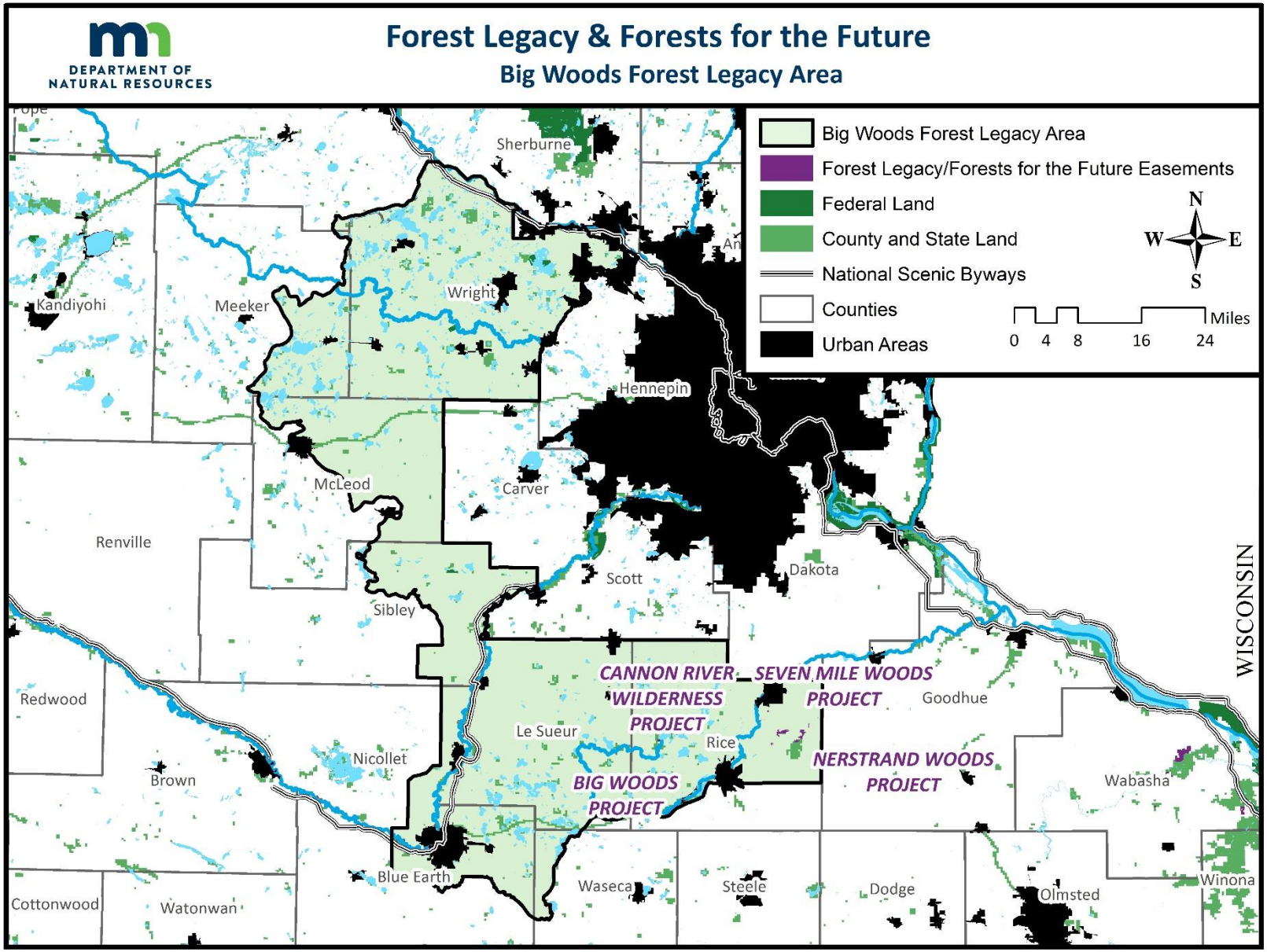
Flat, fertile soil in floodplains and along lakes and rivers in this FLA have the potential to be converted to row crop agriculture. Corn and soybeans are ideal crops for this landscape and climate and have reached record land use by area (USDA Quick Stats 2.02012). The result is high land prices which incentivizes conversion to agricultural use. In addition, there is demand and the infrastructure in this FLA for expansion of livestock containment operations.

Goals of the Big Woods Forest Legacy Area

- Protect remaining blocks of productive hardwood forests
- Maintain or improve water quality and associated drinking water quality
- Protect rare and endangered species and communities, focusing on stabilizing and increasing SGCN populations

Important Environmental Values of the Big Woods Forest Legacy Area

- Forest communities including: southern dry and southern dry mesic.
- Important habitat for migratory birds
- Extensive floodplain forests
- Rare and endangered species
- Unique and rare communities


DEPARTMENT OF NATURAL RESOURCES
Forest Legacy & Forests for the Future
Big Woods Forest Legacy Area
Big Woods Forest Legacy Area
Forest Legacy/Forests for the Future Easements
Federal Land
County and State Land
National Scenic Byways
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Sherburne
Kandiyohi
Meeker
Wright
Hennepin
McLeod
Carver
Renville
Scott
Dakota
Sibley
WISCONSIN
CANNON RIVER WILDERNESS PROJECT
SEVEN MILE WOODS PROJECT
Goodhue
Redwood
Le Sueur
Rice
Nicollet
NERSTRAND WOODS PROJECT
Brown
BIG WOODS PROJECT
Wabasha
Blue Earth
Waseca
Steele
Dodge
Olmsted
Winona
Cottonwood
Watonwan

Public Involvement Process

Public participation and involvement is a State responsibility. It has also been critical for development of this document. Through public meetings with interested citizens and stakeholders, the Division of Forestry was able to define if the FLP and MFF was needed in various regions of the state, and where to focus efforts. The following demonstrates how Minnesota citizens were included in the development of this document.

Minnesota Forest Resource Regional Landscape Committees

The Minnesota Forest Resource Regional Landscape Committees (regional landscape committees) are comprised of representatives of state, federal, and local government, local community members, private forest landowners, timber industry professionals, and environmental organizations. The six volunteer, citizen-based regional landscape committees were formed around landscape regions with unique ecological, social, and economic characteristics to aid landscape level projects, planning, and coordination. DNR personnel, including the Forest Legacy Coordinator, initially presented to the six regional landscape committees in the summer of 2016, asking if there was a need for the FLP and MFF in each region, which forested areas should be included, and what FLP objectives would contribute to their regional goals. In fall and winter 2016/17, DNR FLP representatives solicited feedback to these questions and were able to determine need for the FLP, delineate boundaries for five new FLAs, and refine objectives and threats to the forests in individual FLAs.

Internal and External Stakeholders

Internal DNR stakeholders were asked to review the updated AON. The required internal stakeholders were planning, land management, and forest habitat specialists from the Division of Fish and Wildlife. To aid in plan review, additional comments were requested from Division of Lands and Minerals, Division of Parks and Trails, and Division of Ecological Resources and Waters.

Comments were requested from external stakeholders, representatives of groups with interest in private forestland conservation. Organizations including federal agencies and military units were required to be included in the review process. These required reviewers include planners, land management professionals, and foresters from: Superior National Forest, Chippewa National Forest, Bureau of Indian Affairs, US Fish and Wildlife Service, Voyageurs National Park, US Army Corps of Engineers, Natural Resources Conservation Service, and Camp Ripley Army National Reserve. Minnesota State Technical Committee were also asked to review the AON update. Cooperating organizations include: The Nature Conservancy, The Trust for Public Land, the Minnesota Land Trust, the Conservation Fund, MFRC Regional Forest Landscape Committees, and MN Board of Water and Soil Resources. The draft was available for comments from April 1 through April 30 of 2017.

Comments and suggestions to the draft were incorporated into the final version in May 2017. Additional metrics were added to the Forest Legacy Areas including: National Natural Landmarks, Cold Water Biological Communities identified by Division of Fish and Wildlife (Cisco Lakes), Lakes surveyed by DNR Fisheries, and Hunter Walking Trails. To the Headwaters FLA, a threat to conversion to potato fields was added. The Central Hardwood FLA was extended in the southeast to include most of the Lower Saint Croix FLA from the 2000 AON. Clarity was improved with changes to phrasing and added definitions.

Minnesota Forest Stewardship Committee

Under FLP AON guidelines, each state is required to have a State Forest Stewardship Coordinating Committee (SFSCC) whose duties are defined in Sect. 19(b) of the CFAA (16 USC 2113). The SFSCC makes recommendations to the state lead agency regarding the AON, amendments to the AON, and

determination of Forest Legacy project priorities. The Minnesota Forest Stewardship Committee (FSC) serves as the official SFSCC. Its members include representatives from federal, state, and local government, consulting foresters, environmental organizations, forest landowners, forest industry, and habitat and watershed focused groups. The council provides a forum to promote the appropriate stewardship and utilization of healthy forest ecosystems in Minnesota. The FSC was able to review and comment on the draft AON at the May 25, 2017 meeting held in Cambridge, MN. A few additions to the draft were suggested and have been incorporated. At the May 25, 2017 meeting, the FSP Committee approved the updated AON with incorporated suggestions.

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MN DNR. 1999. *The forest legacy program in Minnesota: statewide assessment of need.* 101 pp.

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Minnesota Forest Resources Council. *Sustaining Minnesota Forest Resources: Voluntary Site-Level Forest Management Guidelines for Landowners, Loggers and Resource Managers.* 2013. Minnesota Forest Resources Council, St. Paul, Minnesota.

Minnesota Forest Resource Council and Minnesota Forest Resources Partnership. 2010. *25-year vision for Lessard-Sams Outdoor Heritage Council investments in Minnesota Forests*. 11 pp.

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U.S. Environmental Protection Agency (USEPA). 2009*. National lakes assessment: a collaborative survey of the nation's lakes.* EPA 841-R-09-001. USEPA, Office of water and office of research and development, Washington, D.C. 103 pp.

Appendix 1: Data References

These references specifically identify the public benefits and importance of Minnesota's newly defined Forest Legacy Areas. They were queried spatially using GIS in January and February of 2017 from DNR developed information. Most, if not all, of these ArcMap layers and shapefiles are available online from the MNDNR data deli.

Timber and other forest commodities

Primary Forest Product Producers. Minnesota Department of Agriculture (MDA). *Sawmill locations in the state of Minnesota*. Content date: 9/18/13.

State Forests. Minnesota Department of Natural Resources (MNDNR). *State Forest Statutory Boundaries and Management Units. Minnesota's 58 state forests were established to produce timber and other forest crops, provide outdoor recreation, protect watersheds, and perpetuate rare and distinctive species of native flora and fauna*. Content date:: 2/3/17.

Fish and Wildlife Habitat

State Species of Special Concern. MNDNR Rare Species Guide. Searched by county on 2/14/2017 & 6/22/17: http://www.dnr.state.mn.us/rsg/index.html

State significant natural communities (MBS surveys). Minnesota Biological Survey, MNDNR. *This data layer represents areas with varying levels of native biodiversity that may contain high quality native plant communities, rare plants, rare animals, and/or animal aggregations*. Content updated 2/2/17.

High conservation value forest. MNDNR. *The High Conservation Value Forests (HCVFs) were selected by Interdisciplinary Regional Teams from a subset of sites of Biodiversity Significance identified by the Minnesota Biological Survey (MBS) that was recommended for consideration by Division of Ecological and Water Resources biologists.* Content date: 5/18/2015.

State Designated Trout Streams. MNDNR. *This layer shows legally designated trout streams and trout stream tributaries as identified in Minnesota Rules Chapter 6264.* Content updated: 08/21/2015.

Trout Lake Designation. MNDNR. *This layer shows legally designated trout lakes as identified in Minnesota Rules Chapter 6264.0050. These are inland lakes managed by DNR Fisheries for trout species (not including lake trout).* Content date: 06/15/2004

Migratory Waterfowl Feeding and Resting Areas. MNDNR. *A polygon feature class of lakes completely or partially designated as Migratory Waterfowl Feeding & Resting Areas, as listed in the Minnesota Hunting & Trapping Regulations Handbook.* Content Date: 12/30/2016.

Wild Rice Lakes - Wild Rice Locations on Lakes and Rivers Identified by DNR Wildlife. MNDNR. *This is a point coverage of wild rice locations in Minnesota lakes and rivers, prepared to support the document: Natural Wild Rice in Minnesota: A Wild Rice Study. February 15, 2008.* Content Date: 02/01/2017.

Lakes of biological significance. MNDNR. *Unique plant or animal presence was the primary measure of a lake's biological significance. Lakes were rated and grouped for each of the following communities: aquatic plants, fish, birds, and amphibians. Lakes were assigned one of three biological significance classes (outstanding, high, or moderate).* Content date: 04/23/2015

Audubon Important Bird Areas. Audubon Minnesota. *The data was prepared for the Important Bird Area (IBA) project in the Audubon Minnesota*. Content date: 01/14/2015

Known Threatened and Endangered Species

USFWS Endangered species data. Searched by state on 2/13/2017: https://ecos.fws.gov/ecp0/reports/species-listed-by-state-report?state=MN&status=listed

MNDNR Rare Species Guide. Searched by county on 2/14/2017: http://www.dnr.state.mn.us/rsg/index.html

Scenic Resources

National Scenic Byways. MNDNR. *This file represents the collection of All-American Roads and National Scenic Byways as designated by United States Department of Transportation, Federal Highway Administration, and National Scenic Byways Program.* Content date: 2012.

State Scenic Byways. MNDOT. http://www.dot.state.mn.us/scenicbyways (searched on 2/14/17)

Riparian Areas

Drinking Water Supply Management Areas. Minnesota Department of Health. *Drinking water supply management area (DWSMA) vulnerability is an assessment of the likelihood for a potential contaminant source within the drinking water supply management area to contaminate a public water supply well based on the aquifer's inherent geologic sensitivity; and the chemical and isotopic composition of the groundwater. This dataset was developed with the intention of protecting the public drinking water supply and complies with the federal Safe Drinking Water Act, United States Code, title 42 and the State of Minnesota Rule (parts 4720.5100 to 4720.5590).* Content date: 09/01/2014.

DNR Catchments with Lake Protection and Restoration Strategies (for watershed data). MNDNR. Content date:

Known Cultural Resources

National Historic Landmarks in Minnesota. Minnesota Historical Society. http://www.mnhs.org/shpo/nrhp/nhl.php (data accessed: 2/14/2017).

Natural National Landmarks in Minnesota. *The National Natural Landmarks Program recognizes and encourages the conservation of sites that contain outstanding biological and geological resources.* National Park Service. https://www.nps.gov/subjects/nnlandmarks/index.htm (data accessed: 5/10/2017).

Public Recreation Opportunities

Superior Hiking Trail. MNDNR. *Superior Hiking Trail main trail, spurs, and campsite spurs for completed trail throughout Cook, Lake, St. Louis and Carlton counties.* Content date: 02/01/2017.

Minnesota State Trails (MS 85.015). MNDNR. *This dataset represents State Trails maintained by Minnesota DNR Division of Parks and Trails pursuant to MS 85.015. This dataset represents State Trails that have been legislatively authorized and physically constructed and that are maintained by the MNDNR Division of Parks and Trails. These trails, which pass through a combination of state-owned lands and acquired easements, have multiple use status with specific activities supported in designated sections.* Content date: 2/1/17.

Minnesota Snowmobile Trails. MNDNR. *This shapefile represents the state monitored snowmobiling opportunities, including trails within state parks, state forests and other state owned lands. The data also shows snowmobile trails funded through the Grant-In-Aid Snowmobile system.* Content date: 2/2/17.

Hunter Walking Trails. MNDNR. *Hunter walking trails are managed to provide non-motorized hunting opportunities. Management may include maintenance of parking lots, gates, signs, mowing, and habitat management for wildlife. Some of these trails are managed in cooperation with other landowners.* Content date: 2/2/2017.

Minnesota Water Trails. MNDNR. *This dataset represents state water trails in the State of Minnesota as designated through legislation and recognized by the Department of Natural Resources.* Content date: 2/1/2017.

Public water access sites in Minnesota. MNDNR. *This geodatabase contains authoritative GIS data for MNDNR Parks and Trails-administered public water access sites. It also contains information about free public water access sites administered by other organizations.* Content date: 11/10/16.

State Parks, Recreation Areas, and Waysides. MNDNR. *A point file of State Park, State Recreation Area, and State Wayside Area reference locations, individually positioned at large scale to represent a common destination within the park such as its entrance or visitor's center.* Content date: 2/3/2017.

Wild and Scenic Recreational Rivers. MNDNR. *This layer contains designated Wild, Scenic & Recreational Rivers in Minnesota as specified in 1997 MN Rules 6105. Segments of rivers are coded as state-designated (Y), federally-designated (F), or not designated (N).* Content date: 1997.

Appendix 2: Guide to the Forest Legacy Program requirements in the 2010 State Forest Action Plan

The Minnesota 2010 Statewide Forest Action Plan is being submitted, with this document, for approval as Minnesota's demonstration of need for FLP involvement. This document is intended to be incorporated into the 2020 Forest Action Plan. Until then, this document will serve as a general guide to locate each of the required FLP components in the 2010 Forest Action Plan. Please reference the following sections for information important to the FLP.

1. Forest Resources, including:
    a. Aesthetic and scenic values:
        i. Indicator 31: Riparian Buffers (Assessment p.65)
        ii. Indicator 42: Roads and Access (Assessment p.84)
        iii. Indicator 47: Site-level Guidelines and Monitoring (Assessment p.94)
        iv. Recreational Values (Assessment p.133)
    b. Fish and wildlife habitat:
        i. Indicator 11: Bird Populations (Assessment p.27)
        ii. Indicator 12: Mammal Populations (Assessment p.28)
        iii. Indicator 31: Riparian Buffers (Assessment p.65)
        iv. Indicator 47: Site-level Guidelines and Monitoring (Assessment p.94)
    c. Mineral resource potential:
        i. State Trust Lands (Assessment p.125)
    d. Public recreation opportunities:
        i. Indicator 42: Roads and Access (Assessment p.84)
        ii. Indicator 43: Recreation Use Trends (Assessment p.85)
        iii. Recreational Use of Forest Lands (Assessment p.117)
        iv. Recreational Values (Assessment p.133)
        v. 2008-2012 Adapting to Change – SCORP Minnesota's Comprehensive Outdoor Recreation Plan (Strategies p.18)
    e. Soil productivity:
        i. Indicator 27: Total Soil Carbon (Assessment p. 62)
        ii. Indicator 28: Estimated Bare Soil (Assessment p.64)
        iii. Indicator 47: Site-level Guidelines and Monitoring (Assessment p.94)
    f. Forest Products and Timber Management Opportunities
        i. Indicator 1: Forest Land Trends (Assessment p.9)
        ii. Indicator 2: Forest Density (Assessment p.12)
        iii. Indicator 13: Plant Populations (Assessment p.30)
        iv. Indicator 14: Trends in the Amount and Condition of Timberland (Assessment p.31)
        v. Indicator 36: Production of Roundwood (Assessment p.75)
        vi. Indicator 37: Production and Consumption of Roundwood Equivalent (Assessment p.75)
        vii. Indicator 38: Trends in Forest Products Manufacturing Sector (Assessment p.76)
        viii. Indicator 39: Timber Imports/Exports (Assessment p.78)
        ix. Indicator 45: Proposed Biomass Facilities and Harvest Development (Assessment p.91)
        x. Indicator 46: Non-traditional Forest Products (Assessment p. 92)
        xi. Indicator 48: Forest Certification (Assessment p. 95)

xii. Support of a Healthy Forest Products Industry, Use of woody Biomass for Energy (Assessment p.116)
xiii. Woody Biomass (Assessment p.126), Small Mills/Medium Mills (Assessment p.127), Large Mills (Assessment p.128)

g. Watershed values including water quality protection
i. Indicator 25: Forests, Water and People (Assessment p.59)
ii. Indicator 26: Forested Watersheds (Assessment p.60)
iii. Indicator 31: Riparian Buffers (Assessment p.65)
iv. Indicator 47: Site-level Guidelines and Monitoring (Assessment p.94)
v. Maintenance and protection of water quality and quantity (Assessment p.111)
vi. Issue: Maintenance and Protection of Water Quality and Quantity (Strategies p.35)

2. Present and Future threat of conversion to nonforest uses/conversion threats
a. Indicator 3: Fragmentation/Parcelization of Forest Lands (Assessment p.13)
b. Indicator 4: Sale of Forest Industry Lands (Assessment p.15)
c. 2008 Forests for the Future Strategic Report (Strategies p.9)
d. Issue: Maintenance of the State's Forest Land Base (Strategies p.33)
3. Historic uses of forest areas, and trends and projected future uses of forest resources
a. Indicator 24: Urban Land Use Change (Assessment p. 56)
b. Indicator 25: Forests, Water and People (Assessment p.59)
c. Indicator 26: Forested Watersheds (Assessment p.60)
d. Indicator 38: Trends in Forest Products Manufacturing Sector (Assessment p.76)
e. Indicator 39: Timber Imports/Exports (Assessment p.78)
f. Indicator 43: Recreation Use Trends (Assessment p.85)
g. Indicator 44: Existing Biomass Facilities and Harvest Development (Assessment p.91)
h. Indicator 45: Proposed Biomass Facilities and Harvest Development (Assessment p.91)
i. Indicator 46: Non-traditional Forest Products (Assessment p. 92)
j. Indicator 47: Site-level Guidelines and Monitoring (Assessment p.94)
k. Indicator 48: Forest Certification (Assessment p. 95)
l. Issue: Support of a Healthy Forest Products Industry (Strategies p.45)
4. Current ownership patterns, size of tracts, and trends and projected future ownership patterns
a. Indicator 1: Forest Land Trends (Assessment p.9)
b. Indicator 3: Fragmentation/Parcelization of Forest Lands (Assessment p.13)
c. Indicator 4: Sale of Forest Industry Lands (Assessment p.15)
d. Indicator 5: Housing Density Projections (Assessment p.15)
e. Indicator 23: Land Use Change (Assessment p. 55)
f. Indicator 24: Urban Land Use Change (Assessment p. 56)
g. Maintenance of Minnesota's Forest Land Base: Increasing Threats of Forest Fragmentation and Parcelization (Assessment p.110)
h. Risk of Development (Assessment p.122)
5. Cultural Resources that can be effectively protected
a. Indicator 47: Site-level Guidelines and Monitoring (Assessment p.94)
6. Outstanding Geologic Features
a. Issue: Maintenance and Enhancement of Rare Ecological Features (Strategies p.50)
7. Threatened and endangered species
a. Indicator 9: Federally Listed Forest Associated Species (Assessment p.21)
b. Indicator 10: State Listed Forest Associated Species (Assessment p.22)
c. Indicator 47: Site-level Guidelines and Monitoring (Assessment p.94)

    d. 2006 Tomorrow's Habitat for the Wild and Rare: An Action Plan for Minnesota Wildlife (Strategies p.17)
8. Other Ecological values
    a. Indicator 8: Reserved Lands (Assessment p. 20)
    b. Indicator 10: State Listed Forest Associated Species (Assessment p.22)
9. Public recreational opportunities
    a. Indicator 42: Roads and Access (Assessment p.84)
    b. Indicator 43: Recreation Use Trends (Assessment p.85)
    c. Issue: Recreational Use of Forest Lands (Strategies p.52)
10. Protected lands in the State, to the extent practical; including Federal, State, and municipal lands and land trust organization lands
    a. Indicator 1: Forest Land Trends (Assessment p.9)
    b. Indicator 7: Protected Forest Land (Assessment p.19)
    c. Indicator 40: Forest Conservation Easements (Assessment p.79)
    d. Importance of Publicly Owned and Protected Lands (Strategies p.22)

Appendix C: Private Forest Management Strategic Plan Document: A System Framework for Minnesota's Family Owned Forests

Minnesota Department of Natural Resources

A SYSTEM FRAMEWORK FOR MINNESOTA'S FAMILY-OWNED FORESTS

Report and Recommendations by the PFM System Planning Team, a project subcommittee of the Minnesota Forest Stewardship Committee

Approved December 2015

Approved by Project Co-Sponsors: Forrest Boe, Director, Division of Forestry & State Forester, Department of Natural Resources
Cathee Pullman, State Conservationist, USDA Natural Resources Conservation Service
Carleen Yocum, Field Representative, USDA Forest Service

Submitted by: Gary Michael, Cooperative Forest Management Supervisor, DNR Division of Forestry
on behalf of the PFM System Planning Team, a subcommittee of the Minnesota Forest Stewardship Committee

TABLE of CONTENTS

PFM System Framework

Executive Summary

The DNR's Division of Forestry, working together with the USDA Natural Resources Conservation Service (NRCS), the USDA Forest Service (USFS), the Board of Soil and Water Resources (BWSR), the Minnesota Forest Resources Council (MFRC), and the Minnesota Forest Stewardship Committee (MNFSC), is uniquely positioned to lead the system effort in support of family-owned forests, which represents the largest forest landowner group in Minnesota. These forests play an important contributing role in addressing the strategic drivers of climate change, renewable energy, declining outdoor recreation, water quality and landscape changes from growth and development.

At the June 2014 meeting of the Minnesota Forest Stewardship Committee, the DNR State Forester and NRCS State Conservationist charged a team of volunteers to develop a system framework to focus on sustainable forest management and diverse and healthy family-owned forests for future generations in Minnesota. They outlined a number of factors for the team to consider in a strategic review to better align and guide the Minnesota Forest Stewardship Committee's collective efforts to address current and future challenges and opportunities.

The proposed goal statement and strategic objectives contained within this document are the result of a facilitated process with a cross-sector team of 15 highly dedicated individuals. Should the work of this team be endorsed by the Minnesota Forest Stewardship Committee, the team recommends expanding opportunities for broader involvement in refining and implementing the strategic goal statement and objectives identified in this report. The purpose of the system framework is to provide the roadmap for detailed planning and implementation to help ensure that Minnesota's family-owned forests continue to provide substantial public benefits, improving Minnesotans' quality of life.

Key elements for moving forward with a systems approach to Minnesota's family-owned forests:

1. **VISION:** A clear vision and measures of success for Minnesota's family-owned forests
2. **LEADERSHIP & COLLABORATION:** A sustainable leadership and collaboration commitment among the original sponsoring organizations: DNR, NRCS, and USFS in combination with two additional key partners in the BWSR and the MFRC.
3. **SPONSORSHIP & SUPPORT:** Ongoing Minnesota Forest Stewardship Committee (MNFSC) sponsorship and support for a system approach to assure services for family forest landowners that encourage sustainable forest management and diverse and healthy forests for generations to come.

4. **ENGAGEMENT:** Full system engagement with involvement and representation of family forest owners, partners and stakeholders

Context: The State of Private Forest Land in Minnesota

Minnesota has a long and respected history of forestry excellence with an over 100-year track record of success in managing our state's beautiful, valuable, and diverse forests. Minnesota is also a leader in the federal landscape stewardship initiatives focused on proactive, strategic and collaborative approaches to private forest management.

As a key leader in effective forest health, management and protection, the DNR Division of Forestry plays a critical role integrating state support of a viable forest products industry with its responsibility for maintaining healthy, sustainable forests today and into the future. The Division of Forestry recognizes the importance that privately owned forests play in our state's overall quality of life. The division remains committed to providing system leadership working closely with the Minnesota Forest Stewardship Committee to develop strategies that support family-owned and other privately held forests such as those owned by corporations and other entities.

With increased demands on limited state resources, funding to support private forest lands continues to be a significant challenge. The PFM System Planning team believes a system plan that combines our collective talents and resources has the best opportunity to adapt and respond to the changes forests face in Minnesota.

The Importance of Family Forests

- Largest Forest Landowner Group in Minnesota
  - 6.8 million acres
  - 40 percent of forests in Minnesota are private and nonindustrial; referred to as family-owned forests in this report
  - Approximately 194,000 landowners
- Land that significantly impacts
  - Forest Products
  - Wildlife Habitat
  - Clean Air
  - Clean Water
  - Soil Conservation
  - Landscape Aesthetics
  - Outdoor Recreation
  - Cultural, Historical and Educational Benefits

Photos courtesy of: John Wallin, Pequot Lakes, MN

Of Minnesota's 6.8 million acres of family owned forest lands…

- **An estimated 618,000 acres have current (10 years old or less) registered stewardship plans as of July 1, 2014 (including nonforested lands)***
  - These acres are covered by approximately 4,600 individual plans

  * *Note: We do not know how many additional acres are covered by plans not registered with DNR*

- **Approximately 400,000 of those acres are forested – which translates to only 6 percent of our family-owned forest lands with registered current stewardship plans**

- **Other important trends and facts:**
  - Minnesota's family owned forest lands are concentrated in a band spanning from northwest to southeast
  - Since June 2012, most Woodland Stewardship plans are now being written by private consulting foresters
  - Currently, there is not a propertywide planning product for family forest landowners with less than 20 acres
  - Private timber harvests have greatly decreased since about 2007 despite being the largest forest landowner group

Funding and capacity challenges to the system impacting our family-owned forest lands include...

- **DNR:**
  - 75 percent budget cut to Minnesota DNR Private Forest Management (PFM) in 2011
  - Reduction in DNR PFM field foresters from 28 FTEs to 10 FTEs in a span of 15 years
- **USFS State and Private Forestry Program:**
  - 15 percent reduction of previously dedicated State Core grant funding moved into federal competitive process starting in 2008
- **NRCS:**
  - State Forester reduced to .5 FTE for forestry related work
- **BWSR:**
  - Forester position vacant
- **U of M:**
  - University of Minnesota Extension forestry positions left unfilled, impacting programming capacity

Photo courtesy of: John Wallin, Pequot Lakes, MN

State Forest Action Plans

Each state is required by the U.S. Forest Service to create a State Forest Action Plan to help guide the direction in which the state's stewardship program and assistance to family forest landowners is implemented. Key components developed within State Forest Action Plans include:

- **State-wide assessment of forest resources:** provides an analysis of forest conditions and trends in the state, threats to forest lands and resources, and delineates priority areas or regions of the state.
- **State-wide forest resource strategy:** provides long-term strategies for investing state, federal, and other resources to address threats to forest resources and manage priority landscapes identified in the state-wide assessment, focusing federal investment where it can most effectively stimulate or leverage desired action and engage multiple partners.

State Forest Action Plans should address the following national priorities and associated management objectives:

1. **Conserve Working Forest Lands:** Conserving and managing working forest landscapes for multiple values and uses.
    - Identify and conserve high priority forest ecosystems and landscapes.
    - Actively and sustainably manage forests.
2. **Protect Forests from Harm:** Protect forests from threats, including catastrophic storms, flooding, insect or disease outbreak, and invasive species.
    - Restore fire-adapted lands and reduce risk of wildfire impacts.
    - Identify, manage and reduce threats to forest and ecosystem health.
3. **Enhance Public Benefits from Trees and Forests:** Including air and water quality, soil conservation, biological diversity, carbon storage, and forest products, forestry related jobs, production of renewable energy and wildlife.
    - Assist communities in planning for and reducing wildfire risks.
    - Maintain and enhance the economic benefits and values of trees and forests.
    - Protect, conserve, and enhance wildlife and fish habitat.
    - Connect people to trees and forests, and engage them in environmental stewardship activities.
    - Manage and restore trees and forests to mitigate and adapt to global climate change.

The PFM System Framework contains strategies and implementation action steps that support these three national priorities and are designed to be incorporated into Minnesota's State Forest Action Plan.

Looking Toward the Future of Minnesota's Family-Owned Forests:

- We have an opportunity to positively impact over 6 million acres of important, private forested lands in Minnesota
- We need to secure and organize the resources allocated to serve these family forest acres and their landowners
- For the next several years, we may also have a unique opportunity to seek support for this work through state legacy funds generated by the Clean Water, Land and Legacy Amendment that was approved by Minnesota voters in 2008
- There is a strong, shared interest by the PFM System Planning Team to develop a collaborative system approach to help the Minnesota Forest Stewardship Committee increase our collective response and better serve Minnesota

As an agency... There is an urgent need for the Minnesota Department of Natural Resources (DNR) to develop cohesive and effective departmental strategies to address changing perceptions, demographics, climates, and landscapes. As part of the DNR 10-Year Strategic Plan, the DNR will develop new models for private lands conservation delivery through work with other local, state, and federal agencies and non-government organization (NGO) partners. These models will develop cooperative efforts to provide technical, planning and financial assistance to private landowners, with a focus on implementing Farm Bill conservation programs.

As a division… The DNR Division of Forestry faces both an increased competition for declining general fund dollars and a declining Forest Management Investment Account (FMIA). With the current two largest sources of division funding facing significant threats, Forestry must look for strategic and operational opportunities to stabilize and ideally enhance funding levels and sources. It is imperative that strategies be put in place to help the division determine 1) clear areas of work priorities, 2) how work effectiveness and efficiencies can best be accomplished, and 3) how integrated strategies and creative partnerships can leverage other funding sources.

As the Minnesota Forest Stewardship Committee... The Forest Stewardship Committee, with representation from a diverse group of stakeholders, will address statewide Forest Stewardship Program implementation issues, opportunities and concerns and support the overall program coordination per the national standards and guidelines established for the federal Forest Stewardship Program.

As we face the future together... The DNR Division of Forestry will continue to provide leadership within the greater community of forest interests to sustain funding and make each dollar work harder for conservation and economic prosperity. Together with our partners throughout the state and across the nation, we will build on successes related to integrated land management and collaboration. Together we will increase the impact of united interests for the benefit of Minnesota's public and privately owned forests.

PFM System Framework Overview

This document is the initial draft of a System Framework to provide guidance for the future of Minnesota's family-owned forests. Family-owned forests are a major component of what is referred to within the industry as Private Forest Management (PFM). The framework is designed to offer an overarching system goal as well as a series of high-level strategic objectives and strategies for consideration and further development by the Minnesota Forest Stewardship Committee. The system framework was developed by a team of 15 people from around the state representing the broad range of interests in the future of Minnesota's family-owned forests. The team was sponsored and convened by the Department of Natural Resources (DNR) Division of Forestry with team leadership provided by Gary Michael, DNR Cooperative Forest Management Supervisor. The DNR engaged Holly Johnson of Lanterna Consulting contracted through Minnesota Management and Budget (MMB) Management Analysis & Development (MAD), to guide and facilitate the PFM System Planning team through a series of seven meetings to develop this System Framework Report and Recommendations.

A progress check-in and feedback meeting with co-sponsors Forrest Boe, DNR State Forester, Don Baloun, NRCS State Conservationist and Carleen Yocum of the US Forest Service was conducted on December 16, 2014. The meeting was focused on gaining sponsor input on the PFM System Planning team's draft strategic goal statement and objectives to enrich the planning team's continued work. This System Framework incorporates their feedback and represents the complete initial draft.

It is the hope of the PFM Planning Team that this initial draft plan will serve as the framework for PFM practitioners, government agencies and other key partners who provide services to family forest landowners. This plan is designed to engage and organize the Minnesota Forest Stewardship Committee in a leadership role in assuring services for Minnesota's family forest landowners to encourage sustainable forest management and diverse and healthy forests for generations to come.

The draft System Framework includes the following components:

- **Goal Statement** – A concise statement of our leadership philosophy and goal for Minnesota's Family-Owned Forests
- **Strategic Objectives** – The nine primary areas of strategic focus that will move us toward achieving our goal statement
- **A Service Delivery Model (SDM)** - The creation of a service delivery model is one of the strategic objectives benefitting both service providers and family forest landowners. The service delivery model is a practical approach for providing a range of service offerings within three main types of services: self service options, land management planning and project planning.
- **Supporting Strategies and Implementation Action Steps** – Initial strategies were identified by the planning team to provide an "implementation starter kit" to support more detailed implementation planning. The implementation action steps also include proposed action owners and timelines.
- **Proposed System Framework Responsibilities** - A proposed series of responsibilities by major system members to promote clear roles, systemwide collaboration and successful implementation.

PFM System Planning Team

The PFM System Planning team was composed of 12 members of the Minnesota Forest Stewardship Committee along with three non-MNFSC members (two private forestry consultants and one DNR PFM lead forester) who volunteered to serve on the team as representatives of the broad and diverse range of system stakeholders in the future of Minnesota's family-owned forests. The team was developed as a project team subcommittee for the full Minnesota Forest Stewardship Committee and was created and sponsored by a joint request from DNR State Forester Forrest Boe and NRCS State Conservationist Don Baloun (now retired) in response to statewide needs identified at the June 2014 meeting.

Co-Sponsors: Forrest Boe, *Director & State Forester, DNR Division of Forestry and Don Baloun, State Conservationist, USDA Natural Resources Conservation Service (now retired)*
Project Subcommittee to: *Minnesota's Forest Stewardship Committee (MNFSC)*

Team Members (*listed alphabetically*):

1. **Bernu, Jan** - *Private Forestry Consultant, Cloquet*
2. **Bundy, Peter** - *Private Forestry Consultant, Minneapolis*
3. **Ekola, Lindberg** - *Minnesota Forest Resources Council (MFRC), Melrose*
4. **Gatzlaff, Brad** —*Private Forestry Consultant, Northfield*
5. **Kopp, Ginger** - *USDA Natural Resources Conservation Service (NRCS), St Paul*
6. **Kroll, Tom** - *Forester, Saint John's Abbey and University, Collegeville*
7. **McDougall, Dennis** - *USFS State and Private Forestry, St. Paul*
8. **Miller, Tony** - *DNR Forestry Specialist, Mora*
9. **Provost, Jodie** - *DNR Fish and Wildlife, Forest Habitat Team, Aitkin*
10. **Sagor, Eli** - *University of Minnesota Extension, St. Paul*
11. **Steward, Dan** - *Board of Soil and Water Resources (BWSR), Brainerd*
12. **Thompson, Dennis** - *Aitkin County SWCD Forester, Minnesota Forestry Association representative (MFA)*
13. **Wallin, John** - *Nationally Recognized Family Forest Owner, Pequot Lakes*
14. **Zumbahlen, Bruce** — *Minnesota Logger Education Program (MLEP), Minnesota Forestry Association (MFA), Tree Farm Program, Cottage Grove*
15. **DNR Team Leader:** Gary Michael, *Cooperative Forest Management Supervisor, DNR Division of Forestry*
16. **Facilitator and Consultant:** Holly Johnson, *Lanterna Consulting Inc. contracted through Management Analysis and Development (MAD), Minnesota Management & Budget (MMB)*

Planning Team Goals

1. Create a systems approach to Private Forest Management (PFM) with a strong emphasis on family-owned lands
2. Build more trust among partners
3. Stabilize the DNR Forestry PFM Program to reduce volatile swings in the system
4. Increase the number of private landowners who are choosing to manage their forests in a sustainable manner

Planning Assumptions

a. We believe using plain language that is easily understood and more intuitive to those outside of the professional forestry industry is beneficial to our goals; therefore we will use "family-owned forests" and "family forest landowners" for our public communications.
b. This framework is designed to serve all private forests with the exception of forest industry-owned lands.
c. Innovation and learning is encouraged. We understand that taking calculated risks will be a part of innovation and learning. We accept that taking some appropriate risk is part of the process.
d. We will examine and seek to modify existing state and federal statutes where they critically limit the development of system strategies.
e. We are open to opportunities throughout the entire system.
f. This plan is designed to provide both near-term and long-term direction for system efforts related to family forests in Minnesota.
g. Budget realities may impact the scope, sequencing and/or timing of detailed system plan implementation.
h. The DNR Division of Forestry will continue to provide a systemwide leadership role for forestry in Minnesota.
i. The Minnesota Forest Stewardship Committee will serve as the championing organization and owner of the PFM System Framework.
j. This first phase of the PFM System Planning effort is focused on development of a high-level system framework for Minnesota's family-owned forests. Detailed implementation plans are out of scope for this initial phase.
k. Next steps will be determined upon review and approval of the System Framework Report and Recommendations by the DNR State Forester, the NRCS State Conservationist and the USFS Field Representative in consultation with the Minnesota Forest Stewardship Committee membership.

Schedule

- **JUN 2014:** PFM System Planning Team Established
- **JUL 2014:** Project Structure Developed
- **AUG 27, 2014:** Kickoff Meeting - Current World and Visioning Session
- **OCT 28, 2014:** Team Meeting - Develop Goal Statement and Review Draft Service Delivery Concept
- **NOV 13, 2014:**Team Meeting - Continue Work on Service Delivery Model and Discuss Information and Technology
- **DEC 4, 2014:**Team Meeting - Continue Work on Service Delivery Model and Discuss Outreach and Education
- **DEC 16, 2014:** Sponsors' Check-In Meeting - Receive Feedback and "Green Light" on Initial Draft Work Direction and Content
- **FEB 10, 2015:** Team Meeting - Review and Incorporate Sponsors' Feedback, Discuss Project Implementation and Effective Monitoring & Evaluation
- **MAR-JUN 2015:** Draft System Framework Report and Recommendations
- **JUL 2015:** PFM System Planning Team Review and Input on Draft System Framework Report & Recommendations
- **AUG 2015:** Finalize the System Framework Report & Recommendations
- **SEPT-DEC 2015:** Presentation of System Framework to Co-Sponsors DNR State Forester, NRCS State Conservationist and USFS Field Representative
- **FEB 2016:** System Framework Presentation to Forest Stewardship Committee
- **2016:** Initiate Detailed Design for System Framework Components
- **ONGOING:** Manage Implementation

The Goal for Minnesota's Family-Owned Forests

The first charge of the PFM System Planning Team was to develop a goal statement to guide the planning effort.

The Goal Statement is a concise, plain language statement, with an eye to the future, that inspires our work to new levels for the benefit of Minnesota's quality of life.

Minnesota's family-owned forests provide substantial public benefits, improving Minnesotans' quality of life. These forests play a critical role in protecting soil resources and water quality and quantity. They provide extensive wildlife habitat, significant forest products, and diverse recreational experiences.

The Minnesota Forest Stewardship Committee's role is to assure services for family forest landowners that encourage sustainable forest management and diverse and healthy forests for generations to come.

A System Plan for Minnesota's Family-Owned Forests

OUR GOAL FOR MINNESOTA'S FAMILY-OWNED FORESTS

Minnesota's family-owned forests provide substantial public benefits, improving Minnesotans' quality of life. These forests play a critical role in protecting soil resources and water quality and quantity. They provide extensive wildlife habitat, significant forest products, and diverse recreational experiences.

The Minnesota Forest Stewardship Committee's role is to assure services for family forest landowners that encourage sustainable forest management and diverse and healthy forests for generations to come.

The following strategic objectives were developed by the PFM System Planning Team to support effective system planning and implementation:

- **STRATEGIC OBJECTIVES:** In support of Minnesota's family-owned forests, the Minnesota Forest Stewardship Committee will focus their talents and resources in the following strategic areas:
    1. **A CLEAR GOAL** Create a clear statement of Minnesota's Private Forest Management (PFM) Goal (*see draft Goal above*)
    2. **LEADERSHIP** Provide effective leadership to design and implement the PFM System Framework and Implementation Plan
    3. **SERVICE DELIVERY** Develop a coordinated plan for service delivery to private landowners (*see draft Service Delivery Model*)
    4. **PROJECT IMPLEMENTATION** Improve consistency and quality of family forest project implementation
    5. **SYSTEM CAPACITY** Ensure adequate system capacity to deliver the services outlined within the system framework
    6. **OUTREACH & EDUCATION** Increase outreach and education for family forest landowners and service providers
    7. **INFORMATION & TECHNOLOGY** Build greater information and technology capabilities to support effective services
    8. **RESOURCES** Secure stable funding and other resources necessary for ongoing support of the PFM Program in Minnesota
    9. **PERFORMANCE EVALUATION & IMPROVEMENT** Define and monitor key system measures for Minnesota

The Service Delivery Model

The Service Delivery Model will be developed to promote and provide services to family forest landowners focused on three main types of services:

1. **Self-Service Options** to provide a variety of access points and methods for people to get good information about forests
2. **Land Management Planning** including three different levels of plans to provide services for landowners with any size acreage and a wide range of needs
3. **Project Planning** for specific implementation efforts

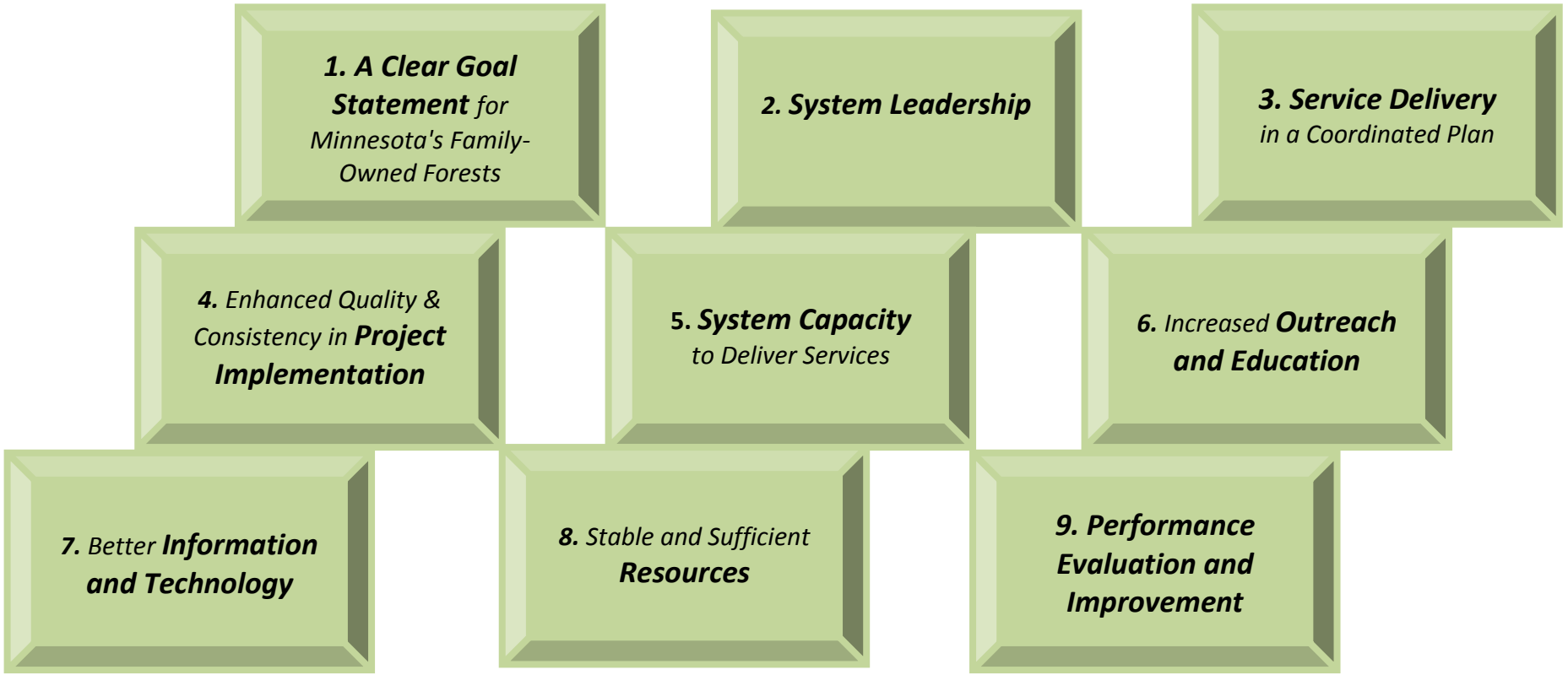
NOTE: See the table on the next page for more information on associated service products, target customers, delivery methods, service status and investment levels for the proposed service delivery model.

A Service Delivery Model to develop, promote and deliver services to family forest landowners:

Service Focus	Products	Target Customers	Delivery Method	Service Status	System Investment	Landowner Investment
Self-Service Options	▪ Landowner handbooks ▪ Brochures ▪ Pamphlets ▪ Web tool to request and print area information ▪ MN SFI Landowner Manual ▪ General I&E products ▪ Workshops/Webinars	▪ New and/or existing landowners who want access to good information to learn more about their forests	▪ Online ▪ Mail ▪ Local events e.g., county fairs ▪ DNR office brochure rack ▪ Other brochure rack ▪ Workshops	▪ Many available now ▪ Ongoing development of new products ▪ Web tool development needed	▪ **Medium** for new Landowner Handbook Series (DNR) ▪ **Medium** for webtool (Tbd)	▪ **Low** - products free to land-owners
Land Management Planning (propertywide)	Streamlined Plan (~4-6 pages)	▪ Anyone ▪ Targeted for < 20 acres	On-ground site visit	▪ Development needed; propose MNFSC Technical Subcommittee	▪ **Low -** electronic tool	▪ **Low -** small fee for plan
	Standard Plan aka Woodland Stewardship Plan	▪ Requires minimum of 20 acres of eligible land	On-ground site visit	▪ Available today ▪ Review standards	▪ **Low -** ongoing	▪ **Medium** - moderate plan fee
	Enhanced Custom Plan	▪ Available to any interested landowner with deeper level of interest/need	▪ On-ground site visit ▪ Other services e.g., research, additional issue consultation, certification, etc.	▪ Offered today	▪ **Low to Medium** - variable based on services	▪ **Medium to High** - fee based on custom services
Project Planning	Site-Specific Implementation Plans	▪ Landowners with specific project needs ▪ Landowners seeking to meet cost-share requirements	On-ground site visit	▪ Offered today ▪ MNFSC Technical Subcommittee to develop template standards / series	▪ **Medium -** time and resources into PFMM	▪ **Low** - fee based on project plan services

Nine Strategic Objectives Supporting a PFM System Plan

The PFM Planning Team proposed objectives and strategies in these nine focus areas to support Minnesota's family-owned forests. Preliminary input on each of the strategic objectives is outlined on the pages that follow.



PFM System Framework
Strategic Objective 1: A Clear Goal Statement

OBJECTIVE

Create a clear and concise statement of the goal of Private Forest Management (PFM) in Minnesota and the role of the Minnesota Forest Stewardship Committee (MNFSC) in fulfilling the goal statement

PROPOSED DRAFT

Proposed Goal Statement:

Minnesota's family-owned forests provide substantial public benefits, improving Minnesotans' quality of life. These forests play a critical role in protecting soil resources and water quality and quantity. They provide extensive wildlife habitat, significant forest products, and diverse recreational experiences.

The Minnesota Forest Stewardship Committee's role is to assure services for family forest landowners that encourage sustainable forest management and diverse and healthy forests for generations to come.

Strategic Objective 1: Clear Goal Statement

Implementation Action Steps	Accountable Entity	Timeline
1. Promote our Goal Statement to key partners including: a. practitioners of private land assistance programs b. policy makers c. family forest landowners	Minnesota Forest Stewardship Committee (MNFSC) members	Ongoing with targeted launch over the next year
2. Promote Systems Plan along with Goal Statement as opportunities arise.	MNFSC members	Proactive introductions during first year and then ongoing
3. Incorporate the Goal Statement into program materials as appropriate and helpful.	MNFSC members	Ongoing

PFM System Framework
Strategic Objective 2: System Leadership

OBJECTIVE

Establish an effective and ongoing leadership commitment to guide and deliver the PFM System Plan.

STRATEGIES

Collaboration Agreement:

Per our proposed Goal Statement, the Minnesota Forest Stewardship Committee's role is to assure services for family forest landowners that encourage sustainable forest management and diverse and healthy forests for generations to come.

We propose development of a Memorandum of Understanding (MOU) to establish a commitment of collaboration toward our Goal Statement among the following five public partners:

- Minnesota's Department of Natural Resources (DNR)
- Natural Resources Conservation Services (NRCS)
- United States Forest Service (USFS)
- Board of Water and Soil Resources (BWSR)
- Minnesota Forest Resources Council (MFRC)

Strategic Objective 2: System Leadership

Implementation Action Steps	Accountable Entity	Timeline
1. Develop and formalize an MOU(s) between the five public agencies supporting the system plan: DNR, NRCS, USFS, BWSR & MFRC. As part of that MOU include an ongoing review and renewal process of the agreement to keep the MOU relevant and actively supported.	Minnesota Forest Resources Council (MFRC)	Target MOU(s) signatures by Spring, 2016
2. Prepare the Minnesota Forest Stewardship Committee members to strategically present system plan components to appropriate audiences and events (e.g., presentations, talking points, handouts)	MNFSC Subcommittee	Materials available for sharing Spring, 2015
3. Develop a plan to introduce and disseminate the Service Delivery Model to practitioners.	MNFSC Subcommittee	Develop a plan during Winter, 2016 Begin introductory launch meetings ~ Spring/Summer, 2016
4. Actively launch and promote the Systems Plan including key elements such as the Goal Statement and Service Delivery Model.	DNR working with other practitioners' organizations including Minnesota Association of Consulting Foresters (MACF), Minnesota Association of Soil and Water Conservation Districts (MASWCD), Minnesota Logger Education Program (MLEP), Natural Resources Conservation Services (NRCS), Minnesota Forest Resources Council (MFRC) and Minnesota Forest Industries (MFI)	Ongoing with targeted effort for the next year

PFM System Framework
Strategic Objective 3: Service Delivery

OBJECTIVE

Develop a service model that provides forest practitioners with a full range of services and products to support family forests throughout the state.

STRATEGIES

1. We propose development of a Service Delivery Model (SDM) that provides a wide range of services and products to family forest landowners *(see page 13-14).*
2. Our Goal Statement and the Service Delivery Model will drive our other system strategies.
3. Work together as a unified private land assistance group to promote sound and sustainable land management practices.
4. Develop more standardized and streamlined planning products that meet all critical program requirements while reducing unnecessary burdens on both plan writers and family forest landowners.
5. Create new products to enhance the existing service offering and provide additional options for landowners with any size acreage.

Strategic Objective 3: Service Delivery

Implementation Action Steps*	Accountable Entity	Timeline
1. Self-Service Options: Update MyMinnesotaWoods.edu to create a more interactive and effective Web tool for landowners. Managed and hosted by U of MN Extension.	University of Minnesota Extension	Enhancements complete December 2016
2. Self Service Options: Creation of Landowner Handbook series	DNR	In progress; complete first three by March 1, 2016
3. Self Service Options: Review and update existing materials to reflect full range of service offerings and products	MNFSC	Annually revisited
4. Land Management Planning Tools: Alignment of Woodland Stewardship Plan, Tree Farm Plan and Conservation Activity Plan/Forest Management Plan (CAP/FMP) elements into a standardized template.	DNR, MN State Tree Farm Committee and NRCS	Begin work in Winter 2016
5. Land Management Planning Tools: Develop a new streamlined plan product.	MNFSC Technical Subcommittee	August, 2016
6. Land Management Planning Tools: Development of example “enhanced plan” elements.	MNFSC Technical Subcommittee	Summer, 2017
7. Project Planning Tools: Standardization of site specific implementation project plans, including templates.	MNFSC Technical Subcommittee	Begin March 2016
8. All Options: Utilize the NRCS staff person to assist with the DNR's Ecological Classification System (ECS) development of ecological site descriptions within Service Delivery model products e.g. land management planning products.	NRCS, DNR & MFRC	Ongoing

* Note: Assumes that upon final approval of the PFM Systems Framework, the MNFSC Technical Subcommittee members will be selected. More than one MNFSC Subcommittee may be needed depending on the nature, amount and timing of implementation work approved.

PFM System Framework
Strategic Objective 4: Project Implementation

OBJECTIVE

Improve the consistency and quality of family forest project implementation.

STRATEGIES

1. Encourage partner involvement at MFRC Landscape Committee meetings to identify and prioritize local project needs. Examples: Tullibee Lakes and Healthy Forests for Healthy Water.
2. Activate key partners within the MFRC Landscape committees to secure resources for shared priority projects.
3. Streamline NRCS Technical Service Providers (TSP) process and training.
4. Secure and expand longer-term cost-share program dollars for sound forestry practices to encourage project implementation.
5. Identify opportunities to improve existing and create new incentive programs that support effective implementation (e.g., "Harvest for Habitat" concept).

Strategic Objective 4: Project Implementation

Implementation Action Steps	Accountable Entity	Timeline
1. Conduct a full review of the current EQIP program in Minnesota to identify the biggest improvement opportunities to optimize services for landowners and technical service providers (TSP). a. Develop recommendations for simplifying the application process for Landowners. b. Develop recommendations to improve the training and payment processes for Technical Service Providers (TSP).	MNFSC, DNR, NRCS	NRCS and DNR Initial meetings to establish approach in Q4 2015
2. Develop new funding mechanisms for smaller size projects that help landowners get resources with minimal administration and hassle. a. Example: Secure grant funds for family-owned forest cost share projects.	MNFSC Technical Subcommittee and DNR	DNR to submit proposal to NRCS next cycle / June 2016.
3. Develop Woodland Stewardship Plan (WSP) writer training that addresses incentive options and incorporates a change in timber harvest ideology which includes wildlife benefits as a key selling point to the private forest landowner.	DNR	2016 Cooperative Forest Management (CFM) Annual Meeting, projected to be in March of 2016. Target annually thereafter.

PFM System Framework
Strategic Objective 5: System Capacity

OBJECTIVE

To ensure adequate system capacity for service delivery to family forest landowners through a coordinated statewide effort lead by DNR Cooperative Forest Management (CFM) Program.

STRATEGIES

1. The MNFSC will serve as the official forestry subcommittee to the NRCS State Technical Committee (MNSTC).
2. Stabilize a baseline DNR CFM staffing model to lead, support and coordinate consistent statewide service delivery.
3. Increase communication among DNR foresters and NRCS district conservationists statewide.
4. Initiate a statewide marketing effort to inform family forest landowners of the service offerings and their local service providers.
5. Ensure local service networks statewide have enough capacity to meet landowner service needs and demands through collaboration among DNR, SWCDs, consulting foresters and industry foresters.
6. Explore development of an informal network of family forest landowners who can raise awareness and serve as community resources (e.g., Minnesota Woodland Ambassadors concept).

Strategic Objective 5: System Capacity

Implementation Action Steps	Accountable Entity	Timeline
1. Leverage DNR and USFS GIS services to collect and analyze landowner demographics at the highest accuracy available from the USFS. Determine the level of service provider availability at the county level.	DNR & USFS	Winter 2017
2. Develop and analyze county parcel data on non-industrial private forest lands to better understand the potential private forest land service acres and location throughout the state.	DNR	Target 2020
3. Develop a Service Provider map connecting landowners to potential resources including county, private, nonprofit, state and federal services.	U of MN Extension	TBD, by Summer 2016
4. Revamp the U of MN's Woodland Advisors Program into the Master Woodland Owners Program.	U of MN Extension	Grant request to revamp the program applied for in Fall, 2015
5. Develop a plan to leverage the U of MN's Master Woodland Owners as the based for a proposed network of "Minnesota Woodland Ambassadors", coordinated by Minnesota Forestry Association, who could be activated to represent the interests of family forest landowners throughout Minnesota.	DNR, U of MN, MFA	Contingent on Action Item #4
6. Identify and prioritize the service provider gaps to match service capacity to service demands.	MNFSC	After Summer 2016, ongoing
7. Minnesota Association of Consulting Foresters (MACF) works with DNR and MACF membership to fill the service demand gaps.	MACF	Ongoing

Implementation Action Steps	Accountable Entity	Timeline
8. DNR maintains inventory of active plans and contacts service providers regarding expiring plans.	DNR	Ongoing
9. NRCS will provide training on EQIP practices and the application process for NRCS Technical Service Providers (TSPs).	NRCS	Ongoing
10. Work with educational institutions to encourage graduates with interests and skills in private forest management, especially as private consultants	U of MN	Ongoing

PFM System Framework
Strategic Objective 6: Outreach and Education

OBJECTIVE

Increase private forest management outreach and education for family forest landowners and service providers.

STRATEGIES

Provide grant opportunities for public partners to support outreach and education efforts

Organize efforts to provide outreach and education to both landowners and service providers:

1. **For Family Forest Landowners:**
   a. Develop and launch the DNR landowner handbook series
   b. Enhanced MyMinnesotaWoods.umn.edu website
   c. Increased use of TELE training and tools (Tools for Engaging Landowners Effectively)
   d. Encourage MFA membership for ongoing information
2. **For Service Providers:**
   a. Reintroduce the Plan Writer Review workshops to increase quality of plans written
   b. Reintroduce the DNR-hosted CFM conference on an annual basis to share best practices
   c. Consolidate qualifications for DNR and NRCS plan writers
   d. Streamline plan writer certification process

Strategic Objective 6: Outreach and Education

Implementation Action Steps	Accountable Entity	Timeline
1. Develop a marketing plan to raise awareness and educate family forest landowners on available services and service providers in their local area	MNFSC	Fall 2016 annual meeting
2. Create an integrated landowner education tracking system through U of MN Extension service.	See Information and Technology section	See Information and Technology section
3. Ensure outreach and education materials are available to landowners across the state	MFA and U of MN Extension propose annual recommendations for consideration by the MNFSC	Ongoing
4. Create materials and services for existing and emerging needs and interests (e.g., Emerald Ash Borer (EAB), forest tent caterpillars)	MFA and U of MN Extension propose annual recommendations for consideration by the MNFSC	Ongoing
5. Encourage Minnesota Forestry Association (MFA) membership to family forest landowners for access to science-based information a. Explore incentives to recruit new MFA members	MFA	Ongoing
6. As part of the MyMinnesotaWoods.umn.edu project: a. Create one-stop landowner education Internet listing on MyMinnesotaWoods.umn.edu that includes a calendar of education opportunities. b. Conduct improvements to the DNR and MyMinnesotaWoods.umn.edu websites to make them more interactive for the landowner.	See Information and Technology section U of MN/DNR	See Information and Technology section Summer 2016

Implementation Action Steps	Accountable Entity	Timeline
7. Reintroduce annual DNR Outreach & Education grants for public partners	DNR/MFA	June, 2016
8. Reintroduce Plan Writer Review workshops on an annual basis	DNR/Sustainable Forests Education Cooperative (SFEC)	Summer, 2016
9. Reintroduce the annual CFM conference	DNR	2016
10. Streamline plan writer certification process and update the online orientation manual for plan writers	DNR	2017
11. Encourage SAF certification (Society of American Foresters, Certified Forester) for ongoing education requirements	MNFSC/U of MN	Ongoing
12. Encourage MLEP to incorporate training curriculum as part of the first year and ongoing annual training requirements to assist loggers in better serving family forest landowners.	MNFSC/MLEP	Ongoing
13. Consolidate qualifications for DNR and NRCS plan writers.	DNR PFM Coordinator and NRCS State Forester	Winter, 2016
14. Complete and distribute the series of DNR Landowner Handbooks	DNR	3 books completed by March 2016; ten book series
15. For currently registered landowners: service providers will provide updates/reminders on expiring plans, new programs, etc.	All Service Providers	Ongoing
16. Provide and maintain current information via the MyMinnesotaWoods.umn.edu regarding services offered	All Service Providers	Ongoing

PFM System Framework
Strategic Objective 7: Information and Technology

OBJECTIVE

Build greater information and technology capabilities to support family forest landowners and service providers in Minnesota

STRATEGIES

Increase the effective use of information and technology:

1. Leverage and enhance the University of Minnesota's MyMinnesotaWoods.umn.edu website to provide interactive Internet resources for family forest landowners and service providers as the primary source for information
2. DNR develops and funds a Family Forest Landowner education database maintained by the University of Minnesota
    a. to track landowner education participation and trends
    b. to provide a public listing of education opportunities available statewide
3. Leverage and enhance the PFM Module as the primary DNR source to create plans, store registered plans, and track landowner assistance.

Strategic Objective 7: Information and Technology

Implementation Action Steps	Accountable Entity	Timeline
1. Create a standing item on the MNFSC meeting agenda to discuss information and technology topics (e.g. what's new on the technology front, status on active projects)	MNFSC	Ongoing
2. Meeting with Matthew Russell, Assistant Professor/Extension Specialist, Department of Forest Resources, University of Minnesota to discuss a MyMinnesotaWoods.umn.edu project to enhance and maintain the website and resources for family forest landowners	U of MN Staff	Ongoing
3. Meeting with Matthew Russell, Department of Forest Resources, Assistant Professor/Extension Specialist, University of Minnesota to discuss the development of a new Family Forest Landowners Education Database to track landowner education and trends as well as to provide a public listing of education opportunities available statewide	DNR/U of MN	Summer 2016
4. Prioritize, fund and execute the DNR's PFM Data Management Plan including enhancements to the PFM Module	DNR	Ongoing
5. Utilize DNR Outreach & Education grants to support development, use and or expansion of technology and information for projects such as: a. Better incorporation of Ecological Classification System (ECS) and Native Plant Communities (NPC) into products e.g., land management planning tools b. Advancement of technology tools in the field setting such as tablets, on-site printing, etc.	MNFSC	Ongoing

PFM System Framework
Strategic Objective 8: Resources

OBJECTIVE

Secure stable and sufficient funding and other resources to support effective private forest management in Minnesota

STRATEGIES

1. Clarify the DNR's system leadership role with support and collaboration among key partners including NRCS, USFS, BWSR, MFRC, SWCDs, and private forest individuals and associations, e.g., MACF, Minnesota Tree Farm Committee
2. Fully leverage both state and federal funding
3. Maintain General Fund support for CFM in Minnesota including funding that indirectly supports service delivery (e.g. SFIA payments to landowners that subsidize management plan writing by consultants)
4. Secure and maintain DNR funding levels to support the CFM statewide coordination staffing model
5. Increase recognition and public support for the importance of family forests in Minnesota
6. Inform funders of the benefits of well-managed private forest lands (e.g., legislators, LCCMR, federal grantors)
7. Develop a network of family forest landowners who are both supportive and actively advocating on behalf of PFM in Minnesota
8. Explore shared positions and/or co-location opportunities
9. Leverage the MFRC landscape committees as a convening entity of multiple partners for the system
10. Develop a more unified approach through targeted landscape stewardship efforts that integrate forest management, water quality, recreation and/or wildlife habitat projects to go after more diverse funding sources for greater impact

Strategic Objective 8: Resources

Implementation Action Steps	Accountable Entity	Timeline
1. Develop a network of family forest landowners to keep them informed of legislation and proposed legislation that affects private landowners and PFM so they can actively advocate for PFM in Minnesota	MFA	Ongoing
2. Utilize MFRC landscape committees as a forum to gather perspectives to identify potential targeted private landowner efforts and to then help align those efforts with funding opportunities to tackle projects that address the local needs (e.g., Tullibee Lakes Project)	MNFSC and MFRC	Ongoing
3. Create and maintain a consolidated grant schedule to include funding source, projects funded, timelines, contacts, etc.	MNFSC	Summer 2016; ongoing thereafter
4. Develop a standard accomplishments reporting format for the purpose of tracking and aggregating PFM efforts regardless of the funding sources	MFRC	2016

PFM System Framework
Strategic Objective 9: Performance Evaluation and Improvement

OBJECTIVE

Define and monitor key system measures for evaluation and improvement for Private Forest Management in Minnesota

STRATEGIES

1. Create a clear set of PFM measures and targets
2. The MNFSC has responsibility for monitoring and evaluation of the full System Plan including annual and longterm PFM goals for Minnesota
3. Incorporate both short- and long-term targets for Private Forest Management into the ongoing Minnesota Forest Stewardship Committee planning and review process
    a. Schedule two formal meetings a year to plan, review and update the system plan work
    b. Schedule other meetings as appropriate based on needs, opportunities and timing

Strategic Objective 9: Performance Evaluation and Improvement

Implementation Action Steps	Accountable Entity	Timeline
1. Schedule Winter 2016 MNFSC Meeting to review the PFM System Framework and establish next steps including a MNFSC Subcommittee to develop draft annual and long term goals for review and refinement by the full MNFSC in October 2016	MNFSC	Winter, 2016
2. Formally schedule two MNFSC meetings a year. Recommended as the following: a. Two face to face meetings annually i. Spring Meeting (~9am to 3pm): ▪ Annual PFM System Plan evaluation to review and update the action steps and timelines ▪ Annual PFM Accomplishment Goals review of past year's and establishment of next year's goals ii. Fall Meeting (~9am to 3pm): ▪ Annual work accomplishments and trends review of PFM in Minnesota (e.g., # of stewardship plans, # of plan acres for the year) b. Additional meetings as needed; may be via conference calls/webinars	MNFSC	Winter, 2016
3. Establish annual and longterm accomplishment goals, targets and timelines for PFM in Minnesota; includes for all system partners (beyond DNR) (i.e., acres planted, acres harvested, acres of stewardship plans, streamline plans, etc.)	MNFSC	Proposed Annual Spring 2016 MNFSC meeting; annually thereafter

Implementation Action Steps	Accountable Entity	Timeline
4. Establish reporting process for annual and longterm accomplishment goals, targets and timelines for PFM in Minnesota	DNR lead; assistance and participation from System Partners including DNR, MACF, NRCS, SWCDs, Industry Foresters, etc.	
5. Draft annual and longterm goals, targets and timelines for the PFM System Framework. For example: ■ Create a series of nine landowner handbooks ■ Enhance “MyMinnesotaWoods.umn.edu” as the primary landowners' website ■ Develop a Landowner Education Tracking system ■ Develop a streamlined plan for Land Management Planning ■ NRCS/DNR ▫ Review and consolidate the CAP 106 and Stewardship Plan standards ▫ Standardized project planning	MNFSC	In progress

Summary of the PFM System Framework Strategic Objectives and Key Components:

PFM System Strategic Objectives	Key Implementation Elements
1. A Clear Goal for Minnesota's Family-Owned Forests	♦ Written Goal Statement
2. System Leadership	♦ Collaboration Agreement among DNR, NRCS, USFS, BWSR & MFRC ♦ Minnesota Forest Stewardship Committee as PFM System Framework Owner
3. Service Delivery	♦ Service Delivery Model including Self-Service Options, Land Management Planning and Project Planning ♦ Enhanced products and services to meet family forest landowner needs
4. Project Implementation	♦ Streamlined Plan Requirements, Templates and Processes
5. System Capacity	♦ DNR Statewide Coordination of network connecting Service Providers to Service Demands for Family Forest Landowners across Minnesota
6. Outreach and Education	♦ Focused on both Landowners and Service Providers
7. Information and Technology	♦ Accessible, Accurate, and Useful for System Partners and Landowners
8. Resources	♦ Optimize State and Federal Funding Resources ♦ Focus on Local and Regional Targeted Outcome Priorities ♦ Combine Conservation Initiatives for Diversified Funding Options
9. Performance Evaluation and Improvement	♦ Establish Short- and Long-Term PFM Goals for Minnesota ♦ Build Planning, Tracking and Evaluation into MNFSC Meeting Process ♦ Monitoring for Impact, Learning, and Continuous Improvement

What's Next: Proposed System Framework Responsibilities

The PFM Planning Team proposes that all members of the system supporting Minnesota's family-owned forests participate in some way to support the implementation of the System Framework. The following recommendations were developed by the PFM Planning Team as proposed key responsibilities for the following PFM system partners listed here in alphabetical order:

- Minnesota Association of Consulting Foresters (MACF)
- Minnesota DNR Division of Forestry (DNR)
- Minnesota Forest Resources Council (MFRC)
- Minnesota Forestry Association (MFA)
- Minnesota Forest Stewardship Committee (MNFSC)
- USDA Forest Service (USFS)
- USDA Natural Resources Conservation Service (NRCS)
- University of Minnesota Extension (U of MN)

Please note: *The proposed system framework responsibilities were developed to provide an initial draft for system members and is not intended to be the complete nor final set of framework responsibilities. It is merely provided as input to the Minnesota Forest Stewardship Committee in establishing their own approach pending approval for adoption and implementation of the System Framework.*

Minnesota Forest Stewardship Committee (MNFSC)

- ✓ We believe the Minnesota Forest Stewardship Committee is the natural and best entity to adopt and lead the implementation of the approved PFM System Framework for Minnesota.
- ✓ We recommend that the MNFSC reestablish a Technical Subcommittee and other subcommittees as needed to develop the draft short- and long-term goals, targets and timelines for presentation to the full membership during a fall 2016 meeting. The DNR Cooperative Forest Management Supervisor will work closely with the MNFSC Technical Subcommittee to advise and support the committee's implementation work in alignment with the PFM System Planning Team spirit and intentions.
- ✓ We recommend actively engaging the Minnesota Forest Stewardship Committee in strategy refinement and implementation (e.g., regional meetings with key stakeholders to review the draft strategies and begin gathering local implementation ideas).
- ✓ Once the MNFSC approves short- and long-term goals, targets and timelines for PFM in Minnesota, we recommend that the MNFSC formally review the status and progress on the system framework and implementation plans as part of the their agenda at least twice a year.

Proposed Responsibilities for the System Leaders' Collaboration (MOU Entities):

Minnesota DNR Division of Forestry (DNR)

- ✓ DNR will provide primary leadership in the implementation of the System Framework.
- ✓ The DNR Division of Forestry will serve as the primary point of coordination for DNR private land staff and programs involved in forestry to support effective and efficient forestry management assistance.
- ✓ As chair of the Minnesota Forest Stewardship Committee, the DNR Cooperative Forest Management Supervisor will work closely with the MNFSC membership to lead the committee's implementation efforts of the PFM System Framework.
- ✓ To support effective coordination of system resources across the state, the DNR Private Forest Management Coordinator will develop and provide direction for DNR forestry staff who serve as statewide points of contact to connect family forest landowners with available system products and services as outlined as part of the Service Delivery Model.
- ✓ DNR will work with NRCS to consolidate requirements for a standard land management planning tool.

USDA Natural Resources Conservation Services (NRCS)

- ✓ NRCS will work with the DNR and American Tree Farm System to develop a standardized plan template that meets the requirements and criteria for Forest Stewardship Plans, Conservation Activity Plans for Forestry (CAP106) and American Tree Farm System plans, including approved site-specific project or practice plans in lieu of an NRCS job sheet.
- ✓ NRCS with work with the DNR to provide training for NRCS employees and TSPs on the standardized plan criteria mentioned above.
- ✓ NRCS will work with the DNR to provide training for becoming a TSP and recertification of TSPs on an annual basis.
- ✓ NRCS with work with the MNFSC to increase family-forest landowners' presence and effectiveness at Local Working Groups.
- ✓ NRCS will work with the DNR and the MNFSC to identify opportunities to improve existing, and create new, incentive forestry programs that support effective implementation of forestry practices.

US Forest Service (USFS)

- ✓ USFS will continue to provide standards and guidelines for the Stewardship Program.
- ✓ USFS will bring perspectives and examples of both best practices and potential pitfalls based on experiences with other states that conduct stewardship activities to help inform the FSC implementation efforts.

Board of Soil and Water Resources (BWSR)

- ✓ BWSR will become more involved in forestry issues with the recognition of the impact forests have on the water regime.
- ✓ BWSR will help connect the PFM system efforts with the local Soil and Water Conservation Districts (SWCDs) and Watershed Districts across Minnesota to further spread the word on the connection between forests and clean water.
- ✓ BWSR will assist with identification and pursuit of integrated multi-purpose conservation initiatives and funding.

Minnesota Forest Resources Council (MFRC)

- ✓ MFRC will take the lead on development of the System Framework's Collaborative Agreement (MOU) among the public partner entities of DNR, NRCS, USFS, BWSR and MFRC.
- ✓ MFRC will introduce their membership to the Service Delivery Model and the DNR's statewide staffing points of contact for coordination of local implementation.
- ✓ MFRC will facilitate local landscape planning efforts in alignment with the System Framework's goal statement - including coordination and activation through their network of landscape committees (MFRC Landscape Program).

Proposed Responsibilities for Other System Partners*:

Minnesota Association of Consulting Foresters (MACF)

- ✓ MACF will promote the system approach and encourage their members to report their family forest service accomplishments for the benefit of performance reporting and funding support levels.
- ✓ MACF will introduce their membership to the Service Delivery Model and the DNR's statewide staffing points of contact for coordination of local implementation.

Minnesota Forestry Association (MFA)

- ✓ MFA will promote the system approach and encourage their members to incorporate practices consistent with the System Framework in their education and advocacy work with Minnesota landowners.

Minnesota Logger Education Program (MLEP)

- ✓ The MNFSC will work with MLEP to discuss and develop training curriculum as part of the first year and ongoing annual training requirements to assist loggers in better serving family forest landowners.

Minnesota State Tree Farm Committee (TF)

- ✓ TF will promote the system approach with forest industry and consultant representatives and their respective organizations.

University of Minnesota Extension (U of MN)

- ✓ U of MN will support the PFM System through the hosting and management of MyMinnesotaWoods.umn.edu as the primary website resource for family forest landowners.
- ✓ U of MN will develop and manage a new Family Forest Landowners Education Database to track landowner education and trends as well as to provide a public listing of education opportunities available statewide.

*** Note:** *All Minnesota Forest Stewardship Committee members have the opportunity to help shape family-owned forests policy, as well as overall private forest management program policy, through active participation on the Minnesota Forest Stewardship Committee.*

For Future Generations: A System Approach for Minnesota's Family-Owned Forests

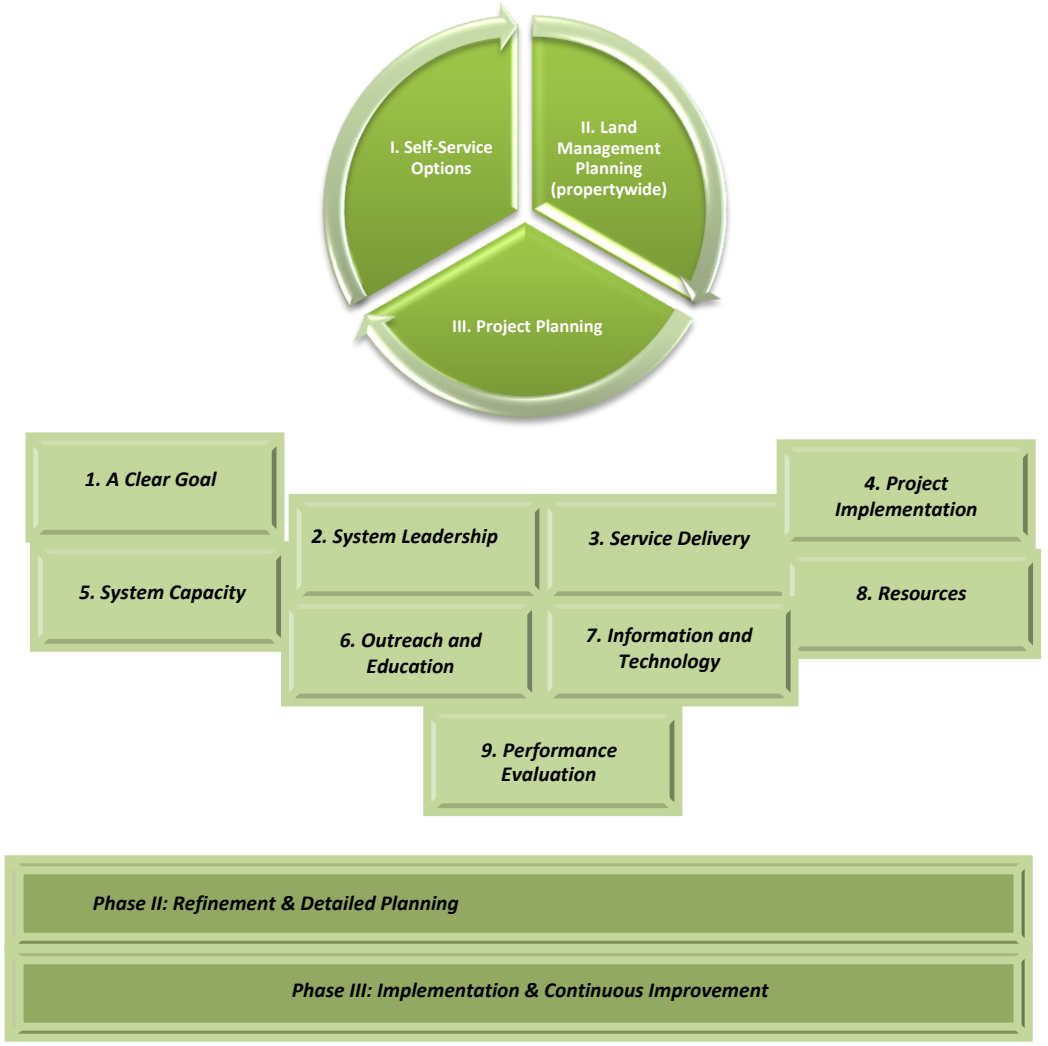
A recap of the system goal and strategic objectives developed by the PFM System Planning Team

★★★★★★★★★★

I. The Why:
Minnesota's family-owned forests provide substantial public benefits, improving Minnesotans' quality of life. These forests play a critical role in protecting soil resources and water quality and quantity. They provide extensive wildlife habitat, significant forest products, and diverse recreational experiences.

II. The How:
Combining system forces to leverage a Service Delivery Model that strategically targets our efforts and resources for the:

III. The Who, What & When:
Working with system partners and stakeholders develop actionable short- and long-term implementation plans. Executing on those plans for success in alignment with our goal statement for the benefit of present and future generations.



PFM System Planning Team Endorsement

Through our signatures, we signify our collective contributions and commitment to this system framework in support of Minnesota's family-owned forests. We believe that working together, with the leadership of the Minnesota Forest Stewardship Committee, this PFM System Framework provides the basis for a deeper and more effective collaboration and partnership to protect and promote the shared interest we all hold in the value, beauty and importance of forested lands to Minnesota's quality of life for years to come.

In alphabetical order:

1. **Jan Bernu** - Private Forestry Consultant, Cloquet _____
2. **Peter Bundy** - Private Forestry Consultant, Minneapolis _____
3. **Lindberg Ekola** - Minnesota Forest Resources Council, Melrose _____
4. **Brad Gatzlaff** —Private Forestry Consultant, Northfield _____
5. **Ginger Kopp** - USDA Natural Resources Conservation Service, St. Paul _____
6. **Tom Kroll** - Forester, Saint John's Abbey and University, Collegeville _____
7. **Dennis McDougall** - USFS State and Private Forestry, St. Paul _____
8. **Gary Michael -** Cooperative Forest Management Supervisor, DNR Division of Forestry _____
9. **Tony Miller** - DNR Forestry Specialist, Mora _____
10. **Jodie Provost** - DNR Fish and Wildlife, Forest Habitat Team, Aitkin _____
11. **Eli Sagor** - University of Minnesota Extension, St. Paul _____
12. **Dan Steward** - Board of Soil and Water Resources, Brainerd _____
13. **Dennis Thompson** - Aitkin County SWCD Forester, Minnesota Forestry Association_____
14. **John Wallin** - Nationally Recognized Family Forest Owner, Pequot Lakes _____
15. **Bruce Zumbahlen —** Minnesota Logger Education Program, Tree Farm Program, Cottage Grove_____

** End of Document*