North Central Landscape
Forest Policy Inventory Report

A support document to the 2nd Generation MFRC North Central Landscape Plan

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Minnesota Forest Resources Council

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Information about the Minnesota Forest Resources Council and the Landscape Program can be found at www.frc.state.mn.us.

This information is available in an alternative format upon request.

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Executive Summary

The Minnesota Forest Resources Council was established in 1995 by the Minnesota Legislature to provide advice to public and private organizations on forest sustainability issues through the Sustainable Forest Resources Act (SFRA). This legislation provided authorization for establishing regional landscape committees to foster landscape-based forest resource planning and coordination. These regional committees provide an opportunity to involve private citizens, forestry professionals and members of various interest groups in developing and implementing landscape-level plans that promote forest sustainability.

This report contains two sections: 1) a summary of the forest policies expressed across these plans; 2) individual plan summaries that contain extracted plan language organized by forest resource issues, visions, goals and strategies, as well as background information on the scope and planning process.

Fifteen forest resource plans were analyzed for this report including one national forest plan, two tribal reservation plans, four DNR plans, and eight county plans. These plans were qualitatively analyzed for common themes. Fifteen prominent themes were identified from the summaries and are presented with respective goals. This set of common themes can provide guidance to agencies and individuals utilizing this report and assist groups in coordinated landscape management of forest resources. The ideas presented are meant as a preliminary guide for developing specific goals and objectives to implement the landscape plan for the North Central Landscape region of Minnesota.

North Central Landscape common themes:

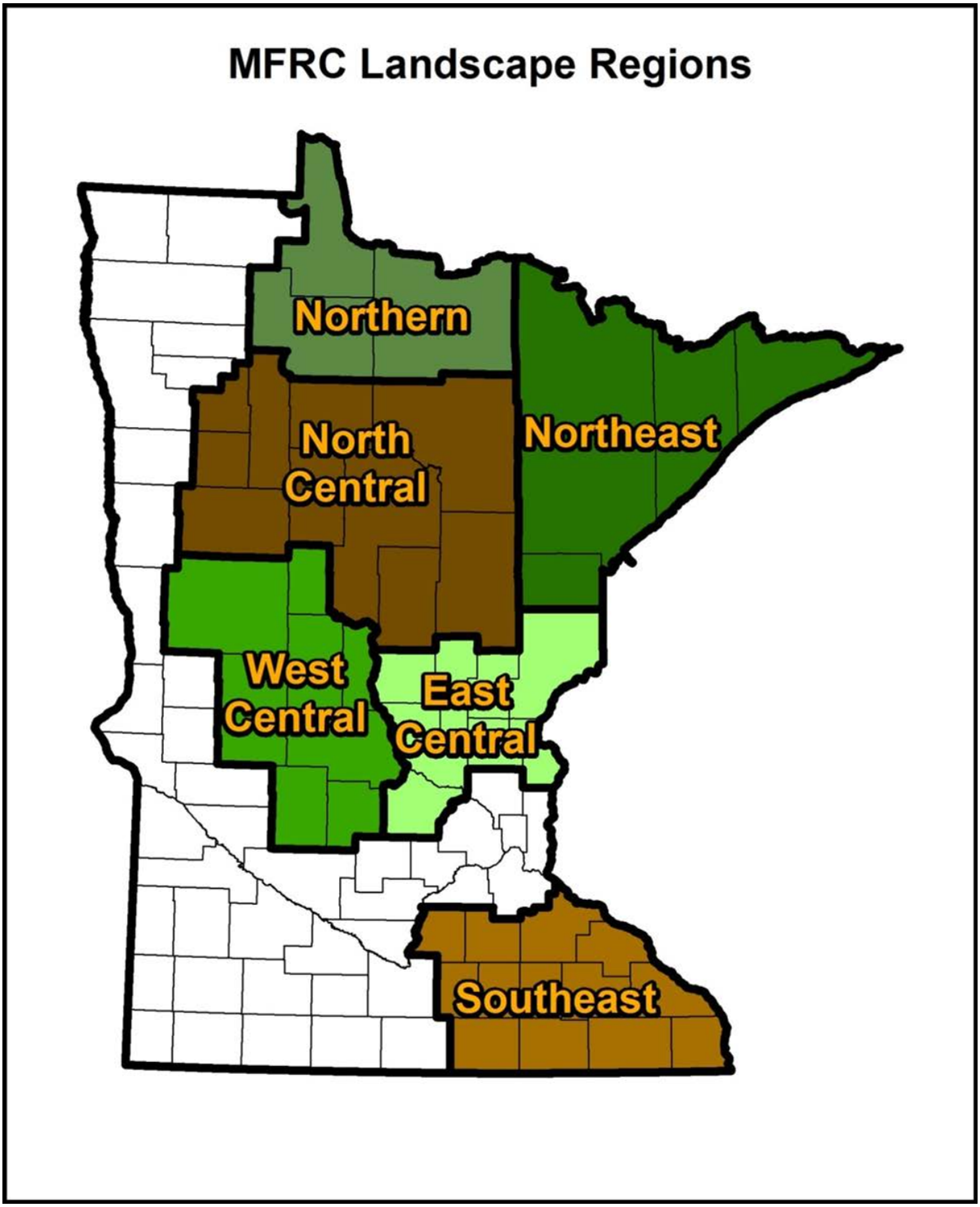
1. Vegetation management
2. Habitat and wildlife
3. Timber
4. Forest health
5. Soil, water, and air resources
6. Visual quality
7. Forest resource sustainability
8. Biological diversity
9. Recreation
10. Forest roads
11. Economic and social sustainability
12. Cooperative management
13. Cultural resources
14. Land base
15. Minerals

Introduction

The purpose of this document is to assess the most recent forest management plans created stakeholder groups in the North Central Region and to identify common themes from the summaries of existing forest resource planning documents. These themes will help provide guidance to the creation of the second generation North Central Landscape Plan, which will be released in 2017.

Setting

The Minnesota Forest Resources Council defines the North Central Landscape region as the following ten-county area: Itasca, Aitkin, Cass, Becker, Clearwater, Crow Wing, Hubbard, Mahnomen, east Half of Polk and south half of Beltrami.



Methods and Definitions

The main objective of this report is to highlight the landscape issues, visions, goals, and strategies presented in forest resource management and planning documents for Northeast Minnesota. As this is a qualitative summary that involves a great deal of categorization, the authors used the following definitions to minimize bias in classifying the data into these four components.

- Issues: An issue is a concern based on current information and peoples' values. It relates to a problem or focus area that the forest resources report addresses. It may be a general idea, "there is not enough wildlife", or very specific, "native tree species in this county are ten times below their historic range". Issues assist in developing a vision.

- Visions: A vision is a look into the future. In landscape planning, a vision refers to future conditions of an area in 100 years or greater. It often is very vague, yet helps managers and stakeholders come to agreement and begin to develop goals. To continue from the examples above, some visions might be to "conserve biodiversity" and "promote regeneration of forestlands."

- Goals: Goals are specific benchmarks that strive toward addressing the vision and resolving the issues. Goals often look in the near future, 10 to 20 years from now. Goals are detailed and assist in developing strategies that address the vision. Given the example above, some goals may be to "limit development within environmental corridors to promote biodiversity" and "increase occurrence of native tree species by 30 percent"

- Strategies: Strategies are methods to accomplish goals and move toward achieving a vision. They provide land managers with tools and techniques to accomplish goals. Landowners often use only strategies that apply to their land. Examples of strategies would be "use direct seeding methods on sites suitable for native plant species" and "reduce high grading of trees and if possible increase natural regeneration through appropriate silvicultural methods". It is important to note that not all strategies apply to all land managers because of their specific nature. Strategies may require particular site characteristics, resources, or land manager objectives in order for implementation to be successful.

In order to fulfill the objectives of the study, forest and related resource management and planning documents were gathered from stakeholder groups in the region. Fifteen documents were reviewed and summarized for this draft inventory. Each document was reviewed and summarized according to the four categories defined above. These summaries are presented at the end of the next chapter in the section, Management and Planning Report Summaries. After all fifteen documents were reviewed and summarized they were examined for common themes. Fifteen main themes were identified based on their presence in multiple reports. Following these themes are the corresponding goals taken from the individual summaries. Where possible, goals were grouped into subheadings based on finer distinctions in theme. In many cases, goals apply to more than one theme, and thus were included under multiple themes.

It is important to note that the focus of this study was on forest resources. As defined in Minnesota Statute 89.001, Subdivision 8: forest resources are "those natural assets of forest lands, including timber and other forest crops; biological diversity; recreation; fish and wildlife habitat; wilderness; rare and distinctive flora and fauna; air; water; soil; and educational, aesthetic, and historic values." Other themes

may have been present in the reviewed documents, however, only those references relating to forest resources were used in developing the landscape policy inventory.

The contents of this report are meant to serve as a guide for landscape planning and coordination. As planning and implementation progresses, many of the components present will likely be refined and regrouped as is seen fit.

Forest Policy Inventory Summary

The summarized management and planning documents are numbered below. Behind each theme, documents are referenced based upon their number in this list. A comprehensive common theme keyword or phrase was prepared as a template to provide guidance to agencies and individuals utilizing this report. The common theme keyword(s) is merely an example based upon the authors' interpretations of the summarized reports.

Documents summarized:

1. Chippewa National Forest Land and Resource Management Plan (2004)
2. Leech Lake Band of Ojibwe Forest Management Plan (2002)
3. White Earth Nation Forest Management Plan (2013)
4. Chippewa Plains-Pine Moraines and Outwash Plains Subsection Forest Resource Management Plan (2009)
5. Hardwood Hills Subsection Forest Resource Management Plan (2012)
6. Mille Lacs Uplands Subsection Forest Resources Management Plan (2008)
7. St. Louis Moraines, Tamarack Lowlands, Nashwauk Uplands, and Littlefork-Vermilion Uplands Subsections Forest Resources Management Plan (2010)
8. Aitkin County Land Department Long Range Strategic Plan (2011)
9. Becker County Forest Plan (*in draft*)
10. Beltrami County Forest Management Plan (2007)
11. Cass County Long Range Resource Management Plan (2010)
12. Clearwater County Resource Management Plan (2008)
13. Crow Wing County Forest Resources Plan (2015)
14. Hubbard County Forest Resource Management Plan (2002)
15. Itasca County Land Management Plan (2009)

Common themes

The fifteen forest management plans reviewed for this inventory shared several common themes. Vegetation management to reflect desired forest composition, structure, spatial patterns, and age-classes was identified in nearly every plan reviewed in this report. The protection, provision, or enhancement of terrestrial and aquatic habitats for wildlife and vegetation was also a commonly stated goal. Maintaining timber productivity and forest health was a feature in most plans in addition to protecting soil, water, and airs resources, maintaining visual quality, ensuring the long-term sustainability of forest resources, and safeguarding biological diversity. Many plans also addressed social and economic topics such as providing recreational opportunities, maintaining an effective and efficient system of forest roads, supporting economic and social sustainability, working cooperative to achieve goals, and protecting cultural resources. Some plans also had goals relating to managing the land base and minerals.

Common Themes

In this section the fifteen prominent themes are highlighted, followed by numbers of the corresponding documents that dealt with each theme. The themes are presented in order based upon the number of documents that referenced each particular theme i.e. the first theme was referenced by the greatest number of documents. Below each theme are specific goals from the document summaries that concern this topic. The goals are listed in random order, with the documents that contained each specific goal referred to in parentheses.

1. Vegetation management (1, 3, 4, 5, 6, 7, 8, 9, 11, 12, 13, 14, 15)

Age-class distribution

Age class diversity

- Vegetation (live and dead) is present in amounts, distributions, and characteristics that are representative of the spectrum of environmental conditions that would have resulted from the natural cycles, processes, and disturbances under which current forest ecosystems and their accompanying biological diversity evolved. The ecosystem composition, structure, and process representation considers time frames, a variety of landscape scales, and current biological and physical environments. Resource conditions exist that minimize undesirable occurrences of non-native invasive species. (1)
- Vegetation constantly changes through management activities and through naturally occurring disturbances and ecosystem recovery processes such as wind, fire, flooding, insects, disease, and vegetation succession. These fluctuations are within an ecologically and socially acceptable range of variability. (1)
- Forest resources will continue to represent multiple age classes, distributed across the landscape. (4)
- Age diversity as well as vertical and horizontal structure within-stands will be maintained or increased where compatible with other strategies in this plan. (4)
- Species, age, and structural diversity within some stands will be maintained or increased. (5, 7)
- Forests in the Mille Lacs Uplands, Glacial Lake Superior Plain, and St. Croix Moraines (planning area) are diverse in age and structure and there are both older and young, regenerating forests. (6)
- Northern Hardwood stands average sixty to eighty years of age with representatives of all age classes. Stands have between eighty and one hundred forty sq. ft of basal area, with most being maintained between eighty and one hundred twenty sq. ft. After the year 2122, northern hardwood acres should be equally divided among basal area classes 80 – 100, 101 – 120, and 121 – 140 for perpetuity. (6)
- Establish a balance of age class groups as appropriate for each cover type. (8, 9, 11, 14)
- Increase the age diversity of the forest (12)
- To increase diverse species composition, patch sizes and age class structure. (15)

Old forests

- Vegetation conditions that have been degraded or greatly diminished in quality or extent on the landscape by past land use are restored to conditions more representative of native vegetation communities. These conditions, in ecologically and socially appropriate areas, result from gradually re-establishing old forest and old-growth forest age classes and vegetative growth stages, while providing for a full array of forest age classes and vegetative growth stages. (1)
- Forest managed for old forest characteristics will be distributed across the landscape. (4)

- Old forest in the subsection is distributed across the landscape to account for timber products, wildlife habitat, and ecological diversity. (5, 7)
- At least 10 percent of lands administered by the Divisions of Forestry and Wildlife in the planning area are managed as older forest. (6)
- Extended rotation forest (ERF) areas are located where they will provide the desired timber quality and old forest attributes. (6)

Young forests

- Forests managed for young, early-successional stages will be distributed across the landscape. (4)
- Young, early-successional forest is distributed across the landscape over time. (5, 7)

Even and uneven-aged forests

- Vegetation conditions that have been degraded or greatly diminished in quality or extent on the landscape by past land use are restored to conditions more representative of native vegetation communities. These conditions, in ecologically and socially appropriate areas, result from gradually re-establishing uneven-aged and multi-aged forests with a variety of tree ages and different vegetation layers (heights) within the same community, while also providing for even-aged forests. (1)
- Even-aged managed cover types will be managed to move toward a balanced age class structure. (5, 7)
- Extended rotation forest stands in even-aged managed cover types will be managed to achieve a declining age class structure from the normal rotation age to the maximum rotation age. (5, 7)
- The SFRMP treatment level for each cover type moves toward the desired age class structure of even-aged managed cover types (both normal and extended rotation forest), and improves the age-structure and timber quality of uneven-aged managed cover types. (5, 7).

Composition

Cover types

- Vegetation (live and dead) is present in amounts, distributions, and characteristics that are representative of the spectrum of environmental conditions that would have resulted from the natural cycles, processes, and disturbances under which current forest ecosystems and their accompanying biological diversity evolved. The ecosystem composition, structure, and process representation considers time frames, a variety of landscape scales, and current biological and physical environments. Resource conditions exist that minimize undesirable occurrences of non-native invasive species. (1)
- Vegetation constantly changes through management activities and through naturally occurring disturbances and ecosystem recovery processes such as wind, fire, flooding, insects, disease, and vegetation succession. These fluctuations are within an ecologically and socially acceptable range of variability. (1)
- Vegetation conditions that have been degraded or greatly diminished in quality or extent on the landscape by past land use are restored to conditions more representative of native vegetation communities. These conditions, in ecologically and socially appropriate areas, result from gradually re-establishing the full range of successional stages in non-forested lands such as bogs, fens, grass, and shrublands. (1)
- Work to restore the red and white pine cover types that existed in the area in pre-settlement times. (3)
- Forest cover-type composition on state lands moves closer to the range of cover-type composition that historically occurred within the ecosystems found in these subsections. (5, 7)
- The amount of white pine in the subsection has increased by 100 percent over 2002 levels. (6)

- The amount of white cedar in the subsection has increased over 2002 levels; an improved age-class structure indicates greatly improved regeneration success. (6)
- The birch cover type has increased by 50 percent over 2002 levels and shows a greatly improved age-class distribution. (6)
- The aspen cover type is reduced by 5 percent from 2002 levels by selective removal of aspen to favor an existing species, natural stand conversion through succession, replanting, or under planting with another species. (6)
- The oak type (red oak, bur oak, and white oak) has increased slightly (2 percent) over 2002 acreage. Oak stands are managed using even-aged or two-aged systems, with even-aged predominant. (6)
- Reduce the amount of over-mature aspen in the unit over the next 10 years. (12)
- Increase the presence of conifers in the unit over the next 20 years. (12)
- Increase the health and presence of hardwoods in the planning unit. (12)
- Increase the presence of jackpine in the unit over the next 20 years. (12)
- To expand the amount of northern hardwood / oak forests in order to provide habitat for species requiring large forest interiors within moderate to long-lived deciduous forests. (14)
- To increase acres of the conifer cover types of red, white and jack pine, and of white spruce. (15)
- To favor natural establishment of conifers and hardwoods (other than aspen) in mixed stands. (15)
- To decrease the aspen-birch forest type and lowland brush type. (15)

Native Plant Communities/Ecological Classification

- Vegetation conditions that have been degraded or greatly diminished in quality or extent on the landscape by past land use are restored to conditions more representative of native vegetation communities. These conditions, in ecologically and socially appropriate areas, result from gradually re-establishing diverse mixes of trees, shrubs, herbs, mosses, lichens, and fungi species at site and landscape levels that are more representative of native vegetation communities. This includes an increase, in appropriate areas, of: rare and sensitive plants and native plant communities; white, red, and jack pine; white cedar; upland tamarack; and in some areas, white and black spruce as components of native vegetation communities. (1)
- Forest composition will be managed according to ecological classifications to more closely reflect vegetation that developed under natural disturbance regimes. (4)
- Native plant communities and their ecological functions will be conserved within stands and stand level ecological function will be maintained or improved. (4)
- The full range of common and uncommon native plant communities and the community viability that developed under natural disturbance regimes will be well represented in the future. (4)
- Some stands on state lands will be managed to reflect the composition, structure, and function of native plant communities. (5, 7)
- Native plant communities that were historically well represented in the planning area are well represented today. (6)
- Stands will be managed so that their forest type, cover type, and related attributes are in accord with the underlying Native Plant Community/Forest Ecological System. (8, 9, 11, 14)

Structure

- Vegetation (live and dead) is present in amounts, distributions, and characteristics that are representative of the spectrum of environmental conditions that would have resulted from the natural cycles, processes, and disturbances under which current forest ecosystems and their accompanying biological diversity evolved. The ecosystem composition, structure, and process representation considers time frames, a variety of landscape scales, and current biological and

physical environments. Resource conditions exist that minimize undesirable occurrences of non-native invasive species. (1)

- Vegetation constantly changes through management activities and through naturally occurring disturbances and ecosystem recovery processes such as wind, fire, flooding, insects, disease, and vegetation succession. These fluctuations are within an ecologically and socially acceptable range of variability. (1)
- Vegetation conditions that have been degraded or greatly diminished in quality or extent on the landscape by past land use are restored to conditions more representative of native vegetation communities. These conditions, in ecologically and socially appropriate areas, result from gradually re-establishing diverse structure in native vegetation communities that have been harvested, salvaged, prescribe burned, or have undergone natural disturbance. Structural diversity components will be provided by small patches of forest (reserve islands); scattered or clumped standing, mature and older live trees; dead trees; and coarse woody debris (down logs and branches).(1)
- Age diversity as well as vertical and horizontal structure within-stands will be maintained or increased where compatible with other strategies in this plan. (4)
- Representations of all growth stages with vertical and horizontal structural diversity will be distributed across the landscape. (4)
- Species, age, and structural diversity within some stands will be maintained or increased. (5, 7)
- State lands will include representation of each of the Native Plant Community growth stages that historically occurred in these subsections. (5, 7)
- Some stands on state lands will be managed to reflect the composition, structure, and function of native plant communities. (5, 7)
- Strive toward a natural forest structure. (8, 13)
- Management will seek to secure a representative distribution of vegetational growth stages (a.k.a. successional stages or phases) across the aggregated stands for each Native Plant Community/Forest Ecological System. (8, 9, 11, 14)

Spatial patterns

- Vegetation (live and dead) is present in amounts, distributions, and characteristics that are representative of the spectrum of environmental conditions that would have resulted from the natural cycles, processes, and disturbances under which current forest ecosystems and their accompanying biological diversity evolved. The ecosystem composition, structure, and process representation considers time frames, a variety of landscape scales, and current biological and physical environments. Resource conditions exist that minimize undesirable occurrences of non-native invasive species. (1)
- Vegetation constantly changes through management activities and through naturally occurring disturbances and ecosystem recovery processes such as wind, fire, flooding, insects, disease, and vegetation succession. These fluctuations are within an ecologically and socially acceptable range of variability. (1)
- The diversity of vegetation spatial landscape patterns that have been degraded or greatly diminished on the landscape by past land use are restored to conditions that more closely emulate the landscape scale patterns that would result from natural disturbances and other ecological processes. These conditions result from gradually re-establishing: (1)
    a. Spatial patterns that promote: well-distributed habitats; restoration of ecosystem function or processes; connectivity between aquatic, terrestrial, and riparian ecosystems across the landscape; scenic landscapes; and economic efficiencies.
    b. Diversity of size, shape, and distribution of patches of forest. This includes large patches of mature and older forest (300 to 1000s of acres) that provide interior forest habitat.

c. Diversity of size, shape, and distribution of temporary forest openings on the landscape. This includes opening sizes from 1 to 1,000 acres.

- Minimize forest fragmentation and manage habitat fragmentation to provide an ecologically appropriate variety of patch sizes distributed across the landscape. (4)
- Connectivity will be maintained between forest habitats using natural corridors and corridors maintained using forest management practices. (4)
- Patch management in these subsections maintains existing large patches and increases the average patch size on state lands over time, with consideration of natural spatial patterns. (5, 7)
- Specific areas are managed to maintain open landscapes needed to maintain populations of species of management concern. (6)
- Forested connections between existing large blocks of forested land and riparian areas are maintained and enhanced to provide for wildlife movement, protect water resources, and prevent habitat fragmentation and consequent isolation of native plants and animals. (6)
- Forests are managed for a variety of patch sizes. Large, contiguous patches of forest are maintained in designated areas, while other parts of the Mille Lacs uplands are managed for smaller or medium size patches. (6)
- The desired trend of patch size distribution will be directed by type of Harvest Management Zone as Active Aggregation (into fewer, larger patches), Moderate Aggregation, or Maintenance (future distribution to approximate current distribution). (8)
- Patch size distribution to tend to favor larger, aggregated patches: except where management objectives, such as wildlife considerations, support smaller forest patches, the general trend of patch size distribution will be toward creation of larger patches. (14)
- To increase diverse species composition, patch sizes and age class structure. (15)

2. Habitat and wildlife (1, 2, 3, 4, 5, 6, 7, 8, 12, 13, 14, 15)

General

- Aquatic and terrestrial wildlife habitats are diverse, healthy, productive, and resilient. (1)
- Aquatic and terrestrial wildlife habitats on NFS land contribute to ecosystem sustainability and biological diversity of Northern Minnesota and, for wide-ranging species, larger landscape scales. Habitats contribute to supporting populations of wildlife that address peoples' current and future need for and interest in the many aesthetic, commercial, subsistence, recreational, cultural, wildlife watching, hunting, fishing, trapping, and scientific uses and values of wildlife. (1)
- Aquatic and terrestrial wildlife habitats and species populations, while constantly changing due to both management activities and naturally occurring events, are present in amounts, quality, distributions, and patterns so that NFS land: (1)
    a. Provide representation of the full spectrum of habitats and conditions that would have resulted from the natural cycles, processes, and disturbances under which the biological diversity of the National Forest evolved. Representation considers time frames, a variety of landscape scales, and current biological and physical communities and environments. Representation considers time frames, a variety of landscape scales, and current biological and physical communities and environments.
    b. Maintain viable populations for all existing native and desired non-native species. Viable populations are those with the estimated numbers and distributions of reproductive individuals to insure their continued existence is well distributed within their range in the planning area.
    c. Contribute to the conservation and recovery of federally-listed, proposed, or candidate threatened and endangered species and the habitats upon which these species depend.

d. Contribute to the conservation of sensitive species and the habitats upon which these species depend.
e. Provide for the desired quality and quantity of habitat for management indicator species and indicator habitats.
f. Support diverse species populations of all existing native and desired nonnative species.
g. Provide ample opportunities for wildlife watching and quality opportunities for sustainable recreational, subsistence and commercial trapping and hunting, helping local communities realize the economic potential associated with these activities.
h. Provide structure, composition, connectivity, function, and spatial patterns of aquatic and terrestrial habitats that maintain or restore opportunities for species to interact, disperse, and migrate and to reduce negative impacts associated with forest habitat fragmentation.
i. Conserve the genetic variability of species.

- On NFS land, management activities, recreation, and other human uses occur at levels that support desired amounts and distribution of suitable habitats for aquatic and terrestrial wildlife. (1)
- Roads and trails are managed to protect or maintain native plants and animals, protect water quality, and to manage for compatible human uses and types of access. (1)
- Native plants and animals dominate all terrestrial and aquatic ecosystems, with non-native plants and animals forming, at most, a minor component. (1)

Aquatic/riparian ecosystems

- Watersheds and their components are part of healthy ecosystems that meet the needs of current and future generations. (1)
- Watersheds and soils are maintained or restored in a way that allows for the conservation of the genetic integrity of native species. Physical properties of soils are maintained and enhanced. Watershed and habitat restoration projects are natural appearing and favor the use of native materials or naturalized species to the extent practical. (1)
- Watersheds and their components are protected or enhanced to provide for unique plant and animal communities, special habitat features, habitat linkages, wildlife corridors, aquatic ecosystems and riparian ecosystems. (1)
- Hydrologic connectivity of aquatic ecosystems and wetlands is maintained or restored to assure passage of water, sediment, nutrients, wood, invertebrates, and fish and to facilitate freshwater mussel dispersal. The number of impoundments is minimized. Waters affected by dams are managed as much as practical to mimic natural lake levels and seasonal flows. Stream flows and lake levels on waters not affected by dams are suitable to protect habitat and maintain natural hydrologic processes. (1)
- Fine sediment from management activities does not adversely affect lake, stream, and wetland habitats. Macro-invertebrates are represented in the approximate proportion expected for high quality waters. Fish habitats are in good to excellent condition and are spatially distributed and connected to allow stable populations of fish, reptiles, and amphibians to persist within their natural ranges. Natural reproduction of fish is not limited by habitat condition. (1)
- Riparian areas serve as landscape connectors. Riparian areas, habitats, and associated vegetative communities are diverse in composition and structure and support native and desired non-native wildlife and plant species appropriate to site, soil, and hydrologic characteristics. Plants are present at a variety of ages and sizes and at densities adequate to provide bank stability. Where suitable to the site, a multi-layered forest canopy is present in the riparian area, providing shade, leaflitter, and coarse woody debris to lakes, streams, and wetlands. Some of these sites have an overstory of conifer that provides shade for aquatic and wetland ecosystems and thermal cover for wildlife. Super canopy trees provide nest sites for riparian associated species. Openings in riparian area vegetation resulting from road crossings, trails, campsites, water access, or other

recreational uses, occur infrequently and result in minimal alterations of riparian ecological function. (1)

- Riparian ecosystems filter runoff. Some of the mature and decadent trees from riparian ecosystems have fallen into lakes, streams, and wetlands, providing bank stability and habitat complexity. Other mature and decadent trees are retained in the riparian ecosystem, providing habitat for amphibians and other species and a reservoir of large wood to supply aquatic and wetland systems. (1)
- Increased emphasis on the health, quality, and ecological function of aquatic ecosystems provides improved habitat conditions for fish, mollusk, invertebrate, plant, and other aquatic species. (1)
- Native fish and aquatic species' populations are viable and well distributed. They are not at risk of extirpation from watersheds within their native range. (1)
- Fish populations are productive and support sustainable recreational, subsistence, and commercial fisheries while meeting the needs of fish-dependant threatened, endangered, or sensitive wildlife species. (1)
- Management activities will protect or enhance riparian areas. (4)
- The management and administration of state land will minimize negative cumulative impacts on aquatic resources. (4)
- Forest management activities will provide old- forest characteristics in defined riparian areas. (4)
- Riparian areas are managed to provide critical habitat for fish, wildlife, and plant species. (4, 5, 7)
- Forested rivers in the planning area have high water quality providing important habitat for fish, amphibians, and invertebrates, including a number of federally listed mussel species. (6)
- Maintain diversity and quality of riparian habitats. (8, 13)
- To protect fish habitat from harmful runoff, to protect streams from erosion and sedimentation, and to maintain shading and cooling provided by forest canopies (14)
- To protect wildlife and habitat values provided by wetlands throughout the county. (14)

Terrestrial ecosystems

- Plant trees, improve timber stands, and implement wildlife habitat improvement projects based on a 10-year forest development plan. (2)
- Incorporate wildlife considerations into all forest management activities. (3)
- Adequate landscape-level habitat and habitat components will be maintained for wildlife and plant species found within these two subsections. (4)
- Forests will be managed to provide sustainable wildlife populations. (4)
- Adequate habitat and habitat components exist, simultaneously at multiple scales, to provide for nongame species found in the Subsection. (5)
- Adequate habitat and habitat elements exist, simultaneously at multiple scales, to provide for game species found in Subsection. (5)
- State lands contribute important habitat and population support for the 439 permanent and regular resident wildlife species that exist in Minnesota. Populations for various species are monitored and habitats for game and nongame species are valued and protected. (6)
- Adequate habitat and habitat components exist, simultaneously at multiple scales, to provide for nongame species found in these subsections. (7)
- Adequate habitat and habitat elements exist, simultaneously at multiple scales, to provide for game species found in these subsections. (7)
- Enhance and conserve the natural environment, unique recreational, historical and scenic values, essential habitat, rare and endangered species and plant communities, as well as forest soil and water quality. (8, 13)
- Enhance wildlife habitat (12)
- Enhance existing sharptail grouse habitat and viewing opportunities. (12)

- Protect fish and wildlife populations by maintaining and improving biological (habitat) diversity in the forest. (14)
- Protect and/or improve critical plant communities for habitat (e.g., forest openings, deer wintering complexes, nesting areas). (14)
- To support viable populations of game species (primarily ruffed grouse, white-tailed deer, black bear) and the species that are associated with the habitats needed for these target species. (14)
- To provide critical wintering habitat for white-tailed deer. (14)
- To expand the amount of northern hardwood / oak forests in order to provide habitat for species requiring large forest interiors within moderate to long-lived deciduous forests (14)
- Provide quality wildlife habitat for game and non-game species through forest management activities. (15)

3. <u>Timber (1, 2, 3, 4, 5, 6, 7, 8, 12, 13, 14, 15)</u>

- Tree vegetation is present in amounts, distributions, and characteristics that allow contribution to a sustained yield of timber and pulpwood products. (1)
- Plant trees, improve timber stands, and implement wildlife habitat improvement projects based on a 10-year forest development plan. (2)
- Continue the current practice of harvesting overmature aspen (*Populus* spp.) to regenerate stands and capture value. (3)
- Manage hardwood stands for the best possible product, based on each site. (3)
- Forests will be managed to increase overall timber productivity. (4)
- Timber productivity and quality on state timber lands is increased. (5)
- Timberlands in the planning area are highly productive. They produce good quality hardwood and softwood logs for manufacturing and export, as well as a good quantity of pulpwood to supply Minnesota's pulp and paper industries. (6)
- Utilization of species and grades of timber are optimized to maximize the benefits these resources provide. (6)
- Ecosystem classification tools have helped DNR resource managers identify species most likely to be productive on a specific site, as indicated by soil and native plant community information. (6)
- Diverse, high-quality mixed hardwood stands are managed by skilled forest managers and selectively harvested by highly trained logging professionals for continuous quality improvement and production of timber, while maintaining forest cover and establishing regeneration. (6)
- Forest inventory data are detailed and current enough to be relied upon in a wide variety of planning and analysis projects. Forestry databases provide a link between generations of forest managers with respect to both strategic and operational decisions that have been made for a specific forested community. (6)
- Benefits derived from efforts to regenerate forests after harvest are maximized. (6)
- Timber productivity and quality on state timber lands is increased. (7)
- Maintain and/or enhance timber quality and productivity of the forests. (8, 13)
- Increase the health and presence of hardwoods in the planning unit. (12)
- Align forest cover with the potential of the landscape to produce forests in order to provide a healthy, productive, diverse, and viable future timber resource. (14)
- Protect and/or improve all forest resources for multiple-use by integrate other program goals with timber management. (14)
- Manage timber resource to produce industrial crops of wood. (15)

4. <u>Forest health (1, 3, 4, 5, 6, 7, 8, 10, 12, 13, 14, 15)</u>

- Native vegetation communities are diverse, productive, healthy, and resilient. (1)
- Resource conditions minimize undesirable fire, insect, and disease outbreaks. When such events do occur, healthy ecosystems are resilient and able to recover. (1)
- Integrated pest management approaches are used to avoid epidemics and infestations of undesirable native or nonnative invasive species. (1)
- Native insects and diseases are present and fulfilling their ecosystem function. Epidemics, when they occur, do not last longer than would be expected in a healthy ecosystem. (1)
- Accumulations of natural and activity fuels are treated to enhance ecosystem resiliency and to maintain desired fuel levels. (1)
- Fire is present on the landscape, restoring or maintaining desirable attributes, processes, and functions of natural communities. (1)
- Unwanted wildland fire is actively suppressed where necessary to protect life, investments, and natural resources. The full range of appropriate management responses are considered when managing unwanted wildland fires. (1)
- Restore all heavily blowdown sites to a productive condition. (3)
- Forest management will minimize damage to forests from native insects and diseases. (4)
- Damage to forests from exotic species will be minimized. (4)
- Natural disturbance events will be evaluated to determine the appropriate forest management response to address the effects on the landscape. (4)
- Negative impacts caused by wildlife species on forest vegetation will be reduced. (4)
- Forest management practices will consider the impacts of climate change on forest lands and will attempt to mitigate these impacts using current knowledge and future research findings. (4)
- Limit damage to forests from insects, disease, and non-native invasive species to acceptable levels where feasible. (5)
- Reduce the negative impacts caused by wildlife species on forest vegetation on state forest lands. (5)
- Forest management on state lands attempts to mitigate global climate change effects on forest lands. Management is based on our current knowledge and will be adjusted based on future research findings. (5)
- Natural disturbance events that occur on state land within the Subsection are promptly evaluated to determine the appropriate forest management needed to their impacts (5)
- New infestations of invasive exotic species on public forest land are rare, and the spread of existing populations is controlled. (6)
- Losses due to forest insects and diseases on private and state forest land are minimized, as are the effects of pest management on nontarget species. (6)
- Limit damage to forests from insects, disease, and exotic species to acceptable levels where feasible. (7)
- Reduce the negative impacts caused by wildlife species on forest vegetation on state forest lands. (7)
- Forest management on state lands attempts to mitigate global climate change effects on forest lands. Management is based on our current knowledge and will be adjusted based on future research findings. (7)
- Natural disturbance events that occur on state land within these subsections are promptly evaluated to determine the appropriate forest management needed to their impacts. (7)
- Reduce losses in timber productivity from insects and disease. (8, 13)
- Increase the health and presence of hardwoods in the planning unit. (12)

- Protect the county's timber resources from losses due to insects, disease, fire, and similar forces. (14)
- Protect the integrity and longevity of forest lands under NRM management. (10)
- Control invasive species to the extent practical with available financial and human resources. (15)
- To minimize mortality and subsequent loss of quality wood products from diseases, fire, insects and other adverse agents that contribute to mortality of trees. (15)
- Maintain ecological integrity through quality resource stewardship of our natural environment. (15)

5. <u>Soil, water, and air resources (1, 2, 3, 4, 5, 6, 7, 8, 10, 13, 14, 15)</u>

- Air on the Forest is of high quality. (1)
- New and modified industrial facilities do not degrade Forest resources or uses. (1)
- Air emissions resulting from National Forest management actions do not degrade natural resources or uses of the Forest. (1)
- Watersheds and soils are maintained or restored in a way that allows for the conservation of the genetic integrity of native species. Physical properties of soils are maintained and enhanced. Watershed and habitat restoration projects are natural appearing and favor the use of native materials or naturalized species to the extent practical. (1)
- Management activities do not reduce existing quality of surface or groundwater or impair designated uses of surface and groundwater. (1)
- Water quality, altered stream flow, and channel stability do not limit aquatic biota or associated recreational uses. Water in lakes, streams, and wetlands meets or exceeds State water quality requirements. (1)
- Watersheds provide an appropriate quantity, quality, and timing of water flow. Stream channels and lakeshores are stable. Stream temperatures are maintained within their natural range and are not increased by lack of shading or because of channel instability. Stream channels, including those in wetlands, are able to transport water and sediment without changing their pattern, dimension, and profile. Sensitive stream types are protected and improved. Management activities protect or promote quality of habitats that occur in the riffle areas of streams, improving stable channel characteristics. (1)
- The physical integrity and hydrologic connectivity of pool depressions in seasonal ponds is maintained to assure seasonal retention of water. (1)
- Hydrologic connectivity of aquatic ecosystems and wetlands is maintained or restored to assure passage of water, sediment, nutrients, wood, invertebrates, and fish and to facilitate freshwater mussel dispersal. The number of impoundments is minimized. Waters affected by dams are managed as much as practical to mimic natural lake levels and seasonal flows. Stream flows and lake levels on waters not affected by dams are suitable to protect habitat and maintain natural hydrologic processes. (1)
- Fine sediment from management activities does not adversely affect lake, stream, and wetland habitats. Macro-invertebrates are represented in the approximate proportion expected for high quality waters. Fish habitats are in good to excellent condition and are spatially distributed and connected to allow stable populations of fish, reptiles, and amphibians to persist within their natural ranges. Natural reproduction of fish is not limited by habitat condition. (1)
- Soils recover from natural disturbance events and absorb the effects of human disturbances without reducing productivity and function. Soils contribute to ecosystem sustainability. Soil-hydrologic function and productivity is protected, preserving the ability to serve as a filter for good water quality and regulation of nutrient cycling. Soil exposure is minimized. There is minimal compaction, displacement, and puddling. Severely burned conditions resulting from management-ignited fire occur infrequently. (1)

- Floodplains have little or no new facility development. Floodplains are able to store and transmit floodwaters, fulfill their natural role in regulating water quality, and present minimum risk to human safety and property. (1)
- The transportation system design considers environmental, social, and health concerns. (1)
- Hazardous materials: (1)
    a. Soil, water, and air resources on the Forest are not contaminated with hazardous materials.
    b. Known sites of hazardous materials are managed and mitigated so that public health and natural resources are not negatively affected.
    c. Hazardous material events are coordinated smoothly with other agencies involved in the situation and Forest interests are represented.
    d. Stored hazardous materials pose the smallest possible threat to personnel and the environment.
- Water Supplies and Wastewater Treatments: (1)
    a. Federal sewage disposal and other developments do not adversely affect water resources.
    b. Public and non-public water supplies are safe for use.
- Protect reservation water resources by utilizing and expanding existing forestry best management practices (BMPs) for water quality guidelines. (2)
- Roads and trails are managed to protect or maintain native plants and animals, protect water quality, and to manage for compatible human uses and types of access. (1)
- Ensure environmental protection is the first priority when any new access roads and/or stream crossings are planned. (3)
- Harvest all forest products in as efficient and safe manner as possible, utilizing both even-aged and all-aged silvicultural management systems, with special consideration given to weather conditions; soil type; topography; road accessibility; stream and water crossings; proximity to lakes, ponds, and wetlands; seasonal restrictions; wildlife constraints; raptor nests; etc. (3)
- Forest management on state lands will protect permanent wetlands and seasonal ponds. (4)
- Management activities will protect or enhance riparian areas. (4)
- The management and administration of state land will minimize negative cumulative impacts on aquatic resources. (4)
- Forest management on state lands adequately protects wetlands and seasonal ponds. (5, 7)
- Forested rivers in the planning area have high water quality providing important habitat for fish, amphibians, and invertebrates, including a number of federally listed mussel species. (6)
- Protect water bodies and watersheds to maintain water quantity and quality. (8, 13)
- Enhance and conserve the natural environment, unique recreational, historical and scenic values, essential habitat, rare and endangered species and plant communities, as well as forest soil and water quality. (8, 13)
- Maintain productivity of forest soils except on areas needed for permanent roads or other permanent infrastructure. (8, 13)
- Protect the integrity and longevity of forest lands under NRM management. (10)
- To protect fish habitat from harmful runoff, to protect streams from erosion and sedimentation, and to maintain shading and cooling provided by forest canopies. (14)
- Maintain ecological integrity through quality stewardship of our natural environment. (15)

6. Visual quality (1, 2, 3, 4, 5, 6, 7, 8, 9, 13, 14)

- In cooperation with other government agencies and private organizations, the Forest provides support for National Forest, State, and National Scenic Byways to enhance the byway's scenic resource, provide recreation and interpretive opportunities, address resource issues, and promote economic development. (1)

- The scenic environment within the Forest ranges from landscapes with high scenic quality, displaying little or no evidence of management activities, to landscapes with low scenic quality where evidence of management activities dominate. High scenic quality is protected or enhanced in landscapes with outstanding scenic value and in high public use recreation areas and corridors. (1)
- In Moderate and High Scenic Integrity Objective (SIO) areas, vegetation management that is visible from travel ways, recreation sites, and lakes with access: (1)
    a. Enhances views, creates vistas, and features natural openings,
    b. Retains canopies over travel routes,
    c. Encourages vegetative diversity and seasonal color contrast, and
    d. Enhances big-tree appearance.
- Permanent openings created through vegetative management will blend with the adjacent landscape and have a natural appearance that mimics natural openings. (1)
- Minimize visual impacts of forest management by following general landscape management principles where feasible. (2)
- Consider visual quality and minimize visual impacts in all timber sale planning. (3)
- Impacts of forest management on visual quality will be minimized. (4)
- Minimize forest management impacts on visual quality in sensitive areas. (5)
- DNR Forest managers minimize the visual and aural impact of forest management activities on users of state forests, thereby supporting and enhancing multiple-use values of state forest land. (6)
- Minimize forest management impacts on visual quality in sensitive areas. (7)
- Maintain visual values in areas of high public use and visibility such as resort lakes, recreational rivers, and near communities. (8, 9, 13)
- Protect the natural aesthetic resources enjoyed by the public. (14)

7. Forest resource sustainability (1, 2, 4, 5, 7, 9, 10, 12, 13, 14, 15)

General

- Vegetation conditions contribute to ecosystem sustainability and biological diversity. They address current and future generations' needs for and interests in the many aesthetic, spiritual, consumptive, commodity, recreational, and scientific uses and values of forests. (1)
- Assure long-term use of the many forest resources for the people of Leech Lake Reservation. (2)
- Provide a sustained yield of renewable resources for utilization for multiple purposes. (8, 13)
- Protect the integrity and longevity of forest lands under NRM management. (10)
- Maintain ecological integrity through quality resource stewardship of our natural environment. (15)

Timber

- Harvest timber on tribal, band, and allotted lands based on a 10-year timber harvest plan. (2)
- Provide adequate timber resources for tribal members' fuelwood use. (2)
- Forests will be managed to provide a sustainable supply of forest products for human use, while minimizing negative impacts to wildlife habitat and forest biodiversity. (4)
- Regulate timber harvest and regeneration for a sustained-yield, long-term output of wood products to provide income to the tax-forfeited land trust fund and commodities for a strong timber industry economy. (14)
- To provide a sustainable, reliable supply of quality saw-timber, pulp and other forest products. (15)

Non-timber forest products

- Identify, protect, and enhance, where appropriate and feasible, sugarbush sites on tribal, band, and allotted lands. (2)
- Develop rules for maple sap collection, bough collecting, and burning permits. (2)
- Forests will be managed to provide a sustainable supply of non-timber forest products for human use while minimizing negative impacts to wildlife habitat and forest biodiversity. (4)
- The harvest of nontimber forest products is managed to provide a sustainable supply for humans while providing for wildlife habitat and biodiversity. (5, 7)
- Preserve and, where appropriate, enhance access to traditional use (bough-cutting, berry picking and sugaring) areas. (12)

8. Biological diversity (1, 2, 4, 5, 6, 7, 8, 13, 14, 15)

General

- Native vegetation communities are diverse, productive, healthy, and resilient. (1)
- Vegetation conditions contribute to ecosystem sustainability and biological diversity. They address current and future generations' needs for and interests in the many aesthetic, spiritual, consumptive, commodity, recreational, and scientific uses and values of forests. (1)
- The ecological processes of native vegetation communities are maintained, emulated, or restored at multiple landscape scales to provide representation of their natural range of distribution and variation within context of multiple-use goals and ecosystem sustainability. These include: processes such as disturbance from fire, wind, flooding, insects and disease; biological community and species interactions; nutrient cycling; and vegetation succession. (1)
- Aquatic and terrestrial wildlife habitats on NFS land contribute to ecosystem sustainability and biological diversity of Northern Minnesota and, for wide-ranging species, larger landscape scales. Habitats contribute to supporting populations of wildlife that address peoples' current and future need for and interest in the many aesthetic, commercial, subsistence, recreational, cultural, wildlife watching, hunting, fishing, trapping, and scientific uses and values of wildlife. (1)
- Diversity of plant species within stands will be maintained or increased. (4)
- Forest management will continue to implement measures to sustain or enhance existing biodiversity. (4)
- Managers of state lands in MCBS sites of statewide biodiversity significance implement measures to sustain or minimize the loss to the biodiversity significance factors on which these MCBS sites were ranked. (5, 7)
- Species, age, and structural diversity within some stands will be maintained or increased. (5, 7)
- State Nurseries have access to sources of seed and other propagation materials from a variety of environments. These sources are identified and protected in the course of forest management. (6)
- Areas of unusual ecological significance are valued and protected as areas for study and conservation of both plant and animal rare species, sources of biological diversity, and ecological benchmarks. (6)
- Maintain ecosystem diversity at all levels—landscape, stand, species, and genetic. (8, 13)
- To increase diverse species composition, patch sizes and age class structure. (15)

Rare and protected species

- Vegetation conditions that have been degraded or greatly diminished in quality or extent on the landscape by past land use are restored to conditions more representative of native vegetation communities. These conditions, in ecologically and socially appropriate areas, result from gradually re-establishing diverse mixes of trees, shrubs, herbs, mosses, lichens, and fungi species at site and landscape levels that are more representative of native vegetation communities. This

includes an increase, in appropriate areas, of: rare and sensitive plants and native plant communities; white, red, and jack pine; white cedar; upland tamarack; and in some areas, white and black spruce as components of native vegetation communities. (1)

- Aquatic and terrestrial wildlife habitats and species populations, while constantly changing due to both management activities and naturally occurring events, are present in amounts, quality, distributions, and patterns so that NFS land: (1)
    a. Contribute to the conservation and recovery of federally-listed, proposed, or candidate threatened and endangered species and the habitats upon which these species depend.
    b. Contribute to the conservation of sensitive species and the habitats upon which these species depend.
- Fish populations are productive and support sustainable recreational, subsistence, and commercial fisheries while meeting the needs of fish-dependant threatened, endangered, or sensitive wildlife species. (1)
- The Forest continues to provide rare or unique benefits that may not be common on or available from other public or private lands, such as opportunities for experiencing solitude in remote settings, recreating where lakeshores are undeveloped, harvesting unique natural resources, and providing habitat for some Federal and/or State endangered, threatened, or sensitive species. (1)
- Provide habitat for Rare, Threatened, and endangered species. (2)
- Species of Greatest Conservation Need and Key Habitats are maintained or enhanced in the subsection. (5)
- Rare plants and animals and their habitats are protected, maintained, or enhanced in the Subsection. (5)
- Rare native plant communities are protected, maintained, or enhanced in the subsection. (5)
- Healthy butternut specimens on state and private lands are protected pending the development of trees resistant to butternut canker. (6)
- Areas of unusual ecological significance are valued and protected as areas for study and conservation of both plant and animal rare species, sources of biological diversity, and ecological benchmarks. (6)
- Forested rivers in the planning area have high water quality providing important habitat for fish, amphibians, and invertebrates, including a number of federally listed mussel species. (6)
- Species of Greatest Conservation Need and Key Habitats are maintained or enhanced in these subsections. (7)
- Rare plants and animals and their habitats are protected, maintained, or enhanced in these subsections. (7)
- Rare native plant communities are protected, maintained, or enhanced in these subsections. (7)
- Enhance and conserve the natural environment, unique recreational, historical and scenic values, essential habitat, rare and endangered species and plant communities, as well as forest soil and water quality. (8, 13)
- Protect significant natural heritage features (e.g., rare flora and fauna, old growth forest ecosystems). (14)
- To retain and enhance habitat critical to support endangered, threatened, or special concern species. (14)

9. <u>Recreation (1, 8, 9, 10, 12, 13, 14, 15)</u>

- Water-related recreational, subsistence and commercial uses (such as access for powered or non-powered watercraft; opportunities and access for activities such as fishing, swimming, camping, wild rice harvesting, and aesthetics) are provided for within the limits of aquatic ecosystem capability. (1)

- The Forest continues to provide rare or unique benefits that may not be common on or available from other public or private lands, such as opportunities for experiencing solitude in remote settings, recreating where lakeshores are undeveloped, harvesting unique natural resources, and providing habitat for some Federal and/or State endangered, threatened, or sensitive species. (1)
- The Forest provides a range of quality motorized and non-motorized recreation opportunities to satisfy diverse public interests while maintaining sustainable ecosystems. (1)
- The Forest emphasizes recreational activities and opportunities appropriate to remote natural settings. Remote natural settings have a predominantly natural appearance and have moderate evidence of human sights and sounds. (1)
- The Forest provides developed sites, facilities, trails, water access sites, and other recreation opportunities within health and safety, resource protection, cost, and maintenance requirements. (1)
- Universally accessible facilities that fit with site and program characteristics are offered. User convenience, visitor satisfaction, and anticipated visitor interactions are also considered when providing recreation opportunities. (1)
- The Forest continues to administer a recreation special use permit program providing recreation opportunities at existing resorts, recreation residences, and camps. Existing permits would be reissued upon expiration provided they comply with their permit terms. (1)
- In cooperation with other government agencies and private organizations, the Forest provides support for National Forest, State, and National Scenic Byways to enhance the byway's scenic resource, provide recreation and interpretive opportunities, address resource issues, and promote economic development. (1)
- Recreation activities continue to occur with little or no disruption when forest management activities are near or adjacent to public use areas and facilities. (1)
- Regulations, constraints, and supervision of recreation use are limited to those necessary for resource protection, visitor satisfaction, and safety. (1)
- Foot travel throughout the Forest is welcome for the wide spectrum of recreation activities and opportunities such as hunting, orienteering, hiking, and bird watching as well as spiritual and cultural pursuits. (1)
- In conjunction with State regulations, the Forest provides a range of quality hunting, trapping, and fishing opportunities. (1)
- In cooperation with other agencies and groups, the Forests enhance existing and provide additional wildlife viewing opportunities. (1)
- The Forest provides developed recreation sites, such as campgrounds and picnic areas, that accommodate the needs of a wide variety of visitors. Easy to access, safe, comfortable, and convenient facilities are provided in scenic environments. Most developed sites accommodate concentrated public use. (1)
- The Forest provides dispersed recreation facilities such as campsites and picnic sites for small groups. Dispersed recreation opportunities emphasize a remote recreation experience, have few or no facilities, and are often near bodies of water or along roads and trails where public use is low. (1)
- The Forest trail system provides a range of activities and experiences necessary to accommodate recreation uses while minimizing environmental and social impacts. (1)
- Trails are managed for their intended primary purpose and to avoid use conflicts. (1)
- The Forest provides non-motorized trail opportunities in a variety of forest settings. (1)
- The Forest provides RMV road and trail riding opportunities with experiences in a variety of forest environments, while protecting natural resources. (1)
- Allowed, restricted, and prohibited RMV uses are clearly defined to the public. Where practical, RMV policies are consistent with adjacent public land management agencies. (1)

- On roads, trails, and in areas (crosscountry) where RMV uses are prohibited, motorized access may be allowed for law enforcement, emergency, firefighting, maintenance, and other administrative purposes. (1)
- The Forest provides a range of water access sites with related recreation opportunities on lakes and river segments. Levels of facility development are appropriate to the lake and river classifications and ROS class objectives. Some lakes and river segments do not have any developed water access sites. (1)
- Provide forest qualities that support and enhance non-consumptive economic values such as tourism, recreation, second home development, and lakeshore development. (8, 13)
- Enhance and conserve the natural environment, unique recreational, historical and scenic values, essential habitat, rare and endangered species and plant communities, as well as forest soil and water quality. (8, 13)
- Provide recreational opportunities on forested lands for residents and visitors. (8, 9, 13)
- Enhance public recreation and use values for the forest. (10)
- Develop a multi-use non-motorized vehicle trail system, and a system for motorized uses. (12)
- Preserve and, where appropriate, enhance access to traditional use (bough-cutting, berry picking and sugaring) areas. (12)
- Provide adequately developed, dispersed facilities such as trails. (14)
- Enhance undeveloped, dispersed recreation opportunities, such as hunting and wildlife viewing, and to provide public access to public waters. (14)
- Provide visitors and the citizens of Itasca County with a variety of quality park and recreation opportunities. (15)
- Maintain a forest road and trail system in Itasca County that provides a variety of access for citizens and reduces the threat of wildfire. (15)

10. <u>Forest roads (1, 4, 5, 6, 7, 12, 14, 15)</u>

- The existing National Forest System roads that are suitable for passenger vehicles provide a safe and affordable system for administrative and public access to NFS land. (1)
- The National Forest road system is the minimum needed to provide adequate access to both NFS and non-NFS land. (1)
- The transportation system design considers environmental, social, and health concerns. (1)
- The National Forest road system provides a "seamless" interface with the neighboring public road agencies based on coordinated use, function, and agency goals. (1)
- Private and non-NFS landowners have reasonable access to their land. (1)
- Forest access routes will be well planned, with an increased level of collaboration among federal, county, private and local units of government to share access, minimize new construction, and close access routes no longer needed for forest management purposes. (4)
- Forest access routes are well planned and there is a high level of collaboration with federal, private, and local units of government to share access and minimize new construction. (5, 7)
- Forest managers carefully consider forest road construction. There is a high level of collaboration with federal and private landowners and local units of government to identify opportunities to share and minimize road construction. (6)
- Improve Access to high priority county land parcels that are now without adequate access. (12)
- Access County forest lands appropriately to protect, manage and utilize forest resources for all programs and multiple uses. (14)
- Maintain a trunk road system, in cooperation with other road authorities, which will sustain prolonged vehicle use. (14)
- Minimize conflicts arising from “multiple-use” of forest roads. (14)

- Maintain a forest road and trail system in Itasca County that provides a variety of access for citizens and reduces the threat of wildfire. (15)

11. <u>Economic and social sustainability (1, 3, 6, 8, 9, 10, 13)</u>

- Ensure that exploring, developing, and producing mineral resources are conducted in an environmentally sound manner so that they may contribute to economic growth and the national defense. (1)
- The Forest provides commodity resources in an environmentally sustainable and acceptable manner to contribute to the social and economic sustainability and diversity of local communities. (1)
- The Forest provides non-commodity opportunities in an environmentally sustainable and socially acceptable manner to contribute to social sustainability and vitality of local resident's way of life, cultural integrity, and social cohesion. (1)
- The Forest continues to emphasize agency, tribal, and public involvement with increases in inter-governmental coordination with federal, state, county governments and agencies; a high level of communication and dialogue with a broad range of stakeholders; and successful dialogue between Tribal governments and Chippewa NF officials. (1)
- The Forest continues to provide rare or unique benefits that may not be common on or available from other public or private lands, such as opportunities for experiencing solitude in remote settings, recreating where lakeshores are undeveloped, harvesting unique natural resources, and providing habitat for some Federal and/or State endangered, threatened, or sensitive species. (1)
- Public and employee health and safety is of primary consideration while managing the National Forest. (1)
- Constructed and natural site-specific amenities designated as actively managed by the national forest are healthy and safe for the public to use. (1)
- The Forest continues to emphasize agency, tribal, and public involvement with increases in inter-governmental coordination with federal, state, county governments and agencies; a high level of communication and dialogue with a broad range of stakeholders; and successful dialogue between Tribal governments and Chippewa NF officials. (1)
- Harvest all forest products in as efficient and safe manner as possible, utilizing both even-aged and all-aged silvicultural management systems, with special consideration given to weather conditions; soil type; topography; road accessibility; stream and water crossings; proximity to lakes, ponds, and wetlands; seasonal restrictions; wildlife constraints; raptor nests; etc. (3)
- The public is involved in forest management planning during designated review periods. (6)
- Forest managers have stakeholder support for employment of a full suite of forest management options as appropriate to reach identified goals. (6)
- Contribute to the local economy over time in terms of economic opportunity and employment as well as provide direct financial returns to the County and its subdivisions. (8, 13)
- Sustain socio-economic benefits of forestry activities for area communities. (8, 9, 13)
- Assure orderly and controlled development resulting from the disposition of tax forfeited land. (8, 9, 13)
- Affirm and establish direction through a public involvement process which utilizes evaluation of issues and policy recommendations of the Forestry Advisory Committee. (8, 9, 13)
- Provide opportunities for meaningful and effective public involvement throughout the forest management planning cycle before irreversible decisions are made. (8, 9, 13)
- Maintain a safe working environment for employees, contractors, and the public. (8, 13)
- Encourage the best use of wood off the land base. (8, 13)

- Anticipate and respond to concerns about potential and actual impacts of forest management activities on other forest uses, users, and managers. (8, 9, 13)
- Solicit public input to supplement forest management decision making. (10)
- Communicate our performance to the County Board and public. (10)
- Promote and incorporate applied research and technology. (10)
- Encourage efficient use of the forest's products for environmental, economic and social benefits. (10)
- Provide public education on forest ecology, sustainable forest management and the economic value of forests. (10)
- To reduce dependence on foreign sources of fuel, develop pilot projects and a management program for producing biofuels for local consumption. (15)

12. <u>Cooperative management (1, 5, 6, 7, 8, 13, 15)</u>

- The Forest works cooperatively with other landowners and land managers to protect, enhance, and restore physical and biological resources as well as social and economic values. Cooperative management includes tribal, State, county, local governments as well as other federal agencies. (1)
- Aquatic and terrestrial resource issues are addressed using a collaborative watershed-based approach. The ecological composition, structure, and function of individual lakes, streams, wetlands, upland and lowland soil and the watersheds and landscapes in which they are nested, is understood and routinely used as a source of information. (1)
- The Forest continues to emphasize agency, tribal, and public involvement with increases in inter-governmental coordination with federal, state, county governments and agencies; a high level of communication and dialogue with a broad range of stakeholders; and successful dialogue between Tribal governments and Chippewa NF officials. (1)
- Forest access routes will be well planned, with an increased level of collaboration among federal, county, private and local units of government to share access, minimize new construction, and close access routes no longer needed for forest management purposes. (4)
- Forest access routes are well planned and there is a high level of collaboration with federal, private, and local units of government to share access and minimize new construction. (5, 7)
- Forest managers carefully consider forest road construction. There is a high level of collaboration with federal and private landowners and local units of government to identify opportunities to share and minimize road construction. (6)
- Progress toward the vision for the subsection(s) forests (or DFFCs) is enhanced by engaging nonindustrial private forest landowners, providing a level of consistency across ownerships with regard to forest management in a given landscape unit. (6)
- Minnesota DNR resource managers routinely collaborate with other landowners to develop consistent goals and landscape-level strategic plans. (6)
- State forest lands are managed in a manner that minimizes conflicts among users, adjacent landowners, and in-holders, while maintaining management options. (6)
- Cooperate with other area forest resource managers to implement ecosystem-based management. (8, 13)
- Encourage other area forest resource managers, public and private, to adopt ecosystem-based management. (8, 13)
- Partner, educate and coordinate with individuals and organizations to provide citizens with quality forest products and services. (15)

13. Cultural resources (1, 2, 3, 4, 5, 7)

- Heritage resources are identified and managed to maintain and preserve the qualities for which they have been deemed significant, and for benefits that may include: research, education, historical perspectives in land management, and the general appreciation of American heritage. (1)
- Define, identify, protect, or enhance areas of special concern (scenic, old growth, gathering areas, medicinal plants, archaeological sites, etc.). (2)
- Protect cultural resources and ensure no negative impacts from logging operations affect these resources. (3)
- Forest management activities will protect cultural resources on state administered lands. (4)
- Cultural Resources will be protected on state-administered lands. (5, 7)

14. Land base (1, 12, 14, 15)

- The amount and spatial arrangement of National Forest System land within the proclamation boundary of the Forest are sufficient to protect resource values and interests, improve management effectiveness, eliminate conflicts, and reduce the costs of administering landlines and managing resources. (1)
- Consolidate County land holdings to increase management effectiveness. (12)
- Ensure a stable land base sufficient in size and character capable of effecting the intent of this management plan and provide long-term multiple use benefits. (14)
- To maintain a no net loss of Memorial Forest designated acres. (15)

15. Minerals (1, 15)

- Exploration and development of mineral and mineral material resources is allowed on National Forest System land. (1)
- Ensure that exploring, developing, and producing mineral resources are conducted in an environmentally sound manner so that they may contribute to economic growth and the national defense. (1)
- Provide earthen materials in support of expansion and maintenance of transportation system in Itasca County. (15)

Management and Planning Report Summaries

1. Chippewa National Forest Land and Resource Management Plan

Document Title	Source	Date	Website Access
Land and Resource Management Plan: Chippewa National Forest	USDA Forest Service	2004	http://www.fs.usda.gov/detail/chippewa/landmanagement/planning/

Geographic Extent / Scope:
The Chippewa National Forest is located in north central Minnesota and was the first national forest established east of the Mississippi. The Forest boundary encompasses 1.6 million acres, of which over 666,000 acres are managed by the USDA Forest Service. (p. 1-2)

Organizations / Agencies involved in plan creation:
Leech Lake Band of Ojibwe, Minnesota Department of Natural Resources, US Fish and Wildlife Service, Minnesota Forest Resource Council, University of Minnesota, The Nature Conservancy, the Ruffed Grouse Society, the Audubon Society, Minnesota Forest Industries, the Sierra Club, Minnesota Deer Hunters Association, Minnesota Timber Producers, North Central Forest Experimental Station, State and Private Forestry, US Environmental Protection Agency, and Forest Service Employees. (Final EIS, Record of Decision, pp. iii-iv)

Info on Planning Process:
A Forest Plan for the Chippewa National Forest was issued in 1986. The National Forest Management Act regulations require that Forest Plans be revised every 10 to 15 years (36 CFR 219.10). In order to meet that requirement, the Chippewa National Forest teamed up with the Superior National Forest to revise their 1986 Forest Plans together. The revised Forest Plan is a result of that revision process.

The Chippewa and Superior National Forests did a joint environmental analysis and issued a final environmental impact statement (FEIS) together. However, there are two separate revised Forest Plans, one for each Forest.

The Forest Plan is based on the alternative that the Regional Forester selected in the Record of Decision for Forest Plan Revision (2004). The Selected Alternative is described in Chapter 2 of the FEIS (Section 2.4.5) and in the Record of Decision.

The 2004 Forest Plan revision process was conducted under the 1982 version of the Forest Service planning rules as stated in CFR §219. (pp. 1-3 – 1-4)

Purpose of plan:
The Forest Plan guides all natural resource management activities for the Chippewa National Forest. It describes desired resource conditions, resource management practices, levels of resource production and management, and the availability of suitable land for resource management. (Forest plans are also referred to as "land and resource management plans".) The purpose of the Forest Plan is to provide management direction to ensure that ecosystems are capable of providing a sustainable flow of beneficial goods and services to the public. (p. 1-2)

ISSUES (Issues) (Final EIS, pp. 1-16 – 1-29)

1. Forest vegetation
    a. Forest age and composition
    b. Forest spatial patterns
2. Wildlife habitat
3. Timber
    a. Uneven-aged vs. even-aged management
    b. Timber supply
    c. Mix of forest products
4. The role of fire
5. Watershed health
    a. Watershed management
    b. Riparian and fish management
6. Special designations
    a. Potential wilderness study areas
    b. Potential research natural areas
7. Recreation
    a. Recreational opportunities and forest settings
    b. Scenic quality
    c. Recreational motor vehicles
    d. Water access
8. Economic and social sustainability
    a. Economic sustainability of local communities
    b. Social sustainability
9. Issues not addressed in detail
    a. Wild and scenic river recommendations
    b. Special uses
    c. Minerals management

VISION(S) (Mission and Forest-wide Goals) (p. 2-5)

Forest Service Mission:
To sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations (p. 2-5)

Forest-wide Goals:
1. Promote ecosystem health and conservation using a collaborative approach to sustain the nation's forests and watersheds.
2. Protect and where appropriate restore soil, air, and water resources.
3. Provide for a variety of life by managing biologically diverse ecosystems.
4. Provide for sustained forest product uses in an environmentally acceptable manner.
5. Provide forest settings and natural resources that enhance social and economic benefits at local, regional, and national levels.
6. Provide a variety of uses, values, products, and services for present and future generations by managing within the capability of sustainable ecosystems.
7. Provide management direction that enhances social and economic benefits for individuals and communities:
    a. Emphasize scenic quality in areas of high interest to people

   b. Emphasize a variety of forest settings that provide for a spectrum of social opportunities and benefits for people
   c. Maintain a road and trail system that provides opportunities for people to access the National Forest
   d. Contribute to local, regional, and national economies by providing natural resources in a socially and environmentally acceptable manner
   e. Contribute to efforts to sustain the American Indian way of life, cultural integrity, social cohesion, and economic well-being.
8. Develop and use the best scientific information available to deliver technical and community assistance and to support ecological, economic, and social sustainability.

GOALS (Desired Conditions) / STRATEGIES (Objectives) [Desired conditions and Objectives are arranged by resource program area, as listed Chapter 2 of the plan.] (pp. 2-7 – 2-52)

Cooperative Management

Desired Conditions

1. The Forest works cooperatively with other landowners and land managers to protect, enhance, and restore physical and biological resources as well as social and economic values. Cooperative management includes tribal, State, county, local governments as well as other federal agencies.

Air Quality and Smoke Management

Desired Conditions

1. Air on the Forest is of high quality so that:
   a. Ecosystems are not impaired by stressors originating in the air (for example, acid deposition, direct injury to vegetation by air pollutants, detrimental changes to soil chemistry and mercury contamination of fish)
   b. The health of visitors, residents, and employees is not impaired
   c. Visibility does not impair scenic quality
   d. Other air quality related values are not adversely affected
2. New and modified industrial facilities do not degrade Forest resources or uses.
3. Air emissions resulting from National Forest management actions do not degrade natural resources or uses of the Forest.

Objectives

1. Maintain the ambient air on the Forest within the National Ambient Air Quality Standards and the Minnesota Ambient Air Quality Standards.

Minerals

Desired Conditions

1. Exploration and development of mineral and mineral material resources is allowed on National Forest System land.
2. Ensure that exploring, developing, and producing mineral resources are conducted in an environmentally sound manner so that they may contribute to economic growth and the national defense.

Watershed Health, Riparian Areas, and Soil Resources

Desired Conditions

1. Watersheds and their components:
    a. Are part of healthy ecosystems that meet the needs of current and future generations
    b. Provide for State, tribal, and local beneficial uses
    c. Are protected or enhanced to provide for unique plant and animal communities, special habitat features, habitat linkages, wildlife corridors, aquatic ecosystems and riparian ecosystems.
2. Water-related recreational, subsistence and commercial uses (such as access for powered or non-powered watercraft; opportunities and access for activities such as fishing, swimming, camping, wild rice harvesting, and aesthetics) are provided for within the limits of aquatic ecosystem capability.
3. Watersheds and soils are maintained or restored in a way that allows for the conservation of the genetic integrity of native species. Physical properties of soils are maintained and enhanced. Watershed and habitat restoration projects are natural appearing and favor the use of native materials or naturalized species to the extent practical.
4. Management activities do not reduce existing quality of surface or groundwater or impair designated uses of surface and groundwater.
5. Water quality, altered stream flow, and channel stability do not limit aquatic biota or associated recreational uses. Water in lakes, streams, and wetlands meets or exceeds State water quality requirements.
6. Watersheds provide an appropriate quantity, quality, and timing of water flow. Stream channels and lakeshores are stable. Stream temperatures are maintained within their natural range and are not increased by lack of shading or because of channel instability. Stream channels, including those in wetlands, are able to transport water and sediment without changing their pattern, dimension, and profile. Sensitive stream types are protected and improved. Management activities protect or promote quality of habitats that occur in the riffle areas of streams, improving stable channel characteristics.
7. The physical integrity and hydrologic connectivity of pool depressions in seasonal ponds is maintained to assure seasonal retention of water.
8. Hydrologic connectivity of aquatic ecosystems and wetlands is maintained or restored to assure passage of water, sediment, nutrients, wood, invertebrates, and fish and to facilitate freshwater mussel dispersal. The number of impoundments is minimized. Waters affected by dams are managed as much as practical to mimic natural lake levels and seasonal flows. Stream flows and lake levels on waters not affected by dams are suitable to protect habitat and maintain natural hydrologic processes.
9. Fine sediment from management activities does not adversely affect lake, stream, and wetland habitats. Macro-invertebrates are represented in the approximate proportion expected for high quality waters. Fish habitats are in good to excellent condition and are spatially distributed and connected to allow stable populations of fish, reptiles, and amphibians to persist within their natural ranges. Natural reproduction of fish is not limited by habitat condition.
10. Riparian areas serve as landscape connectors. Riparian areas, habitats, and associated vegetative communities are diverse in composition and structure and support native and desired non-native wildlife and plant species appropriate to site, soil, and hydrologic characteristics. Plants are present at a variety of ages and sizes and at densities adequate to provide bank stability. Where suitable to the site, a multi-layered forest canopy is present in the riparian area, providing shade, leaflitter, and coarse woody debris to lakes, streams, and wetlands. Some of these sites have an overstory of conifer that provides shade for aquatic and wetland ecosystems and thermal cover for wildlife. Super canopy trees provide nest sites for riparian associated species. Openings in

riparian area vegetation resulting from road crossings, trails, campsites, water access, or other recreational uses, occur infrequently and result in minimal alterations of riparian ecological function.

11. Riparian ecosystems filter runoff. Some of the mature and decadent trees from riparian ecosystems have fallen into lakes, streams, and wetlands, providing bank stability and habitat complexity. Other mature and decadent trees are retained in the riparian ecosystem, providing habitat for amphibians and other species and a reservoir of large wood to supply aquatic and wetland systems.
12. Soils recover from natural disturbance events and absorb the effects of human disturbances without reducing productivity and function. Soils contribute to ecosystem sustainability. Soil-hydrologic function and productivity is protected, preserving the ability to serve as a filter for good water quality and regulation of nutrient cycling. Soil exposure is minimized. There is minimal compaction, displacement, and puddling. Severely burned conditions resulting from management-ignited fire occur infrequently.
13. Floodplains have little or no new facility development. Floodplains are able to store and transmit floodwaters, fulfill their natural role in regulating water quality, and present minimum risk to human safety and property.
14. Aquatic and terrestrial resource issues are addressed using a collaborative watershed-based approach. The ecological composition, structure, and function of individual lakes, streams, wetlands, upland and lowland soil and the watersheds and landscapes in which they are nested, is understood and routinely used as a source of information.

<u>Objectives</u>

1. Improve and protect watershed conditions to provide the water quality, water quantity, and the soil productivity necessary to support ecological functions and intended beneficial water uses.
2. Restore ecological integrity on all or parts of one or two of the Forest's fifth level watersheds per year by:
    a. Enhancing or re-establishing the natural ecological process and diversity of riparian areas (aquatic ecosystems, riparian ecosystems, and wetlands) on National Forest System land.
    b. Improving road and trail crossings of streams and wetlands to assure soil stability, unimpeded flow, sediment transport, and/or passage of fish.
    c. Characterizing the ecological composition, structure function, and patterns of individual lakes, streams, wetlands, upland and lowland soil (terrestrial ecological classification units) and the watersheds and landscapes in which they are nested.
3. Within "near-bank" riparian management zones, as part of all actions involving vegetation management, favor management for long-lived tree species (such as white pine, red pine, black spruce, tamarack, etc.) suitable for the site, at stand densities suitable for the site.
4. Within "near-bank" riparian management zones, increase the basal area in situations where basal area is less than 60 sq. ft./acre and the site is capable of supporting a higher basal area.
5. Within "remainder" riparian management zones, as part of all actions involving vegetation management, favor management for extended rotation of tree species (either long- or short-lived) suitable for the site.
6. Reconstruct an average of one-half to three miles of stream channel per year, based on principles of stream geomorphology, to enable the flow of water and sediment to occur without resulting in a change in stream pattern, dimension, and profile.
7. Decrease the Forest's contribution of nonpoint water pollutants to all watersheds or water bodies for which a Total Maximum Daily Load has been determined.

8. Increase the amount of forest cover that is age 16 or older on NFS land in sixth level watersheds where the total (all ownerships) combined acreage in upland open plus upland young (<age 16) forest is above or approaching 60% of the total watershed area.
9. Protect and restore areas where soils are adversely impaired and contributing to an overall decline in watershed condition, soil productivity, soil quality and soil function. Do this by using management practices, inventory and monitoring results, and findings from the inventory of ecological units.
10. During all management actions involving soil disturbance:
    a. Maintain adequate ground cover and soil organic layers, both during and after treatment, to minimize erosion (including rill and gully formation) and allow water to infiltrate the soil.
    b. Minimize soil displacement, nutrient loss, and effects of severe burning.
    c. Restore and re-vegetate disturbed areas.
    d. Provide for the maintenance of physical, chemical and biological properties of the forest floor (soil organic matter, surface O layer) that make soil productive.
    e. Protect soil-hydrologic functions by minimizing rutting, puddling, and compaction.

    At the project level, this objective does not apply to the portions of disturbed areas that, by design, are converted long term or permanently to a non-productive condition (such as gravel pits or the actual compacted or paved surfaces of all season roads or trails, parking lots, or water access ramps).

Insects, Diseases, and Disturbance Processes

Desired Conditions

1. Resource conditions minimize undesirable fire, insect, and disease outbreaks. When such events do occur, healthy ecosystems are resilient and able to recover.
2. Integrated pest management approaches are used to avoid epidemics and infestations of un-desirable native or nonnative invasive species.
3. Native insects and diseases are present and fulfilling their ecosystem function. Epidemics, when they occur, do not last longer than would be expected in a healthy ecosystem.
4. Accumulations of natural and activity fuels are treated to enhance ecosystem resiliency and to maintain desired fuel levels.
5. Fire is present on the landscape, restoring or maintaining desirable attributes, processes, and functions of natural communities.
6. Unwanted wildland fire is actively suppressed where necessary to protect life, investments, and natural resources. The full range of appropriate management responses are considered when managing unwanted wildland fires.

Objectives

1. Increase the amount of forest restored to or maintained in a healthy condition to with reduced risk of and damage from fires, insects, and diseases.
2. Establish, maintain, or improve the condition of vegetation conditions using prescribed fire, mechanical treatments, and other tools.
3. Treat areas of highest fire risk (based on Fire Regime and Condition Class) to minimize the effects of unwanted wildland fire.
4. Reduce fuels and control vegetation in the understory of stands that have historically had naturally occurring low intensity surface fires.
5. Provide a program where firefighter and public safety are the highest priority with every fire management activity.

6. Use activity fuel and hazard fuel reduction methods, including prescribed fire, to meet vegetation objectives and to minimize mechanical ground disturbance of riparian areas.

Timber

Desired Conditions

1. The amount of commercial timber sales available for purchase is at a level that is sustainable over time. Mills operating in northern Minnesota can depend on a consistent level of timber harvest on the National Forest.

Objectives

1. Provide commercial wood for mills in northern Minnesota. Harvested material supplies sawmills, veneer mills, paper mills, and mills constructing engineered wood products (hardboard, particleboard, oriented strand board, etc.). The Forest also provides posts, poles, and logs for log home construction.

Vegetation Management

Desired Conditions

1. Native vegetation communities are diverse, productive, healthy, and resilient.
2. Vegetation conditions contribute to ecosystem sustainability and biological diversity. They address current and future generations' needs for and interests in the many aesthetic, spiritual, consumptive, commodity, recreational, and scientific uses and values of forests.
3. Vegetation (live and dead) is present in amounts, distributions, and characteristics that are representative of the spectrum of environmental conditions that would have resulted from the natural cycles, processes, and disturbances under which current forest ecosystems and their accompanying biological diversity evolved. The ecosystem composition, structure, and process representation considers time frames, a variety of landscape scales, and current biological and physical environments. Resource conditions exist that minimize undesirable occurrences of non-native invasive species.
4. Tree vegetation is present in amounts, distributions, and characteristics that allow contribution to a sustained yield of timber and pulpwood products.
5. Vegetation constantly changes through management activities and through naturally occurring disturbances and ecosystem recovery processes such as wind, fire, flooding, insects, disease, and vegetation succession. These fluctuations are within an ecologically and socially acceptable range of variability.
6. Vegetation conditions that have been degraded or greatly diminished in quality or extent on the landscape by past land use are restored to conditions more representative of native vegetation communities. These conditions, in ecologically and socially appropriate areas, result from gradually reestablishing:
    a. Old forest and old-growth forest age classes and vegetative growth stages, while providing for a full array of forest age classes and vegetative growth stages.
    b. Uneven-aged and multi-aged forests with a variety of tree ages and different vegetation layers (heights) within the same community, while also providing for even-aged forests.
    c. The full range of successional stages in non-forested lands such as bogs, fens, grass, and shrublands.
    d. Diverse mixes of trees, shrubs, herbs, mosses, lichens, and fungi species at site and landscape levels that are more representative of native vegetation communities. This

includes an increase, in appropriate areas, of: rare and sensitive plants and native plant communities; white, red, and jack pine; white cedar; upland tamarack; and in some areas, white and black spruce as components of native vegetation communities.

e. Diverse structure in native vegetation communities that have been harvested, salvaged, prescribe burned, or have undergone natural disturbance. Structural diversity components will be provided by small patches of forest (reserve islands); scattered or clumped standing, mature and older live trees; dead trees; and coarse woody debris (down logs and branches).

7. The diversity of vegetation spatial landscape patterns that have been degraded or greatly diminished on the landscape by past land use are restored to conditions that more closely emulate the landscape scale patterns that would result from natural disturbances and other ecological processes. These conditions result from gradually re-establishing:
    a. Spatial patterns that promote: well-distributed habitats; restoration of ecosystem function or processes; connectivity between aquatic, terrestrial, and riparian ecosystems across the landscape; scenic landscapes; and economic efficiencies.
    b. Diversity of size, shape, and distribution of patches of forest. This includes large patches of mature and older forest (300 to 1000s of acres) that provide interior forest habitat.
    c. Diversity of size, shape, and distribution of temporary forest openings on the landscape. This includes opening sizes from 1 to 1,000 acres.
8. The ecological processes of native vegetation communities are maintained, emulated, or restored at multiple landscape scales to provide representation of their natural range of distribution and variation within context of multiple-use goals and ecosystem sustainability. These include: processes such as disturbance from fire, wind, flooding, insects and disease; biological community and species interactions; nutrient cycling; and vegetation succession.

<u>Objectives</u>

1. Move vegetation conditions from Year 2003 conditions toward the long-term desired composition, structure, age, spatial patterns, and within-stand diversity.
2. Increase acres of red, white, and jack pine, spruce/fir, and northern hardwood vegetation communities. Decrease acres of aspen vegetation communities.
3. Maintain or slightly increase acres of birch vegetation communities.
4. Maintain acres of lowland conifer and lowland hardwood vegetation communities.
5. Maintain acres of non-forested wetlands.
6. Decrease the acres of maintained permanent upland openings except for those needed for social reasons or if important ecological needs are not adequately met by amount, quality or distribution of temporary forest openings.
7. Restore the diversity of tree species within stands to conditions more representative of native vegetation communities by increasing the component of white pine, red pine, paper birch, white cedar, upland tamarack, and in some areas, white spruce and black spruce.
8. Restore the diversity of shrubs and herbs, including sensitive or rare shrubs and herbs, to conditions more representative of native vegetation communities.
9. Restore structural diversity and ecosystem processes within stands when harvesting or burning by retaining: a diverse mix of trees, shrubs, and herbs; live and dead standing trees; earth and tree root mounds caused by uprooted trees; coarse woody debris from fallen trees; and patches of live trees.
10. Increase the amount of multi-aged forest communities in a variety of vegetative growth stages, including stages dominated by young, mature, old, and old growth trees. To successfully achieve a diversity of healthy multi-aged stands, a variety of vegetation management practices that are ecologically appropriate to the forest community will be used. This will include an increase in the

percentage of unevenaged timber harvest practices used to manipulate vegetation, with a decrease in percentage of clearcutting.

11. Increase amount of a variety of prescribed burning practices to restore the ecological process of fire and provide habitat for threatened and endangered species and other wildlife that benefit from or require burned vegetation.
12. Retain an adequate representation of naturally disturbed forest that is not salvaged, such as burned, flooded, blowdown, or insect- or disease-killed areas. Maintain these in a variety of patch sizes and distributions on the landscape.
13. Where natural disturbances, human influences, or stand age or composition have combined to perpetuate stands that are brush-dominated or have sparse tree canopy on sites that could otherwise provide productive timber management opportunities, and where there may be adequate ecological representation of these types of conditions, seek to reestablish adequately stocked stands to address timber management objectives.
14. Maintain a full range of age classes from young to old, including old growth and multi-aged growth stages, for the variety of forested vegetation communities within each Landscape Ecosystem.
15. Increase acres of old forest, old-growth forest, and multi-aged upland forest vegetation communities.
16. In forest managed to meet desired conditions and objectives for the old growth and multi-aged old growth forest vegetative growth stages, manage forest to promote old growth characteristics.
17. In mature or older red and white pine forest types maintain characteristics of mature or older native vegetation communities and promote the maintenance or development of interior forest habitat conditions.
18. Increase acres of young lowland black spruce and tamarack forest communities. Increase acres of old-growth lowland black spruce and tamarack forest communities.
19. Maintain or increase the acres and number of patches of mature or older upland forest in patches 300 acres or greater. Large upland forest patches may cross Landscape Ecosystem or other ecological boundaries (such as watersheds, Landtypes). When determining which large upland mature patches will be retained, take into consideration the contribution of other unmanaged lands within the same ecological setting and proximity.
20. Maintain a representative array of large patches (>300 acres) of mature or older lowland forest.
21. Increase amount of interior forest habitat. Provide interior habitat in a variety of upland and lowland vegetation communities.
22. In mature or older upland forest types managed to maintain large patches (300 acres or greater in all types) manage patches to maintain the characteristics of mature or older native upland forest vegetation communities and promote the maintenance or development of interior forest habitat conditions.
23. Where ecologically appropriate, increase acres and number of patches of temporary openings up to and including 1000 acres.
24. Increase average size of temporary forest openings. Reduce amount of forest edge created through vegetation management activities, while still retaining a range of small patches and edge habitat.

Terrestrial & Aquatic Wildlife

Desired Conditions

1. Aquatic and terrestrial wildlife habitats are diverse, healthy, productive, and resilient.
2. Aquatic and terrestrial wildlife habitats on NFS land contribute to ecosystem sustainability and biological diversity of Northern Minnesota and, for wide-ranging species, larger landscape scales. Habitats contribute to supporting populations of wildlife that address peoples' current and future

need for and interest in the many aesthetic, commercial, subsistence, recreational, cultural, wildlife watching, hunting, fishing, trapping, and scientific uses and values of wildlife.

3. Aquatic and terrestrial wildlife habitats and species populations, while constantly changing due to both management activities and naturally occurring events, are present in amounts, quality, distributions, and patterns so that NFS land:
    a. Provide representation of the full spectrum of habitats and conditions that would have resulted from the natural cycles, processes, and disturbances under which the biological diversity of the National Forest evolved. Representation considers time frames, a variety of landscape scales, and current biological and physical communities and environments. Representation considers time frames, a variety of landscape scales, and current biological and physical communities and environments.
    b. Maintain viable populations for all existing native and desired non-native species. Viable populations are those with the estimated numbers and distributions of reproductive individuals to insure their continued existence is well distributed within their range in the planning area.
    c. Contribute to the conservation and recovery of federally-listed, proposed, or candidate threatened and endangered species and the habitats upon which these species depend.
    d. Contribute to the conservation of sensitive species and the habitats upon which these species depend.
    e. Provide for the desired quality and quantity of habitat for management indicator species and indicator habitats.
    f. Support diverse species populations of all existing native and desired nonnative species.
    g. Provide ample opportunities for wildlife watching and quality opportunities for sustainable recreational, subsistence and commercial trapping and hunting, helping local communities realize the economic potential associated with these activities.
    h. Provide structure, composition, connectivity, function, and spatial patterns of aquatic and terrestrial habitats that maintain or restore opportunities for species to interact, disperse, and migrate and to reduce negative impacts associated with forest habitat fragmentation.
    i. Conserve the genetic variability of species.
4. On NFS land, management activities, recreation, and other human uses occur at levels that support desired amounts and distribution of suitable habitats for aquatic and terrestrial wildlife.
5. Roads and trails are managed to protect or maintain native plants and animals, protect water quality, and to manage for compatible human uses and types of access.
6. Increased emphasis on the health, quality, and ecological function of aquatic ecosystems provides improved habitat conditions for fish, mollusk, invertebrate, plant, and other aquatic species.
7. Native fish and aquatic species' populations are viable and well distributed. They are not at risk of extirpation from watersheds within their native range.
8. Fish populations are productive and support sustainable recreational, subsistence, and commercial fisheries while meeting the needs of fish-dependant threatened, endangered, or sensitive wildlife species.
9. Native plants and animals dominate all terrestrial and aquatic ecosystems, with non-native plants and animals forming, at most, a minor component.

<u>Objectives</u>

1. <u>Populations:</u> Provide ecological conditions to sustain viable populations of native and desired non-native species and to achieve objectives for management indicator species and management indicator habitats.
2. <u>Habitats:</u> Move terrestrial and aquatic habitats in the direction of desired conditions and objectives for all native and desired non-native wildlife.

3. Human Use: Provide an adequate and representative array of habitat conditions for desired plant and animal species that supports acceptable and sustainable levels of human uses.
4. Maintain, protect, or improve habitat for all threatened and endangered species by emphasizing and working toward the goals and objectives of federal recovery plans and management direction in the Forest Plan.
5. Seek opportunities to benefit threatened and endangered species by integrating habitat management objectives into plans for the full spectrum of management activities on NFS land.
6. Reduce or eliminate adverse effects on threatened and endangered species from the spectrum of management activities on NFS land.
7. Minimize building or upgrading of roads in areas that are important for threatened and endangered species habitat and for habitat connectivity.
8. Promote the conservation and recovery of Canada lynx and its habitat.
9. In LAUs on NFS land, manage vegetation to retain, improve, or develop habitat characteristics suitable for snowshoe hare and other important alternate prey in sufficient amounts and distributions so that availability of prey is not limiting lynx recovery.
10. In LAUs on NFS land, manage vegetation to provide for foraging habitat in proximity to denning habitat in amounts sufficient to provide for lynx.
11. Maintain and, where necessary and feasible, restore sufficient habitat connectivity to reduce mortality related to roads and to allow lynx to disperse within and between LAUs on NFS land.
12. Through partnerships with other agencies and landowners, participate in cooperative efforts to identify, map, and maintain or restore, where feasible, linkage areas that provide habitat connectivity sufficient to allow lynx to disperse between disjunct blocks of lynx habitat at larger landscape scales (for example, among National Forests in the Great Lakes region).
13. Maintain or improve the natural competitive advantage of Canada lynx in deep snow conditions. Snow compacting activities (such as snowmobiling, snowshoeing, skiing, dog sledding) are planned and accommodated in areas best suited to the activity while maintaining large, interconnected areas of habitat with little or no snow-compacting, recreational activities.
14. Through coordination with other agencies, participate in cooperative efforts to reduce, to the extent possible, the potential for lynx mortality related to highways and other roads within the proclamation boundary of the National Forest.
15. Promote the conservation and recovery of the bald eagle. Population goal minimum: 150 occupied breeding territories.
16. Promote the conservation and recovery of the gray wolf. Population goal minimum: contribution
17. Maintain, protect, or improve habitat for all sensitive species. Meeting this objective will involve two basic and complementary strategies that would be implemented based on species' habitat requirements and distribution, individual site conditions, expected management impacts, and other multiple use objectives. These strategies include:
    a. Landscape level (or coarse filter) management strategies: Addressing species' needs through integrated resource management at large landscape scales including, but not limited to: Landscape Ecosystem or Landtype scales for vegetation and management indicator habitat objectives; watersheds for aquatic and riparian condition objectives; and Management Areas for desired or acceptable levels of human uses.
    b. Site-level (or fine filter) management strategies: Addressing species' needs by managing specifically for high quality potential habitat or known locations of sensitive species.
18. In all known and future breeding locations maintain or restore high quality breeding habitat and protect nesting areas from predators and negative human impacts. High quality breeding habitat: dry sandy uplands with sparse vegetation adjacent to complexes of large and small shallow marshes with woody debris, logs, and emergent vegetation.
19. In all known breeding locations maintain or restore high quality breeding habitat: Adults prefer cool, moist closed-canopy northern hardwoods with abundant coarse woody debris and vegetation

litter/moss for security cover adjacent to breeding wetlands: swamps, boggy streams, and wet, wooded or open areas near fish-free ponds (the larval habitat).

20. In known or good potential breeding habitat, maintain or restore high quality habitat conditions: Mature (>50 years old), dense, upland forest nesting habitat within ½ to 1½ miles of areas with a sufficient network of lowland conifer forest, bog, and non-forest foraging habitat.
21. In all known breeding locations, maintain or restore high quality nesting habitat: marshes with >300 feet of open water and emergent vegetation that covers between 50-85% of marsh.
22. In all known breeding locations maintain or restore high quality nesting habitat: marshes or shallow rivers or lakes with suitable balance of open water and emergent vegetation.
23. In all known breeding locations Collaborate with other landowners and management agencies to protect, restore, or enhance high quality nesting habitat: beaches with sparse vegetation on lakes approximately 50,000 acres or greater that are secure from negative impacts of predators and human uses and developments. Identify high quality potential nesting habitat for Caspian tern on Leech Lake and collaborate with other landowners to develop high quality nesting habitat.
24. On 50% of the known breeding locations on the Chippewa restore or maintain high quality nesting habitat: lowland sedge meadows with specific characteristics such as overhead mat of dead sedge, water 1-10" deep for feeding.
25. Maintain or improve quality nesting and foraging habitat by managing toward the Landscape Ecosystem Vegetation Objectives for mature and older conifer forest. Important characteristics within these older forests include trees large enough for nest cavities and current or future habitat to provide dead and dying flaky-barked trees for forage.

    In addition to tracts of mature and older conifer forest, retain large concentrations of flaky-barked conifer trees (especially jack pine, white spruce, black spruce, and tamarack) that have been damaged or killed by fire, insects, disease, flooding or other disturbances. Prioritize maintenance of woodpecker habitat in areas and concentrations where management objective conflicts can be minimized.
26. The amount and distribution of dead and dying trees should provide adequate representation of patterns and amounts that would result from natural disturbances (such as fire and flooding) and other ecological processes (such as insect and disease infestation and vegetation succession). If natural disturbances do not provide adequate habitat, it may be necessary to emulate natural disturbances through management ignited fire or other treatments.
27. Maintain, protect, or improve quality nesting and foraging habitat: variety of boreal forests (generally 10-20% canopy cover) including uplands, lowlands, edges, and beaver meadows with a preponderance of standing live or dead large trees used for perching and foraging, especially spruce or tamarack. High association with riparian and riverine areas.
28. In at least 8 known breeding locations protect, maintain, or restore high quality nesting habitat: sedge-dominated wet meadows, marshes, and open peatlands with minimal open water.
29. In all known sites and breeding locations, enhance, or restore high quality habitat for these species primarily by implementing management direction that promotes desired conditions for healthy and functional watersheds, riparian areas, and vegetation.
30. Additionally, during evaluation and restoration of one to two 5th level watersheds per year, known locations of the following sensitive aquatic species will provide priority areas for proactive management to improve habitats:
    - *Least darter*
    - *Greater redhorse*
    - *Pugnose shiner*
    - *Creek heelsplitter*
    - *Fluted-shell mussel*
    - *Black sandshell*

- *Vertree's caddisfly*

31. Enhance or restore high-quality habitat on a minimum of 20 (average of 2 sites per year) known sites of sensitive plants. Priority for habitat improvement will generally be for those species and habitats for which:
    a. Proactive management (versus protection based on avoidance of any management activities) is needed to maintain species and
    b. Coarse filter management does not provide adequate maintenance or restoration.
32. Provide habitat to provide for population goal minimum: 20-30 breeding pairs.
33. Increase amount of white pine to amounts more representative of native plant communities by planting or naturally regenerating white pine trees in white pine forest types and in other upland deciduous, mixed, and conifer forest types. This objective matches white pine objectives shown in the Landscape Ecosystems Objectives section.
34. Manage to improve white pine survival on planted sites and as many naturally regenerating sites as practical.
35. Provide a wide variety of vegetation conditions in the riparian zone to provide for the variety of species whose habitat includes riparian forest. Management will move conditions toward long-term desired conditions for vegetation composition, age, spatial distribution, within stand diversity, and ecological function described in sections on Watershed and Riparian management, Vegetation management, and Wildlife management.
36. Reduce amount of forest edge created through vegetation management activities, while still retaining a range of small patches and edge habitat.
37. Maintain or improve lake and stream habitat quality. Objectives, standards, and guidelines are found primarily under Watershed and Riparian Management direction.
38. Reduce the spread of terrestrial or aquatic non-native invasive species that pose a risk to native ecosystems.
39. Use Integrated Pest Management to:
    a. Eradicate any populations of new invaders
    b. Contain or eradicate populations of recent invaders (i.e., non-native invasive species that have only recently become established but are not widespread in the planning area)
    c. Limit the spread of widespread, established invaders within the planning area
40. In coordination with the State, Tribes and other wildlife and fish management agencies, provide habitat for all aquatic and terrestrial game populations. Quality, quantity, and distribution of habitats are guided at project level by the objectives for the management indicator habitats associated with the wide array of game species on the Forest.

Social and Economic Stability

Desired Conditions

1. The Forest provides commodity resources in an environmentally sustainable and acceptable manner to contribute to the social and economic sustainability and diversity of local communities.
2. The Forest provides non-commodity opportunities in an environmentally sustainable and socially acceptable manner to contribute to social sustainability and vitality of local resident's way of life, cultural integrity, and social cohesion.
3. The Forest continues to provide rare or unique benefits that may not be common on or available from other public or private lands, such as opportunities for experiencing solitude in remote settings, recreating where lakeshores are undeveloped, harvesting unique natural resources, and providing habitat for some Federal and/or State endangered, threatened, or sensitive species.
4. The Forest continues to emphasize agency, tribal, and public involvement with increases in inter-governmental coordination with federal, state, county governments and agencies; a high level of

communication and dialogue with a broad range of stakeholders; and successful dialogue between Tribal governments and Chippewa NF officials.

Objectives

1. Contribute to local-scale social and economic vitality by promoting and/or protecting area cultural values, traditional employment, recreation opportunities, historical landscape features, commodity related natural resources, and aesthetic qualities of the forest.
2. An annual and sustainable program of commercial timber sales and other products are offered and/or available.
3. Increase accessibility to a diversity of people and members of underserved and low-income populations to the full range of uses, values, products, and services.
4. Improve delivery of services to urban communities.

Tribal Rights and Interests

Desired Conditions

1. Lands within the Forest serve to help sustain American Indians' way of life, cultural integrity, social cohesion, and economic well-being.
2. The Forest Service continues to work within the context of a respectful government-to-government relationship with Tribes, especially in areas of treaty interest, rights, traditional and cultural resources, and ecosystem integrity. The Forests provide opportunities for traditional American Indian land uses and resources.
3. The Chippewa National Forest facilitates the exercise of the right to hunt, fish, and gather as retained by Ojibwe whose homelands were subject to treaty in 1855 (10 Stat. 1165). Ongoing opportunities for such use and constraints necessary for resource protection are reviewed and determined in consultation with the Leech Lake Band of Ojibwe.

Objectives

1. Improve relationships with American Indian tribes in order to understand and incorporate tribal cultural resources, values, needs, interests, and expectations in forest management and develop and maintain cooperative partnership projects where there are shared goals.
2. Maintain a consistent and mutually acceptable approach to government-to government consultation that provides for effective Tribal participation and facilitates the integration of tribal interests and concerns into the decision making process.
3. The Forest Service will work with the appropriate tribal governments to clarify questions regarding the use and protection of miscellaneous forest products with the objective of planning for and allowing the continued free personal use of these products by band members within the sustainable limits of the resources.
4. Consult, as provided for by law, with Tribes in order to address tribal issues of interest and National Forest management activities and site-specific proposals.
5. The Forest Service will administer projects and programs to address and be sensitive to traditional Native American religious beliefs and practices.
6. Provide research, transfer of technology and technical assistance to Tribal governments.

Heritage Resources

Desired Conditions

1. Heritage resources are identified and managed to maintain and preserve the qualities for which they have been deemed significant, and for benefits that may include: research, education, historical perspectives in land management, and the general appreciation of American heritage.

Objectives

1. Identify, evaluate, protect, monitor, and preserve heritage resources.
2. Promote heritage values in public education and outreach.
3. Contribute relevant historical and cultural perspectives to natural resource management.

Recreation

Desired Conditions

1. The Forest provides a range of quality motorized and non-motorized recreation opportunities to satisfy diverse public interests while maintaining sustainable ecosystems.
2. The Forest emphasizes recreational activities and opportunities appropriate to remote natural settings. Remote natural settings have a predominantly natural appearance and have moderate evidence of human sights and sounds.
3. The Forest provides developed sites, facilities, trails, water access sites, and other recreation opportunities within health and safety, resource protection, cost, and maintenance requirements.
4. Universally accessible facilities that fit with site and program characteristics are offered. User convenience, visitor satisfaction, and anticipated visitor interactions are also considered when providing recreation opportunities.
5. The Forest continues to administer a recreation special use permit program providing recreation opportunities at existing resorts, recreation residences, and camps. Existing permits would be reissued upon expiration provided they comply with their permit terms.
6. In cooperation with other government agencies and private organizations, the Forest provides support for National Forest, State, and National Scenic Byways to enhance the byway's scenic resource, provide recreation and interpretive opportunities, address resource issues, and promote economic development.
7. Recreation activities continue to occur with little or no disruption when forest management activities are near or adjacent to public use areas and facilities.
8. Regulations, constraints, and supervision of recreation use are limited to those necessary for resource protection, visitor satisfaction, and safety.
9. Foot travel throughout the Forest is welcome for the wide spectrum of recreation activities and opportunities such as hunting, orienteering, hiking, and bird watching as well as spiritual and cultural pursuits.
10. In conjunction with State regulations, the Forest provides a range of quality hunting, trapping, and fishing opportunities.
11. In cooperation with other agencies and groups, the Forests enhance existing and provide additional wildlife viewing opportunities.
12. The Forest provides developed recreation sites, such as campgrounds and picnic areas, that accommodate the needs of a wide variety of visitors. Easy to access, safe, comfortable, and convenient facilities are provided in scenic environments. Most developed sites accommodate concentrated public use.
13. The Forest provides dispersed recreation facilities such as campsites and picnic sites for small groups. Dispersed recreation opportunities emphasize a remote recreation experience, have few or no facilities, and are often near bodies of water or along roads and trails where public use is low.

Objectives

1. Improve the capability of the Forest to provide diverse high quality outdoor recreation opportunities.
2. Management activities will move toward the Recreation Opportunity Spectrum (ROS) class objectives in Table O-REC-1 and on Figure O-REC-1. Management activities may meet a less

developed ROS class but cannot meet a higher developed class than the mapped ROS class objective for an area.
3. Through project level planning, the Forest will consider management of some inventoried semi-primitive ROS areas for separate non-motorized or motorized recreation uses.
4. Maintenance of recreation facilities generally takes precedence over development of new facilities.

Trails

Desired Conditions
1. The Forest trail system provides a range of activities and experiences necessary to accommodate recreation uses while minimizing environmental and social impacts.
2. Trails are managed for their intended primary purpose and to avoid use conflicts.
3. The Forest provides non-motorized trail opportunities in a variety of forest settings.

Objectives
1. Proposed non-motorized trails that meet user demand and other forest management direction will generally be considered.

Recreational Motor Vehicles

Desired Conditions
1. The Forest provides RMV road and trail riding opportunities with experiences in a variety of forest environments, while protecting natural resources.
2. Allowed, restricted, and prohibited RMV uses are clearly defined to the public. Where practical, RMV policies are consistent with adjacent public land management agencies.
3. On roads, trails, and in areas (crosscountry) where RMV uses are prohibited, motorized access may be allowed for law enforcement, emergency, firefighting, maintenance, and other administrative purposes.

Objectives
1. The Forest will determine which existing OML 1 and OML 2 roads are appropriate or inappropriate for RMV use
2. A maximum of 90 additional ATV trail miles and 100 snowmobile trail miles with associated trail facilities (trailhead parking, signs, toilets, etc.) may be added to the designated National Forest Trail system.

Water Access

Desired Conditions
1. The Forest provides a range of water access sites with related recreation opportunities on lakes and river segments. Levels of facility development are appropriate to the lake and river classifications and ROS class objectives. Some lakes and river segments do not have any developed water access sites.

Objectives
1. Associated recreational, subsistence, and commercial water uses at water access sites will enhance or maintain water quality, TES species, and viable populations of native species and desirable non-native species.

Scenic Resources

Desired Conditions

1. The scenic environment within the Forest ranges from landscapes with high scenic quality, displaying little or no evidence of management activities, to landscapes with low scenic quality where evidence of management activities dominate. High scenic quality is protected or enhanced in landscapes with outstanding scenic value and in high public use recreation areas and corridors.
2. In Moderate and High Scenic Integrity Objective (SIO) areas, vegetation management that is visible from travel ways, recreation sites, and lakes with access:
    a. Enhances views, creates vistas, and features natural openings,
    b. Retains canopies over travel routes,
    c. Encourages vegetative diversity and seasonal color contrast, and
    d. Enhances big-tree appearance.
3. Permanent openings created through vegetative management will blend with the adjacent landscape and have a natural appearance that mimics natural openings.

Objectives

1. 1 Management activities will maintain the Forest's scenic resource values by meeting as a minimum the Scenic Integrity Objectives in Table O-SC-1 and on Figure O-SC-1. Higher SIOs may be managed for if deemed appropriate. Areas that do not currently meet SIOs will be considered for scenic enhancement and rehabilitation. (SIO boundaries lie at least one-quarter mile from the actual location of travel ways, recreation sites, and bodies of water with access.)

Transportation System

Desired Conditions

1. The existing National Forest System roads that are suitable for passenger vehicles provide a safe and affordable system for administrative and public access to NFS land.
2. The National Forest road system is the minimum needed to provide adequate access to both NFS and non-NFS land.
3. The transportation system design considers environmental, social, and health concerns.
4. The National Forest road system provides a "seamless" interface with the neighboring public road agencies based on coordinated use, function, and agency goals.
5. Private and non-NFS landowners have reasonable access to their land.

Objectives

1. Improve the safety and economy of National Forest System roads and trails.
2. Few new OML 3, 4, and 5 roads will be constructed.
3. New roads built to access land for resource management will be primarily OML 1 or temporary and not intended for public motorized use. Temporary roads will be decommissioned after their use is completed. All newly constructed OML 1 roads will be effectively closed to motorized road and recreation vehicles following their use unless they are needed for other management objectives.
4. Road and trail crossings of streams, wetlands, and riparian areas adjacent to lakes and streams will be minimized.
5. Hydrologic and riparian functions will be maintained or improved when roads or trails are constructed across wetlands.
6. Decisions will be made on Forest unclassified roads to designate them as a National Forest System road or trail or to decommission them.

7. Unneeded roads will be decommissioned and closed to motorized vehicles. Roads that are not necessary for long-term resource management are considered "unneeded".
8. The Forest will decommission approximately 200 miles of road.

Land Adjustment

Desired Conditions

1. The amount and spatial arrangement of National Forest System land within the proclamation boundary of the Forest are sufficient to protect resource values and interests, improve management effectiveness, eliminate conflicts, and reduce the costs of administering landlines and managing resources.

Objectives

1. Through various land adjustment procedures (e.g., purchase, donation, and exchange) and a landownership adjustment map, secure a land ownership pattern that supports and enhances total Forest Plan resource management objectives.
2. The Land Adjustment Zone Map and descriptions of zones will be referenced by the Forest Plan. The map will be updated on an as needed basis.
3. Mineral interest beneath National Forest System land will be acquired when opportunities arise to protect surface interests within the Research Natural Areas, Candidate Research Natural Areas, and Unique Biological, Aquatic, Geological, or Historical Areas.

Special Uses

Objectives

1. Generally provide for utility transmission corridors and communication sites. Emphasize the use of common corridors and multiple use sites when granting appropriate right-of-ways.
2. Attempt to meet demand for special use activities when consistent with the Forest Plan direction and when the proposed use cannot be accommodated on non-NFS land.
3. Continue to administer a recreation special use program providing for recreation uses associated with the existing resorts, residences, camps and other recreation special uses. Recreation special uses will continue where their use enhances the recreation potential of the area, meets an apparent public need, and is compatible with other multiple-use goals and objectives.
4. Manage permits for recreation residences by providing for the continuation of existing permits and re-issuance of expiring permits. However, do not issue any new permits on existing undeveloped recreation residence lots.
5. Permit existing organization camps to remain under special use permit as long as their operations and management continue to meet the stated purposes of the permit. Allow presently unused facilities, currently not under permit, to be placed under permit for a five-year term if there is a demonstrated need. Consider proposals for new camps to be constructed where the proposed use would meet a specific public demand that cannot be met on other ownership.

Public Health and Hazardous Materials

Desired Conditions

- Public and employee health and safety is of primary consideration while managing the National Forest.
- Constructed and natural site-specific amenities designated as actively managed by the national forest are healthy and safe for the public to use.
- Hazardous materials:

e. Soil, water, and air resources on the Forest are not contaminated with hazardous materials.
f. Known sites of hazardous materials are managed and mitigated so that public health and natural resources are not negatively affected.
g. Hazardous material events are coordinated smoothly with other agencies involved in the situation and Forest interests are represented.
h. Stored hazardous materials pose the smallest possible threat to personnel and the environment.

- Water Supplies and Wastewater Treatments:
    c. Federal sewage disposal and other developments do not adversely affect water resources.
    d. Public and non-public water supplies are safe for use.

Objectives

1. Public and non-public water and wastewater systems are updated, maintained, and managed to the standards set forth in the appropriate federal guidelines and applicable state standards during this plan period.
2. Hazardous materials are appropriately stored in approved facilities, and are transported safely if necessary for forest management.
3. Known abandoned wells will be grouted and unused wells will be capped and maintained to prevent groundwater contamination.
4. Forest owned facilities and designated recreation sites and/or natural resource amenities are inspected and managed to ensure safe operation.
5. Where possible, minimize use of hazardous materials. Make more frequent use of non-hazardous substitute materials, safe use, and storage of hazardous materials (following federal and state guidelines.)

2. Leech Lake Band of Ojibwe Forest Management Plan

Document Title	Source	Date	URL or Address
Leech Lake Band of Ojibwe Forest Management Plan	Leech Lake Band of Ojibwe Forestry Department	May 2002	http://www.llojibwe.com/

Geographic Extent / Scope:
The Leech Lake Indian Reservation contains 864,158 acres, occupying portions of Beltrami, Cass, Hubbard, and Itasca counties. Indian lands account for 29,717 acres or less than 5 percent of this area. Approximately 74 percent of Indian lands on Leech Lake Reservation are commercial forest land. This amounts to 22,134 acres. (pp. 6, 7)

Organizations / Agencies involved in plan creation:
The plan was developed by an interdisciplinary team made up of Leech Lake Reservation natural resource managers in the areas of fish and wildlife management, plants, forestry, water resources, environmental protection, land management, conservation enforcement, and cultural resources, with input from the communities. (p. 3)

Info on Planning Process:
Public input from tribal members, resource managers, and the tribal council was solicited to identify issues, concerns, and opportunities. From this input, goals and objectives were then developed. After establishing goals, the team developed four alternatives for managing the forest. The tribal council selected the alternative that best met the goals of the tribe. (p. 1)

The planning process used in producing this document is outlines in Indian Affairs Manual Part 53, Chapter 2. The development procedures outlines in the supplement were essentially followed for the plan. (p. 5)

Purpose of plan:
The Forest Management Plan (FMP) is intended to be a management guide for the Leech Lake forest resource manager. It provides goals and objectives for present and future management and will provide a framework for project activity planning and decision making. It can also help resource managers along with the Tribal Council in planning specific forest management projects. (p. 3)

The broad objectives of this plan are: (pp. 4-5)

1. To provide general work plans and goals for forest resource management. Specific recommendations for practices, as governed by inventory data, budget, mission, and personnel availability, will be designed on a year-to-year basis.
2. To provide integration of water resources, environmental protection, fisheries, wild rice, plant resources, wildlife management, cultural resources management, and forestry practice with other natural resources management programs, with emphasis on a multiple-use concept.
3. To protect and preserve plant, fish, and wildlife species and their habitat.
4. To provide enforcement of the Leech lake Conservation Code for protection, management, and distribution of Leech lake Reservation's forest, fish, plant, cultural, and wildlife resources.
5. To provide inventory of timberlands and long-range planning of trust lands.
6. To provide protection for endangered, threatened, sensitive, rare, or culturally important plants, birds, mammals, reptiles, amphibians and invertebrates on the Leech Lake Reservation.

ISSUES

None identified.

VISION(S) (Selected alternative management scenario) (p. 2)

Manage Tribal, Band and Alloted lands on a sustained-yield/even-flow basis while emphasizing the importance of other important resources such as wildlife, water quality, and visual impact.

GOALS (Goals) (p. 17)

1. Harvest timber on tribal, band, and allotted lands based on a 10-year timber harvest plan.
2. Plant trees, improve timber stands, and implement wildlife habitat improvement projects based on a 10-year forest development plan.
3. Minimize visual impacts of forest management by following general landscape management principles where feasible.
4. Protect reservation water resources by utilizing and expanding existing forestry best management practices (BMPs) for water quality guidelines.
5. Define, identify, protect, or enhance areas of special concern (scenic, old growth, gathering areas, medicinal plants, archaeological sites, etc.).
6. Identify, protect, and enhance, where appropriate and feasible, sugarbush sites on tribal, band, and allotted lands.
7. Provide adequate timber resources for tribal members' fuelwood use.
8. Develop rules for maple sap collection, bough collecting, and burning permits.
9. Assure long-term use of the many forest resources for the people of Leech Lake Reservation.
10. Provide habitat for Rare, Threatened, and endangered species.

STRATEGIES (Objectives) (p. 17)

1. Seek and utilize tribal input, through a tribal survey, in developing a 10-year timber harvest and forest development plan.
2. Provide employment opportunities to tribal members when possible.
3. Manage the timber resource on a sustained-yield basis.
4. Utilize operations inventory database and geographic information system (GIS) data in developing the timber harvest and the forest development plan.
5. Coordinate timber harvest and forest development activities with reservation natural resources staff and other resources management agencies.
6. Incorporate newly-acquired forest lands into the current forest management system.
7. Seek tribal input in identifying, protecting, or enhancing areas of special concern.
8. Develop a reservation sugarbush management plan, in coordination with other agencies, to assure gathering opportunities are available for tribal members.
9. Regulate fuelwood gathering to ensure that an adequate supply is available and that other natural resource values are protected.
10. Adopt rules governing burning permits, the collection of maple sap, boughs, and timber trespass and include them in the Leech Lake conservation code.
11. Develop a plan to address the age imbalance of aspen and jack pine on allotted lands.
12. Encourage timber species conversion to the appropriate timber type when feasible.

3. White Earth Nation Forest Management Plan

Document Title	Source	Date	URL or Address
Forest Management Plan: White Earth Nation, Minnesota	White Earth Tribal Forestry Program	July 2013	https://whiteearth.com/programs/?page_id=263&program_id=8

Geographic Extent / Scope:
The White Earth Reservation consists of 83,033.12 acres, encompassing all of Mahnomen County and portions of Becker and Clearwater counties. 62,892.54 acres of the land is forested. The Reservation is located within the following four ecoregions: Alexandria Moraines and Detroit Lakes Outwash Plain, Chippewa Plains, Itasca and St. Louis Moraines, and Lake Agassiz Plains. (pp. i, ii, 3-2)

Organizations / Agencies involved in plan creation:
The Forest Management Plan (FMP) was prepared by Environmental Express Services, Inc. (EES) under contract with and direction from the White Earth Tribal Forestry Program. (p. ii)

Info on Planning Process:
The FMP has been developed in accordance with the requirements of 53 IAM, Chapter 2, *Forest Management Planning*, Release #128, September 1, 2006. (p. 1-1)

Purpose of plan:
The purpose of the FMP is to provide a written description of the forest protection and forest management goals and objectives for the White Earth Nation's land. The key aim of the FMP is to ensure the forestlands of the White Earth Indian Reservation are managed in an environmentally sensitive, sustainable, and economically viable manner. In addition, the FMP is intended to ensure that planning is a continuing process, responsive to changing community expectations and expanding knowledge of the forest ecosystem. To achieve this aim, the FMP proposes the active use and management of forestland that will be in harmony and balance with the conservation of natural, aesthetic, and cultural values. (p. 1-1)

ISSUES

None identified.

VISION(S) (Mission and Vision Statements) (pp. i, 1-1)

Mission Statement:
Manage the tribal resource in an environmentally positive manner for the benefit of present and future generations. The Tribal Forestry Program is tasked with forest management actions on the timberland of the reservation. The primary management activity of the program is the planning and implementation of timber sales. The other primary activity is forest development.

Vision Statements:

1. Management will aim to ensure that all indigenous species and communities will survive and flourish across their natural range;

2. Management will reduce any excessive woodcutting and will plant or regenerate new trees lost due to substantial flooding, fire, lightning, disease, or excessive woodcutting;
3. Management of the Nation's forestland will be according to state-of-the-art practices. Standards will be maintained and improved by implementation and review of codes of practice, management guidelines, prescriptions, licensing, and regulation of commercial activities on reservation land;
4. Forest management will be sensitive to the cultural significance of the forestland in all segments of the community;
5. Sustainable use of the forestland for recreation will be encouraged and facilitated; and
6. Forest management will be flexible and responsive to new information. Change will be introduced in a proactive, but orderly fashion, to maintain the confidence and stability of forest-based industries and the local economy.

GOALS (Goals) / STRATEGIES (Objectives) [Objectives are shown directly below their related Goal, as listed in section 2.0 of the FMP.] (pp. 2-1 – 2-3)

1. Continue the current practice of harvesting overmature aspen (*Populus* spp.) to regenerate stands and capture value.
    a. Clear-cut near monoculture aspen stands for best regeneration;
    b. Clear-cut low-quality and decadent hardwoods with aspen when a significant hardwood component exists, preserving approximately six seed and mast trees per acre;
    c. Limit aspen harvesting to the period between July 1 and March 15 to ensure maximum regeneration;
    d. Apply principles for water quality defined in *Sustaining Minnesota's Forest Resources: Voluntary Site-Level Forest Management Guidelines for Landowners, Loggers and Resource Managers* during all harvest operations; and
    e. Limit the use of herbicides and insecticides and ensure the use of these chemicals adhere to the *Tribal Pesticide Code*.
2. Restore all heavily blowdown sites to a productive condition.
    a. Use winter-shearing methods wherever timber damage and fire hazard are maximum and regeneration is minimal;
    b. Plant sheared sites with pine (*Pinus spp.*) or hardwoods (depending on soil type) whenever natural regeneration is inadequate;
    c. Salvage usable fuelwood where shearing is impractical, via contract loggers and treat sites for plantation or understory planting; and
    d. Improve growth of any regeneration in areas where blowdown is not severe, via mechanical release or other stand improvement treatment.
3. Manage hardwood stands for the best possible product, based on each site.
    a. Remove lower-quality and decadent trees to promote maximum sawtimber production;
    b. Manage lower-quality stands for wood production and wildlife benefits, via selective harvesting;
    c. Mark trees on poorest sites for fuelwood harvesting by tribal members for timber stand improvement; and
    d. Manage all hardwood forests using multiple-use principles.
4. Work to restore the red and white pine cover types that existed in the area in pre-settlement times.
    a. Plant as much pine as possible each year;
    b. Convert old-fields to line plantations as they come out of the Conservation Reserve Program (CRP) where and when it is not in conflict with other policies of the tribe;
    c. Site-prepare and convert all pine that do not show adequate natural regeneration to harvest sites;

   d. Preserve all viable red (*Pinus resinosa*) and white pine (*Pinus strobus*) trees as a seed source for natural regeneration; and
   e. Underplant white pine in poorly stocked hardwood stands, whenever possible.
5. Consider visual quality and minimize visual impacts in all timber sale planning.
   a. Apply principles for visual quality defined in *Sustaining Minnesota's Forest Resources: Voluntary Site-Level Forest Management Guidelines for Landowners, Loggers and Resource Managers* in sale design and location;
   b. Leave wide buffers along lakeshores and streams where timber sales are located close to these features;
   c. Leave timber buffer strips, when practical, when timber sales are adjacent to main roads; and
   d. Preserve leave trees, snags, and natural terrain features on timber sale sites.
6. Incorporate wildlife considerations into all forest management activities.
   a. Increase communication and cooperation with the White Earth Natural Resource Department during timber sale planning;
   b. Apply principles for wildlife management defined in *Sustaining Minnesota's Forest Resources: Voluntary Site-Level Forest Management Guidelines for Landowners, Loggers and Resource Managers* into timber sale planning;
   c. Identify old growth or other reserve stands and areas and exclude these areas from logging to preserve as natural areas for wildlife and tribal gathering;
   d. Plant vegetative types that are beneficial to wildlife on logging roads, landings, clearings, etc., when feasible; and
   e. Manage logging sites in a manner that does not remove large contiguous blocks of the forest.
7. Ensure environmental protection is the first priority when any new access roads and/or stream crossings are planned.
   a. Locate roads away from open water, wetlands, sloughs, etc., whenever possible;
   b. Construct roads with a "crowned" center to facilitate drainage;
   c. Review existing access routes to determine if they are acceptable or if preferred alternative routes exist;
   d. Maintain water crossings at a 90-degree angle to streambeds and use culverts, whenever possible;
   e. Ensure planned culverts and bridges have the ability to accommodate a 25- to 50- year flood occurrence;
   f. Identify potential limited access areas for the protection of cultural, recreational, and wildlife features;
   g. Monitor and collaborate with loggers to ensure that proper environmental practices are being employed; and
   h. Develop and implement a policy on the establishment and maintenance of forest roads.
8. Protect cultural resources and ensure no negative impacts from logging operations affect these resources.
   a. Consult with the White Earth Archaeologist during timber sale planning;
   b. Seek public comment when timber sales are planned in potentially culturally sensitive areas;
   c. Ensure all operators are aware of federal, state, and BIA regulations regarding cultural discoveries during logging operations or other land impact activities (i.e. road building);
   d. Limit operations on culturally sensitive sites to times when the ground is frozen, when necessary;
   e. Preserve, manage, and improve sugar maple (*Acer saccharum*) stands as sugarbush sites; and

f. Encourage growth of young sugar maple where dense regeneration is encountered.

9. Harvest all forest products in as efficient and safe manner as possible, utilizing both even-aged and all-aged silvicultural management systems, with special consideration given to weather conditions; soil type; topography; road accessibility; stream and water crossings; proximity to lakes, ponds, and wetlands; seasonal restrictions; wildlife constraints; raptor nests; etc.

4. Chippewa Plains-Pine Moraines and Outwash Plains Subsection Forest Resource Management Plan

Document Title	Source	Date	URL or Address
Chippewa Plains-Pine Moraines and Outwash Plains Subsection Forest Resource Management Plan	Minnesota Department of Natural Resources	Feb. 2009	http://www.dnr.state.mn.us/forestry/subsection/cp_pmop/index.html

Geographic Extent / Scope:
The Chippewa Plains and the Pine Moraines and Outwash Plaines (CP-PMOP) subsection landscape covers approximately 4.6 million acres in north central Minnesota. Of this, State lands comprise approximately 14 percent (682,986 acres) of the land ownership in these subsections. Of the state lands, approximately 59 percent (401,160 acres) is considered managed timberlands or lands suitable and available for timber production. These two units cover approximately 4.6 million acres in an area from near Deer River on the east to Detroit Lakes on the west, and from Camp Ripley on the south to Kelliher on the north. (p. 1.1)

Organizations / Agencies involved in plan creation:
Subsection Forest Resource Management Plan (SFRMP) planning team members include DNR forestry, wildlife, ecological services, and other agency staff. These planning teams have primary responsibility for the work and decision making involved in developing the subsection plans. Managers of adjacent county, federal, tribal, and industrial forestlands were invited to provide information about the condition of their forest lands and future management directions. (p. 1.6)

Info on Planning Process:
The recommended desired outcomes, goals, and strategies developed for the North Central Landscape Region by the North Central Regional Landscape Committee under the direction of the Minnesota Forest Resources Council (MFRC) Landscape Program were considered in developing this SFRMP. Members of the CP-PMOP Planning Team participated as members of the North Central Regional Landscape Committee. By considering the recommendations from the North Central Landscape Region Plan, the decisions for management of DNR-administered lands incorporate recommendations from a broader landscape perspective across all ownerships and assist in cooperation across ownerships in this larger landscape area. (p. 1.6)

Process Overview (p. 1.7) abbreviated:

- Step 1: Initiating the Planning Process
- Step 2: Preliminary Issue and Assessment Identification
- Step 3: SFRMP Draft Plan including:
- Step 4: Final Plan

Purpose of plan:
A SFRMP is a DNR plan for vegetation management on forestlands administered by the DNR Divisions of Forestry, and Fish and Wildlife, Vegetation management includes actions that affect the composition and structure of forestlands, such as timber harvesting, thinning, prescribed burning, and reforestation. The geographic area covered by these plans is defined by Ecological Classification System (ECS) subsections. In response to growing public interest in DNR timber management planning, the DNR SFRMP process was developed to provide a more standardized, formal process and opportunities for increased public involvement. In addition, it is based at the subsection level of the DNR's ecological

classification system (ECS) rather than DNR administrative areas as in the past (i.e., DNR Forestry Area boundaries). The SFRMPs do consider the condition and management of forest lands not owned by the DNR, but will only propose forest management direction and actions for DNR lands. (p. 1.5)

The end result of the planning process will be development of the CP-PMOP SFRMP including several key products, among them:

- **Desired Future Forest Composition (DFFC) goals:** The goals will include long-term (50 years or more) and short-term (10 years) desired changes in the structure and composition of DNR forest lands in the subsection.
- **List of DNR forest stands to be treated over the next 10-year period.** SFRMPs will identify forest stands on DNR Forestry- and Fish and Wildlife-administered lands that are proposed for treatment (e.g., harvest, thinning, regeneration, and re-inventory) over the 10-year plan implementation period. (p. 1.5)

[Note to the reader: Letters and letter/number combinations that the DNR assigned to statements were retained to show connections between Issues, General Direction Statements, and Strategies]

ISSUES (Issues) (Table 2.1a, pp. 2.2-2.13)

A. Desired Age-Class Distribution
   - A1. What are the desired age-class and growth-stage distribution of forest types across the landscape?
   - A2. What is the appropriate amount, type and distribution of old forest?
   - A3. What is the appropriate amount, type and distribution of young, early successional forest?

B. Forest Composition, Structure, Spatial Arrangement, Growth Stages, and Plant Community Distributions
   - B1. What is the appropriate forest composition at the landscape level and how will the important tree species that have declined, be restored?
   - B2. What is the appropriate mix of patch sizes and forest conditions on the landscape considering the impacts of fragmentation?
   - B3. How can landscape level connectivity between forest habitats be maintained?
   - B4. What are the appropriate mixes of forest structure and growth stages for state lands within the subsections?
   - B5. How will native plant communities that historically occurred on the landscape be represented in the future?

C. Riparian and Aquatic Areas
   - C1. How can the impacts of forest management on permanent wetlands, wetland inclusions, and seasonal ponds be addressed?
   - C2. How will the appropriate width of the riparian management zone (RMZ) be determined and what vegetation management activities will be allowed to take place?
   - C3. How can the cumulative impacts of forest management on aquatic resources and surface water quality at the watershed and sub-watershed level be addressed?
   - C4. How can adequate safeguards be implemented to provide old forest characteristics, including nesting cavities, in riparian areas?
   - C5. How can the adverse impacts of forest management activities on aquatic plant species, fisheries, and wildlife habitat be minimized?

D. Access to State Timberlands
   - D1. How can new access to stands identified for management during the 10-year planning period be established without negative impacts on forest resources?

E. Diversity and Complexity

E1. Within stands, how are biodiversity, native plant community composition and structural complexity maintained or enhanced?

F. Wildlife and Plant Species Habitat
   F1. How can habitat for all wildlife and plant species be provided?
G. Wildlife Populations Management
   G1. How can sustainable wildlife populations be provided at levels that are acceptable to user groups?
H. Harvest Level
   H1. What is the appropriate timber harvest level on state lands with consideration for the sustainability of all forest resources?
   H2. How can an adequate and sustainable supply of non-timber forest products be ensured for the future?
I. Timber Quality / Quantity
   I1. How can timber productivity be increased on state lands?
J. Visual Quality
   J1. How will the impacts of forest management activities on visual quality be minimized?
K. Other Statutes
   K1. How will foresters and wildlife managers achieve the goals of this plan and remain consistent with state and federal statutes?
L. Cultural Resources
   L1. How will cultural resources be protected during forest management activities on state-administered lands?
M. Rare Features
   M1. How can rare plants and animals, their habitats, and other rare features be protected?
N. Managing Impacts
   N1. How should the impacts of forest insects and disease on forest ecosystems be addressed?
   N2. How will threats and invasions of exotic species be managed?
   N3. How will natural disturbances such as fire and blow down be considered in forest management decisions?
   N4. How can vegetation be managed to reduce animal damage, crop depredation, nuisance animals, potential spread of animal disease, and human health impacts (e.g., Lyme disease)?
   N5. How should forest management respond to global climate change within the planning period?

VISION(S)

None identified.

GOALS (General Direction Statements (GDS)) / STRATEGIES (Strategies) [Strategies are shown directly below their related GDS, as listed in Chapter 3 of the SFRMP.] (pp. 3.6-3.80)

- A1a. Forest resources will continue to represent multiple age classes, distributed across the landscape.
   1. Consider ECS characteristics and other indicators when deciding where old forest and younger age classes are best suited.
   2. Provide representations of desired age-classes through forest composition goals.
   3. Develop and apply criteria to identify stands that are over rotation age but can be carried into subsequent 10-year planning periods to reduce age-class imbalances.
- A2a. Forest managed for old forest characteristics will be distributed across the landscape.

4. Designate ERF stands in the amounts and percentages prescribed by the Statewide ERF Work Group.
5. Distribute ERF stands across the landscape consistent with ERF policy.
6. Prescribe ERF stands across all age classes to maintain a constant supply of effective ERF.
7. Manage ERF stands in even-aged cover types to achieve a declining age-class structure from normal rotation age to maximum rotation age.
8. Maintain the current acreage of designated Old Growth stands.
9. Manage designated old-growth stands and OFMCs according to individual OFMC plans and *DNR Old Growth Management Guidelines*.
10. Continue to prescribe ERF stands adjacent to old growth to create OFMCs consistent with DNR OFMC policy.
11. Prescribe ERF stands in steep areas, inaccessible terrain, riparian areas, habitat areas, travel corridors, visual corridors to achieve desired old forest attributes consistent with DNR OFMC policy.
12. Consider ECS and range of natural variation (RNV) when identifying sites capable of growing older stands and/or providing winter cover and food sources for wildlife.
13. Give priority to designating ERF in areas of the landscape that have historically supported the oldest forests and highest proportion of older forests. (p. 3.17)

- A3a. Forests managed for young, early-successional stages will be distributed across the landscape.
    14. Consider ECS characteristics when locating sites capable of supporting young early-successional forests.
    15. Move aspen, balm of Gilead, paper birch, and jack pine cover types toward a balanced age-class structure.
    16. Maintain the amount of the paper birch cover type and the percent of stand component during the 10 planning period.
    17. Decrease the amount of birch as a cover type and stand component during subsequent 10 year planning periods (through five decades).
    18. Include areas of young, early-successional forest, adjacent to areas of extensive or expansive old forest (i.e. ERF, old growth, or OFMC).
    19. Maintain young, early-successional forest, in a variety of patch sizes to provide habitat for associated species.
- B1a. Forest composition will be managed according to ecological classifications to more closely reflect vegetation that developed under natural disturbance regimes.
    20. Consider the MFRC North Central Landscape Region Plan forest composition goals and objectives.
    21. Increase mixed forest conditions in most stands in selected cover types.
    22. Decrease the acres of aspen, northern hardwoods, oak, ash, and lowland hardwoods to favor conifer cover types.
    23. Increase the acres of the white pine, jack pine, tamarack and northern white cedar cover types.
    24. Increase the acres of the cedar and tamarack cover types on both upland and lowland sites.
    25. Maintain the acres of the black spruce cover type on both upland and lowland sites.
- B2a. Minimize forest fragmentation and manage habitat fragmentation to provide an ecologically appropriate variety of patch sizes distributed across the landscape.
    26. Inventory current and potential patches by subsection.
    27. Manage patch sizes to more closely resemble those created under natural disturbance regimes.

28. Retain and create larger patches, where conditions allow, through state management activities and cooperation with other landowners and forest managers.
29. When applying silvicultural treatments in an area, give priority to management of whole stands, groups of stands, or entire native plant communities to further patch management.
30. Coordinate plan implementation with large land managers including the U.S. Forest Service, county land departments, local governments, industrial forest land managers and nonprofit organizations to identify causes and mitigate impacts of fragmentation.

- B3a. Connectivity will be maintained between forest habitats using natural corridors and corridors maintained using forest management practices.
    31. Identify existing and potential corridors between significant forest areas and assess cooperation opportunities with other landowners.
    32. Maintain or improve important corridors between forest areas.
    33. Give priority to riparian corridors to connect significant forest areas.
- B4a. Representations of all growth stages with vertical and horizontal structural diversity will be distributed across the landscape.
    34. Retain structural components of old forest, when managing uneven-aged cover types and at the final harvest of even-aged cover types.
    35. Use variable density techniques during intermediate stand treatment and variable retention techniques during final harvest to move selected stands toward desired growth stages and desired within-stand structure.
    36. Develop a methodology to measure growth stages, within-stand age diversity, plant species diversity and vertical/horizontal structure and use this methodology to quantify and monitor changes.
- B5a. The full range of common and uncommon native plant communities and the community viability that developed under natural disturbance regimes will be well represented in the future.
    37. Use ECS information to assist in determining management direction for stands on state lands.
    38. Protect significant plant communities as they are identified.
    39. Encourage initiation of the Minnesota County Biological Survey in Beltrami, Itasca and Koochiching counties and completion of the survey in all other counties in the CP-PMOP.
    40. Delineate and manage ecologically important lowland conifer sites to enhance their unique characteristics.
    41. Document and manage known locations of NPCs with a statewide rank of Critically Imperiled (S1), or Imperiled (S2) and other plant communities that are rare in the landscape to maintain their ecological integrity.
    42. Identify stands with known locations of Critically Imperiled (S1) or Imperiled (S2) NPCs and monitor those stands during Annual Stand Exam List review.
- C1a. Forest management on state lands will protect permanent wetlands and seasonal ponds.
    43. Implement the MFRC Voluntary Site-level Forest Management Guidelines.
    44. Protect non-target species from pesticide translocation by following the division's Pesticide and Pest Control Operational Order #59.
    45. Reduce negative impacts by selecting and implementing treatments that consider site-specific conditions such as soils, topography, hydrology, past management, existing vegetation and desired vegetation.
    46. Employ measures that maintain normal seasonal flows within wetland inclusions and seasonal ponds.
    47. Use access routes with the least impact when necessary to freeze-down winter crossings.
- C2a. Management activities will protect or enhance riparian areas.

48. Establish widths of RMZs consistent with *MFRC Voluntary Site-level Forest Management Guidelines*.
49. Field identify the boundaries of RMZs prior to applying treatments.
50. Maintain a filter strip between aquatic resources and treatment areas consistent with *MFRC Voluntary Site-level Forest Management Guidelines*.
51. Implement treatments within identified RMZs consistent with *MFRC Voluntary Site-level Forest Management Guidelines*.
52. Distribute slash evenly within RMZs to adequately protect soils and provide nutrient retention.
53. Retain a selection of live and dead trees in a variety of sizes and species adequate to provide a mixed age structure when conducting management within an RMZ.

- C3a. The management and administration of state land will minimize negative cumulative impacts on aquatic resources.
    54. Continue to implement all *MFRC Voluntary Site-level Forest Management Guidelines* directing forest management practices that pose potential impacts to surface waters.
    55. Collect baseline ecological data on surface water quality across the subsection.
    56. Implement ongoing surface water quality monitoring.
    57. Coordinate and cooperate with other landowners and water resource managers to establish guidelines that determine and minimize cumulative impacts.
    58. Implement site level surface water quality monitoring on water that may be impacted by logging activities when there is cause for concern.
- C4a. Forest management activities will provide old- forest characteristics in defined riparian areas.
    59. Define where management for old forest is appropriate in riparian areas and implement needed management.
    60. Manage RMZ forest composition to favor uneven-aged management of longer-lived species and extended rotations.
    61. Manage to meet or exceed *DNR Forestry-Wildlife Habitat Management Guidelines*' minimum requirements for cavity nesting trees within RMZs.
- C5a. Riparian areas will be managed to provide critical habitat for fish, wildlife, and aquatic plant species.
    62. Manage stands within RMZs for longer-lived, uneven-aged, mixed-species to provide shade, moderated microclimate, coarse woody debris, microhabitat diversity, resiliency to natural catastrophes, bank stability, nutrient cycling, and carbon and nutrient input.
    63. Manage for long-lived conifers, near water bodies, to discourage beaver related damming and siltation.
    64. Maintain a filter strip between aquatic resources and treatment areas consistent with MFRC Voluntary Site-level Forest Management Guidelines.
    65. Follow MFRC Voluntary Site-level Forest Management Guidelines regarding approaching water crossings at or near right angles to stream flow to minimize stream bank disturbances and chose construction materials that minimize sediment input and flow obstruction.
    66. Follow MFRC Voluntary Site-level Forest Management Guidelines regarding the appropriate timing of water crossing installations to minimize disturbance to fish spawning and migration patterns in areas identified by Fisheries staff.
    67. Leave snag trees, mast sources, and den trees, as directed in DNR Forestry-Wildlife Habitat Management Guidelines.
- D1a. Forest access routes will be well planned, with an increased level of collaboration among federal, county, private and local units of government to share access, minimize new construction, and close access routes no longer needed for forest management purposes.

68. Complete a timber access plan.
69. As Annual Stand Exam Lists are prepared, continue to cooperate with other forest landowners to retain existing access to state land and to coordinate development and maintenance of new access routes across mixed ownerships.
70. Develop long-term agreements with the United States Forest Service, county land departments, local governments, and private landowners where necessary to gain access to state lands.
71. Gate, barricade or obliterate all roads constructed during the life of this plan that are not needed for future stand management.

- E1a. Diversity of plant species within stands will be maintained or increased.
    72. Maintain the highest soil productivity possible by favoring regeneration and growth of native vegetation and trees using the *MFRC Voluntary Site-level Forest Management Guidelines*.
    73. Utilize harvest systems, methods and sale regulations (e.g., process at stump) that protect advanced regeneration and maintain or improve the patterns, diversity and composition of forest vegetation present in the stand prior to harvest.
    74. Preserve legacy patches and inclusions in stands for seed sources and native plant diversity, as well as to favor regeneration and seeding of native vegetation.
    75. Establish and manage plantations to more closely resemble naturally occurring stands by planting a variety of tree species using variable-density thinning techniques, preserving existing natural vegetation, and preserving advanced regeneration.
    76. Develop methods to measure and monitor the within-stand diversity of plant species, and provide ongoing education and training on these techniques and methods.
- E1b. Age diversity as well as vertical and horizontal structure within-stands will be maintained or increased where compatible with other strategies in this plan.
    77. Apply techniques during the young forest growth stage that encourages age and vertical/horizontal structure.
    78. Use intermediate treatments to provide age diversity and vertical/horizontal structure in the young forest, transition and mature forest growth stages.
    79. Design final harvest projects in a way that will transmit a legacy of age diversity, and vertical/horizontal structure.
    80. Develop a methodology for measuring growth stages, within stand age diversity, plant species diversity, and vertical/horizontal structure, and use this methodology to quantify and monitor changes.
- E1c. Native plant communities and their ecological functions will be conserved within stands and stand level ecological function will be maintained or improved.
    81. Design and implement training that allows field staff to identify native plant communities, growth stages, natural disturbance intervals, suitable tree species, and soil operability ratings.
    82. Control non-native invasive species.
    83. Control herbivory through management of wildlife populations, through the use of repellents, fencing or other practices that prove to be effective.
    84. Plan and execute stand maintenance and stand replacement silvicultural activities in a way that corresponds with the natural stand dynamics of the NPC.
    85. Ensure that regenerating tree species are suitable as indicated in the DNR's ECS Suitability of Tree Species by Native Plant Community tables.
    86. Provide growing conditions (i.e., sunlight, periodic fire, etc.) that will encourage species diversity in the ground, shrub and sub-canopy layers.
    87. Use soil operability ratings to avoid rutting and compaction when applying stand treatments.

88. Use herbicide and heavy site preparation methods sparingly, or find alternative techniques.
89. Restore or mitigate impacts to NPCs following heavy mechanical or chemical site preparation, frequent and/or intense disturbance, or establishment of species that are not native to the NPC.
90. Meet *MFRC Voluntary Site-level Forest Management Guidelines* (i.e. 5 percent minimum) for retention of large living trees, snags, down logs, tree regeneration, and undisturbed forest floor within stands after harvest.

- F1a. Adequate landscape-level habitat and habitat components will be maintained for wildlife and plant species found within these two subsections.
    91. Provide for both young and old forests distributed across the landscape.
    92. Retain or increase the amount of coniferous forest, coniferous woodland, and mixed coniferous/deciduous forest as a cover type.
    93. Maintain conifers as a component of deciduous cover types where suitable to the site.
    94. Retain or increase white cedar and oak as cover types and components of other cover types as they provide significant wildlife habitat.
    95. Maintain or enhance existing large patches.
    96. Provide a variety of patch sizes across the landscape to reflect patterns produced by natural disturbances.
    97. Provide a balanced age-class structure in cover types managed with even-aged silvicultural systems.
    98. Increase the productivity and maintain the health of even-aged cover types.
    99. Consider impacts to wildlife populations and habitat utilization in the design, management and regulation of forest management access and recreational trail systems.
    100. Favor and promote robust NPCs and retain elements of biodiversity significance (e.g., variety and abundance of native plants, intact ecological function and intact structure within communities).
    101. Retain the integrity of, or improve riparian areas as habitat for dependant wildlife species and protect seasonal and permanent wetlands.
    102. Maintain the productivity of forest soils to favor regeneration and growth of native vegetation and trees.
    103. Provide for the needs of species that depend on snags, cavity trees, bark foraging sites, and dead downed-woody debris.
    104. Reserve a minimum of 5 percent undisturbed vegetation as legacy or reserve patches in clumps or strips to benefit wildlife, as well as to provide scattered super canopy long lived conifers, legacy or seed trees in each harvest unit.
    105. Provide sufficient amounts of soft and hard mast in a way that will meet the needs of wildlife.
    106. Retain and perpetuate aspen and birch inclusions/clones within all cover types, especially long lived conifer types.
    107. Support research needs concerning the impacts of forest thinning on wildlife species that rely on high stem density regeneration for habitat, particularly in aspen cover types.
    108. Retain conifers and protect conifer regeneration in clumps or strips to provide thermal cover, food, nesting cover, and structural attributes beneficial to wildlife.
    109. Retain or increase white cedar and oak as a stand component.
    110. Use harvest systems, and sale regulations that protect advanced regeneration and maintain or improve patterns, diversity and composition of forest vegetation representative of the stand prior to harvest.
    111. Establish and manage plantations to more closely resemble naturally occurring stands by planting diverse tree species, preserving existing natural vegetation, and preserving

advanced regeneration by using variable density thinning techniques, varying stem density, and using less intense methods.

112. Give consideration to within stand occurrences of species that are endangered, threatened, or of special concern.
113. Designate special management areas for the benefit of wildlife species.
114. Consider Natural Heritage Program data and other rare species information during development and implementation of both the 10-Year Stand Exam List and Annual Stand Exam Lists.

- G1a. Forests will be managed to provide sustainable wildlife populations.
    115. Enhance habitat while completing land treatments by using practices and procedures outlined in the *DNR Forestry-Wildlife Habitat Management Guidelines* and the *DNR's Interdisciplinary Forest Management Coordination Policy*.
    116. Implement corridor planning and management.
    117. Adhere to the recommendations in the *MFRC Voluntary Site-Level Forest Management Guidelines* regarding RMZs, leave trees, legacy patches, woody debris, etc.
    118. Identify and acquire critical habitat land parcels for management and protection of important species.
    119. Develop cooperative procedures with other land management agencies to coordinate wildlife management efforts.
    120. Use the openlands assessment and planning process to develop necessary strategies and DFFCs for the designated open lands.
    121. Identify habitat components and habitat distributions needed to sustain wildlife populations at levels that are acceptable to user groups, but not detrimental to forest vegetation.
- H1a. Forests will be managed to provide a sustainable supply of forest products for human use, while minimizing negative impacts to wildlife habitat and forest biodiversity.
    122. Move even-age managed cover types toward a balanced age-class structure.
    123. Achieve a declining age-class structure in ERF stands from normal rotation age through maximum rotation age.
    124. Improve the distribution of ages and quality of timber in uneven-age managed cover types.
    125. Designate lowland conifer old growth from EILC stands and return undesignated stands to the harvest pool.
    126. Implement recommendations identified in the *MFRC's Voluntary Site-Level Forest Management Guidelines*, *Biomass Harvesting Guidelines for Forestlands, Brushlands, and Open Lands*.
- H2a. Forests will be managed to provide a sustainable supply of non-timber forest products for human use while minimizing negative impacts to wildlife habitat and forest biodiversity.
    127. Implement the recommendations of the Special Forest Products (SFP) planning process.
    128. Increase supervision of SFP harvest permits and increase enforcement of rules against illegal harvesting activity.
    129. Manage selected forest stands for non-timber forest products.
    130. Support research to determine sustainable harvest levels for SFPs (e.g., decorative spruce tops), criteria for managing harvests and methods of propagation.
    131. Use all available information including "*Careful Harvest Fact Sheets*" (Extension Web site), and the DNR Forestry's Utilization and Marketing Web site that supports sustainable harvest of non-timber forest products when approving SFP Permits.
    132. Apply knowledge of existing traditional gathering areas of non-timber forest products when managing other forest resources.

133. Identify managers with local expertise in managing non-timber products and utilize their knowledge when managing non-timber forest products at the landscape and statewide levels.
134. Reduce impacts by coordinating non-timber product harvests with timber harvest.
135. Increase public knowledge about the sustainable use of non-timber forest products through dissemination of educational information and training.

- I1a. Forests will be managed to increase overall timber productivity.
  136. Support research that maximizes timber productivity (e.g., optimal stocking levels, mixed species management, treatment timing) without impacting wildlife and plant species.
  137. Apply management techniques to improve stocking and stand composition on general forestry lands.
- J1a. Impacts of forest management on visual quality will be minimized.
  138. Apply the *MFRC Voluntary Site-level Forest Management Guidelines* and the *Visual Quality Best Management Practices for Forest Management in Minnesota*, as they apply, to all vegetative management activities.
  139. Review and update as appropriate the Visual Sensitivity Classification county maps.
- K1a. Forest management activities will continue to adhere to state and federal statutes.
  140. Invite comment from, and coordinate with adjacent landowners.
  141. Ensure that forest resource managers maintain a working knowledge of all applicable state and federal statutes, rules, guidelines and policies.
  142. Ensure that DNR forest managers have access to and consider appropriate related resource management policy, guidelines and plans of other divisions when vegetative management is prescribed.
- L1a. Forest management activities will protect cultural resources on state administered lands.
  143. Subsection plans will consider the impacts of forest treatments on cultural resources consistent with all adopted DNR policy and guidelines.
  144. Share data on known cultural sites and consider impacts to these sites as silvicultural treatments are applied.
  145. Increase cultural resource training for field staff, stress the importance of preserving cultural resources, and encourage the reporting of new sites.
  146. Evaluate the existing Cultural Resource Review procedure to improve efficiency and reduce time required for site review.
- M1a. Forest management will continue to implement measures to sustain or enhance existing biodiversity.
  147. Complete the Minnesota County Biological Survey (MCBS) for all counties within the subsections.
  148. Maintain the ecological integrity of Native Plant Communities (NPCs) by documenting and managing known locations with a statewide rank of Critically Imperiled (S1) or Imperiled (S2), and those with S-ranks of S3 to S5 that are rare or otherwise unique in these subsections.
  149. Consult the Natural Heritage database (including the rare features database) prior to prescribing or implementing forest management activities.
- N1a. Forest management will minimize damage to forests from native insects and diseases.
  150. Manage identified forest insect and disease occurrences to contain and reduce impacts, using techniques appropriate for the species involved.
  151. Identify, document, and monitor native insect and disease populations (e.g. jack pine budworm, ips bark beetle, two lined chestnut borer, or diplodia shoot blight), as part of the *Forest Health Monitoring Program* and establish occurrence levels above which management action should be taken.

152. Manage the vegetative content and structure of stands to reduce the potential impact of insects and disease.

- N2a. Damage to forests from exotic species will be minimized.
    153. Identify, document and monitor exotic species populations (e.g., gypsy moth, garlic mustard, common buckthorn, emerald ash borer, and earthworms) as part of the Forest Health Monitoring Program on state-managed lands.
    154. Contain and reduce impacts caused by exotic species using proven techniques.
    155. Manage the impact of exotic species using techniques such as aggressive containment or seasonal timing.
- N3a. Natural disturbance events will be evaluated to determine the appropriate forest management response to address the effects on the landscape.
    156. Accept a higher level of disturbance in ERF stands, provided the level of impact does not jeopardize the ability to regenerate the stand to the desired cover type or jeopardize the management goals of surrounding stands.
    157. Evaluate large-scale (i.e., hundreds to thousands of acres) and small-scale (i.e., tens of acres) disturbance events to determine appropriate action.
    158. Implement efforts to salvage usable timber stumpage from damaged stands in a timely manner to minimize losses due to decay and staining.
- N4a. Negative impacts caused by wildlife species on forest vegetation will be reduced.
    159. Expand the knowledge of field staff related to preventing or reducing damage caused by wildlife through training and/or field level information sharing.
    160. Consider the potential for wildlife damage to artificial or natural regeneration when prescribing site management measures.
    161. Incorporate damage prevention strategies at all phases of forest management.
    162. Focus artificial forest regeneration efforts in areas less likely to be impacted by wildlife species.
    163. Apply mitigation strategies where wildlife damage is anticipated (e.g., considering stock sources that are less palatable to wildlife).
- N5a. Forest management practices will consider the impacts of climate change on forest lands and will attempt to mitigate these impacts using current knowledge and future research findings.
    164. Reference the *MFRC Voluntary Site-level Forest Management Guidelines* for identification and management of tree species currently found at, or near the edge of their range.
    165. Maintain or increase species diversity across the subsections.
    166. Ensure connectivity that encourages the migration of plants and animals as climate changes the landscape.
    167. Evaluate site conditions with respect to climate change when selecting tree species for future forest stands.
    168. Apply the concept of carbon sequestering to remove carbon dioxide from the atmosphere.

5. Hardwood Hills Subsection Forest Resource Management Plan

Document Title	Source	Date	URL or Address
Hardwood Hills Subsection Forest Resource Management Plan	Minnesota Department of Natural Resources	Mar. 2012	www.dnr.state.mn.us/forestry/subsection/hardwoodhills/index.html

Geographic extent / scope:
The Hardwood Hills Subsection covers approximately 3.5 million acres in an area from near Mentor in the northwest to near Clearbrook in the northeast, and from near Paynesville in the southwest to near Clearwater in the southeast. Public agencies administer approximately 2.5 percent of the land, with the state portion being approximately 57,000 acres or 1.6 percent. Approximately 18,019 acres of the state land is timber land that will be considered for wood products production and other resource management objectives in this plan. Other cover types on Forestry or Wildlife Lands, totaling 27,000 acres are non-forested and may be considered to meet other resource management objectives. Other than considerations for old-growth, patches and ecologically important lowland conifers, state lands totaling 14,000 acres in State Parks and Scientific and Natural Areas were not included in this plan. (p. 1.4)

Organizations / Agencies involved in plan creation:
Subsection Forest Resource Management Plan (SFRMP) team members include DNR forestry, wildlife, and ecological and water resources staff. Managers of adjacent county, federal, tribal, and industrial forest lands were invited to provide information about the condition of their forest lands and their future management direction. (p. 1.9)

Info on planning process:
The recommended desired outcomes, goals, and strategies developed for the North Central and West Central Landscape regions by regional landscape committees under the direction of the Minnesota Forest Resources Council (MFRC) Landscape Program were considered in developing this SFRMP. By considering the recommendations from the landscape region plans, the decisions for management of DNR-administered lands incorporate recommendations from a broader landscape perspective across all ownerships and assists in cooperation across ownerships in this larger landscape area. (pp. 1.9-1.10)

Process Overview (pp 1.10-1.11, abbreviated):

- Step 1: Initiating the Planning Process
- Step 2: Assessment and Issue Identification
- Step 3a: Strategies, Desired Future Forest Composition, and Stand Selection Criteria
- Step 3b: Draft List of Stands to be Treated and New Access Needs
- Step 4: Final Plan

Purpose of plan:
A SFRMP is a DNR plan for vegetation management on forest lands administered by the DNR Division of Forestry and Section of Wildlife. Vegetation management includes actions that affect the composition and structure of forest lands, such as timber harvesting, thinning, prescribed burning, biomass harvest and reforestation. The geographic area covered by these plans is defined by Ecological Classification System (ECS) subsections. The SFRMPs will also consider the condition and management of forest lands not owned by the DNR, but will only propose forest management direction and actions for DNR lands. (p. 1.8)

The end result of the planning process will be two key products:

- **Desired Future Composition (DFC) goals:** The goals will include long-term (50 years or more) and short-term (10 years) desired changes in the structure and composition of DNR forest lands in the subsection.
- **List of DNR forest stands to be treated over the next 10-year period.** SFRMPs will identify forest stands on DNR Forestry- and Fish and Wildlife-administered lands that are proposed for treatment (e.g., harvest, thinning, regeneration, and re-inventory) over the 10-year planning period. (p. 1.9)

[Note to the reader: Letters and letter/number combinations that the DNR assigned to statements were retained to show connections between Issues, Focused Issues, General Direction Statements, and Strategies]

ISSUES (Issues) (Table 2.1a, pp. 2.3-2.18)

A. Desired age-class distribution
   - A1. What are the desired age-class and growth-stage distributions of forest types across the landscape?
   - A2. What are the appropriate amount, kind, and location of old forest?
   - A3. What are the appropriate amount, kind, and location of young, early successional forest?

B. Desired mix of forest composition, structure, spatial arrangement, growth stages, and native plan communities
   - B1. What is the appropriate forest composition, structure, representation of growth stages, within-stand diversity, spatial arrangement of vegetative types, and native plant community distributions necessary to maintain sustainability goals for biodiversity, forest health, and productivity across the three subsections? How do we get there?
   - B2. How will we ensure restoration of important component tree species that have declined within forest communities in the subsection?
   - B3. How will we maintain forest communities of particular concern in the subsection?
   - B4. How can intensive management of forest communities be adapted to retain some of the characteristics of natural stand-replacement disturbance events?
   - B5. How can management on state lands, especially large patch management, better reflect natural landscape patterns (the size and configuration of growth stages and types resulting from broad-scale natural disturbances) in the subsection?
   - B6. How do we limit forest fragmentation and maintain connectivity among habitats?

C. Riparian and aquatic areas
   - C1. How can we address the impacts of forest management on permanent wetlands, wetland inclusions, and seasonal ponds?
   - C2. What vegetative management activities will be allowed to take place within the riparian management zone (RMZ) and how will the appropriate width of the RMZ be determined to minimize the impacts of forest management activities on water quality, fisheries, and wildlife habitat?
   - C3. How can we address cumulative impacts to aquatic resources of forest management on a watershed/sub-watershed level?

D. Access to state land
   - D1. How can we plan for access to the stands identified for management during the 10-year plan period while protecting and minimizing the negative impacts that timber access development or use may have on other forest resources?

E. Biological diversity
   - E1. How can management of stands within areas of biodiversity significance be adapted to enhance biodiversity and native plant community composition, structure, and function?

E2. How do we plan to retain and restore within-stand structural complexity (e.g., vertical structure, stem size and density, coarse woody debris, and pit and mound micro-topography) on actively managed lands?

F. Wildlife habitat
   F1. How do we manage vegetation to balance the habitat needs of game and nongame species?
G. Forest health
   G1. How do we address the impacts of forest insects and disease on forest ecosystems?
   G2. How will we respond to non-native invasive species threats/invasions?
   G3. How will natural disturbances like fire and blowdown be considered in forest management decisions?
   G4. How do we manage vegetation to reduce negative animal impacts?
   G5. How should forest management respond to global climate change within the planning period?
H. Harvest level
   H1. What is the appropriate timber harvest level on state lands with consideration for the sustainability of all forest resources?
   H2. How can we ensure adequate and sustainable "nontimber forest products" for the future?
I. Timber and biomass productivity
   I1. How can we increase timber productivity on state lands?
   I2. How can sustainable biomass production be integrated into vegetation management?
J. Visual quality
   J1. How will forest management activities minimize impacts on visual quality?
K. Legal and policy requirements
   K1. How will land managers achieve desired results and continue to uphold various state and federal statutes and departmental policies?
L. Cultural resources
   L1. How will cultural resources be protected during forest management activities on state-administered lands?
M. Rare features
   M1. How can we ensure that rare plants and animals, their habitats, and other rare features are protected in the subsection?
N. Other jurisdictions
   N1. How will vegetation management objectives be coordinated across ownership boundaries?

VISION(S)

None identified.

GOALS (General Direction Statements (GDS)) (# links to issue) / STRATEGIES (Strategies) [GDSs are grouped under 12 forest resource management topic areas or categories. Strategies are shown directly below their related GDS, as listed in Chapter 3 of the SFRMP] (pp. 3.17-3.82)

Within-Stand Composition and Structure

- 1A. Most stands on state lands will be managed to reflect the composition, structure, and function of native plant communities. (A1, A2, A3, B1, B2, B3, C2, E1, E2, F1, H1, I1, I2, M1)

    a. Continue to use the *Field Guide to the Native Plant Communities in Minnesota. the Eastern Broadleaf Forest Province* and associated ECS Silvicultural Interpretations to classify stands to NPC and inform silvicultural prescriptions.
    b. Follow strategies in GDS-2C relating to retaining components of various growth stages in stands.

- 1B. Species, age, and structural diversity within some stands will be maintained or increased. (A2, A3, B1, E1, E2, F1, H1, I1, I2, M1)
    a. Use selective harvesting to encourage diversity of species, ages, and stand structures.
    b. Implement the *Site-Level Guidelines* designed to maintain a diversity of tree species within a stand.
    c. Use the NPC Field Guide, tree suitability tables, site index, soils data, and ECS Silvicultural Interpretations to aid in determining the species composition and structure appropriate for the site.
    d. Retain tree species, stand structure, and ground layer diversity within stands when prescribing timber stand improvement and thinning activities.
    e. Reserve seed trees in harvest areas and site preparation areas, where possible.
    f. Use the least intensive site preparation methods possible to ensure success.
    g. Use harvest systems or methods that protect advance regeneration. Retain conditions that favor regeneration and understory initiation.
    h. Identify some stands where succession is allowed to occur to encourage development of within-stand diversity. Movement to the next successional stage may be achieved with or without harvest.
    i. Increase and/or maintain by reserving from harvest, target species such as red oak and bur oak as components within northern hardwood types. Silvicultural practices that may add or increase the presence of these target species will include prescribed burning, selective harvest, and artificial or natural seeding.
    j. Manage planted and seeded stands to represent the array of native plant diversity.
    k. Use ERF in some even-aged managed stands to encourage greater structural diversity.
    l. Encourage fruit and mast-producing species.

Harvest Levels

- 2A. The SFRMP treatment level for each cover type moves toward the desired age class structure of even-aged managed cover types (both normal and extended rotation forest), and improves the age-structure and timber quality of uneven-aged managed cover types. (A1, A2, A3, B1, B5, B6, E2, F1, H1, I1, I2)
    a. Maintaining old forest.
    b. Maintaining young forest.
    c. Planned increases/decreases in cover type acres.
    d. Supply of timber.
- 2B. The harvest of nontimber forest products is managed to provide a sustainable supply for humans while providing for wildlife habitat and biodiversity. (B1, F1, H1, H2, M1)
    a. Consider known traditional gathering areas when managing other forest resources. For example, consider forest management effects on known areas such as those traditionally used for gathering maple syrup (sugarbush areas) or gathering wild rice (ricing camps) when planning forest management activities.
    b. Supervise and enforce special product permit regulations to ensure that the site's capacity for future production is not jeopardized. Consider managing or using some forest stands for nontimber forest products, such as maple syrup (sugarbush).

c. Consider the known locations of important wildlife habitats, rare native plant communities or species, and the possible impacts of nontimber forest products harvest practices before issuing special product permits.
d. Forest managers should proceed judiciously when issuing special products permits for species where limited knowledge and understanding constrains our ability to know if we are managing these groups of species sustainably.

Biological Diversity, Forest Composition, and Spatial Distribution

- 3A. Old forest in the subsection is distributed across the landscape to account for timber products, wildlife habitat, and ecological diversity. (A2, B1, B2, B3, E1, E2, F1, H1)
    a. Determine the desired level of effective extended rotation forest for even-aged managed cover types.
    b. Prescribe ERF stands and schedule harvest in even-aged managed cover types so that when a balanced age class distribution is achieved, the desired amount of effective ERF will be provided.
    c. Allow some stands to naturally succeed to long-lived cover types with, or without the use of harvest.
    d. Manage designated old growth stands and old forest management complexes according to DNR policy.
    e. Manage ecologically important lowland conifers according to department direction.
    f. Meet or exceed the MFRC Voluntary Site-Level Forest Management Guidelines (*Site-Level Guidelines*) to retain components of old forest in even-aged managed cover types.
    g. Use silvicultural treatments that retain old forest components in some stands.
    h. Consider the status of old forest within the Subsection when making decisions to add and offer unplanned wood for harvest.
- 3B. Species of Greatest Conservation Need and Key Habitats are maintained or enhanced in the subsection. (B1, B2, B3, E1, F1, M1)
    a. Provide current SGCN and Key Habitat data to DNR staff upon request.
    b. Incorporate new SGCN and Key Habitat locations and data as they are collected in the Subsection.
    c. Provide current SGCN and Key Habitat data to DNR staff upon request.
    d. Incorporate new SGCN and Key Habitat locations and data as they are collected in the Subsection.
    e. Select some ERF, OFMC, and EILC stands based on their association with SGCNs and Key Habitats.
    f. Stand-level management accounts for SGCN and Key Habitats.
- 3C. Forest cover type composition on state lands moves closer to the range of cover type composition that historically occurred within the ecosystems found in the Subsection. (A1, B1, B2, B3, B6, E1, E2, H1)
    a. Increase the acres of oak cover type using the following actions.
        i. Use the NPC Field Guide as a tool to guide the on-site evaluation of stands for conversion from one cover type to another or managing for mixed forest conditions (species composition and stand structure).
        ii. Conversions can be immediate or can take place over the span of a rotation period through thinning, partial cuts, and intermediate treatments.
    b. Increase mixed-forest condition in some stands in all cover types.
    c. Forest composition goals and objectives are consistent with the MFRC Landscape plans.

- 3D. Patch management in the Subsection maintains existing large patches and increases the average patch size on state lands over time, with consideration of natural spatial patterns. (B1, B6, H1)
- 3E. Managers of state lands in MCBS sites of statewide biodiversity significance implement measures to maintain or enhance the biodiversity significance factors on which these MCBS sites were ranked. (A1, B1, B2, B3, E1, M1)
    a. Determine which MCBS sites are of greatest concern or importance for SFRMP over the 10-year planning period.
    b. Consider the broader context and significance of the MCBS site as a whole when assigning management objectives and designing silvicultural prescriptions.
    c. Determine location and composition of stand conversions based on NPCs. (GDS-1A)
    d. Allow some stands to succeed to the next native plant community growth stage, with or without harvest.
    e. Emulate the within-stand composition, structure, and function of NPC growth stages when managing stands in MCBS sites.
    f. Apply variable density management strategies during harvest or reforestation.
    g. Apply variable retention harvest techniques during harvest.
    h. Designate some stands as ERF to provide old forest conditions.
    i. Increase the use of prescribed fire as a silvicultural technique in managing fire-dependent NPCs.
    j. Locate roads to minimize fragmentation of a MCBS site. (GDS-3D and 10)
    k. Emulate natural disturbance conditions in patch management. (GDS-3C and 3D)
    l. Apply special management recommendations for known rare features, Species of Greatest Conservation Concern, and Key Habitats. (GDS-3F and 3G)
    m. Defer management of some stands that have been identified as having high conservation value for further assessment (e.g., EILC, G1G2 native plant communities, nominated natural areas, and rare or representative ecosystems).
    n. Consider timber productivity, trust responsibilities, and other forest management priorities when managing stands in these MCBS sites. (GDS-6)
    o. Forestry, Wildlife, and Ecological and Water Resources personnel will communicate with other landowners, as opportunities arise, to inform them of the significance of these MCBS sites and management options that could be implemented to address the biodiversity objectives of these MCBS sites.
- 3F. Rare plants and animals and their habitats are protected, maintained, or enhanced in the Subsection. (B1, B2, B3, E1, F1, M1)
    a. Provide the current rare features database (Natural Heritage Information System) to DNR staff through the DNR Quick Layers in ArcGIS and encourage public land managers to obtain a license providing them access to the most up-to-date information.
    b. Incorporate new and updated rare features inventory information as the MCBS is completed in the Subsection.
    c. Consider current rare plant and animal species, and rare habitats in management activities in the Subsection.
    d. Select some ERF, OFMC, and EILC stands based on their association with rare features.
    e. During the development of the 10-year stand examination list and annual stand examination lists, land managers check the rare features database and flag for follow-up consultation those stands proposed for treatment that includes a rare feature.
    f. Harvest prescriptions, access plans, and other management proposals identify and implement measures that protect rare features.
- 3G. Rare native plant communities are protected, maintained, or enhanced in the subsection. (B1, B2, B3, E1, M1)

    a. Manage known locations of critically imperiled (S1) or imperiled (S2) NPCs and those NPCs that are rare statewide or with limited occurrences in this subsection to maintain their ecological integrity.
    b. Ecological and Water Resources staff identified stands that are high quality examples of rare native plant communities.
- 3H. Even-aged managed cover types will be managed to move toward a balanced age class structure. (A1, A2, A3, B1, B5, E2, H1, I1, I2)
    a. Target the selection of stand treatment acres to the appropriate age classes.
- 3I. ERF stands in even-aged managed cover types will be managed to achieve a declining age class structure from the normal rotation age to the maximum rotation age. (A1, A2, B1, E2, H1, I1, I2)
    a. Prescribe ERF stands within even-aged managed cover types so that each age class will be represented to produce a sustainable amount of old forest over time.
    b. Target ERF treatment acres to the appropriate age classes to move toward the declining age class structure after normal rotation age.
- 3J. State lands will include representation of each of the Native Plant Community growth stages that historically occurred in the Subsection. (A1, A2, A3, B1, B2, B3, E1, E2, H1, I1, I2, M1)
    a. Determine growth stage stands selected for treatment in the Subsection.
    b. Strive to emulate the within-stand composition, structure, and function of NPC growth stages when managing stands.
    c. Consider the contribution of inoperable stands and reserved areas (e.g., old growth, SNAs, state parks) in providing representations of growth stages when developing prescriptions.
    d. Manage designated representative ecosystems (RSAs) and High Conservation Value Forests (HCVF) consistent with forthcoming DNR direction to achieve distributions of native plant communities.
    e. Apply ECS Silvicultural Interpretations when proposing stand management prescriptions.
- 3K. Young, early-successional forest is distributed across the landscape over time. (A1, A3, B1, B5, F1, H1)
    a. Move aspen, balm of Gilead, red oak (high and low SI) and bur oak cover types toward a balanced age class structure. (GDS-2A)

Wildlife Habitat

- 4A. Adequate habitat and habitat components exist, simultaneously at multiple scales, to provide for nongame species found in the Subsection. (A2, A3, B1, B5, E2, F1, H1, M1)
    a. Provide old forest distributed across the landscape.
    b. Provide young forest distributed across the landscape.
    c. Provide a variety of patch sizes across the landscape that better reflect patterns produced by natural disturbances, and attempt to maintain existing large old forest stands.
    d. Manage to retain the integrity of riparian areas and provide protection for seasonal and permanent wetlands.
    e. Provide for the needs of species that depend on perches, cavity trees, bark foraging sites, and downed-woody debris.
    f. Provide for the needs of species associated with important native plant communities in this subsection.
    g. Provide for creation and maintenance of within-stand diversity.
    h. Manage to favor native plant communities and retain elements of biodiversity significance.

    i. Consider Natural Heritage Program data and other rare species information during development of both the 10-year and annual stand examination lists.
    j. Provide a range of habitats for short-distance and long-distance (neotropical) migratory birds.

- 4B. Adequate habitat and habitat elements exist, simultaneously at multiple scales, to provide for game species found in Subsection. (A2, A3, B1, B5, E2, F1, H1, M1)
    a. Provide young forest distributed across the landscape.
    b. Provide old forest distributed across the landscape.
    c. Provide a balanced age class structure in cover types managed with even-aged silvicultural systems.
    d. Increase the productivity and maintain the health of even-aged managed cover type stands.
    e. Provide for the needs of species associated with conifer stands and mixed conifer/ hardwood stands.
    f. Provide for creation and maintenance of within-stand diversity.
    g. Continue to manage Special Management Areas (SMAs) for the benefit of game species.
    h. Manage Priority Open Landscape Areas (OLAs) for the benefit of wildlife species (e.g. prairie chicken).

Riparian and Aquatic Areas

- 5A. Riparian areas are managed to provide critical habitat for fish, wildlife, and plant species. (A2, A3, B1, B3, C1, C2, M1)
    a. Meet or exceed the *MFRC Site-Level Guidelines* relating to riparian areas.
    b. Manage to maintain or increase old forest in riparian areas.
    c. Using the NPC Field Guide and associated ECS Silvicultural Interpretations, manage for a species appropriate for the site.
    d. Follow recommendations in Tomorrow's Habitat for the Wild and Rare.
- 5B. Forest management on state lands adequately protects wetlands and seasonal ponds. (B3, C1, C2, I1, I2, M1)
    a. Meet or exceed *MFRC Site-Level Guidelines*.
    b. Consider landforms (e.g., end moraines) that have seasonal ponds and small open-water wetlands, and address those features in site-specific prescriptions that are developed during the stand examination field visit.

Timber and Biomass Productivity

- 6. Timber productivity and quality on state timber lands is increased. (B1, I1, I2)
    a. Move toward harvesting non-ERF stands in even-aged managed cover types at their normal rotation age (see GDS-1A and 2A).
    b. Examine all stands over maximum rotation age on stand exam lists in even-aged managed cover types.
    c. Thin or selectively harvest in some red pine, northern hardwood and oak stands.
    d. Include silvicultural treatments such as site preparation, inter-planting, release from competition (e.g., herbicide application or hand release), and timely thinning in plantation management, to increase productivity.
    e. Apply and supervise the implementation of the *MFRC Site-Level Guidelines* on treatment sites.
    f. Continue to implement, supervise, and enforce current DNR timber sale regulations to protect and minimize damages to sites or residual trees from treatment activities.

g. Manage some ERF stands for large diameter, high-quality sawtimber products by retaining adequate stocking and basal area.
h. Respond to insect and disease problems, as appropriate.

Forest Pests, Pathogens and Non-native Invasive Species

- 7A. Limit damage to forests from insects, disease, and non-native invasive species to acceptable levels where feasible. (B1, G1, G2)
    a. Identify and monitor insect, disease, and non-native invasive species populations as part of the Forest Health Monitoring Program and document their occurrence on state-managed lands.
    b. Follow Minnesota DNR Operational Order 113 (Invasive Species) and appropriate division guidelines to minimize the spread of non-native invasive species during forest management activities.
    c. Adhere to the Minnesota DNR 2010 Invasive Species Program Directive on Forestry Lands.
    d. Manage existing forest insect and disease problems, as appropriate.
    e. Use the least intensive site preparation methods possible to ensure success.
    f. Manage stands to reduce the potential impact of insects and diseases.
    g. In ERF stands, a higher level of impact from native insect and disease infestations may be accepted as long as it does not jeopardize the ability to regenerate the stand to the desired forest cover type or the management goals of the surrounding stands.
- 7B. Reduce the negative impacts caused by wildlife species on forest vegetation on state forest lands. (B1, G4)
    a. Improve knowledge about the complexity of factors that affect solutions to preventing or reducing damage caused by wildlife. Do this through training and/or field level coordination on sites where problems exist.
    b. Consider the potential for wildlife impacts to planted or natural regenerating trees before damage occurs. Coordinate on preventative strategies before planting or timber sales begin.
    c. Focus forest regeneration efforts in areas less likely to be negatively impacted by wildlife species.
    d. On sites where damage from wildlife species is anticipated, use mitigation techniques to reduce damage when planting susceptible tree species.
    e. When deciding what to plant, consider species or stock sources that are less palatable to wildlife.

Climate Change

- 8. Forest management on state lands attempts to mitigate global climate change effects on forest lands. Management is based on our current knowledge and will be adjusted based on future research findings. (B1, G5, H1)
    a. Maintain or increase species diversity across the Subsection.
    b. Maintain or increase structural diversity across the subsection.
    c. Maintain connectivity that permits the migration of plants and animals as climate changes the landscape.
    d. Evaluate site conditions with respect to climate change when selecting tree species for regeneration.
    e. Use the concept of carbon sequestration to remove carbon dioxide (the most significant anthropogenic greenhouse gas) from the atmosphere.

f. Maintain or increase conifers adjacent to coldwater streams to moderate the microclimate that provides a cooling effect in warm weather and retains a snowpack longer, slowing discharge in the spring.
g. Apply the *MFRC Site-Level Guidelines* for tree species at the edge of their range.

Visual Quality

- 9. Minimize forest management impacts on visual quality in sensitive areas. (J1, K1)
    a. Apply the *Site-Level Guidelines* on visual quality on all vegetative activities.

Access to State Land

- 10. Forest access routes are well planned and there is a high level of collaboration with federal, private, and local units of government to share access and minimize new construction. (B1, D1, H1, I1, I2, J1, K1)
    a. Continue to seek cooperation with other forest landowners to retain existing access to state land and to coordinate new road access development and maintenance across mixed ownerships.
    b. Follow Minnesota statutes and guidelines and DNR policies for state forest roads.
    c. Apply the department direction regarding access roads across EILC and other areas that have been reserved (or deferred) from treatment during the 10-year plan.
    d. Follow strategies identified under other General Direction Statements that apply to roads throughout the planning, development, and disposition of forest roads.
    e. Complete a timber access plan.

Cultural Resources

- 11. Cultural Resources will be protected on state-administered lands. (L1)
    a. Annual Stand Exam lists are reviewed by DNR archeologists; recommendations for mitigation are implemented as part of sale design.

Natural Disturbance Events

- 12. Natural disturbance events that occur on state land within the Subsection are promptly evaluated to determine the appropriate forest management needed to their impacts. (B4, G3)
    a. The subsection planning team will evaluate large-scale (100's to 1000's of acres) disturbance events to determine appropriate action.
    b. Local land managers will evaluate and determine appropriate actions for small-scale (10s of acres) disturbance events.

6. Mille Lacs Uplands Subsection Forest Resources Management Plan

Document Title	Source	Date	URL or Address
Mille Lacs Uplands Subsection Forest Resources Management Plan	Minnesota Department of Natural Resources	June 2008	http://www.dnr.state.mn.us/forestry/subsection/millelacs/index.html

Geographic Extent / Scope:
The Mille Lacs Uplands planning area covers approximately 3,498,533 acres. More than 357,000 acres of that area (about 10 percent) is administered by state agencies, mainly the Forestry and Wildlife Divisions of Minnesota Department of Natural Resources (DNR). Portions of three Ecological Classification System (ECS) Subsections are included. The majority of the land area is in the Mille Lacs Uplands, a small amount is in the Glacial Lake Superior Plain, and a tiny portion is in the St. Croix Moraines Subsection. Approximately 40 percent of the Mille Lacs Uplands and 66 percent of the GLSP is forested. Most of the St. Croix Moraines is included in Interstate State Park, and is therefore not affected by this planning process. (p. 1.1)

Organizations / Agencies involved in plan creation:
An interdisciplinary team comprised of DNR Forestry, Fish and Wildlife, Ecological Services, and other division staffs had primary responsibility for the work and decision-making involved with the subsection plan. Managers of adjacent county, federal, tribal, and industrial forestlands were invited to provide information about the condition of their forestlands and future management direction. (p. 1.3)

Info on Planning Process:
This document is part of a five step Subsection Forest Resource Management Plan (SFRMP) Planning Process**.**

Process Overview (p 1.4, abbreviated):

- Step 1: Initiating the Planning Process
- Step 2: Assessment and Issue Identification
- Step 3: Strategies, Desired Future Forest Composition, and Stand Selection Criteria
- Step 4: Draft List of Stands to be Treated and New Access Needs
- Step 5: Final Plan

Purpose of Plan:
A SFRMP is a DNR plan for vegetation management on forestlands administered by the DNR Forestry and Wildlife Divisions. Vegetation management includes actions that affect the composition and structure of forest and brush lands, such as timber harvesting, thinning, prescribed burning, and reforestation. The geographic area covered by this plan is a subsection rather than administrative boundary such as counties or DNR administrative areas. The SFRMP considers the condition and management of lands by other agencies, but only proposes forest management direction on DNR-administered lands. (p. 1.2)

The end result of the planning process will be two key products:

- **Desired future forest composition (DFFC) goals.** These goals include long-term (i.e., 50-100+ years) and short-term (i.e., 10 years) desired changes in the structure and composition of vegetation on DNR-administered lands in the subsection.
- **List of DNR forest stands to be treated over the next 10-year period.** SFRMPs will identify forest stands on DNR Forestry- and Fish and Wildlife-administered lands that are

proposed for treatment (e.g., harvest, thinning, regeneration, and re-inventory) over the seven-year planning period. (p. 1.2)

[Note to the reader: Letters and letter/number combinations that the DNR assigned to statements were retained to show connections between Issues, Desired Future Forest Conditions, and Strategies]

VISION(S)

None identified.

Final issues, goals, and strategies are broken down into four categories:

1. Biological Diversity
2. Forest Spatial Patterns
3. Timber Productivity
4. Public involvement and collaboration

1. Issues, goals, and strategies related to Biological Diversity (pp. 2.1-2.9, 3.2-3.14)

ISSUES (Issues)

1. Age-class structure
2. Vegetation diversity
3. Wildlife habitat diversity
4. Ecologically significant areas

GOALS (Desired Future Forest Condition) / STRATEGIES (Strategies) [Strategies are shown directly below their related DFFCs, as listed in Chapter 3 of the SFRMP]

- 1.1. Forests in the Mille Lacs Uplands, Glacial Lake Superior Plain, and St. Croix Moraines (planning area) are diverse in age and structure and there are both older and young, regenerating forests.
    a. Use harvest planning to improve the age class distribution of all forest types in the subsection.
    b. Designate stands as extended rotation forest (ERF) that include a variety of age classes.
    c. Include short-lived (early successional) species such as aspen, jack pine, and birch in ERF areas.
    d. Continue to harvest aspen stands that are classified as “high risk” due to age, and will be maintained as aspen, at an accelerated rate.
    e. Model current and future forest age-class distributions for the planning area, annually.
    f. Ensure that the oldest age classes are present on the landscape in adequate amounts.
    g. Continue to refine the list of old-growth forests by evaluating and prioritizing within existing old-growth teams.
    h. Coordinate with Minnesota County Biological Survey and other programs to identify additional old-growth forests.
    i. Use ERF designation to buffer impacts to designated old-growth forests.
    j. Plan timber sale access to minimize undesirable recreational impacts to designated old-growth forests and adjacent special management zones.
- 1.2. At least 10 percent of lands administered by the Divisions of Forestry and Wildlife in the planning area are managed as older forest.

a. Identify opportunities to locate ERF in specific riparian, corridor, and Wildlife Management Areas, and adjacent to designated old-growth forests.
b. Identify some highly productive forest lands for management as ERF, for the production of high quality timber.
c. Emphasize early successional species such as aspen, jack pine, and birch in these ERF areas, in addition to typically long-lived (later successional) species
d. Concentrate ERF in areas that have historically supported the oldest forests, and the highest proportion of older forests, in the planning area. Such areas provide site conditions and have experienced disturbance regimes that allow the development of old forests.
e. Categorize each Landtype Association (LTA) (or LTA group) by its ability to develop and maintain older forests.
f. Participate in the identification of LTAs that are appropriate for open landscape management; these LTAs may not be the best choices for ERF.
g. Consider existing large patches and identified forested corridors as areas of ERF concentration.

- 1.3 ERF areas are located where they will provide the desired timber quality and old forest attributes.
    a. Allocate ERF on two levels (or scales), both of which are below the subsection level:
        i. At the unit or landscape level/LTA level -- at this level historical disturbance regimes are most important.
        ii. At the stand level -- at this level existing corridors, riparian zones, and oldgrowth special management zones are important.
    b. Concentrate ERF in areas of the subsection(s) that have historically supported the oldest forests and highest proportion of older forests. Such areas provide site conditions and have experienced disturbance regimes that allow the development of old forests.
    c. LTAs provide the best landscape unit for basing decisions on allocation of ERF; in general, these units are homogeneous enough in terms of environmental conditions that each can be categorized by its ability to develop and maintain older forests.
    d. The Division of Wildlife has identified certain LTAs that are appropriate for brushland management; these LTAs may not be the best choices for ERF
    e. Large patches and corridors identified by the SFRMP team's spatial concerns work group should be considered as areas of ERF concentration.
- 2.1. Native plant communities that were historically well represented in the planning area are well represented today.
    a. Identify those species that were historically more common and the native plant communities in which they thrived, and focus regeneration and reintroduction efforts in those areas.
    b. Place a high priority on efforts to map the occurrence of native plant communities and native plant community systems in the subsection(s).
    c. Continue to develop capability to use native plant community and soil data to make decisions about appropriate forest cover types for a site.
    d. Use native plant community keys to guide forest management decisions in the subsections; there will be a number of options from which to choose on any given site.
    e. Identify stands most appropriate for conversion to other types using site index, risk criteria, native plant community, and soils data.
    f. Work to achieve natural regeneration if possible, use artificial regeneration when necessary, and make a commitment to protect regeneration.
- 2.2. Benefits derived from efforts to regenerate forests after harvest are maximized.

a. Develop management plans specific to the needs of forest types that have been identified as lacking adequate regeneration (see specific cover-type notes in this document).
b. Engage in routine monitoring and evaluation of regeneration efforts.
c. Work closely with Division of Wildlife resource managers to ensure that population goals for wildlife and regeneration plans are not in conflict in a given area.
d. Continue to experiment with regeneration strategies that appear less vulnerable to depredation.
e. Take every precaution to avoid damage to the site during harvest; this is often at the root of regeneration problems, which are then compounded by faulty regeneration practices.
f. Document successes and failures in regeneration efforts in order to avoid repeating errors.
g. Protect soils and enhance regeneration by regulating season of harvest when necessary.
h. Follow Forest Development Manual (Minnesota DNR, 1994-5) guidelines for harvesting, site preparation, and artificial regeneration to ensure greatest chance of success in artificial regeneration.
i. Use Ecosystem Classification System (ECS) field guides to help ensure DNR resource managers make sound decisions in artificial regeneration projects.
j. Completely document all species within the project area (all woody species that occupy a site, not just the species of interest).

- 2.3. The amount of white pine in the subsection has increased by 100 percent over 2002 levels.
    a. Implement the guidelines provided by Minnesota DNR's *White Pine Management Policy* (Minnesota DNR, 1998).
    b. Focus regeneration efforts in areas where white pine was historically abundant in the planning area, where there is a low incidence of blister rust, and where slopes are adequate to permit air drainage.
    c. Make a commitment to protect natural and planted white pine regeneration in focus areas from depredation; enlist the support of other DNR divisions and volunteers, where possible.
- 2.4. The amount of white cedar in the subsection has increased over 2002 levels; an improved age-class structure indicates greatly improved regeneration success.
    a. Identify native plant communities in the subsection that support the growth of upland and lowland white cedar.
    b. Focus regeneration efforts on areas that have existing white cedar, especially those surrounded by large contiguous patches of forest.
    c. Continue to refrain from harvesting upland white cedar in the subsection until adequate regeneration is identified or established in focus areas.
- 2.5. The birch cover type has increased by 50 percent over 2002 levels and shows a greatly improved age-class distribution.
    a. Identify native plant communities in the planning area that support the growth of quality birch.
    b. Engage in regeneration efforts, including site preparation and planting, if needed to ensure adequate birch regeneration in selected areas, e.g., in gaps created in mixed hardwood stands.
    c. Ensure that birch inclusions are managed for regeneration.
    d. Ensure that harvest of decadent birch stands in the subsection be addressed as a high priority to maximize chances for natural regeneration.
    e. Combine Strategy (d) with post-harvest preparation techniques to improve regeneration.
    f. Implement the recommendations of current research into sustainable harvest of birch bark from live, standing trees.

- 2.6. Healthy butternut specimens on state and private lands are protected pending the development of trees resistant to butternut canker.
    a. Continue to implement butternut harvest moratorium on state lands (Minnesota DNR, 1992).
- 2.7. The aspen cover type is reduced by 5 percent from 2002 levels by selective removal of aspen to favor an existing species, natural stand conversion through succession, replanting, or under planting with another species.
    a. Identify stands that can be maintained as mixed aspen and conifers by retaining and enhancing advanced conifer regeneration.
    b. Identify aspen stands that are "high risk" due to disease and could be converted to another type.
    c. Use historical records, native plant community, soil, and wind firmness data to determine appropriate conversion, if natural conversion is not apparent.
    d. Reserve long-lived conifer types as clusters in hardwood stands for seed sources.
    e. Encourage and nurture natural succession to mixed hardwoods on appropriate sites.
- 2.8. Specific areas are managed to maintain open landscapes needed to maintain populations of species of management concern.
    a. Collaborate with Divisions of Wildlife and Ecological Services to identify specific open landscapes that will provide the most benefit to associated wildlife species and maintain those areas as non-forest.
    b. Provide maps of critical open landscape habitat areas for use by those involved in land-use planning efforts.
    c. Collaborate with other divisions and other landowners to actively maintain open landscapes in designated areas using appropriate management techniques.
- 2.9. State Nurseries have access to sources of seed and other propagation materials from a variety of environments. These sources are identified and protected in the course of forest management.
    a. Encourage field personnel to document location of specimens or populations appropriate for use as seed sources. Sugar maple, basswood, white pine, yellow birch, oak species, and bigtooth aspen are of particular interest for use in tree improvement programs.
    b. Identify and document pure stands of tree species that are easily accessible.
    c. Use locally adapted seed.
    d. Manage several stands of trees within a subsection for seed production as a way of maintaining sufficient diversity when the seed is deployed for regeneration.
    e. Use seed collected from several stands of trees to increase variation among planted or seeded stands.
    f. Mille Lacs Uplands falls within the Central Minnesota seed zone (Minnesota DNR, 1989). Using seed from this seed zone (even if the seed is from another subsection) has been determined to be appropriate and will further increase genetic diversity among planted or seeded stands.
    g. When establishing a seed production area, it is important to develop several acres with each acre retaining ten to fifteen trees. This will result in a sufficient number of trees providing ample genetic material to have a good "mix" and sufficient genetic variation. Establishing several seed production areas will increase genetic diversity.
- 2.10. The oak type (red oak, bur oak, and white oak) has increased slightly (2 percent) over 2002 acreage. Oak stands are managed using even-aged or two-aged systems, with even-aged predominant.
    a. Avoid thinning and other management when oaks are under severe stress from drought and/or defoliation.
    b. Examine stands when basal area reaches 120 sq. ft per acre.
    c. Thin stands to produce seven to fifteen cords per acre before regeneration harvest.

    d. Accept other high quality species in wet-mesic communities.
    e. Regenerate by use of shelterwood harvests, post-harvest timber stand improvement, weeding, and possibly planting to retain oak.
    f. Evaluate sapling stands for precommercial release and thinning.
    g. Consider using prescribed fire to regenerate oak on dry-mesic communities.
    h. Re-examine stands on ten to fifteen year intervals.
    i. Initiate regeneration harvest on sites that meet criteria.
    j. Consider converting poor sites (SI less than 55) to a more appropriate cover type for the site.

- 2.11. Northern Hardwood stands average sixty to eighty years of age with representatives of all age classes. Stands have between eighty and one hundred forty sq. ft of basal area, with most being maintained between eighty and one hundred twenty sq. ft. After the year 2122, northern hardwood acres should be equally divided among basal area classes 80 – 100, 101 – 120, and 121 – 140 for perpetuity.
    a. Thin stands to produce an average of seven cords per acre at harvest.
    b. Identify low-quality hardwood stands for conversion or rehabilitation using a clear-cut technique.
    c. Thin better quality northern hardwood stands for long-term stand improvement.
    d. Complete native plant community classification for each site to assess its potential for future management.
- 2.12. New infestations of invasive exotic species on public forest land are rare, and the spread of existing populations is controlled.
    a. Continue to develop educational materials that help adjacent landowners recognize exotic species and understand appropriate control methods.
    b. Balance the need for recreational trails with the risk of introducing exotic species into all public forest areas.
    c. Understand and communicate the distinction between invasive and non-invasive exotic species.
- 3.1. State lands contribute important habitat and population support for the 439 permanent and regular resident wildlife species that exist in Minnesota. Populations for various species are monitored and habitats for game and nongame species are valued and protected.
    a. Identify wildlife management species for the subsection that represent the various habitat and ecological processes necessary to ensure overall sustainability and viability of wildlife.
    b. Work with the Divisions of Wildlife and Ecological Services to define which wildlife species can be identified as representative wildlife management species.
    c. Use wildlife resource assessment information about representative wildlife management species to guide/support forest management decisions concerning: 1) species distribution and population estimates, 2) habitat associations, 3) landscape habitat elements, 4) site level habitat elements, 5) management practices, and 6) monitoring and adaptive management strategies.
    d. Participate in designation of open landscape complexes to be maintained as habitat for open-landscape-dependent wildlife species.
    e. Identify and maintain long-lived conifer secondary species in hardwood stands as winter cover.
    f. Identify and maintain mast species as leave trees on harvest sites. (p. 3.13)
- 4.1. Areas of unusual ecological significance are valued and protected as areas for study and conservation of both plant and animal rare species, sources of biological diversity, and ecological benchmarks.

a. Consult the most up-to-date rare features database layer available through the DNR Geographic Information Systems data library.
b. Flag stands that include a rare feature element during stand selection.
c. Following stand selection, DNR Ecological Services Division will confer with Forestry staff (on Forestry-administered lands) and Wildlife staff (on Wildlife administered lands) to determine adjustments (if needed) in proposed treatments to protect the element occurrence.
d. Work with the Divisions of Ecological Services and Wildlife to identify areas of high biological diversity on State land that are not already protected by Scientific and Natural Areas, state Parks, or Wildlife Management Areas, and consider giving them special management to conserve their unique assets.
e. Determine the kind of forest resource management that is required to conserve each high biological diversity area, if appropriate.
f. Consider including high biological diversity areas in ERF management areas and/or in forested corridor areas, as appropriate.

- 4.2. Forested rivers in the planning area have high water quality providing important habitat for fish, amphibians, and invertebrates, including a number of federally listed mussel species.
    a. Adhere to MFRC voluntary site-level guidelines for trout streams when conducting forest management activities in riparian areas of rivers and streams that contain trout or listed mussel species and MFRC standard riparian area voluntary site-level guidelines (Minnesota FRC, 1999) in other riparian areas

2. Issues, goals, and strategies related to Forest Spatial Patterns (pp. 2.9-2.10, 3.14-3.18)

ISSUES (Issues)

1. Connectivity
2. Patch management
3. Fragmentation

GOALS (Desired Future Forest Condition) / STRATEGIES (Strategies) [Strategies are shown directly below their related DFFCs, as listed in Chapter 3 of the SFRMP.]

- 1.1. Forested connections between existing large blocks of forested land and riparian areas are maintained and enhanced to provide for wildlife movement, protect water resources, and prevent habitat fragmentation and consequent isolation of native plants and animals.
    a. Identify and maintain existing connections between large blocks of forest land.
    b. Establish a corridor, a minimum of one-quarter mile (1320 feet) in width. This may or may not always be in the same location.
    c. Manage forests in the designated corridor for a minimum average basal area of 60 sq. ft per acre. Where the management goal within the corridor is to maintain an even-aged species (aspen, jack pine, red pine, etc.) no more than one-half the width of the corridor may be less than 60 sq. ft of basal area at any one time. Any Division of Forestry-approved management activity that maintains these stand characteristics is acceptable.
    d. Work with other land managers (federal, tribal, and county) to maintain forest land in the corridor in forested status. This will mean involving them and getting "buy-in" to the concept of establishing a forested corridor.
- 2.1. Forests are managed for a variety of patch sizes. Large, contiguous patches of forest are maintained in designated areas, while other parts of the Mille Lacs uplands are managed for smaller or medium size patches.

a. Plan subsection timber harvests taking into consideration the desired future distribution of patch sizes.
b. Conserve existing large contiguous mature forest areas to provide critical habitat for multiple forest interior species, e.g., red-shouldered hawk nest sites.
c. Manage existing large blocks of state forest land, and blocks of state forest land that are adjacent to large blocks on other ownerships, for large patches, giving priority to those areas in Strategy b, above.
d. Continue to use information on historical disturbance regimes to help refine planning for management of large, medium, or small patches.
e. Continue to increase the proportion of state forest land managed according to uneven-aged management regimes as a way of achieving a more desirable patch size distribution.
f. Manage state forest lands in the planning area to achieve the following distribution of patch sizes (percent of Forestry and Wildlife lands):
    - Very large (640 acres +) 10%
    - Large (250-639 acres) 15%
    - Medium (100-249 acres) 40%
    - Small (40-99 acres) 25%
    - Very small (< 40 acres) 10%
g. Take care to maintain existing patches in the very large and large size categories.

- 3.1. Forest managers carefully consider forest road construction. There is a high level of collaboration with federal and private landowners and local units of government to identify opportunities to share and minimize road construction.
    a. Plan the fate of new roads and trails prior to construction so that appropriate action can be taken to either maintain them, or obliterate them from the forest. It is undesirable to have roads developing in an unplanned way as a result of recreational use of logging trails.
    b. Follow the DNR State Forest Road Manual (Minnesota DNR, 1994-6) for development of new roads.
    c. Adhere to Forestry-Wildlife Guidelines to Habitat Management (Minnesota DNR, 1985-2) Roads and Trails section.
    d. Contact county land departments and other appropriate land managers (e.g., Tribal governments, The Nature Conservancy) to arrange cooperative use of existing roads to keep new road construction to a minimum.
    e. Provide a draft of road access needs for public review as part of the forest resource planning process.

3. Issues, goals, and strategies related to Timber Productivity (pp. 2.11-2.12, 3.18-3.22)

ISSUES (Issues)

1. Identification and management of highly productive sites
2. Utilization and marketing of forest resources
3. Increase site-level productivity
4. Improved forestry data management

GOALS (Desired Future Forest Condition) / STRATEGIES (Strategies) [Strategies are shown directly below their related DFFCs, as listed in Chapter 3 of the SFRMP.]

- 1.1. Timberlands in the planning area are highly productive. They produce good quality hardwood and softwood logs for manufacturing and export, as well as a good quantity of pulpwood to supply Minnesota's pulp and paper industries.
    a. Identify areas that are good examples of their type, occur on wind firm soils, can be managed for production of high quality hardwoods, and/or include large contiguous forested patches for wildlife habitat. Consider thinning healthy aspen types in ERF as well as dense hardwoods and conifers to produce quality timber for the future.
    b. Use Site-Level Guidelines for all activities to ensure that site quality is maintained.
    c. Increase hardwood-marking efforts as resources allow.
    d. Use ECS and local knowledge to identify aspen stands that would be appropriate for conversion to mixed hardwoods, and manage these for quality hardwoods using selective harvest and thinning techniques.
    e. Identify advance regeneration of long-lived conifers in less productive aspen stands, and plan for their conversion to pine, spruce, and fir types.
    f. Improve production of quality aspen by continuing to harvest high-risk aspen stands that are to be maintained in the aspen type at a high rate, to avoid conversion to other types.
    g. Investigate potential for thinning aspen to increase growth and produce high quality logs on selected sites.
    h. Use site-level ecosystem classification keys to identify the native plant community type on a given site and make decisions to manage for appropriate forest types. Sites that are managed for appropriate forest types, have good access, and where managers are committed to continuous improvement have the greatest potential for optimizing timber productivity for the present and the future.
    i. Focus management activities intended to help stands approach their full production potential on sites with fewest conflicting priorities (rare features, oldgrowth forest, poor access, etc.
- 2.1. Utilization of species and grades of timber are optimized to maximize the benefits these resources provide.
    a. Promote the use of lesser-utilized species and identify potential markets for underutilized species to DNR resource managers.
    b. Communicate changes in wood and non-timber forest product markets to DNR resource managers.
- 3.1. Ecosystem classification tools have helped DNR resource managers identify species most likely to be productive on a specific site, as indicated by soil and native plant community information.
    a. Use ECS and local knowledge to identify stands that would be appropriate for conversion to mixed hardwoods, and manage these for quality hardwoods using selective harvest and thinning techniques.
    b. Use ECS keys and historical information to identify sites appropriate for introduction or enhancement of long-lived conifer species.
    c. Use ECS keys to help identify forest types that may be more productive than those currently on sites that are marginally productive.
    d. Use innovative silvicultural techniques appropriately to manage for structural diversity and improved timber quality.
- 3.2. Diverse, high-quality mixed hardwood stands are managed by skilled forest managers and selectively harvested by highly trained logging professionals for continuous quality improvement and production of timber, while maintaining forest cover and establishing regeneration.
    a. Increase hardwood-marking efforts as resources allow.
    b. Identify thinning opportunities to enhance quality of all timber types.

    c. Continue to make use of contract hardwood marking crews to improve the growth and quality of hardwood stands.
- 4.1. Forest inventory data are detailed and current enough to be relied upon in a wide variety of planning and analysis projects. Forestry databases provide a link between generations of forest managers with respect to both strategic and operational decisions that have been made for a specific forested community.
    a. Create a priority reinventory list each planning period.
    b. Support the development and use of databases that include planning elements in addition to inventory elements.

4. Issues, goals, and strategies related to Public Involvement and Collaboration (pp. 2.12-2.14, 3.22-3.24)

ISSUES (Issues)

1. Forest stewardship planning
2. Collaboration with other landowners
3. Public involvement and review

GOALS (Desired Future Forest Condition) / STRATEGIES (Strategies) [Strategies are shown directly below their related DFFCs, as listed in Chapter 3 of the SFRMP.]

- 1.1. Progress toward the vision for the subsection(s) forests (or DFFCs) is enhanced by engaging nonindustrial private forest landowners, providing a level of consistency across ownerships with regard to forest management in a given landscape unit.
    a. Consider the differences between private and public lands when developing DFFCs for the planning area. A one-size-fits-all future condition statement is not likely to be implemented or result in diverse and resilient ecosystems.
    b. Develop a concise summary of landscape-level ecological conditions that can be used by stewardship plan preparers to help private landowners understand past, present, and future ecosystems. This will help landowners select realistic management objectives that are compatible with ecological and economic conditions.
    c. Prepare or revise management prescriptions tailored to conditions in the planning area so that they can be incorporated into Forest Stewardship Plans.
- 2.1. Minnesota DNR resource managers routinely collaborate with other landowners to develop consistent goals and landscape-level strategic plans.
    a. Continue efforts to coordinate plans and management projects with federal and county land managers. Provide federal, tribal, and county managers the opportunity to participate in developing management plans for state lands. Review and comment on management plans for federal-, tribal-, and county managed natural resources.
    b. In counties that have land departments, send copies of annual vegetation management work plans to the county land commissioner to allow coordination of vegetation management and road access projects.
    c. In counties that do not have land departments, offer to assist county auditors or the county board to develop land management plans for tax-forfeit land that will be retained in county ownership, as time and resources permit.
    d. When feasible, develop joint contracts (e.g., site preparation, tree planting) on state and county lands to avoid duplication of effort and achieve economies of scale.

    e. Maintain contact with other resource managers in the planning area and monitor their strategic planning documents as a way of maintaining an awareness of their long and short-term forest management goals.
    f. Take advantage of opportunities to collaborate with other resource managers as resources allow.
- 2.2. Losses due to forest insects and diseases on private and state forest land are minimized, as are the effects of pest management on nontarget species.
    a. Inform adjacent landowners of insect or disease incidents on state land and assist them to make informed decisions about protecting their trees and property.
    b. When a private landowner adjacent to state land is actively suppressing a forest pest infestation and that pest also exists on adjacent state lands, the state should consider appropriately treating the pest also.
    c. Follow guidelines established by Division of Forestry forest health specialists with regard to insect and disease outbreaks.
- 2.3. State forest lands are managed in a manner that minimizes conflicts among users, adjacent landowners, and in-holders, while maintaining management options.
    a. When planning management activities, always make adjacent landowners aware of the plan and the purpose.
    b. Maintain awareness of, and respect for, ownership boundaries.
    c. Clearly mark and post all boundaries with signs where possible.
- 3.1. The public is involved in forest management planning during designated review periods.
    a. Encourage and actively solicit public input into forest management activities such as planning.
- 3.2. DNR Forest managers minimize the visual and aural impact of forest management activities on users of state forests, thereby supporting and enhancing multiple-use values of state forest land.
    a. Apply visual quality management guidelines. Be particularly considerate of scenic values in areas classified as most sensitive (e.g., high-use recreational areas, adjacent to recreational lakes and streams, solitude areas).
    b. Manage expectations and perceptions by informing and educating stakeholders about the need for and expected impacts of management activities prior to, during, and after the activity.
- 3.3. Forest managers have stakeholder support for employment of a full suite of forest management options as appropriate to reach identified goals.
    a. Use opportunities to communicate to the public about management options, risks, and benefits as they arise.
    b. Use historical disturbance regime and range of natural variation data as they become available to help determine appropriate management techniques for landscape areas.
    c. Document management prescriptions and choices as they are made, to facilitate communication and public education.
    d. Use pre-treatment monitoring and post-treatment monitoring as learning and communication tools to justify choices and outcomes.

7. St. Louis Moraines, Tamarack Lowlands, Nashwauk Uplands, and Littlefork-Vermilion Uplands Subsections Forest Resources Management Plan

Document Title	Source	Date	URL or Address
St. Louis Moraines, Tamarack Lowlands, Nashwauk Uplands, and Littlefork-Vermilion Uplands Subsections Forest Resources Management Plan	Minnesota Department of Natural Resources	Dec. 2010	http://www.dnr.state.mn.us/forestry/subsection/north4/index.html

Geographic Extent / Scope:
The St. Louis Moraines, Tamarack Lowlands, Nashwauk Uplands, and Littlefork- Vermilion Uplands subsections cover approximately 5.5 million acres in an area from near Tower on the east to Blackduck on the west, and from Aitkin on the south to International Falls on the north (p. 1.4). State lands comprise 22 percent (1,240,000 acres) of the land ownership in these subsections; 70,000 of those acres are in state parks and Scientific and Natural Areas (SNAs) and are beyond the scope of this management plan. Of the remaining state lands, 712,415 acres (61 percent) are considered timber lands i.e., lands suitable for timber production (p. iii).

Organizations / Agencies involved in plan creation:
'Subsection Forest Resource Management Plan' (SFRMP) team members include DNR forestry, wildlife, and ecological services staff. These teams have primary responsibility for the work and decision making involved with the subsection plans. Decision making by the team is through an informed consent process. Managers of adjacent county, federal, tribal, and industrial forest lands may be invited to provide information about the condition of their forest lands and their future management direction.

Info on Planning Process:
The recommended desired outcomes, goals, and strategies developed for the Northeast and North Central Landscape regions by regional landscape committees under the direction of the Minnesota Forest Resources Council (MFRC) Landscape Program were considered in developing this SFRMP. By considering the recommendations from the landscape region plans, the decisions for management of DNR-administered lands incorporate recommendations from a broader landscape perspective across all ownerships and assists in cooperation across ownerships in this larger landscape area. (p. 1.9)

Process Overview (p 1.10, abbreviated):

- Step 1: Initiating the Planning Process
- Step 2: Assessment and Issue Identification
- Step 3: Strategies, Desired Future Forest Composition, and Stand Selection Criteria
- Step 4: Draft List of Stands to be Treated and New Access Needs
- Step 5: Final Plan

Purpose of plan:
A SFRMP is a DNR plan for vegetation management on forest lands administered by the DNR divisions of Forestry, Fish and Wildlife, and Trails and Waterways. Vegetation management includes actions that affect the composition and structure of forest lands, such as timber harvesting, thinning, prescribed burning, and reforestation. The geographic area covered by these plans is defined by Ecological

Classification System (ECS) subsections. Previous forest management plans were based on administrative boundaries (e.g., DNR forestry areas). The SFRMPs will also consider the condition and management of forest lands not owned by the DNR, but will only propose forest management direction and actions for DNR lands. Consistent with state policy (Minnesota Statutes 89A), the SFRMP process will pursue the sustainable management, use, and protection of the state's forest resources to achieve the state's economic, environmental, and social goals (p. 1.7).

The end result of the planning process will be two key products:

- **Desired Future Forest Composition (DFFC) goals:** The goals will include long-term (50 years or more) and short-term (10 years) desired changes in the structure and composition of DNR forest lands in the subsection.
- **List of DNR forest stands to be treated over the next 10-year period.** SFRMPs will identify forest stands on DNR Forestry- and Fish and Wildlife-administered lands that are proposed for treatment (e.g., harvest, thinning, regeneration, and re-inventory) over the 10-year planning period. (p. 1.8)

[Note to the reader: Letters and letter/number combinations that the DNR assigned to statements were retained to show connections between Issues, General Direction Statements, and Strategies]

ISSUES (Issues) (Table 2.1a, pp. 2.2-2.13)

A. Desired Age-Class Distribution
   - A1. What are the desired age-class and growth-stage distribution of forest types across the landscape?
   - A2. What is the appropriate amount, type and distribution of old forest?
   - A3. What is the appropriate amount, type and distribution of young, early successional forest?

B. Desired mix of forest composition, structure, spatial arrangement, growth stages, and Native Plant Communities
   - B1. What is the appropriate forest composition, structure, representation of growth stages, within-stand diversity, spatial arrangement of vegetative types, and native plant community distributions necessary to maintain sustainability goals for biodiversity, forest health, and productivity across the three subsections? How do we get there?
   - B2. How will we ensure restoration of important component tree species that have declined within forest communities in these subsections?
   - B3. How will we maintain forest communities of particular concern in these subsections?
   - B4. How can intensive management of forest communities be adapted to retain some of the characteristics of natural stand-replacement disturbance events?
   - B5. How can management on state lands, especially large patch management, better reflect natural landscape patterns (the size and configuration of growth stages and types resulting from broad-scale natural disturbances) in these subsections?
   - B6. How do we limit forest fragmentation and maintain connectivity between habitats?

C. Riparian and Aquatic Areas
   - C1. How can we address the impacts of forest management on permanent wetlands, wetland inclusions, and seasonal ponds?
   - C2. What vegetative management activities will be allowed to take place within the riparian management zone (RMZ) and how will the appropriate width of the RMZ be determined to minimize the impacts of forest management activities on water quality, fisheries, and wildlife habitat?
   - C3. How can we address cumulative impacts to aquatic resources of forest management on a watershed/sub-watershed level?

D. Access to State Lands
   - D1. How can we plan for providing access to the stands identified for management during the 10-year plan period while protecting and minimizing the negative impacts that timber access development or use may have on other forest resources?

E. Biological Diversity
   - E1. How can management of stands within larger areas of biodiversity significance be adapted to enhance biodiversity and native plant community composition, structure, and function?
   - E2. How do we plan to retain and restore within-stand structural complexity (e.g., vertical structure, stem size and density, coarse woody debris, and pit and mound microtopography) on actively managed lands where natural succession pathways are truncated (cut short)?

F. Wildlife Habitat
   - F1. How do we manage forest vegetation to balance the habitat needs of game and nongame species?

G. Disturbance Impacts on Forest Ecosystems
   - G1. How do we address the impacts of forest insects and disease on forest ecosystems?
   - G2. How will we respond to exotic plant species threats/invasions?
   - G3. How will natural disturbances like fire and blowdown be considered in forest management decisions?
   - G4. How do we manage vegetation to reduce herbivory, crop depredation, nuisance animals, potential spread of animal disease, and possible human health issues (e.g., Lyme disease)?
   - G5. How should forest management respond to global climate change within the planning period?

H. Harvest Level for Timber and Non-Timber Forest Products
   - H1. What is the appropriate timber harvest level on state lands with consideration for the sustainability of all forest resources?
   - H2. How can we ensure adequate and sustainable "nontimber forest products" for the future?

I. Timber Productivity
   - I1. How can we increase timber productivity on state lands?

J. Visual Quality
   - J1. How will forest management activities minimize impacts on visual quality?

K. Balancing forest management needs with statutory requirements
   - K1. How will land managers achieve desired results and continue to uphold various state and federal statutes?

L. Cultural Resources
   - L1. How will cultural resources be protected during forest management activities on state-administered lands?

M. Rare Features
   - M1. How can we ensure that rare plants and animals, their habitats, and other rare features are protected in these subsections?

VISION(S)

None identified.

GOALS (General Direction Statements (GDS)) / STRATEGIES (Strategies) [GDSs are grouped under 12 forest resource management topic areas or categories. Strategies are shown directly below their related GDS, as listed in Chapter 3 of the SFRMP] (pp. 3.3-3.87)

Biological Diversity, Forest Composition, and Spatial Distribution

- 1A. Old forest in these subsections is distributed across the landscape to account for timber products, wildlife habitat, and ecological diversity.
    a. Determine the desired level of effective extended rotation forest (ERF) for even-age managed cover types.
    b. Utilize Remsoft model to prescribe ERF stands in even-age managed cover types so that when a balanced age-class distribution is achieved, the desired amount of effective ERF will be provided.
    c. The Remsoft harvest-scheduling model selected ERF, using the following criteria provided by the North 4 Core Team: (p. 3.1)
    d. Manage riparian management zones primarily to reflect old forest conditions.
    e. Allow some stands to naturally succeed to long-lived cover types with, or without the use of harvest.
    f. Manage designated old-growth stands and old forest management complexes according to DNR policy.
    g. Designate ecologically important lowland conifers according to department direction.
    h. Follow the *MFRC Voluntary Site-Level Forest Management Guidelines (Site-Level Guidelines)* to retain components of old forest in even-age managed cover types.
    i. Use silvicultural treatments that retain old forest components in some stands.
    j. Consider the status of old forest within subsections when making decisions to add and offer uplanned wood for harvest.
- 1B. Species of Greatest Conservation Need and Key Habitats are maintained or enhanced in these subsections.
    a. Provide current SGCN and Key Habitat data to DNR staff upon request.
    b. Incorporate new SGCN and Key Habitat locations and data as they are collected in these subsections.
    c. Select some ERF, OFMC, EILC, and Patch stands based on their association with SGCNs and Key Habitats. Stand-level management accounts for SGCN and Key Habitats.
    d. Stand-level management accounts for SGCN and Key Habitats.
- 1C. Forest cover-type composition on state lands moves closer to the range of cover-type composition that historically occurred within the ecosystems found in these subsections.
    a. Increase the acres of jack pine, red pine, white pine, northern hardwoods, oak, white spruce/balsam fir and white cedar using the following actions: (p. 3.14)
    b. Increase mixed-forest conditions in some stands in all cover types.
    c. Forest composition goals and objectives are consistent with the MFRC Landscape plans.
- 1D. Patch management in these subsections maintains existing large patches and increases the average patch size on state lands over time, with consideration of natural spatial patterns.
    a. Maintain or increase average harvest block size across the landscape.
    b. During assignment of fiscal years to 10-year stand exam list, group harvests within patches in close temporal proximity.
    c. At the area level, using the *Coordination Framework*, initiate the following process for each of the designated patches within the patch: (p. 3.25)
    d. For the long term (50 years+), manage designated patches to include characteristics of older NPC growth stages.
    e. In the short term (10 years), apply management strategies that contribute to the longterm goal stated in (d) above.
    f. For stands outside of the 53 designated patches, incorporate the initial patch assessment in stand-level decisions.

g. When possible, cooperate with other landowners in patch management to maintain existing large patches and increase the average patch size across forest land of multiple ownerships.

- 1E. Managers of state lands in MCBS sites of statewide biodiversity significance implement measures to sustain or minimize the loss to the biodiversity significance factors on which these MCBS sites were ranked.
    a. Determine which MCBS sites are of greatest concern or importance for SFRMP over the 10-year planning period.
    b. Consider the broader context and significance of the MCBS site as a whole when assigning management objectives and designing silvicultural prescriptions.
    c. Determine location and composition of stand conversions based on NPCs. (GDS-3B)
    d. Allow some stands to succeed to the next native plant community growth stage, with or without harvest. (GDS-1A, Strategy e.)
    e. Emulate the within-stand composition, structure, and function of NPC growth stages when managing stands in MCBS sites.
    f. Apply variable density thinning during harvest or reforestation.
    g. Apply variable retention harvest techniques during harvest.
    h. Designate some stands as ERF to provide old forest conditions.
    i. Increase the use of prescribed fire as a silvicultural technique in managing fire dependent NPCs.
    j. Locate roads to minimize fragmentation of a MCBS site. (GDS-1D and 10)
    k. Emulate natural disturbance conditions in large patch management. (GDS-1C)
    l. Apply special management recommendations for known rare features, Species of Greatest Conservation Concern, and Key Habitats. (GDS-1G)
    m. Defer management of some stands that have been identified as having high conservation value for further assessment (e.g., EILC and nominated natural areas, and rare or representative ecosystems).
    n. Consider timber productivity, trust responsibilities, and other forest management priorities when managing stands in these MCBS sites. (GDS-6)
    o. Forestry, Wildlife, and Ecological Resources personnel will communicate with other landowners, as opportunities arise, to inform them of the significance of these MCBS sites and management options that could be implemented to address the biodiversity objectives of these MCBS sites.
- 1F. Rare plants and animals and their habitats are protected, maintained, or enhanced in these subsections.
    e. Provide current rare features database (Natural Heritage Information System) to DNR staff through the DNR Quick Themes in ArcView.
    f. Incorporate new rare features inventory information as the Minnesota County Biological Survey is completed in these subsections.
    g. Select some ERF, OFMC, and EILC stands based on their association with rare features.
    h. During the development of the 10-year stand examination list and annual stand examination lists, land managers check the rare features database and flag those stands proposed for treatment that include a rare feature for follow-up consultation.
    i. Harvest prescriptions, access plans, and other management proposals identify and implement measures that protect rare features.
- 1G. Rare native plant communities are protected, maintained, or enhanced in these subsections.
    a. Complete the Minnesota County Biological Survey (MCBS) and document known locations of NPCs with a statewide rank of critically imperiled (S1) or imperiled (S2), and those NPCs with S-Ranks of S3 to S5 that are rare or otherwise unique in these subsections.

b. Manage known locations of critically imperiled (S1) or imperiled (S2) NPCs and those NPCs that are rare statewide or with limited occurrences in these subsections to maintain their ecological integrity.
c. Ecological Resources staff identified stands that are high quality examples of rare native plant communities. Those stands were removed from consideration for placement on the 10-year stand exam list.

Age-Class Distribution

- 2A. Even-age managed cover types will be managed to move toward a balanced age-class structure.
    a. Target the selection of stand treatment acres to the appropriate age classes.
- 2B. ERF stands in even-age managed cover types will be managed to achieve a declining age-class structure from the normal rotation age to the maximum rotation age.
    a. Prescribe ERF stands within even-age managed cover types so that each age class will be represented to produce a sustainable amount of old forest over time.
    b. Target ERF treatment acres to the appropriate age classes to move toward the declining age-class structure after normal rotation age.
- 2C. State lands will include representation of each of the Native Plant Community growth stages that historically occurred in these subsections.
    a. Determine growth stages stands selected for treatment in these Subsections.
    b. Strive to emulate the within-stand composition, structure, and function of NPC growth stages when managing stands.
    c. Consider the contribution of non-timber land cover types (e.g., stagnant conifer types), inoperable stands, and reserved areas (e.g., old growth, SNAs, state parks) in providing representations of growth stages.
    d. Designated representative ecosystems and High Conservation Value Forests per forthcoming DNR direction.
    e. Apply ECS Silvicultural Interpretations to management decisions.
- 2D. Young, early-successional forest is distributed across the landscape over time.
    a. Move aspen, balm of gilead, paper birch, and jack pine cover types toward a balanced age-class structure. (GDS-2A)
    b. Increase the treatment level for the paper birch cover type. (GDS-9A)
    c. Regenerate most paper birch harvest sites to well-stocked, young paper birch stands.
    d. Maintain young, early successional forest in a variety of patch sizes to provide habitat for the associated species.

Within-Stand Composition and Structure

- 3A. Species, age, and structural diversity within some stands will be maintained or increased.
    a. Use selective harvesting to encourage diversity of species, ages, and stand structures.
    b. Implement the *Site-Level Guidelines* designed to maintain a diversity of tree species within a stand.
    c. Use the NPC Field Guide, site index, soils data, and ECS Silvicultural Interpretations to aid in determining the species composition and structure most appropriate for the site.
    d. Retain tree species, stand structure, and ground layer diversity within stands when prescribing timber stand improvement and thinning activities.
    e. Reserve seed trees in harvest areas and site preparation areas, where possible.
    f. Use the least intensive site preparation methods possible to ensure success.
    g. Use harvest systems or methods that protect advance regeneration. Retain conditions that favor regeneration and understory initiation.

h. Identify some stands where succession is allowed to occur to encourage development of within-stand diversity. Movement to the next successional stage may be achieved with or without harvest.
i. Increase and/or maintain by reserving from harvest, target species including white pine, jack pine, white spruce, upland cedar, oak, yellow birch, and upland tamarack as a component within appropriate cover types. Silvicultural practices that may add or increase the presence of these target species will include planting, interplanting, and artificial or natural seeding.
j. Manage planted and seeded stands to represent the array of plant diversity.
k. Use ERF in some even-age managed stands to encourage greater structural diversity. (GDS-1A)
l. Encourage fruit and mast-producing species.

- 3B. Some stands on state lands will be managed to reflect the composition, structure, and function of native plant communities.
    a. Continue to use the *Field Guide to the Native Plant Communities in Minnesota: the Laurentian Mixed Forest Province* and associated ECS Silvicultural Interpretations to classify stands to NPC and inform silvicultural prescriptions.
    b. Follow strategies in GDS-2C relating to retaining components of various growth stages in stands.

Wildlife Habitat

- 4A. Adequate habitat and habitat components exist, simultaneously at multiple scales, to provide for nongame species found in these subsections.
    a. Provide old forest distributed across the landscape.
    b. Provide young forest distributed across the landscape.
    c. Provide a variety of patch sizes across the landscape that better reflect patterns produced by natural disturbances, and attempt to maintain existing large patches.
    d. Manage to retain the integrity of riparian areas and provide protection for seasonal and permanent wetlands.
    e. Provide for the needs of species that depend on perches, cavity trees, bark foraging sites, and downed-woody debris.
    f. Provide for the needs of species associated with conifer stands and mixed conifer/hardwood stands.
    g. Provide for creation and maintenance of within-stand diversity.
    h. Manage to favor native plant communities and retain elements of biodiversity significance.
    i. Consider Natural Heritage Program data and other rare species information during development of both the 10-year and annual stand examination lists.
    j. Apply the DNR management recommendations for habitats of nongame species (e.g., gray wolves, bald eagles, wood turtles, northern goshawk, 4-toed salamander) as described in DNR guidelines and policies.
    k. Provide a range of habitats for short-distance and long-distance (neo-tropical) migratory birds.
- 4B. Adequate habitat and habitat elements exist, simultaneously at multiple scales, to provide for game species found in these subsections.
    a. Provide young forest distributed across the landscape.
    b. Provide old forest distributed across the landscape.
    c. Provide a balanced age-class structure in cover types managed with even-age silvicultural systems.

d. Increase the productivity and maintain the health of even-age managed cover-type stands.
e. Provide for the needs of species associated with conifer stands and mixed conifer/ hardwood stands.
f. Provide for creation and maintenance of within-stand diversity.
g. Continue to manage special management areas for the benefit of game species.

Riparian and Aquatic Areas

- 5A. Riparian areas are managed to provide critical habitat for fish, wildlife, and plant species.
    a. Apply the Site-Level Guidelines relating to riparian areas.
    b. Manage to maintain or increase old forest in riparian areas.
    c. Using the NPC Field Guide and associated ECS Silvicultural Interpretations, manage for a species appropriate for the site. Emphasize conifers where appropriate and discourage aspen and birch in the RMZ.
    d. Follow the recommendations in the St. Louis Cloquet Whiteface Corridor Management Plan.
    e. Follow recommendations in Tomorrow's Habitat for the Wild and Rare.
- 5B. Forest management on state lands adequately protects wetlands and seasonal ponds.
    a. Apply the *Site-Level Guidelines*.
    b. Areas will consider landforms in their work areas (e.g., end moraines) that have seasonal ponds and small open-water wetlands, and address those features in site-specific prescriptions that are developed during the stand examination field visit.

Timber Productivity

- 6. Timber productivity and quality on state timber lands is increased.
    a. Move toward harvesting even-age managed non-ERF stands at their normal rotation age (see GDS-2A and 9A).
    b. Examine all stands over maximum rotation age in even-age managed cover types.
    c. Thin or selectively harvest in some aspen, balm of gilead, birch, white pine, red pine, balsam fir, white spruce, northern hardwoods, lowland hardwoods, ash, and oak stands to capture mortality and/or increase growth rates.
    d. Include silvicultural treatments such as site preparation, interplanting, release from competition (e.g., herbicide application or hand release), and timely thinning in plantation management, to increase productivity.
    e. Apply and supervise the implementation of the *Site-Level Guidelines* on treatment sites.
    f. Continue to implement, supervise, and enforce current DNR timber sale regulations to protect and minimize damages to sites or residual trees from treatment activities.
    g. Manage some ERF stands for large diameter, high-quality sawtimber products by retaining adequate stocking and basal area.
    h. Respond to insect and disease problems, as appropriate. (GDS-7A)

Forest Pests, Pathogens, Exotic Species, and Climate Change

- 7A. Limit damage to forests from insects, disease, and exotic species to acceptable levels where feasible.
    a. Identify and monitor insect, disease, and harmful exotic species populations as part of the Forest Health Monitoring Program and document their occurrence on state-managed lands.

   b. Follow Minnesota DNR Operational Order 113 (Invasive Species) to minimize the spread of invasive exotic species during forest management activities.
   c. Adhere to the Minnesota DNR 2010 Invasive Species Program Directive
   d. Manage existing forest insect and disease problems, as appropriate.
   e. Manage stands to reduce the potential impact of insects and diseases.
   f. In ERF stands, a higher level of impact from native insect and disease infestations may be accepted as long as it does not jeopardize the ability to regenerate the stand to the desired forest cover type or the management goals of the surrounding stands.
- 7B. Reduce the negative impacts caused by wildlife species on forest vegetation on state forest lands.
   a. Improve field staff knowledge about the complexity of factors that affect solutions to preventing or reducing damage caused by wildlife. Do this through training and/or field level coordination on sites where problems exist.
   b. Consider the potential for wildlife impacts to planted or natural regenerating trees before damage occurs. Coordinate on preventative strategies before planting or timber sales begin.
   c. Focus forest regeneration efforts in areas less likely to be negatively impacted by wildlife species.
   d. On sites where damage from wildlife species is anticipated, use mitigation techniques to reduce damage when planting susceptible tree species.
   e. When deciding what to plant, consider species or stock sources (if available) that are less palatable to wildlife.
- 7C. Forest management on state lands attempts to mitigate global climate change effects on forest lands. Management is based on our current knowledge and will be adjusted based on future research findings.
   a. Maintain or increase species diversity across the subsections.
   b. Maintain or increase structural diversity across the subsections.
   c. Maintain connectivity that permits the migration of plants and animals as climate changes the landscape.
   d. Evaluate site conditions with respect to climate change when selecting tree species for regeneration.
   e. Use the concept of carbon sequestration to remove carbon dioxide (the most significant anthropogenic greenhouse gas) from the atmosphere.
   f. Maintain or increase conifers adjacent to coldwater streams to moderate the microclimate that provides a cooling effect in warm weather and retains a snowpack longer, slowing discharge in the spring.
   g. Apply the *Site-Level Guidelines* for tree species at the edge of their range (*Rationale for Guidelines Section, Wildlife Habitat, pages 26-35*).

Visual Quality

- 8. Minimize forest management impacts on visual quality in sensitive areas.
   a. Apply the Site-Level Guidelines on visual quality on all vegetative management activities.

Harvest Levels

- 9A. The SFRMP treatment level for each cover type moves toward the desired age-class structure of even-age managed cover types (both normal and extended rotation forest), and improves the age-structure and timber quality of uneven-age managed cover types.

a. Age-Class Imbalances
b. High-risk, low-volume stands
c. Treating Stands Older than Normal Rotation Age
d. Maintaining Old Forest
e. Maintaining young forest
f. Planned Increases/Decreases in Cover-type Acres
g. Supply of Timber

- 9B. The harvest of nontimber forest products is managed to provide a sustainable supply for humans while providing for wildlife habitat and biodiversity.
    a. Consider known traditional gathering areas when managing other forest resources.
    b. Supervise and enforce special product permit regulations to ensure that the site's capacity for future production is not jeopardized.
    c. Implement Minnesota DNR regional targets for sustainable decorative tree top (black spruce) harvest.
    d. Consider the known locations of important wildlife habitats, rare native plant communities or species, and the possible impacts of nontimber forest products harvest practices before issuing special product permits.
    e. Forest managers should proceed judiciously when issuing special products permits for species where limited knowledge and understanding constrains our ability to know if we are managing these groups of species sustainably (e.g., commercial harvest of mushrooms, *Lycopodium spp*, and native plant seed).

Access to State Land

- 10. Forest access routes are well planned and there is a high level of collaboration with federal, private, and local units of government to share access and minimize new construction.
    a. Continue to seek cooperation with other forest landowners to retain existing access to state land and to coordinate new road access development and maintenance across mixed ownerships.
    b. Follow Minnesota statutes and guidelines and DNR policies for state forest roads.
    c. Apply the department direction regarding access roads across EILC and other areas that have been reserved (or deferred) from treatment during the 10-year plan.
    d. Follow strategies identified under other General Direction Statements that apply to roads throughout the planning, development, and disposition of forest roads.
    e. Complete a timber access plan.

Cultural Resources

- 11. Cultural Resources will be protected on state-administered lands.
    a. Annual Stand Exam lists are reviewed by DNR archeologists; recommendations for mitigation are implemented as part of sale design.

Natural Disturbance Events

- 12. Natural disturbance events that occur on state land within these subsections are promptly evaluated to determine the appropriate forest management needed to their impacts.
    a. The subsection planning team will evaluate large-scale (100's to 1000's of acres) disturbance events to determine appropriate action.
    b. Local land managers will evaluate and determine appropriate actions for small-scale (10s of acres) disturbance events.

8. Aitkin County Land Department Long Range Strategic Plan

Document Title	Source	Date	URL or Address
Aitkin County Land Department Long Range Strategic Plan	County Board of Aitkin County	2011	https://www.co.aitkin.mn.us/departments/Land/landhome.html

Geographic Extent / Scope:
Aitkin County manages approximately 221,500 total acres of tax forfeited land (19% of the total area of Aikin County). 160,653 acres of County lands are commercial forest. Aitkin County lies entirely within the Laurentian Mixed Forest Province with the northern two-thirds of the County located in the Northern Minnesota Drift and Lake Plains Section and the southern third is in the Western Superior Uplands Section. Subsections covering Aitkin County include the St. Louis Moraine, Tamarack Lowlands, and Mille Lacs Uplands. (pp. 23-24)

Organizations / Agencies involved in plan creation:
Aitken County Land Department and Aitkin County Forest Advisory Committee. Document was prepared with assistance from the consultant team of Pro-West & Associates, Inc. / Applied Insights^{north}.

Info on Planning Process:
None identified.

Purpose of plan:
This plan addresses matters related to the use and management of the tax-forfeited lands of Aitkin County serving to: (p. 1)

- Describe the tax-forfeited resource.
- Identify needs and opportunities associated with management of tax-forfeited land.
- Set management direction and document Land Department policies.
- Provide basis for management coordination and cooperation with other public agencies and the forest industry.
- Promote continuity of management in the event of personnel changes.

ISSUES

None identified

VISION(S) (Department Mission and Strategic Objectives Headings) (pp. 1, 3, 4)

Department Mission:
To fulfill the County's obligation as trustee for the local governmental jurisdictions of Aitkin County by being a responsible steward who sustains the forest for future generations, generates income for the County and local governmental jurisdictions, and properly utilizes the land base and renewable forest resources to sustain the region's economic and social well-being.

Strategic Objectives Headings:

1. Ecological Sustainability: To sustain a healthy and diverse forest.
2. Economic Sustainability: To insure continuing viability of timber and non-timber economic activities dependent upon Aitkin County's forested lands.
3. Social Sustainability: To satisfy Aitkin County's obligation as steward of the lands.

GOALS (Strategic Objectives and Strategic Management Principles) (pp. 3-5)

Strategic Objectives:

1. Ecological Sustainability
    a. Enhance and conserve the natural environment, unique recreational, historical and scenic values, essential habitat, rare and endangered species and plant communities, as well as forest soil and water quality.
    b. Strive toward a natural forest structure.
    c. Maintain ecosystem diversity at all levels—landscape, stand, species, and genetic.
    d. Protect water bodies and watersheds to maintain water quantity and quality.
    e. Maintain diversity and quality of riparian habitats.
    f. Maintain productivity of forest soils except on areas needed for permanent roads or other permanent infrastructure.
    g. Encourage other area forest resource managers, public and private, to adopt ecosystem-based management.
    h. Cooperate with other area forest resource managers to implement ecosystem-based management.
2. Economic Sustainability
    a. Contribute to the local economy over time in terms of economic opportunity and employment as well as provide direct financial returns to the County and its subdivisions.
    b. Provide a sustained yield of renewable resources for utilization for multiple purposes.
    c. Maintain a safe working environment for employees, contractors, and the public.
    d. Maintain and/or enhance timber quality and productivity of the forests.
    e. Encourage the best use of wood off the land base.
    f. Reduce losses in timber productivity from insects and disease.
    g. Provide forest qualities that support and enhance non-consumptive economic values such as tourism, recreation, second home development, and lakeshore development.
3. Social Sustainability
    a. Assure orderly and controlled development resulting from the disposition of tax forfeited land.
    b. Maintain a progressive, cost effective resource development program and investment in proven management systems.
    c. Meet contractual and legal obligations specifically including such agreements and arrangements as the Mississippi Headwaters Board, MacMillan Bloedel Settlement, and various treaties with Minnesota Chippewa tribes and bands.
    d. Anticipate and respond to concerns about potential and actual impacts of forest management activities on other forest uses, users, and managers.
    e. Provide recreational opportunities on forested lands for residents and visitors.
    f. Maintain visual values in areas of high public use and visibility such as resort lakes, recreational rivers, and near communities.
    g. Sustain socio-economic benefits of forestry activities for area communities.
    h. Enhance Aitkin County as a quality place to live.
    i. Affirm and establish direction through a public involvement process which utilizes evaluation of issues and policy recommendations of the Forestry Advisory Committee
    j. Provide opportunities for meaningful and effective public involvement throughout the forest management planning cycle before irreversible decisions are made.

Strategic Management Principles:

1. Retaining forest stability, defined as maintenance of forest integrity, is essential to the ongoing health, diversity, and productivity of the forest.
2. Strategic management is based upon those forest elements which are the most constant and enduring over time.
3. The desired trend of patch size distribution will be directed by type of Harvest Management Zone as Active Aggregation (into fewer, larger patches), Moderate Aggregation, or Maintenance (future distribution to approximate current distribution).
4. Stands will be managed so that their forest type, cover type, and related attributes are in accord with the underlying Native Plant Community.
5. Management will seek to secure a representative distribution of vegetational growth stages (a.k.a. successional stages or phases) across the aggregated stands for each Native Plant Community.
6. Stands targeted to remain in a given vegetational growth stage or within a given sequence of growth stages will be primarily selected on the basis of productivity of the objective tree species.
7. Establish a balance of age class groups as appropriate for each cover type.

STRATEGIES (Strategic Initiatives) (pp. 5, 6)

1. Enhance the quality, vigor, and value of northern and lowland hardwoods.
2. Retain a vigorous, productive, and balanced aspen resource.
3. Increase the amount of upland conifer forest.
4. Increase the amount of oak forest.
5. Strive to retain the birch cover type.
6. Manage for the needs of wildlife through provision of range of habitats.
7. Focus recreational management on provision of dispersed recreation and trails.
8. Maintain / enhance the quality of water yielded from County land.

9. Becker County Forest Plan

Document Title	Source	Date	URL or Address
Becker County Forest Plan (DRAFT)	Becker County Natural Resources Department	2015	http://www.co.becker.mn.us/dept/natural_resource/default.aspx

[Note to the reader: This Forest Plan is in the draft stage and therefore this summary is incomplete. Additional information will be added upon the release of the finalized Forest Plan]

Geographic Extent / Scope:
Becker County is located in western Minnesota approximately 35 miles east of Fargo-Moorhead and 175 miles northwest of the Twin Cities metro area. Becker County manages approximately 73,000 acres of tax forfeited land, which are concentrated in the northern and eastern parts of the county. 61,500 acres of County lands are commercial forest land. Becker County is located within a zone of transition and is covered by three ecological provinces: Laurentian Mixed Forest, Eastern Deciduous Forest, and Prairie Parklands Province. The County's forested tax forfeit lands are located within the Pine Moraines and Hardwood Hills Subsections which lie in the Northern Minnesota Drift and lakes Plains Section and the Minnesota and NE Iowa Morainal Section, respectively. (pp. 2.1.1, 2.2.1-2.2.3, 2.3.1, 2.41)

Organizations / Agencies involved in plan creation:
None identified.

Info on Planning Process:
None identified.

Purpose of plan:
This plan addresses matters related to the use and management of the tax-forfeited lands of Becker County serving to: (p. 1.1)

1. Describe the tax-forfeited resource.
2. Identify needs and opportunities associated with management of tax-forfeited land.
3. Set management direction and document Land Department policies.
4. Provide basis for management coordination and cooperation with other landowners and public agencies.
5. Promote continuity of management in the event of personnel changes.

ISSUES

None identified.

VISION(S) (Department Mission and Long Term Goals) (pp. 1.1, 8.1)

Department Mission:
Regarding the management of tax-forfeited lands, it is the mission of the Becker County Natural Resource Management Department to:

1. Protect, enhance, and utilize the natural resources found on Becker County's approximately 73,000 acres of tax-forfeited lands for the economic, and social benefit of the County's residents and its visitors, in a manner that maintains environmental expectations outlined in the Comprehensive Plan.

2. Fulfill the County's obligation as trustee for the local governmental jurisdictions of Becker County by being a responsible steward who sustains the forest for future generations, generates income for the County and local governmental jurisdictions, and properly utilizes the land base and renewable forest Resources, to sustain the region's economic and social well-being.

Long Term Goals:

1. Maintain a healthy forest.
2. Use a sustainable yield process for extracting natural resources.
3. Create balanced age classes for long term timber management and wildlife habitat
4. Ensure that the forest regenerates after any harvesting.

GOALS (Strategic Objectives and Strategic Management Principles) (pp. 1.2-1.5)

Strategic Objectives:

1. Social Sustainability
    a. Assure orderly and controlled development resulting from the disposition of tax forfeited land.
    b. Maintain a progressive, cost effective resource development program and investment in proven management systems.
    c. Meet contractual and legal obligations specifically including various treaties with Minnesota Chippewa Tribes and Bands.
    d. Anticipate and respond to concerns about potential and actual impacts of forest management activities on other forest uses, users, and managers.
    e. Provide recreational opportunities on forested lands for residents and visitors.
    f. Maintain visual values in areas of high public use and visibility such as resort lakes, recreational rivers, and near communities.
    g. Sustain socio-economic benefits of forestry activities for area communities.
    h. Enhance Becker County as a quality place to live.
    i. Affirm and establish direction through a public involvement process which utilizes evaluation of issues and policy recommendations of the Forestry Advisory Committee
    j. Provide opportunities for meaningful and effective public involvement throughout the forest management planning cycle before irreversible decisions are made.

Strategic Management Principles:

1. Retaining forest stability, defined as maintenance of forest integrity, is essential to the ongoing health, diversity, and productivity of the forest.
2. Strategic management is based upon those forest elements which are the most constant and enduring over time.
3. Stands will be managed so that their forest type, cover type, and related attributes are in accord with the underlying Native Plant Community.
4. Management will seek to secure a representative distribution of vegetational growth stages (a.k.a. successional stages or phases) across the aggregated stands for each Native Plant Community.
5. Stands targeted to remain in a given vegetational growth stage or within a given sequence of growth stages will be primarily selected on the basis of productivity of the objective tree species.
6. Establish a balance of age class groups as appropriate for each cover type.

STRATEGIES (Strategic Initiatives) (pp. 1.5, 1.6)

1. Enhance the quality, vigor, and value of northern and lowland hardwoods.
2. Retain a vigorous, productive, and balanced aspen resource.

3. Increase the amount of upland conifer forest.
4. Increase the amount of oak forest.
5. Strive to retain the birch cover type.
6. Manage for the needs of wildlife through provision of range of habitats.
7. Focus recreational management on provision of dispersed recreation and trails.
8. Maintain / enhance the quality of water yielded from County land.

10. Beltrami County Forest Management Plan

Document Title	Source	Date	URL or Address
Beltrami County Forest Management Plan	Beltrami County Natural Resource Management Department	Jan. 2007	www.co.beltrami.mn.us/Departments/NRM/Forest_Mgmt.html

Geographic Extent / Scope:
The Beltrami County Forest Management Plan covers the long term management of approximately 147,000 acres of County tax-forfeit forest land under the management control of the County Natural Resource Management (NRM) department. Located primarily in southern Beltrami County, this land is intermingled with private, state and federal land. Beltrami County lies mostly in the Laurentian Mixed Forest Province, and is covered largely by the Northern Minnesota Drift and Lake Plains (MDL) Section, with a small northeast portion located in the
Northern Minnesota and Ontario Peatlands (MOP) Section. (pp. 1, 4, 45)

Organizations / Agencies involved in plan creation:
Beltrami Natural Resource Management Department.

Info on Planning Process:
The Beltrami County Forest Management planning process is geared toward helping the County achieve third party certification of its forest land management practices. Third party certification, in this case, means to meet either Sustainable Forestry Initiatives (SFI) and/or Forest Stewardship Council (SCI) standards, providing independent verification that forest management practices meet professional, sustainable standards.

The planning process used includes a number of steps, such as:

- Completion of an updated electronic inventory of the County Forest.
- In-depth review of the current management of the forest and within each management district.
- Development of a vision and goals for County forest management.
- Identification of the strengths and weaknesses of the current management structure as it relates to achieving the county's forest management vision.
- Review of Desired Future Forest Conditions (DFFC) identified for the North Central and Northern Landscape through a public input process.
- Identification of a Desired Future Forest Condition (DFFC) that translates the vision into verifiable goals.
- Creation of a computerized model that identifies harvest levels by species by district to achieve the DFFC.

Final adoption of the plan was at the consideration of the Beltrami County Board of Commissioners. (pp. 2-3)

Purpose of plan:
The Forest Management Plan will help guide staff in decision making and inform the public about the management of the County's forests. It is also a critical component of achieving third party certification for the management of County lands. (p. 1)

ISSUES

None identified.

VISION(S) (NRM Vision and Mission Statements, NRM Guiding Principles) (pp. 1, 71)

Vision Statement:
It is the vision of the Natural Resource Management department to be stewards of County managed forestland by:

1. Managing for long term forest health and productivity
2. Achieving third party certification
3. Providing opportunities for multiple public use
4. Maintaining and improving the County's land base
5. Sustaining a financial return that supports continued County stewardship of public lands
6. Supporting the local timber industry and the regional economy

Mission Statement:
Beltrami County Natural Resource Management's mission is to responsibly manage the approximate 147,000 acres of tax forfeited lands in Beltrami County in a sustainable manner that benefits the citizens of the County. The department is committed to a sustainable harvest and multiple use management of its lands. It also recognizes the impacts its activities can have on aesthetics, wildlife, riparian areas, cultural resources, soils, and water quality.

Guiding Principles:

1. Sustainable harvest and long term forest health
2. Managed multiple use
3. Balanced Environmental, Social and economic values
4. Financial sustainability

GOALS (County-wide NRM Objectives) / STRATEGIES (Policies) [Policies are shown directly below their related NRM Objective, as listed in section IV of the Management Plan.] (pp. 73-80)

The following objectives and policies represent a 10-year planning horizon for organization and management purposes.

1. Protect the integrity and longevity of forest lands under NRM management.
    a. All short term harvest plans will be consistent with the Forest Management Plan's long term forest modeling projection for a sustainable harvest.
    b. Promote a variety of native forest cover types across the forest.
    c. Forest managers will develop regeneration plans for all treated stands that consider the water, ecological classification, health, soils and historical cover type for that site.
    d. Maximize the use of voluntary guidelines to preserve water quality and protect lake, stream and wetland integrity.
    e. Consistently enforce all harvest contract requirements and site-level guideline prescriptions.
    f. Implement appropriate silvicultural techniques and intermediate treatments that improve the long-term health and productivity of stands prior to final harvest, including thinning of commercial stands and biomass removal in commercial and noncommercial stands following guidelines prepared by the Minnesota Forest Resources Council (MFRC).
    g. Continue working relationships with adjacent forest managers to promote the overall diversity, health and use of the forest across the landscape.

   h. Control road construction to reduce impacts on the environment, minimize the construction of new permanent roads and ensure the decommissioning of all temporary roads.
   i. Encourage the MNDNR to conduct a County Biological Survey.
   j. Cooperate with the County Highway Department, MNDNR and local trappers to reduce the amount of beaver damage on county land.
   k. Encourage hunting and trapping on all County forest land where practical to promote forest appreciation and maintain manageable populations of game species.
2. Comply with all applicable laws, regulations and voluntary guidelines.
   a. The Minnesota Forest Resources Council's *Sustaining Minnesota Forest Resources: Voluntary Site-Level Forest Management Guidelines* will guide all site-level decision making.
   b. Ensure compliance with all federal, state, and local laws.
   c. Maximize the effectiveness of and minimize the use of chemical treatments through the implementation of best management practices, ecological classification and following all herbicide label application guidelines.
3. Pursue third party certification of forest management.
   a. Conduct third party performance audits to achieve and maintain certification.
4. Require ongoing professional development for staff and contractors.
   a. Require staff to attend continuing forestry education per departmental policy LD-MS5.
   b. Require responsible operators to have achieved MLEP training consistent with board policy.
   c. Develop high-level capacity within the staff team on native plant community classification, GIS and related technologies, forest inventory management, recreation management and a variety of silvicultural treatments.
5. Promote and incorporate applied research and technology.
   a. Continue to be an active participant and supporter of the Minnesota Forest Resource Council's North Central Landscape Committee and its research efforts.
   b. Create an environment for staff to regularly discuss opportunities and challenges within their areas of responsibility, with the goal of matching solutions with problems department-wide.
   c. Establish pilot projects where feasible to test new technology, silvicultural techniques or equipment that may help the County achieve its forest vision.
6. Solicit public input to supplement forest management decision making.
   a. Create a County Forest Advisory Council to serve as an advisory body providing recommendations to the Beltrami County Board and Natural Resource Management on policy issues related to sustainable forest management and long term forest management plans.
   b. Develop a well-documented response mechanism to deal with public inquiries and complaints in a timely and accountable manner.
   c. Nurture a working relationship with adjoining forest management agencies, including federal, state, county and tribal natural resource departments.
7. Enhance public recreation and use values for the forest.
   a. Adopt and implement a county-wide recreational trails plan and a park and recreation areas plan that is multiple-use oriented and provides a well-designed experience for users.
   b. Encourage the use of portable hunting stands and establish rules to minimize damage to trees from hunting operations and support state efforts to regulate permanent hunting stands on public lands
   c. Continue use of visual harvest techniques along all public roads and along waterways that are consistent with visual management guidelines.

   d. Foresters will manage the use of roads to correct impacts as identified in the County Recreational Trails Plan and to protect the forest and habitat resource.
   e. Continue forest management and silvicultural treatments within recreation areas with a higher level of awareness of visual and multiple use impacts than on non-recreation sites.
8. Provide public education on forest ecology, sustainable forest management and the economic value of forests.
   a. Create a semi-annual department e-newsletter to communicate department activities and accomplishments to partners, industry and the public.
   b. Conduct an annual public presentation on sustainable county forest management.
   c. Support the work of the local Timber Producers Association to publish the economic impact of forest management on the local and regional economy.
   d. Create opportunities within designated recreation areas to showcase and explain forest management practices.
   e. Highlight the positive impact of County forest management to local government budgets.
   f. Create media opportunities at least twice per year to highlight county forest management practices, impacts and successes.
   g. Continue to participate in the local Bemidji Forestry Affairs Council.
9. Encourage efficient use of the forest's products for environmental, economic and social benefits.
   a. Mandate harvest techniques that reduce waste and minimize site impact for every timber sale or intermediate treatment.
   b. Promote and support the full utilization or recycling of all harvested forest products within the manufacturing process or through secondary markets, such as biomass fuels.
   c. Conduct all major forest operations on a competitive open market business model.
   d. Utilize secondary forest products in a fee for harvest permit system that covers the real cost of implementation.
   e. Support local contractors, loggers and manufacturing facilities where feasible through the contracting process and County economic development strategy.
   f. Encourage the market for marginal or new forest products, such as small diameter trees or brush.
   g. Reduce the burning of residual slash.
10. Improve internal processes and data collection/utilization.
   a. Continue to streamline internal documents, databases and recordkeeping into a computerized system.
   b. Update the forest inventory database on a continuous basis.
   c. Use the project planning and inspection database as the basis for planning and tracking all projects.
   d. Utilize Forest Development Records database for documenting actual reforestation activities.
11. Communicate our performance to the County Board and public.
   a. Collect and report data on harvest sales, permits, regeneration activities, recreation investments/facilities and partnership activities to the County Board at least annually.
   b. Provide a written copy of that report on the County NRM website.
   c. Annually report activities as required by the SFI standard.

11. Cass County Long Range Resource Management Plan

Document Title	Source	Date	URL or Address
Cass County Long Range Resource Management Plan	Cass County Land and Forestry Department	May 2010	http://www.co.cass.mn.us/government/county_directory/land_department/index.php

Geographic Extent / Scope:
Cass County administers about 254,000 acres of tax-forfeited land or 20% of the county's total area. Just over three-quarters of this land is forested with the rest being brush, water, or developed (e.g., forest roads, gravel pits, etc.). Cass County is entirely within the Laurentian Mixed Forest Province, and the Northern Minnesota Drift and Lake Plains Section. Subsections which cover Cass County include the Pine Moraines and Outwash Plains, Chippewa Plains, and St. Louis Moraines. (pp. i, 7, 14)

Organizations / Agencies involved in plan creation:
Cass County Land & Forestry Department and Natural Resources Advisory Committee. Document was prepared with assistance from the consultant team of Pro-West & Associates, Inc. / Applied Insights^{north}.

Info on Planning Process:
None identified.

Purpose of plan:
None identified.

ISSUES

None identified.

VISION(S) (Department Mission) (p. 1)

Department Mission:
The mission of the Cass County Land Department is to professionally manage the County's forest land base within the confines of Minnesota Statutes 282 and to improve the quality and value of the County's forest land resources.

GOALS (Strategic Principles) (p. ii)

1. Long-term forest integrity is the foundation of all management: Retaining forest stability, defined as maintenance of forest integrity, is essential to the ongoing health, diversity, and productivity of the forest. Strategic management is based upon those forest elements which are most constant and enduring over time. The general objective is to manage the resource, not to manage for specific outputs
2. Humans are embedded in nature: Humans are fundamental influences in ecological processes and cannot be considered external factors. Human values and ethics play a dominant role in directing management initiatives and setting goals. At the same time, human values are to be carefully weighed alongside those of other life especially within the context of ecological functions in a healthy, resilient environment. In general, human uses of the forest and resource base will be

accommodated to the constraints placed upon them by the ecological considerations articulated in the other principles.

3. Manage consistent with native plant community: Stands will be managed so that their forest type, cover type, and relational attributes are in accord with the underlying native plant community.
4. Resource distributed in accord with vegetational growth stages: Management will seek to secure a representational distribution of vegetational growth (successional) stages across the aggregated stands for each native plant community.
5. Management by species age: Establish a balance of age class groups as appropriate for each cover type.

STRATEGIES (Strategic Initiatives) (pp. 3-4)

1. Land Asset Management Program: Continue implementation of a land asset management program that retains and consolidates the tax forfeited land base to improve efficiency and effectiveness in achieving management objectives, and, reduce future public costs to service remote and isolated private land.
2. High Conservation Value Forests: The Bear Island and McKinley Prairie high conservation value forest areas will be managed in accordance with the standards and objectives set for such unique and valuable lands.
3. Landscape Level Management: The County Land Department will participate in and coordinate with North Central Landscape Committee to foster integration of county management objectives with other major landowners so as to help achieve mutually agreed upon landscape scale goals.
4. Logger Interaction: Recognizing that achieving county management objectives requires the full cooperation of professional loggers, the County will continue to assist loggers to gain skill in managing uneven aged forest, an increasingly important component of overall forest management.
5. Leases: The county will no longer grant leases for uses including recreational cabin leases on tax forfeited lands.

12. Clearwater County Resource Management Plan

Document Title	Source	Date	URL or Address
Clearwater County Resource Management Plan	Clearwater County Land Department	June 2008	www.co.clearwater.mn.us/index.asp?Type=B_LIST&SEC={DFAB31DE-47C5-434F-9AB7-05086E118B6E}

Geographic Extent / Scope:
Clearwater County manages approximately 90,577 acres of tax-forfeited forest lands out of the County's total 639,883 total acres. About 90 % of the forest is located in the southern half of the County. Clearwater County includes four Subsections: Chippewa Plains, Hardwood Hills, Aspen Parklands, and Pine Moraines and Outwash Plains. (pp. 10, 13, 14).

Organizations / Agencies involved in plan creation:
Clearwater County Land Department, Headwaters Regional Development Commission, and the Northwest Minnesota Foundation. At appropriate times during the process, the advice of other local, state and federal natural resource management agencies was sought. The public was also involved through two open public meetings (pp. 1, 3)

Info on Planning Process:
This natural resources plan provides guidance for county management activities over the next 20 years. The planning process included the following steps: (pp. 2-3)

- Description of Existing System
- Identification of Priority Strategic Issues
- Assessment of Resources
- Development of Policy and Strategy Framework

Participation by concerned stakeholders was an important component of this planning process. Four different methods were used for involving stakeholders in the process:

- Staff consultations
- Individual interviews/focus groups
- Open Public Meetings
- Multi-agency involvement.

Purpose of plan:
The purpose of the Forest Management Plan for the Clearwater County Land Department is to establish a framework for the department's resource management activities. The planning process was designed to meet the following objectives: (p. 2)

- Describe the existing situation of the County's land resources
- Provide a vision of a future condition of the County's land resources and direction for departmental activities to achieve that vision
- Identify and address the most important strategic resource management issues faced by the County
- Create a plan that is consistent with the County's Sustainable Management Procedures, and meets the requirements for a Long Term Forest Management Plan outlined in those procedures

VISION(S) (Vision and Goals) (p. 28)

Vision:
In 2050 the Clearwater Forest will consist of a healthy and productive diversity of tree species that have a diverse age mix. It will contain more conifer and less aspen, and have pockets of productive hardwoods.

The forest will also provide a range of recreation opportunities, including trails for both motorized and non-motorized use, hunting, wildlife viewing opportunities and access to enhanced traditional use areas.

The future Clearwater forest is managed for the benefit of the entire Clearwater community; for those that make a living from the woods, and for those that derive enjoyment from it active and passive recreational pursuits.

Goals:
1. Support the local timber industry and the regional economy.
2. Provide opportunities for multiple uses, including recreation and traditional uses.
3. Maintain a healthy, diverse and productive forest over the long-term.
4. Protect and enhance the environment of the County, including its wildlife habitat and water quality.
5. Provide a sustainable revenue stream for the County, enabling it to be a steward of this resource for future generations.

Issues, goals, and strategies are broken down into county planning units:
5. South Planning Unit
6. South Central Planning Unit
7. North Central Planning Unit
8. North Planning Unit

5. Issues, goals, and strategies in the South Planning Unit

ISSUES (Opportunities, Challenges and Issues) (pp. 18-19)

1. 8,000 acres Of 40+ aspen.
2. Three (3) large public land tracts provide management opportunity.
3. Opportunity to expand pine presence in Long Lost Lake area.
4. Principal area for expanding recreation activities, trails.
5. Need to prevent trail/wildlife/timber conflicts.
6. In the northwest quadrant there is a possible opportunity for hardwood expansion.
7. Need to be sensitive to traditional use areas.
8. Opportunity to enhance wildlife habitat.

GOALS (Objectives) / STRATEGIES (Strategies) [Strategies are shown directly below their related Objective.] (pp. 28-30)

1. Reduce the amount of over-mature aspen in the unit over the next 10 years.
    a. Target over-mature aspen stands for harvest.
2. Increase the presence of conifers in the unit over the next 20 years.
    a. Identify 3-5 sites over the next 5 years to convert to conifer.
    b. Implement a variety of conifer reforestation techniques to determine those that maximize tree survivability.
3. Develop a multi-use non-motorized vehicle trail system, and a system for motorized uses.
    a. Work to develop and nurture trail user groups that can be partners with the County.

   b. Design, develop and maintain, in partnership with these groups, a trail system for both motorized and non-motorized users.
4. Increase the health and presence of hardwoods in the planning unit.
   a. Identify area(s) best suited for hardwood generation.
   b. Implement selected techniques to enhance the health and presence of hardwood in this area(s).
5. Preserve and, where appropriate, enhance access to traditional use (bough-cutting, berry picking and sugaring) areas.
   a. Identify high quality traditional use areas.
   b. Determine access needs for each site.
   c. Where needed, enhance access to selected sites.
6. Increase the age diversity of the forest in the South Planning Unit.
   a. Complete timber sales that meet the agreed-upon allowable cut for this Planning Unit.
   b. Implement Strategies for conifer and hardwood forest regeneration as found under Objectives 2 and 4.

6. Issues, goals, and strategies in the South Central Unit

ISSUES (Opportunities, Challenges and Issues) (pp. 21-22)

1. Access to isolated county lands.
2. <3,000 acres of 40+ aspen.
3. Opportunity for hardwood expansion.
4. Opportunity for trail connector.
5. DNR/County Land Exchange.
6. Opportunity for softwood expansion.

GOALS (Objectives) / STRATEGIES (Strategies) [Strategies are shown directly below their related Objective.] (pp. 31-32)

1. Reduce the amount of over-mature aspen in the unit over the next 10 years.
   a. Target over-mature aspen stands for harvest.

2. Increase the presence of conifers in the unit over the next 20 years.
   a. 1-3 sites over the next 5 years to convert to conifer.
   b. Implement a variety of conifer reforestation techniques to determine those that maximize tree survivability.
3. Develop a motorized vehicle connector trail system between the trails systems to the south and the trail systems in the Solway/Shevlin/Bagley area.
   a. Work to develop and nurture trail user groups that can be partners with the County.
   b. Design, develop and maintain, in partnership with these groups, a connector trail system for motorized use.
4. Increase the health and presence of hardwoods in the planning unit.
   a. Identify area(s) best suited for hardwood generation.
   b. Implement selected techniques to enhance the health and presence of hardwood in this area(s).
5. Improve Access to high priority county land parcels that are now without adequate access.
   a. Conduct an investigation to determine parcels where increased access should be a priority and to determine appropriate strategies for creating access.
   b. Implement access plan.

6. Consolidate County land holdings to increase management effectiveness.
    a. Conduct investigation to identify parcels that may be priority candidates for land exchange discussions with DNR and others.
    b. Enter into discussions with DNR and others to implement policy.
7. Increase the age diversity of the forest in the South Central Planning Unit.
    a. Complete timber sales that meet the agreed-upon allowable cut for this Planning Unit.
    b. Implement Strategies for conifer and hardwood forest regeneration as found under Objectives 2 and 4.

7. Issues, goals, and strategies in the North Central Unit

ISSUES (Opportunities, Challenges and Issues) (p. 24)

1. Access to isolated parcels.
2. Wildlife enhancement opportunities.
3. Opportunity for more jack pine in Clover and Pine Twp's.

GOALS (Objectives) / STRATEGIES (Strategies) [Strategies are shown directly below their related Objective.] (pp. 33-34)

1. Enhance wildlife habitat in 2-4 areas of the Planning Unit.
    a. Develop and implement wildlife habitat improvement plans for selected areas.
2. Improve Access to high priority county land parcels that are now without adequate access
    a. Conduct an investigation to determine parcels where increased access should be a priority and to determine appropriate strategies for creating access.
    b. Implement access plan.
3. Increase the presence of jackpine in the unit over the next 20 years.
    a. Identify 1-3 sites over the next 5 years to convert conifer.
    b. Implement a variety of conifer reforestation techniques to determine those that maximize tree survivability.

8. Issues, goals, and strategies in the North Unit

ISSUES (Opportunities, Challenges and Issues) (p. 26)

1. Enhancement of sharptail grouse habitat.
2. Wildlife viewing.
3. DNR/County land exchange opportunities.

GOALS (Objectives) / STRATEGIES (Strategies) [Strategies are shown directly below their related Objective.] (p. 35)

1. Enhance existing sharptail grouse habitat and viewing opportunities.
    a. Develop and implement actions to enhance the existing habitat area(s).
    b. Develop and implementation plans for enhancing viewing opportunities for this species.
2. Consolidate County land holdings to increase management effectiveness
    a. Conduct investigation to identify parcels that may be priority candidates for land exchange discussions with DNR.
    b. Enter into discussions with DNR to implement policy.

13. Crow Wing County Forest Resources Plan

Document Title	Source	Date	URL or Address
Forest Resources Plan for the Tax-Forfeited Lands of Crow Wing County	Crow Wing County Land Services Department	Feb. 2015	http://crowwing.us/index.aspx?NID=261

Geographic Extent / Scope:
Crow Wing County manages approximately 103,523 acres of tax-forfeited land (14%) out of the County's total 740,646 acres. Of the county administered land, 72,503 acres (70%) are commercial forest. Crow Wing County lies almost entirely within the Laurentian Mixed Forest Province, and is roughly divided in half by the Northern Minnesota Drift and Lake Plains and the Western Superior Uplands sections. Subsections within Crow Wing County include the Pine Moraines and Outwash Plains, St. Louis Moraines, Tamarack Lowlands, Mille Lacs Uplands, and Anoka Sand Plain. (pp. 12, 14, 15, 30)

Organizations / Agencies involved in plan creation:
Crow Wing County Land Services Department and Natural Resources Advisory Committee. Document was prepared with assistance from the consultant team of Pro-West & Associates, Inc. / Applied Insights[north].

Info on Planning Process:
None identified.

Purpose of plan:
The scope of this plan covers matters related to the use and management of the tax-forfeited lands of Crow Wing County. The plan addresses a wide range of topics associated with this management, describes the resource base, and sets forth the County's strategic approach for land and resource management. It updates the current management plan that was last updated in 2004.

The plan serves the following purposes and benefits: (p. 1)

1. Describes the County's forest resource, its extent, location and current condition.
2. Sets forth a desired future condition to which actions are directed.
3. Documents County management policies, practices and management initiatives.
4. Provides the basis for improved coordination with other public and private resource managing agencies.
5. Promotes continuity of management efforts over time.

ISSUES

None identified

VISION(S) (Vision, Mission, Management Objectives Headings, and Desired Future Condition)
(pp. 2-4)

Vision:
Sustainable, healthy and diverse forestlands in Crow Wing County for current and future generations.

Mission:

To be a leader among Minnesota Counties in providing best in class professional natural resource management that supports local economies, protects water and wildlife resources and provides diverse recreational opportunities.

Management Objectives Headings:

1. Ecological Sustainability: To sustain a healthy and diverse forest.
2. Economic Sustainability: To insure continuing viability of timber and non-timber economic activities dependent upon Crow Wing County's forested lands.
3. Social Sustainability: To satisfy Crow Wing County's obligation as steward of the lands.

Desired Future Condition:

These conditions are a look into the future for Crow Wing County's forests in 2114.

1. Primary commercial forest species are sustainable over time:
    a. Aspen resources have sustainable balanced age classes and have approximately the same presence on the landscape as in 2014.
    b. Oak and Northern Hardwood resources are of higher quality and vigor over their conditions in 2014.
    c. Conifer resources are more numerous than in 2014 and have sustainable balanced age classes.
2. The forest ecology is resilient, appropriately diverse, and healthy:
    a. Forest cover is compatible with the underlying ecological systems.
    b. Distributions of the forest in terms of succession and growth stages are more in keeping with historical ranges than was the case in 2014.
    c. Forest cover is holding its place in the face of changing climatic dynamics.
3. Forest resources are the basis for an appropriate mix of recreational opportunities:
    a. A network of trails and forest-based recreation opportunities are compatibly located on the landscape.
    b. Travel corridors and scenic landscapes are enhanced through forest management.

GOALS (Management Objectives) (pp. 3-4)

Crow Wing County intends to satisfy the following objectives as it implements their management plan in achieving the desired future forest of 2114.

1. Ecological Sustainability
    a. Enhance and conserve the natural environment, unique recreational, historical and scenic values, essential habitat, rare and endangered species and plant communities, as well as forest soil and water quality.
    b. Strive toward a natural forest structure.
    c. Maintain ecosystem diversity at all levels—landscape, stand, species, and genetic.
    d. Protect water bodies and watersheds to maintain water quantity and quality.
    e. Maintain diversity and quality of riparian habitats.
    f. Maintain productivity of forest soils except on areas needed for permanent roads or other permanent infrastructure.
    g. Encourage other area forest resource managers, public and private, to adopt ecosystem-based management.
    h. Cooperate with other area forest resource managers to implement ecosystem-based management.
2. Economic Sustainability

   a. Contribute to the local economy over time in terms of economic opportunity and employment as well as provide direct financial returns to the County and its subdivisions.
   b. Provide a sustained yield of renewable resources for utilization for multiple purposes.
   c. Maintain a safe working environment for employees, contractors, and the public.
   d. Maintain and/or enhance timber quality and productivity of the forests.
   e. Encourage the best use of wood off the land base.
   f. Reduce losses in timber productivity from insects and disease.
   g. Provide forest qualities that support and enhance non-consumptive economic values such as tourism, recreation, second home development, and lakeshore development.
3. Social Sustainability
   a. Assure orderly and controlled development resulting from the disposition of tax forfeited land.
   b. Maintain a progressive, cost effective resource development program and investment in proven management systems.
   c. Meet contractual and legal obligations specifically including such agreements and arrangements as the Mississippi Headwaters Board and the 1837 Treaty.
   d. Anticipate and respond to concerns about potential and actual impacts of forest management activities on other forest uses, users, and managers.
   e. Provide recreational opportunities on forested lands for residents and visitors.
   f. Maintain visual values in areas of high public use and visibility such as resort lakes, recreational rivers, and near communities.
   g. Sustain socio-economic benefits of forestry activities for area communities.
   h. Enhance Crow Wing County as Minnesota's favorite place.
   i. Affirm and establish direction through a public involvement process which utilizes evaluation of issues and policy recommendations of the Natural Resources Advisory Committee
   j. Provide opportunities for meaningful and effective public involvement throughout the forest management planning cycle before irreversible decisions are made.

STRATEGIES

None identified.

14. Hubbard County Forest Resource Management Plan

Document Title	Source	Date	URL or Address
Hubbard County Tax-Forfeited Lands: Forest Resources Management Plan	Hubbard County Land Department	Oct. 2002	www.co.hubbard.mn.us/Public%20Works/resourcemgmt.htm

Geographic Extent / Scope:
Hubbard County manages roughly 137,910 acres of tax-forfeited land, representing 21.9% of the total area of the county. Hubbard County is located within the Laurentian Mixed Forest Province and lies in the Northern Minnesota Draft and Lake Plains Section. Subsections covering the County include the Pine Moraines and Outwash Plains and the Chippewa Plains. (pp. 1, 11, 16)

Organizations / Agencies involved in plan creation:
Hubbard County Land Department and Forest Advisory Committee. Document was prepared with assistance from the consultant team of Pro-West & Associates, Inc. / Klaers, Powers, and Associates/ and George Host/Mark White.

Info on Planning Process:
None identified.

Purpose of plan:
The document sets forth a strategic vision for the management of tax forfeited lands administered according to Minnesota Statute by Hubbard County. It is a strategic plan which provides the "why" that support the "what" of future tactical and operational actions. (p. 1)

ISSUES

None identified.

VISION(S) (Department Mission) (pp. 1, 2)

Department Mission:
To undertake the County's obligation as trustee for the local governmental jurisdictions of Hubbard County by being a responsible steward who applied multiple-use (i.e. consideration of various forms of economic value generated by the land base, social values, and ecological dynamics) and sustained-yield principles to maintain the forest's ecological integrity for future generations, generates income for the County and local governments, and appropriately utilizes the land base and its renewable resources to sustain the county's economic and social well-being.

Strategic Management Principles:
1. Long-term forest integrity is the foundation of all management: Retaining forest stability, defined as maintenance of forest integrity, is essential to the ongoing health, diversity, and productivity of the forest. Strategic management is based upon those forest elements which are most constant and enduring over time.
2. Patch size distribution to tend to favor larger, aggregated patches: Except where management objectives, such as wildlife considerations, support smaller forest patches, the general trend of patch size distribution will be toward creation of larger patches.

3. Consistency with Forest Ecological Systems: Stands will be managed so that their forest type, cover type, and related attributes are in accord with the underlying Forest Ecological System.
4. Distribution by Vegetational Growth Stage: Management will seek to secure a representative distribution of vegetational growth stages (a.k.a. successional stages or phases) across the aggregated stands for each Forest Ecological System.
5. Management by species age: Establish a balance of age class groups as appropriate for each cover type.
6. Modifying considerations: Application of strategic principles may be modified to account for such factors as wildlife, recreation, ownership, historical and cultural resources, aesthetics, water quality or quantity, or natural disturbance.

GOALS (Goals) / STRATEGIES (Strategic Actions) [Goals and Strategic Actions are grouped by resource topic, as listed in the Strategic Management section of the plan.] (pp. 48-87)

Department Administration

Goals

1. To be a progressive, professional, and publicly sensitive organization at all levels of planning and implementation.

Strategic Actions

1. Add sufficient Natural Resource Manager positions to help implement the two decade period of accelerated management for aspen and jack pine. After that time, the staff may be reduced through attrition.
2. Natural Resources Management Office may utilize County Geographic Information System personnel to assist GIS needs in the office.
3. Formally establish the Forest Advisory Committee with members representing a range of interests (e.g., forest products, recreation, environmental, etc.) to advice the Natural Resources Office staff and County Board.
4. Conduct annual reviews of forest conditions and management. Review to be done by Forest Advisory Committee and staff.
5. Devise a procedure to guide the case-by-case consideration of contacting adjacent or affected landowners regarding management activities planned for a given parcel of land.
6. Continually update forest resource inventory including periodic visits to regenerating stands and proofing of forest ecological system, and evaluation of stands for revised management. Periodic analyses will be based upon the inventory to examine progress on management objectives, possible changes in management, reaction to changes or environmental conditions, and the like.
7. Evaluate options for third-party certification of County management of tax forfeited lands within 3-5 years.

Land Administration - General

Goals

1. Ensure a stable land base sufficient in size and character capable of effecting the intent of this management plan and provide long-term multiple use benefits.

Strategic Actions

1. The County will prepare and adopt an omnibus ordinance governing various aspects of management and use of tax forfeited lands.

Land Administration – Easements, Timber Sales, Leases

Goals

1. Meet the need for specific local services and specialized land uses without compromising overall public benefits.

Strategic Actions

1. Establish new fee schedule for cabin leases. The new fee will be $100, in 2003 the fee will be increased to $150. IN each of the next three years the fee will be increased by $25. At the end of that period a review will be made regarding the lease rate as compared to the value of the property.
2. The Forest Advisory Committee will conduct a review of leech and minnow harvesting on County lands. This review is to include: monitoring of the current level of activity on County lands; discussions with harvesters regarding need for access controls, leasing of ponds, etc.; discussions with harvesters regarding need for access controls, leasing of ponds, etc; discussions with DNR resource managers; and identification of ponds on County lands that are leech and minnow resource sites.
3. Identify the number of guiding services using County lands and monitor the level of use on County lands.

Habitat - General

Goals

1. Protect fish and wildlife populations by maintaining and improving biological (habitat) diversity in the forest.
2. Protect and/or improve critical plant communities for habitat (e.g., forest openings, deer wintering complexes, nesting areas).
3. Protect significant natural heritage features (e.g., rare flora and fauna, old growth forest ecosystems).

Strategic Actions

1. Create a management plan for the Clover Township Ruffed Grouse Management Area. This will be done in coordination with the Ruffed Grouse Society, the DNR, and other interested parties.
2. Maintain updated listing of natural heritage features on or near County lands.
3. Adopt, as necessary, special policies and procedures for conducting forest management activities in areas with known or suspected endangered, threatened, or special concern natural features.

Habitat – Riparian Zones and Fish Habitat

Goals

1. To protect fish habitat from harmful runoff, to protect streams from erosion and sedimentation, and to maintain shading and cooling provided by forest canopies.

Strategic Actions

1. Follow Best Management Practices for riparian areas as provided in *Sustaining Minnesota Forest Resources: Voluntary Site-Level Forest Management Guidelines.*
2. Reserve stand timber from clear-cutting within 150 feet of designated trout streams and lakes. Within this zone, partial or salvage cutting will be done only after consultation with local DNR Fishers manager.

3. Design harvests within perimeter zones (66 feet out from edge) of qualifying wetlands (open-water types 3, 4, and 5 larger than 1 acre) so that no more than 50% of the zone is harvested within 5 years.
4. Reserve from clear cut harvesting a 200 foot strip from the edge of lakes classified as "Natural Resource-Residential", "Recreational", or "General Development" according to the DNR's Shoreland Management Standards.

Habitat - Wetlands

Goals

1. To protect wildlife and habitat values provided by wetlands throughout the county.

Strategic Actions

1. Follow Best Management Practices for wetlands as provided in *Sustaining Minnesota Forest Resources: Voluntary Site-Level Forest Management Guidelines* for road construction, timber harvest, site preparation, and chemical use. This means no landings on open water wetlands.
2. Use seasonably wet areas for landings only where upland sites are not practical. On seasonably wet areas used for winter landings, no logging slash or other debris is to remain once-logging is completed.
3. Reserve timber from harvest along selected wetlands.
4. Keep all logging slash out of wetlands and not concentrating slash or windrows within 50 feet of wetlands.
5. Wetlands will be created, restored, or improved by: allowing beaver activity to change or expand wetlands except where other high-value resource are threatened (e.g., roads, conifer swamps, winter deer cover); constructing water impoundments or similar features in cooperation with DNR Wildlife, Hubbard County Highway Department, and US Natural Resources Services.

Habitat – Upland Game Habitat

Goals

1. To support viable populations of game species (primarily ruffed grouse, white-tailed deer, black bear) and the species that are associated with the habitats needed for these target species.

Strategic Actions

1. Follow DNR forest habitat composition guidelines.
2. Plan harvests of aspen-birch cover types to distribute disturbance and regeneration of these types throughout the county.
3. In areas where game habitat is to be emphasized (e.g., Clover Township Ruffed Grouse Management Area), harvesting of aspen-birch will be done in small blocks with 5-10 years between adjacent cuts.
4. With aspen-birch harvest areas reserve clumps (100-150 trees) or strips (2-5 chains wide) in harvest areas over 20 acres.
5. Within aspen-birch harvests reserve most inclusions of long-lived species (e.g., oak, northern hardwoods, red / white pine, ash, spruce) except where they are at risk of loss within 5 years.
6. Reserve dead snags and live residual trees (oak and white pine will be priorities if present). Hardwood inclusions and riparian reserves within a harvest area may be used for this purpose. Preference will be to leave trees of 6" dbh or larger.
7. Secondary hardwood species will be harvested as needed to encourage future stand diversity.
8. Secondary species of balsam fir and spruce will be retained.

9. Undertake intensive supportive management efforts within the Clover Township Ruffed Grouse Management Area and consider designation of additional such areas.
10. Older, well-established brushlands and sparsely-stocked forest lands will not be converted without prior consultation with DNR Wildlife managers. In selected areas and in consultation with DNR Wildlife managers, these areas will be regenerated as brush.
11. "Permanent" forest openings will be sustained over time in cooperation with the DNR. Additional acres may be developed over time. New openings are to be located around harvest "landings" and away from other natural or man-made openings. Manage small failures (5 acres or less) within planted regeneration area forest openings (up to a maximum of 10% of the regenerating area).

Habitat – Deer Wintering Complexes

Goals

1. To provide critical wintering habitat for white-tailed deer.

Strategic Actions

1. Deer wintering complexes will be identified through computer analysis and field experience and surveys by DNR Wildlife managers.
2. Primary deer wintering areas will be managed as a whole by developing composition goals and management guides for each one.
3. Secondary wintering areas will be managed by: regenerating 10 acre and larger conifer stands in predominantly aspen areas back to conifers; reserving white cedar from harvest; delaying harvest of types with cedar or immature balsam fir understories.
4. Biological diversity and the integrity of individual wintering complexes will be maintained or improved by: harvesting only parts of larger jack pine stands or delaying harvest of smaller stands; regenerate jack pine back into jack pine or other conifer species; regenerate hardwoods adjacent to winter cover; maintain or improve vegetation diversity in pine stands.

Habitat – Northern Hardwoods / Oak Forests

Goals

1. To expand the amount of northern hardwood / oak forests in order to provide habitat for species requiring large forest interiors within moderate to long-lived deciduous forests.

Strategic Actions

1. Convert appropriate aspen-birch stands to northern hardwoods and/or oak.
2. Use a variety of means to increase the average size of hardwood / oak patches.
3. Manage northern hardwoods for multi-aged stands with characteristics of mature forests.
4. Retain shorter-lived aspen-birch components for nesting-cavity habitat and associated wildlife values.
5. Use a variety of techniques to enhance acorn production in both burr and red oak. Methods might include thinning and regeneration with shelterwood cuts in old stands with no advanced reproduction.

Habitat – Endangered, Threatened or Special Concern Species

Goals

1. To retain and enhance habitat critical to support these species.

Strategic Actions

1. Nesting areas for colonial birds (e.g., great blue herons) will be reserved from harvest and allowed to expand.
2. Eagle nests on or close to County lands will be protected by implementing nest management plans provided by DNR's Regional Nongame specialist.
3. Designated prairie chicken and sandhill crane management areas will be maintained and improved by: not artificially converting grasslands and brushlands to forest, and, cooperating with DNR Wildlife to maintain grasslands though shearing, prescribed burning, etc.
4. Use Natural Heritage database information, DNR Wildlife and Non-game staff, and other data to determine if endangered, threatened or special concern species (and biotic communities) might be present on County lands. As appropriate, create general policies or place-specific practices to protect and enhance these areas. This action will apply to other significant natural heritage features which may be present on the landscape.

Forest Roads

Goals

1. Access County forest lands appropriately to protect, manage and utilize forest resources for all programs and multiple uses.
2. Maintain a trunk road system, in cooperation with other road authorities, which will sustain prolonged vehicle use.
3. Minimize conflicts arising from "multiple-use" of forest roads.

Strategic Actions

1. Build 5-10 miles of forest road of varying classes during first 10 years of plan.
2. Assign designation to all official roads and trails.

Recreation

Goals

1. Provide adequately developed, dispersed facilities such as trails.
2. Enhance undeveloped, dispersed recreation opportunities, such as hunting and wildlife viewing, and to provide public access to public waters.
3. Protect the natural aesthetic resources enjoyed by the public.

Strategic Actions

1. Work with DNR and user groups to define routes for Grant-in-Aide trail system.
2. Regulate timber hauling and signing of trails during times of logging / hauling to minimize user conflicts.
3. Develop county ordinance to establish regulations and methods of enforcement regarding use of trails, structures, and forest uses.
4. Provide 5-10 miles of new non-motorized forest access trails.

Timber Management

Goals

1. Align forest cover with the potential of the landscape to produce forests in order to provide a healthy, productive, diverse, and viable future timber resource.
2. Protect the county's timber resources from losses due to insects, disease, fire, and similar forces.

3. Regulate timber harvest and regeneration for a sustained-yield, long-term output of wood products to provide income to the tax-forfeited land trust fund and commodities for a strong timber industry economy.
4. Protect and/or improve all forest resources for multiple-use by integrate other program goals with timber management.

Strategic Actions

1. Develop “on-going vegetation assessment and inventory update” system.
2. Prepare 2-year tactical management plans. The specific stands selected for management will be drawn from a 10-year pool of eligible stands.

15. Itasca County Land Management Plan

Document Title	Source	Date	URL or Address
Itasca County Land Department: Land Management Plan	Itasca County Land Department	Sept. 2009	http://www.co.itasca.mn.us/Home/Departments/Land/Pages/default.aspx

Geographic Extent / Scope:
Itasca County is located in north central Minnesota, 180 miles north of the Minnesota state capital of St. Paul. Itasca County's Land Department manages approximately 300,000 acres of tax-forfeited land, comprising roughly 17% of the county area. Of the land base administered by the Land Department, about 248,000 acres (83%) are commercial forest. Itasca County is located entirely within the Laurentian Mixed Forest Province, and covered by seven biophysical regions; they are the Bigfork-Cook Plain, Laurentian Upland North, Laurentian Upland South, Mesabi Range, Wawina-Hibbing Plain, Grand Rapids Uplands, and the Cut-foot Sioux Upland region. (pp. I.1-I.6)

Organizations / Agencies involved in plan creation:
Land Management Plan was produced by the Itasca County Land Department. (p. i.1)

Info on Planning Process:
None identified.

Purpose of plan:
The Land Management Plan was designed for providing vision and direction to guide strategic and operational programs of the Land Department. (p. i.1)

ISSUES

None identified.

VISION(S) (Department Mission) (p. A.2)

The Land Department is committed to ensuring that the economic benefits and environmental integrity of the County's natural resources are available to both present and future generations. Active land management will provide a balance of benefits that include recreational opportunities, quality water, wildlife habitat, timber production, earthen materials, maintenance of ecological integrity as well as a monetary return to the tax forfeited trust.

GOALS (Policy Statements and Forest Management Goals) / STRATEGIES (Policy Statement Goals) [Policy Statement Goals are shown directly below their related Policy Statement, as listed in section I.I of the Management Plan.] (pp. I.6-I.8, A.2)

Policy Statements:

1. Maintain ecological integrity through quality resource stewardship of our natural environment.
    a. Maintain an Integrated Resource Information System (IRIS) that provides a comprehensive, systematic approach to the management of natural resources from a base of quality, selected information sources.
    b. Produce quality forest products and services within identified sustainable biophysical capacity of the County forest.

   c. Prepare techniques for improving effectiveness of evaluating the capacity of forestland for supporting equipment traffic that will minimize adverse impacts and maintain sustainable productivity of quality products.
   d. Utilize native plants for producing quality goods and services.
   e. Continue to apply silvicultural practices that provide high quality water from forest environment.
   f. Recognize and manage selected natural resources in special management areas.
   g. Develop detailed forest management handbooks for managing species, issues or activities.
   h. Attain and maintain recognized 3rd party forest certification for county forest lands.
2. Provide visitors and the citizens of Itasca County with a variety of quality park and recreation opportunities.
   a. Manage developed recreation under the Park System program.
   b. Manage undeveloped recreation under the forest management program.
   c. Provide public access to and public use of the County forest.
   d. Coordinate with other landowners to provide managed OHV recreational opportunities.
   e. Participate with other landowners in providing hunters with access to forestland and opportunities for quality upland bird and big game hunting.
   f. Enhance quality of scenic corridors by applying silviculture practices appropriate for increasing seasonal variety of colors of native plants.
3. Maintain a forest road and trail system in Itasca County that provides a variety of access for citizens and reduces the threat of wildfire.
   a. Administer Ordinance for Management and Control of Recreational Vehicles.
   b. Provide for managed OHV travel for commercial purposes.
   c. Provide and obtain easements, licenses, leases and permits to manage access to private land, pubic land and public water.
4. Provide quality wildlife habitat for game and non-game species through forest management activities.
   a. Consideration for wildlife habitat features such as seasonal food, thermal cover, cover for nesting and brooding, shelter from predators and contiguous travel lanes will be analyzed and evaluated during preparation of prescriptions.
5. Manage timber resource to produce industrial crops of wood.
   a. Increase potential productivity of County forest by selecting prime quality parent stock for natural regeneration and for collecting seed for regenerating new forest.
   b. Maintain a timber inventory system that produces an annual update of growing stock information necessary to carry out intensive forest management plans.
   c. Provide a forest composition that is firmly connected to sustained biophysical capacity, potential productivity, and that integrates the needs of local consumers of wood products.
   d. Improve mixture of timber types, composition of stands and age class distribution of commercial trees.
6. Implement integrated prescriptive management and monitoring program.
   a. Monitoring and evaluating compliance with performance standards is an integral part of integrated prescriptive management.
   b. Establish and maintain permanent plots for the purpose of monitoring and evaluating dynamics of forest growth and yield, plant community structure and their response to proactive prescriptive management.
7. Manage tax forfeited trust on enterprise principles.
   a. Participate in supporting local business by making available from County forest timely quality forest products.

   b. Purchase to the greatest extent possible equipment, services, supplies and materials from local businesses provided they are competitively priced and of acceptable quality.
   c. Provide a monetary return to the tax-forfeited trust.
   d. Improve efficiency of Department land management programs, projects and field operations by managing ownership through land sale, exchange and acquisition opportunities.
8. Administer Real Estate Management program to further the public interest through land sale, exchange and acquisition opportunities.
   a. Decisions about tax-forfeited land sales are made on a case by case basis, in the context of MS 282 and meeting the county's need for economic development and environmental protection.
   b. Maintain a land classification committee for evaluation of land sale opportunities.
9. Partner, educate and coordinate with individuals and organizations to provide citizens with quality forest products and services.
   a. Continue to encourage cooperative scientific research and development of new information necessary for sustained quality land stewardship with professionals qualified to conduct studies in a complex forest environment and that is applicable to the County forest and adjoining ownerships.
   b. Coordinate land management activities with private and public landowners in and adjoining Itasca County.
   c. Coordinate land management activities and seek input from Leech Lake and Bois Forte tribal representatives, while recognizing their legal and customary treaty rights.
   d. Provide professional development opportunities to increase occupant skills of staff through appropriate training sessions and practical experiences.
   e. Provide land management leadership in the county and statewide where appropriate.
   f. Provide students of Itasca County school system and citizens with opportunities for learning about the management and stewardship of the quality forest environment for which Itasca County is known.
10. Provide earthen materials in support of expansion and maintenance of transportation system in Itasca County.
   a. Develop extractive use guidelines.
   b. Manage earthen materials in balance with multiple-use management of forest land.
11. Control invasive species to the extent practical with available financial and human resources.
   a. Develop noxious weed control program and manual.
12. To reduce dependence on foreign sources of fuel, develop pilot projects and a management program for producing biofuels for local consumption.
   a. Recognize that carbon storage and sequestration is an important public value and service of the County forest.

Forest Management Goals:

1. Socio-Economic Goals
   a. To provide a sustainable, reliable supply of quality saw-timber, pulp and other forest products.
   b. To minimize mortality and subsequent loss of quality wood products from diseases, fire, insects and other adverse agents that contribute to mortality of trees.
   c. To maintain a no net loss of Memorial Forest designated acres.
2. Forest Composition Goals
   a. To increase diverse species composition, patch sizes and age class structure.
   b. To increase acres of the conifer cover types of red, white and jack pine, and of white spruce.

   c. To favor natural establishment of conifers and hardwoods (other than aspen) in mixed stands.
   d. To decrease the aspen-birch forest type and lowland brush type.
3. Stewardship Goals
   a. To manage within the capacity of the forestland to support the production of goods and services.