Chapter 2 Forest-wide Management Direction

Introduction

Chapters 2 and 3 present management direction for the Forest that will guide Forest managers in reaching desired outcomes. The management direction in Chapter 2 is broad and applies everywhere on the Forest; whereas Chapter 3 presents management direction for specific management areas that reflects the variety of different uses and resources in the management areas.

Direction for management areas is typically more specific than Forest-wide direction. When planning a site-level project, managers will first consult the Forest-wide direction and then determine if there is more specific direction for the management area.

Forest-wide management direction describes goals, desired conditions, objectives, standards, and guidelines for the major resource program areas on the Forest. Programs are arranged according to the ecosystem management framework, beginning with physical resources and then moving through biological, social, and economic resources.

The standards and guidelines do not repeat management direction found in laws, regulations, Forest Service Handbook, Forest Service Manual, or other policies. The Forest Service will follow applicable laws, including the following:

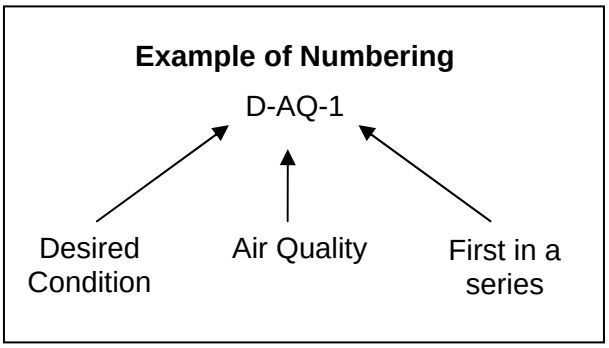
- National Environmental Policy Act
- National Forest Management Act
- Multiple-use Sustained Yield Act
- Organic Administration Act
- Alaska National Interest Lands Conservation Act
- Native American Graves Protection and Repatriation Act
- Endangered Species Act
- Freedom of Information Act
- Archeological Resources Protection Act
- National Historic Preservation Act
- Wild and Scenic Rivers Act
- Federal Land Policy and Management Act
- Clean Water Act
- Federal Clean Air Act
- Shipstead-Newton-Nolan Act

In addition to the standards and guidelines, the Forest will also do the following to reach the desired conditions:

- Assess natural resource and social conditions with monitoring and evaluation
- Provide employees with training on up to date management practices and with scientific knowledge and technologies
- Collaborate with landowners, other land managers, and the public
- Develop strategies to address specific resource concerns

Key to Numbering

D	Desired Condition
O	Objectives
S	Standard
G	Guideline
AQ	Air Quality
CM	Cooperative Management
FW	Forest-wide
HR	Heritage Resources
ID	Insects, Diseases, and Disturbance Processes
LA	Land Adjustment
MN	Minerals
PH	Public Health and Hazardous Materials
REC	Recreation
RMV	Recreation Motor Vehicles
RTL	Trails
RWA	Water Access
SC	Scenic Resources
SE	Social and Economic Stability
SU	Special Uses
TM	Timber Management
TR	Tribal Rights and Interests
TS	Transportation Systems
VG	Vegetation Management
WL	Terrestrial and Aquatic Wildlife
WS	Watershed Health, Riparian Areas, and Soil Resources



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FOREST-WIDE GOALS

Through forest management and planning, The Forest Service will strive to achieve the following goals:

- Promote ecosystem health and conservation using a collaborative approach to sustain the nation's forests and watersheds.
- Protect, and where appropriate, restore soil, air, and water resources.
- Provide for a variety of life by managing biologically diverse ecosystems.
- Provide for sustained forest product uses in an environmentally acceptable manner.
- Provide forest settings and natural resources that enhance social and economic benefits at local, regional, and national levels.
- Provide a variety of uses, values, products, and services for present and future generations by managing within the capability of sustainable ecosystems.
- Provide management direction that enhances social and economic benefits for individuals and communities:
  - Emphasize scenic quality in areas of high interest to people
  - Emphasize a variety of forest settings that provide for a spectrum of social opportunities and benefits for people
  - Maintain a road and trail system that provides opportunities for people to access the National Forest
  - Contribute to local, regional, and national economies by providing natural resources in a socially and environmentally acceptable manner
  - Contribute to efforts to sustain the American Indian way of life, cultural integrity, social cohesion, and economic well-being.
- Develop and use the best scientific information available to deliver technical and community assistance and to support ecological, economic, and social sustainability.

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.

FOREST-WIDE DESIRED CONDITIONS, OBJECTIVES, STANDARDS, AND GUIDELINES

Cooperative Management

Desired Condition

D-CM-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.

Key cooperators include the following:

- Grand Portage Band of Chippewa Indians
- Fond du Lac Band of Lake Superior Chippewa
- Bois Forte (Nett Lake) Band of Chippewa
- Minnesota Department of Natural Resources
- Cook County
- Koochiching County
- Lake County
- St. Louis County
- US Fish and Wildlife Service
- North Central Forest Experiment Station
- University of Minnesota
- Voyageurs National Park
- Ontario Ministry of Natural Resources
- Minnesota Forest Resources Council
- Regional partners with the Lake Superior Lakewide Management Plan and Great Lakes Ecological Assessment
- Minnesota Department of Transportation
- The Nature Conservancy
- State Historical Preservation Office and the Advisory Council on Historic Preservation
- Private Landowners
- Environmental Protection Agency
- Special Interest Groups (e.g., timber industry, conservation organizations, etc…)

All Resources

Consistency with Minnesota Forest Resources Council (MFRC) Voluntary Site-level Guidelines

G-FW-1 The Forest Service will implement the MFRC management guidelines when managing forest resources on the National Forest. These measures are described in *Sustaining Minnesota Forest Resources: Voluntary site-level Management Guidelines*.

Standards and guidelines in the Forest Plan are intended to provide equal or greater protection to the resources addressed by the MFRC guidelines. Some of the Forest Plan standards and guidelines may:

- Provide direction or guidance not provided in the MFRC guidelines
- Give additional explanation or detail on how to implement the MFRC guidelines
- Provide direction that modifies the MFRC guidelines or
- Have an approach that differs from the MFRC guidelines in order to achieve compliance with law, regulation, or policy

A provision of the MFRC guidelines is that they may be modified if the modifications provide equal or greater benefits to resources.

Individual MFRC guidelines will be implemented as guidelines for management on NFS land, unless they are restated as standards in this Forest Plan. In general, however, MFRC guidelines are not restated in this Forest Plan.

Forest Plan standards and guidelines take precedence over the MFRC guidelines in any situation where management direction from these two sources appears to conflict.

Listed below are examples of resource areas where the Forest Plan standards and guidelines differ from MFRC guidelines.

Cultural Resources - The MFRC guidelines recognize that specific requirements pertaining to the protection and management of cultural (heritage) resources differ depending upon land ownership, project funding sources, and the jurisdiction of the project licensing or permitting authority. While the guidance provided by the MFRC guidelines includes some discussion of federal cultural resource management, the specific direction that the Forest Service must adhere to is in federal law, regulation, and policy. In following federal direction, the Forest Service meets and goes beyond the MFRC guidelines pertaining to cultural resource protection.

Visual Quality – The Forest Service will use the Scenery Management System (SMS) rather than the MFRC Visual Quality Guidelines to manage scenic resources on the National Forests. The SMS is a system that was developed by the Forest Service and is used on National Forests across the country. It has been specifically adapted in this Forest Plan for use in northern Minnesota. The MFRC Visual Quality Best Management Practices are generally consistent with the SMS, although differences do exist in terminology, processes, and scale and range of application.

Forest Soil Productivity - MFRC guidelines that provide general recommendations for the protection of soil productivity will generally be followed. As recommended in Part 2 of *Sustaining Minnesota Forest Resources: Voluntary site-level Management Guidelines* (page 7 of the Forest Soil Productivity section), it is very important that managers evaluate soil conditions on the sites they manage. The Forest Service has developed detailed inventories and associated interpretations of soils on National Forest System (NFS) land. This site-specific information has enabled the Forest Service to refine or tailor management direction to help ensure the productive capacities of sites on NFS land are not reduced due to forest management. In some cases, the detailed information has resulted in management direction that is more specific than the general direction provided in the MFRC guidelines. An example of such direction

in the Forest Plan are guidelines limiting management activities based on specific mapping units of the Forest's terrestrial ecological unit inventory.

Riparian Area, Water Quality, and Wetland Protection - Direction in the Forest Plan is based on the desire to both protect and enhance the same riparian area ecological functions and aquatic/terrestrial linkages discussed in Part 2 of the MFRC guidelines (pages 5 and 6 of the Riparian Area section). Riparian management direction in the Forest Plan not only reflects the intent of the MFRC site-level mitigative guidelines but goes beyond that to enhance or restore ecological functions in all riparian areas. Facets of the Forest Plan that differ from specific MFRC guidelines for riparian management are a matter of approach rather than substance or intent. Some key examples of these differences are:

1. The approach to riparian management in this Forest Plan is based on identifying site-specific boundaries of functional riparian areas along lakes, streams, and open water wetlands. Wide functional riparian areas are subdivided into two Riparian Management Zones (RMZs). The zone nearest the lake or stream is called the "near-bank" zone; the zone further removed from the lake or stream is called the "remainder" zone.

   Forest Plan management direction provided for "near-bank" RMZs is to actively manage vegetation for the primary purpose of enhancing or restoring the functional linkage between aquatic and terrestrial ecosystems, and to favor long-lived site-suitable tree species; "remainder" RMZs are to be managed for extended rotations of site-suitable tree species. This differs from current MFRC Guidelines which employ a single-tier RMZ and are designed to mitigate impacts on riparian areas from management activities which are not necessarily focused on riparian function.

2. To protect against excessive in-channel sediment generation in streams, direction is provided in the Forest Plan to cap, at 60%, the combined acreage of upland open land and young (<age 16) forest at the 6th level (12-digit Hydrologic Unit Code) watershed (landscape) scale. Direction is also provided to increase the amount of forest greater than age 15 in any 6th level watershed where the combined acreage of upland open land and young (<age 16) forest is currently more than 60% of the total watershed area. This differs from current MFRC Guidelines which include no direction addressing the watershed (landscape) scale.

Physical & Biological Resources

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Air Quality and Smoke Management (AQ)

Desired Conditions

D-AQ-1 Air on the Forest is of high quality so that:

- 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).
- The health of visitors, residents, and employees is not impaired.
- Visibility does not impair scenic quality.
- Other air quality related values are not adversely affected

D-AQ-2 New and modified industrial facilities do not degrade Forest resources or uses.

D-AQ-3 Air emissions resulting from National Forest management actions do not degrade natural resources or uses of the Forest.

Objectives

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

Standards & Guidelines

S-AQ-1 Prescribed burning activities on the National Forest will only be conducted if they comply with requirements of the most current Minnesota Smoke Management Plan.

Minerals (MN)

Desired Condition

D-MN-1 Exploration and development of mineral and mineral material resources is allowed on National Forest System land, except for federally owned minerals in designated wilderness (BWCAW) and the Mining Protection Area (MPA).

D-MN-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 national defense.

Standards & Guidelines

Federal Minerals

Outside the BWCAW and Mining Protection Area (MPA)

S-MN-1 No permit is required for nondestructive exploration of federal minerals such as geologic mapping, geochemical studies, or geophysical surveys where timber cutting does not occur.

S-MN-2 The removal of more than 5,000 cubic yards of mineral materials per year from any source requires an approved development and reclamation plan.

Inside the BWCAW

S-MN-3 No permit, lease, or other authorization will be issued for the exploration of or mining of minerals owned by the United States.

S-MN-4 No permit is required for nondestructive activities, such as, geologic mapping, geochemical studies, or geophysical surveys where disturbance is minimal.

S-MN-5 No permit will be issued for mining federal peat and marl deposits.

Inside the MPA

S-MN-6 No permit, lease, or other authorization will be issued for the exploration of, or mining of minerals owned by the United States.

S-MN-7 No permit is required for nondestructive

activities, such as, geologic mapping, geochemical studies, or geophysical surveys where disturbance is minimal.

S-MN-8 No permit will be issued for mining federal peat and marl deposits.

S-MN-9 The Forest Service will provide sand and gravel for public and private use.

Non-federal Minerals

Outside the BWCAW and MPA

S-MN-10 The use of National Forest System land for exploration and development of non-federal mineral rights will be governed by the reserved or outstanding rights indicated in the chain of title.

S-MN-11 A permit is not required for occupancy of federal surface for exploration or development of the underlying mineral estate unless the chain of title indicates one is appropriate.

S-MN-12 The protection of federal surface will be accomplished through negotiating with the mineral owner or operator and implementing applicable State and federal Laws.

S-MN-13 Where a federal permit is required, mitigation measures and management requirements will be established to minimize and mitigate adverse environmental effects.

G-MN-1 Land disturbed by mineral development activities or facilities will generally be reclaimed as soon as practical. Reclamation work will generally reflect the landscape character and processes of the surrounding landscape. Reclamation measures will generally be implemented so that the mining project areas would meet the pre-project SIO as soon as practical.

Watershed Health, Riparian Areas, and Soil Resources (WS)

Desired Conditions

D-WS-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.

D-WS-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.

D-WS-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.

D-WS-4 Management activities do not reduce existing quality of surface or groundwater or impair designated uses of surface and ground water.

D-WS-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.

D-WS-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.

D-WS-7 The physical integrity and hydrologic connectivity of pool depressions in seasonal ponds is maintained to assure seasonal retention of water.

D-WS-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.

D-WS-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.

D-WS-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, leaf-litter, 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.

D-WS-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.

D-WS-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.

D-WS-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.

D-WS-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.

Objectives

O-WS-1 Improve and protect watershed conditions to provide the water quality, water quantity, and soil productivity necessary to support ecological functions and intended beneficial water uses.

O-WS-2 Restore ecological integrity on all or parts of one or two of the Forest's fifth level watersheds per year by:

- Enhancing or re-establishing the natural ecological process and diversity of riparian areas (aquatic ecosystems, riparian ecosystems, and wetlands) on National Forest System land.
- Improving road and trail crossings of streams and wetlands to assure soil stability, unimpeded flow, sediment transport, and/or passage of fish.
- 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.

O-WS-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.

O-WS-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.

O-WS-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.

O-WS-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.

O-WS-7 Decrease the Forest's contribution of non-point water pollutants to all watersheds or water bodies for which a Total Maximum Daily Load has been determined.

O-WS-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.

O-WS-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.

O-WS-10 During all management actions involving soil disturbance:

- 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.
- Minimize soil displacement, nutrient loss, and effects of severe burning.
- Restore and re-vegetate disturbed areas.
- Provide for the maintenance of physical, chemical and biological properties of the forest floor (soil organic matter, surface O layer) that make soil productive.
- 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).

Standards & Guidelines

Watershed Health

S-WS-1 Management actions on NFS land will not increase the total (all ownerships) acreage of upland young forest (<16 years), and upland openings to the point where the combined acreage exceeds 60% of the total area of any 6th level watershed. Upland openings include permanent openings, roads and associated clearings, parking lots, cropland, pastures, borrow pits, utility rights of way, town sites, homes and yards, and upland brush, and grass. In 6th level watersheds that already exceed the 60% threshold, no action on NFS land will be taken that causes a net whole watershed increase of more than 1% in open and young forest conditions.

S-WS-2 Excavated soil material, construction debris, spoils or debris from dredging projects, and debris and soil moved from upland sites during timber management activity (such as timber harvest, shearing or brush raking) will be deposited or spread out in upland locations. Stabilize soil deposited in this manner with vegetation.

S-WS-3 Salvage and reuse topsoil for site rehabilitation during construction projects or other land use activities. When topsoil is unsuitable for reuse, other methods or tools such as sodding, hydro-seeding, fertilization, or erosion-resistant matting may be used to help rehabilitate disturbed areas.

G-WS-1 Restore eroded sites, generally employing natural-appearing stabilization materials. Native species will be used in the restoration of vegetative cover. Non-native annuals may be used as nurse crops to obtain rapid stabilization while slower-growing native species are becoming established.

G-WS-2 Project-level planning for activities that have the potential to increase water pollution from non-point sources within 6th level watersheds contributing to impaired (Federal Clean Water Act Section 303(d)-listed) waters listed because of conventional pollutants will include:

a) Documentation that the project is located within a watershed that contributes runoff to an impaired water body, and

b) A documented plan for how Best Management Practices will be implemented, monitored and evaluated (for watersheds and pollutants where Total Maximum Daily Loads (TMDLs) have not been established), or

c) A description of how the project complies with the NFS share of pollution reduction goals (for watersheds and pollutants which have established TMDLs).

For Riparian Areas as a Whole (Both the Aquatic and Non-aquatic Portions)

S-WS-4 Water quality Best Management Practices, which are represented by some of the MN Forest Resources Council (MFRC) Voluntary Site Level Forest Management Guidelines, will be implemented as standards on NFS land.

Refer to guideline G FW-1 for a discussion of the overall relationship between MFRC site level guidelines and the management direction established in this Forest Plan.

S-WS-5 New facilities (such as roads, trails, campsites, and buildings) within riparian or floodprone areas will be discouraged If such facilities are built in riparian or floodprone areas, they will be constructed and maintained in a way that minimizes adverse impacts to the ecological function of the area.

S-WS-6 Management activities involving heavy equipment crossing (by road, trail, or skid trail) of any stream or drainage ditch, or operations on the immediate shoreline of any lake or open water wetland will be designed and conducted in a way that:

a. Limits the number of crossing locations to the absolute minimum needed to conduct the activity

b. Maintains or improves channel stability (dimension, pattern and profile) or shoreline stability in the affected or connected waters

c. Uses filter strips as directed by Forest Plan guideline G-WS-4 and MFRC site level guidelines.

Aquatic Portion of Riparian Areas (Lakes, Streams, and Open Water Wetlands)

S-WS-7 When removing beaver dams or other channel obstructions from streams, control hydrologic discharge to minimize the potential for downstream flooding, sedimentation, and associated impacts on channel morphology and habitat, including wild rice beds.

S-WS-8 On lakes and wetlands where the Forest Service controls the discharge of water, minimum flow will be established to minimize impacts on downstream resources.

G-WS-3 Coarse woody debris will be removed from streams and lakes only if it presents a hazard to people or structures or creates an impassible barrier to watercraft. Where coarse woody debris impedes passage for recreational watercraft, restrict removal to the minimum amount necessary for safe passage.

Non-Aquatic portion of Riparian Areas

G-WS-4 On slopes averaging 18% or steeper, the width of filter strips adjacent to lakes or streams will be either 150 ft. from the ordinary high water mark, 150 ft. from the bankfull elevation, or the width of the entire slope that is adjacent to the water's edge, which ever is greater.

Exceptions to filter strip guidelines are allowed for projects specifically designed for stream, lakeshore, or wetland restoration.

G-WS-5 In project areas subject to soil or vegetation disturbance, where the landward limit of the functional riparian area has not been site-specifically identified as part of project planning, a default "near bank" and "remainder" riparian management zone width of 100 feet each will generally be used along lakes, open water wetlands and streams.

Near-Bank Riparian Management Zone

(Also see additional direction for the near-bank zone in objectives for Watershed Health.)

S-WS-9 Within the near-bank zone, harvest trees only to maintain or restore riparian ecological function.

S-WS-10 Within the near-bank zone, do not deposit debris or spoils from maintenance, construction, or dredging. However, depositing materials for habitat improvement or restoration is allowed.

G-WS-6 Within the near-bank zone, minimize soil disturbance and avoid activities that may destabilize soils or add sediment to the water.

G-WS-7 Within the near-bank zone, minimize mowing or any other activity involving intensive removal of understory vegetation.

Soils

G-WS-8 Follow the limitations on management activities as specified in Table G WS-8.

G-WS-9 During resource management activities, minimize adverse impacts to soil productivity by striving to have no more than 15 percent of a treatment area in a detrimentally compacted, eroded, rutted, displaced, or severely burned condition

G-WS-10 When conducting prescribed burns on ELTs 7, 8, 9, 11, 12, 16, 17, and 18, minimize the loss of forest floor (surface O layer). Provide for:

a. Igniting burns only when the Canadian Fire Weather Index System Build Up Index (BUI) is 50 or less. (If the BUI system becomes outdated, another predictive model or index system may be used provided it

affords a level of organic soil layer protection that is equivalent to a BUI of 50 or less.)

b. Adjustment of ignition timing and firing patterns

c. Taking into account vegetation type, topography, number of days since precipitation, wind, air temperature, humidity, and fuel loadings.

G-WS-11 On Ecological Land Types (ELTs) 7, 8, 9, 11, 12, 16, 17, and 18, management activities used for vegetation competition control will be designed and conducted in ways that minimize loss of the forest floor (surface O layer and duff layer).

Wetlands

S-WS-11 Activity fuels will not be pushed into windrows that encircle wetlands.

S-WS-12 Natural wetlands will not be used for sewage disposal for administrative purposes, unless done for research to develop operational guidelines or after such guidelines are established.

G-WS-12 Use of wetlands under frozen conditions for temporary roads and skid trails will generally be permitted as long as no fill is placed in the wetland. These roads or trails will be blocked to discourage vehicle use under unfrozen conditions.

G-WS-13 Wetland impacts will be avoided whenever possible. Where impacts are unavoidable, minimize and compensate for loss when undertaking projects.

S-WS-13 Where utility rights–of-way are constructed across wetlands, the crossings will be designed and maintained to preserve hydrologic and riparian function.

G-WS-14 Avoid felling trees into non-forested wetlands, except where done for purposes of habitat restoration.

G-WS-15 Wetlands will be managed to prevent the reduction of their water quality, fish and wildlife habitat, and aesthetic values. Management actions will not reduce water quality within a wetland, or upstream or downstream of a wetland, unless restoration of natural conditions is the primary goal of the activity.

Table G-WS-8. Limits on Management Activities Designed to Safeguard Soil Productivity on Superior National Forest. (Mitigations are shown as codes which are listed and explained in Table G-WS-8a. A brief description of each ELT, and principle threats to soil productivity associated with activities on each ELT, is shown in Table G-WS-8b).

Activity/Limitation	Ecological Landtype (ELT) Number																	
	1	2	3	4	5**	6	7	8	9	10	11	12**	13	14	15	16	17	18**
Skidding	Ax, B	A	Ax , B	A	#, A	A	B, E	E	B, E	Ax	B, E	#,A, E	B	Ax, B,	Ax, B	Ax, B, E	#,Ax, B, E	#, A, E
Landings	A	A	A	A	#, A	A	+	+	--	Ax	+	--	+	Ax	Ax	#, Ax	#	--
Whole tree Logging	+	+	+	+	--	#	#, E, F	+, E, F	#, E, F	+	#, E, F	--	+	+	+	+, E, F	#, E, F,	#, E, F,
Tracked vehicles (feller buncher etc)	Ax	A	Ax	A	#, A	A	+	+	#	+	+	#	+	+	+	+	#	#, A
Temp roads, trails	#, Ax	#, A	#, Ax	#, A	#, A	#, A	+	+	+	Ax, B	+	--	+	Ax	Ax	+	--	--
Discing	Az, B	--	Az, B	--	--	--	B	B	--	Az, B	B	--	B	Az, B	Az	B	--	--
Reforestation	+	+	+	+	E	+	E, F	+	+	+	E, F	E, F	+	+	+	E, F	E, F	E, F
Machine Planting	Ax, B	--	Ax, B	--	--	--	Ax, B	Ax, B	#, B	Ax, B	B	--	B	Ax, B	Ax, B	B	--	--
Bracke scarification and Barrel scarification	Az	--	Az	--	--	--	C, E	C, E	#	Az	C, E	--	C	Az	Az	C, E	C, E	--
Blading, Shearing, Rockraking	Ax, B	A	Ax, B	A	#, A	A	D, E	D. E	D, E	Ax, D	D, E	#, D, E	D	Ax, D	Ax, D	Ax, D, E	--	--
Machine Piling/Bundler	Ax	A	Ax	A	#, E	E	E	E	--	+	E	#, E,	+	+	+	E	E	#, E
Prescribed Fire	+	+	+	+	#, E, F, G	+	E, F, G	E, F, G	#, E, F, G	+	E, F, G	#, E, F, G	+	+	+	E, F, G	E, F, G	#, E, F, G
Use of low psi tires or other equipment with similar integrity	H	H	H	H	H	H	+	+	+	+	+	--	+	+	+	+	H	H

Table G-WS-8a. Activity Limit Codes Used in Table G-WS-8	
Code	**Activity Limitation Designed to Protect Soil Productivity**
**	No activities are permitted on these ELTs for purposes of timber production. Activities done for salvage, or to achieve other multiple use desired conditions or objectives are strongly discouraged on these ELTs and are subject to any applicable limitations shown elsewhere in this table.
+	Practice permitted on this ELT, subject to any applicable limitations specified elsewhere in this table.
--	Practice not permitted on this ELT.
#	Practice is strongly discouraged on this ELT. If undertaken, it is subject to any applicable limitations specified elsewhere in this table.
A	Limit activity to frozen soil (frozen to a depth that will support equipment that is being used).
Ax	Limit activity to frozen soil (frozen to a depth that will support equipment that is being used) or during normal dry period (generally July 1- Sept 15).
Az	Limit activity to normal dry period (generally July 1-Sept 15).
B	On slopes exceeding 18%, confine operations to the lower end of slopes and avoid creating long uninterrupted equipment "paths" that could channel water and erode soil. For slopes that exceed 35%, design for and favor activities that would provide for use of equipment and techniques that minimize operations on these slopes.
C	Bracke scarification not allowed when slopes exceed 18%.
D	Shearing not allowed on unfrozen ground when slopes exceed 18%, with the exception that it may be permitted during dry conditions if mineral soil is not exposed.
E	Retain/return distributed slash or woody debris and, where appropriate, retain stumps and bark on site.
F	Determine long term strategy on these ELTs for soil nutrient and tree nutrient efficiency. Favor maintaining or converting to pine/conifer type within LE vegetation composition by type objectives, and favor vegetation objectives for older growth stages. If existing stand is aspen/birch, favor partial cut & under plant to convert, or leaving more residual basal area when converting.
G	Follow G-WS-10.
H	Take precautionary measures to minimize soil disturbance when using this equipment on these sites.

Table G-WS-8b. Ecological Land Types (ELTs) on Superior National Forest	
ELT	Description
1	Lowland, moist loamy soils with plant communities that are transitional between uplands & lowlands. Somewhat poorly drained soils are susceptible to rutting and compaction when saturated.
2	Lowland, wet loamy and clayey soils with plant communities typical of wetlands. Can be forested or wetland shrub. Soils are susceptible to rutting and compaction due to continuous saturated conditions.
3	Lowland, moist silty clay loam and clay soils with plant communities transitional between uplands & lowlands. Somewhat poorly drained soils are susceptible to rutting & compaction when saturated.
4	Lowland, wet clay loam, silty clay and clay soils with plant communities typical of clayey wetlands. Soils are susceptible to rutting and compaction due to continuous saturated conditions.
5	Lowland, acidic, poorly- decomposed organic soils composed mainly of sphagnum and hypnum mosses with bog plant communities adapted to permanently wet soils. Soils are susceptible to rutting and compaction due to continuous saturated conditions.
6	Lowland, acidic to neutral organic soils composed of decaying woody plants and forbs with plant communities adapted to permanently wet soils. Soils are susceptible to rutting and compaction due to continuous saturated conditions.
7	Upland, moderately well-drained sand and gravel soils with plant communities adapted to a fluctuating water table in a sandy root zone. Soils are susceptible to nutrient loss due to thinner surface organic layer and coarse textured soils.
8	Upland, well-drained sand and gravel soils with a water table at an estimated depth of 5 to 8 feet and with plant communities having both upland and lowland species. Soils are susceptible to nutrient loss due to thinner surface organic layer and coarse textured soils.
9	Upland, droughty gravel and sand soils with plant communities adapted to droughty conditions and a root zone dominated by gravels. Soils are susceptible to nutrient loss due to thinner surface organic layer and coarse textured soils.
10	Upland, moderately well- drained silty clay loam and clay soils with upland plant communities. Silty soils will retain water long enough to create temporarily saturated soil in wet conditions and be more susceptible to rutting and compaction.
11	Upland, well-drained sandy loam & loamy sand soils. Gravelly subsurface; plant communities adapted to dry site. Soils susceptible to nutrient loss due to thin surface organic layer & coarse textured soils.
12	Upland, poor to well-drained, bouldery, loamy soil. The ground is also covered with boulders. Plant communities have adapted to these site conditions. On some sites, the ground may be covered with boulders with very little vegetation. Soils are susceptible to nutrient loss due to lack of surface organic layer or organic layer underlain with boulders.
13	Upland, well-drained sandy loam & loamy sand soils with a gravelly subsurface and plant communities representative of dry uplands.
14	Upland, moderately well-drained, sandy loam to silt loam soils with a subsurface layer of dense soil that retains water for longer periods of time in some locations, and plant communities that have relatively high requirements for nutrients & moisture. Subsurface layer of dense soil will retain water long enough to create temporarily saturated soil in wet conditions and be more susceptible to rutting & compaction.
15	Upland, well-drained to moderately well-drained loam, clay loam & silt loam soils, and plant communities with a high requirement for nutrients and moisture. Silt & clay soils will retain water long enough to create temporarily saturated soil in wet conditions, more susceptible to rutting & compaction.
16	Upland, well-drained sandy loam or loam soils, 20 to 40 inches deep over bedrock. Plant communities have adapted to dry conditions and shallow soils depths to bedrock. Soils susceptible to nutrient loss due to the thinner surface organic layer and shallow soil depth.
17	Upland, well-drained sandy loam soils, 8-20” deep over bedrock. Plant communities have adapted to droughty conditions and shallow soils depths to bedrock. Soils are susceptible to nutrient loss due to the thinner surface organic layer and shallow soil depth.
18	Upland, droughty loam, and sandy loam soils, less than 8” deep over bedrock, with bedrock outcrops occurring on 5 to 30 percent of the ground surface. Plant communities have adapted to very dry conditions. Mosses commonly cover the ground. Soils are susceptible to nutrient loss due to the thinner surface organic layer and shallow soil depth.

Insects, Diseases, and Disturbance Processes

Desired Condition

D-ID-1 Resource conditions minimize undesirable fire, insect, and disease outbreaks. When such events occur, healthy ecosystems are resilient and able to recover.

Insects and Disease

D-ID-2 Integrated pest management approaches are used to avoid epidemics and infestations of undesirable native or non-native invasive species.

D-ID-3 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.

Fire

D-ID-4 Accumulations of natural and activity fuels are treated to enhance ecosystem resiliency and to maintain desired fuel levels.

D-ID-5 Fire is present on the landscape, restoring or maintaining desirable attributes, processes, and functions of natural communities.

D-ID-6 The presence of wildland fire on the landscape is appropriate and desirable, but unwanted wildland fire is actively suppressed where necessary to protect life, investments, and natural resources. The full range of appropriate management responses are considered for unwanted wildland fires.

Objectives

O-ID-1 Increase the amount of forest restored to or maintained in a healthy condition to reduce risk of and damage from fires, insects, and diseases.

Fire

O-ID-2 Establish, maintain, or improve the condition of vegetation using prescribed fire, mechanical treatments, and other tools.

O-ID-3 Treat areas of highest fire risk (based on Fire Regime and Condition Class) to minimize effects of unwanted wildland fire.

O-ID-4 Reduce fuels and control vegetation in the understory of stands that had naturally occurring low intensity surface fires.

O-ID-5 Provide a program where firefighter and public safety are the highest priority with every fire management activity.

O-ID-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.

Standards & Guidelines

G-ID-1 Minimum Impact Management Tactics (MIMT) will generally be used in managing wildland fire and prescribed fire to reduce adverse effects. MIMT will be applied in both operational and logistical functions.

G-ID-2 Avoid delivery of chemical retardant, foam, additives, or gray water to all surface waters and riparian areas. A line officer or designee may grant an exception when there are overriding and immediate unsafe conditions. In life threatening emergencies, the Incident Commander can grant exception to this guideline.

G-ID-3 Utilize existing natural or man-made barriers, such as drainages, cliffs, streams, roads, and trails instead of constructed firelines for prescribed fire and suppression activities where practical and safe for firefighters and the public.

G-ID-4 Areas that are identified as Wildland Urban Interface and have vegetation conditions that are in Condition Class 2 or 3 will be given highest priority for hazardous fuels treatment.

Timber

Desired Condition

D-TM-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

O-TM-1 Provide commercial wood for mills in northern Minnesota. Harvest material to supply sawmills, veneer mills, paper mills, and mills constructing engineered wood products (hardboard, particleboard, oriented strand board, etc.). Also provide posts, poles, and logs for log home construction.

Standards & Guidelines

S-TM-1 Plan, schedule, and harvest timber to meet O TM-1 only on land identified as suitable for timber management: Land Suitability Classes 500, 510, and 520.

G-TM-1 On land identified as not suitable for timber management, allow timber harvest if necessary for salvage or to enhance or achieve desired conditions or multiple-use objectives other than O-TM-1.

G-TM-2 Clearcutting may be used to regenerate the following forest types: jack pine, red pine, spruce-fir, oak, aspen, aspen-spruce/fir, paper birch, and lowland conifers.

S-TM-2 Harvest using even-aged regeneration methods (clearcutting, seed tree, shelterwood) may create a temporary forest opening no larger than 1,000 acres in size.

Exceptions: temporary forest openings from even-aged harvest exceeding those limits established above are permitted;

a. On an individual timber sale basis after 60 days public notice and review by the Regional Forester; or

b. When the size of the area harvested is as a result of catastrophic condition such as fire, insect and disease attack, or windstorm.

G-TM-3 Openings that are greater than 1,000 acres will generally be separated from other temporary openings by manageable forested stands.

S-TM-3 Temporary openings created by even-aged regeneration harvest will no longer be considered open when regenerating trees reach 10 feet high.

S-TM-4 Five years after clearcutting or final removals in seed tree or shelterwood harvest, stands must be adequately restocked. The minimum trees per acre necessary to adequately restock forests after even-aged tree harvest are shown in Table S-TM-4 by forest type group.

Table S-TM-4. Minimum trees per acre at five years of age necessary to adequately restock forests after tree harvest.

Forest Type Group	Minimum Trees* per Acre
Conifers	400
Northern Hardwoods, Birch, and Ash	1,000
Aspen	4,000
*Any commercial tree species may be included in the minimum.	

G-TM-4 Allow harvest of white cedar trees (in any forest type) only when re-growth of cedar is likely to be successful or for research purposes.

G-TM-5 In stands 20 acres or larger that were regenerated with clearcuts, retain a minimum of 5% of the stand in legacy patches of live trees where no harvest occurs. Wherever possible these should be at least two acres in size. These legacy patches will protect soil organic matter and associated organisms and remaining vegetation will aid in the re-colonization of the adjacent managed area.

G-TM-6 In northern hardwoods forest types, generally maintain a closed canopy (70% or greater where possible) of mature forest

vegetation in a minimum 200-foot zone surrounding seasonal ponds. Seasonal ponds included in this guideline must typically persist at least six weeks and be free of fish. The area will generally be managed to prevent the soil and water from warming excessively, to prevent erosion, and to provide large woody debris and leaf litter.

S-TM-5 Even-aged regeneration harvest (clearcutting, seed tree, shelterwood) is allowed after a stand has reached at least 95% of culmination of the mean annual increment. This does not preclude salvage using even-aged harvest after natural disturbances such as fire, wind, insects, or disease or to meet other resource objectives.

Generally, the following forest type groups reach the culmination of mean annual increment at the ages shown in Table S-TM-5.

G-TM-7 A full suite of timber harvest practices will be allowed. Harvest practices will generally be selected because they provide the most appropriate strategy to achieve or optimize achievement of multiple use management objectives**.** See Table G-TM-7.

Table S-TM-5. Minimum Age for Even-aged Regeneration Harvest

Forest Type Group	Minimum allowable age* for even-aged regeneration harvest
Northern Hardwoods	90
Lowland Conifers	90
Lowland Hardwoods	90
Red and White Pine	60
Oaks	60
Jack Pine	50
Spruce	50
Paper Birch	50
Balsam Fir	40
Aspen	40

* Age of culmination of mean annual increment.

Table G TM-7. Type of Timber Management Practices by Forest Type Group

	Even-aged	Clear cut	Shelter wood	Uneven-aged	Partial Cut
Jack Pine	X	X			X
Red Pine	X	X	X		X
White Pine	X		X	X	X
Spruce/ fir	X	X	X	X	X
Aspen	X	X			X
Aspen/ fir	X	X			X
Paper Birch	X	X	X		X
Northern Hardwds	X		X	X	X
Oak	X	X	X		X
Black Ash				X	X
Lowland Conifer	X	X			X

Vegetation Management (VG)

Desired Conditions

D-VG-1 Native vegetation communities are diverse, productive, healthy, and resilient.

D-VG-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.

D-VG-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.

D-VG-4 Tree vegetation is present in amounts, distributions, and characteristics that allow contribution to a sustained yield of timber and pulpwood products.

D-VG-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.

Vegetation Composition and Structure

D-VG-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 re-establishing:

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; yellow birch; white cedar; and 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).

Vegetation Spatial Patterns

D-VG-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.

Ecological Processes and Vegetation

D-VG-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.

Objectives, Standards, and Guidelines

A key goal of this Plan for achieving integrated resource goals is to provide appropriate vegetation management direction at both landscape and site level scales. This Section below provides direction that broadly addresses both scales. Direction is generally applicable Forest-wide outside the BWCAW, unless otherwise noted for Spatial Zones or excepted by Management Area direction (Chapter 3). In addition, it is generally necessary and important to consider this direction in combination with the vegetation objectives and other guidance found in the Section on Landscape Ecosystems and current and future applicable ecological and social information.

O-VG-1 Move vegetation conditions from Year 2003 conditions toward the long-term desired composition, structure, age, spatial patterns, and within-stand diversity.

Vegetation Composition and Structure

O-VG-2 Increase acres of red, white, and jack pine, spruce/fir, and northern hardwood vegetation communities. Decrease acres of aspen vegetation communities.

O-VG-3 Maintain acres of lowland conifer and lowland hardwood vegetation communities.

O-VG-4 Maintain acres of non-forested wetlands.

O-VG-5 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.

O-VG-6 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, yellow birch, upland tamarack, white cedar, and in some areas, white spruce and black spruce.

O-VG-7 Restore the diversity of shrubs and herbs, including sensitive or rare shrubs and herbs, to conditions more representative of native vegetation communities.

O-VG-8 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.

O-VG-9 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 uneven-aged timber harvest practices used to manipulate vegetation, with a decrease in percentage of clearcutting.

O-VG-10 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.

O-VG-11 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.

O-VG-12 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 re-establish adequately stocked stands to address timber management objectives.

Forest Vegetation Age

O-VG-13 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.

O-VG-14 Increase acres of old forest, old-growth forest, and multi-aged upland forest vegetation communities.

O-VG-15 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.

S-VG-1 When implementing projects under authority of the Healthy Forest Restoration Act [Section 102(e)(2)(3b)], fully maintain or contribute toward the restoration of the structure and composition of structurally complex old growth stands according to the pre-fire suppression old growth conditions characteristic of the forest type, while considering the contribution of the stand to landscape fire adaptation and watershed health, and retaining the large trees contributing to old growth structure.

O-VG-16 Increase acres of young lowland black spruce and tamarack forest communities. Increase acres of old-growth lowland black spruce and tamarack forest communities.

Forest Vegetation Spatial Patterns

Spatial objectives, standards, and guidelines for NFS land only outside the BWCAW were developed considering conditions of the BWCAW, where natural processes form the landscape patterns.

To provide appropriate landscape scale and context for interior forest and large patch management and to ensure well-distributed habitats, direction is provided for the following landscape scales:

- Forest-wide**:** Some landscape elements such as large patches of red and white pine are addressed Forest-wide because of their rarity.
- Zone 1 (Figure Veg-1) is physically distanced from the BWCAW and has more interspersed ownership patterns.
- Zone 2 (Figure Veg-1) is physically distanced from the BWCAW and is ecologically different.
- Zone 3 (Figure Veg-1) is proximate to the BWCAW and is ecologically similar. The BWCAW contributes to the ecological representation of desired landscape patterns.

Forest-wide

Upland Forest

O-VG-17 In mature or older upland forest types managed to maintain large patches (≥300 acres of 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.

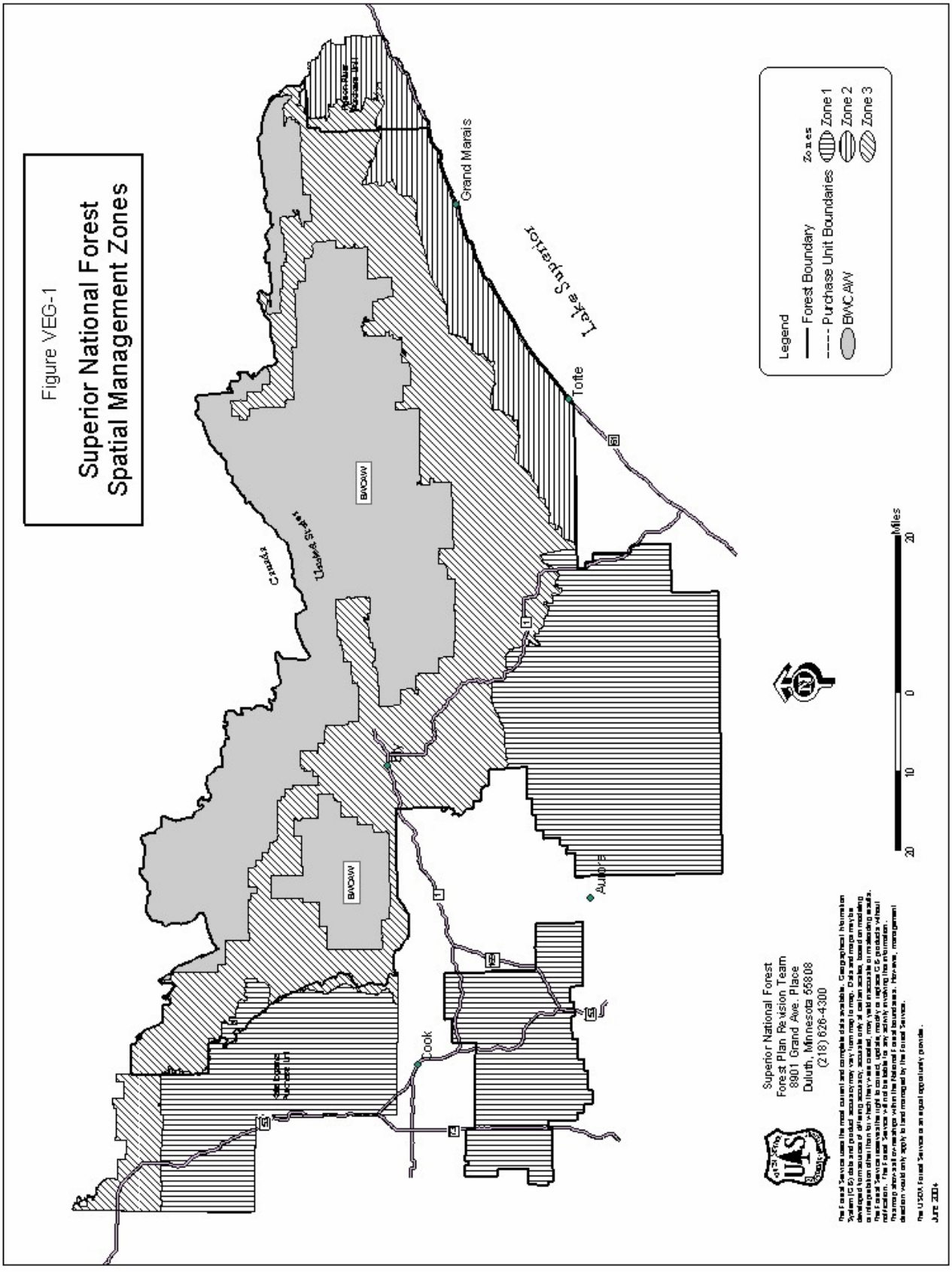
Figure VEG-1
Superior National Forest
Spatial Management Zones
Grand Marais
Lake Superior
Tofte
Ely
Cook
BWCAW
Legend
Forest Boundary
Purchase Unit Boundaries
BWCAW
Zones
Zone 1
Zone 2
Zone 3
Miles
20
10
0
20
Superior National Forest
Forest Plan Revision Team
8901 Grand Ave. Place
Duluth, Minnesota 55808
(218) 626-4300
JUNE 2004

Red and White Pine Forest

O-VG-18 In mature or older red and white pine forest types managed to maintain large patches (≥100 acres), 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.

300 acre minimum patches

G-VG-1 The number of patches ≥300 acres that are older red and white pine forest types will generally not be reduced below 8.

S-VG-2 Maintain a minimum of 4,700 acres of mature and older red and white pine forest types in patches ≥300 acres.

100 acre minimum patches

G-VG-2 Maintain a minimum of 88 patches of mature and older red and white pine forest types in patches ≥100 acres in size.

S-VG-3 Maintain a minimum of 17,300 acres of mature and older red and white pine forest types in patches ≥100 acres.

S-VG-4 In mature or older red and white pine forest types managed to maintain patch sizes of ≥100 acres, vegetation management treatments that maintain a 60% minimum canopy closure and maintain large diameter trees are allowable.

Lowland forest

O-VG-19 Maintain a representative array of large patches (≥300 acres) of mature or older lowland forest.

Temporary Openings

O-VG-20 Create large patch temporary openings up to 1000 acres through management activities.

O-VG-21 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.

Spatial Zones 1 and 2

Interior Forest Conditions

O-VG-22 In Spatial Zones 1 and 2 maintain or increase amount of interior forest habitat. Provide interior habitat in a variety of upland and lowland vegetation communities.

Large Mature and Older Upland Patches

O-VG-23 In Spatial Zones 1 and 2 maintain or increase the acres and number of patches of mature or older upland forest in patches ≥300 acres. Large upland forest patches may cross Landscape Ecosystem or other ecological boundaries (such as watersheds, Landtype Associations). 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.

G-VG-3 In Spatial Zones 1 and 2, in mature and older upland forest types managed to maintain patch sizes of ≥300 acres, vegetation management treatments are allowable where they maintain a 50% (60% for red and white pine) minimum canopy closure at time of treatment and favor retention of larger and older trees characteristic of the patch.

10,000 acre minimum patches

G-VG-4 In Spatial Zone 2 maintain a minimum of one patches of mature and older upland forest in patches of ≥10,000.

S-VG-5 In Spatial Zone 2 maintain a minimum 11,700 acres of mature and older upland forest in patches of ≥10,000 acres.

1,000 acre minimum patches

G-VG-5 In Spatial Zone 1 maintain a minimum of 8 patches of mature or older upland forest in patches of ≥1,000 acres.

G-VG-6 In Spatial Zone 2 maintain a minimum of 14 patches of mature and older upland forest in patches of ≥1,000 acres.

300 acre minimum patches

S-VG-6 In Spatial Zone 1 maintain a minimum 44,700 acres of mature and older upland

forest in patches of ≥300 acres.

S-VG-7 In Spatial Zone 2 maintain a minimum 54,400 acres of mature and older upland forest in patches of ≥300 acres.

Spatial Zone 3

O-VG-24 In Spatial Zone 3 strive to minimize the decrease in acres and numbers of patches of mature or older upland forest in patches ≥300 acres. Age and composition objectives will be considered the primary drivers of forest condition in this Zone. When determining which large upland mature patches will be retained, take into consideration the contribution of BWCAW acres and other unmanaged lands within the same ecological setting and proximity.

O-VG-25 In Spatial Zone 3 strive to minimize the decrease in interior forest habitat in a variety of upland and lowland vegetation communities

Special Forest Products

G-VG-7 Permits will generally be required for commercial gathering of special forest products from trees (such as boughs, Christmas trees, birch bark, and firewood), or other vegetation (berries, clubmosses, lichens, fungi, and moss).

G-VG-8 Permits will specify allowable quantities and collection restrictions designed to protect or maintain ecological and cultural resource values.

G-VG-9 Gathering of tree products will generally be at least 50 feet from trails, roads, or waterbodies that have high scenic integrity objectives and at least 100 feet from a perennial waterbody.

G-VG-10 Gathering of special forest products for personal or scientific use will generally require a permit. Exception: Gathering of nuts, fruits, berries, and fungi for personal use will not generally require a permit.

G-VG-11 Commercial peat mining and sphagnum moss collection are generally prohibited.

Terrestrial & Aquatic Wildlife (WL)

Desired Conditions

D-WL-1 Aquatic and terrestrial wildlife habitats are diverse, healthy, productive, and resilient.

D-WL-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.

D-WL-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 lands:

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.

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 non-native 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.

D-WL-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.

D-WL-5 Roads and trails are managed to maintain native plants and animals, protect water quality, and to manage for compatible human uses and types of access.

D-WL-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.

D-WL-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.

D-WL-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.

D-WL-9 Native plants and animals dominate all terrestrial and aquatic ecosystems, with non-native plants and animals forming, at most, a minor component.

Objectives, Standards, and Guidelines

Desired conditions for wildlife are addressed both through wildlife management direction below and through direction for other physical and biological resources found in other sections of the Plan. This is because the amount, quality, distribution, and ecological function of terrestrial and aquatic habitats are largely dependent on the environmental conditions of: vegetation, watersheds and riparian areas, soil resources, natural disturbances, and other ecological processes.

The many human uses of these resources (such as timber management, recreational uses, transportation systems, Special Uses) also influence the condition and diversity of wildlife habitats and populations, and therefore management guidance in the Plan for these appropriate and desired uses will also substantively address wildlife.

This Section addresses aquatic and terrestrial wildlife habitat objectives for planning period with:

- General direction applicable to all species, and
- Specific direction for:
  - Threatened and endangered species
  - Regional Forester Sensitive Species
  - Management Indicator Species
  - Management Indicator Habitats
  - Non-native Invasive Species
  - Other Species of Interest
  - Aquatic communities

Direction provided in both these categories, together with other resource management direction, is intended to provide the guidance necessary to ensure management from Year 2003 conditions toward

desired conditions for all native and desired non-native species.

General

O-WL-1 Populations: 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.

O-WL-2 Habitats: Move terrestrial and aquatic habitats in the direction of desired conditions and objectives for all native and desired non-native wildlife.

O-WL-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.

Objectives for Threatened and Endangered Species

O-WL-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.

O-WL-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.

O-WL-6 Reduce or eliminate adverse effects on threatened and endangered species from the spectrum of management activities on NFS land.

O-WL-7 Minimize building or upgrading of roads in areas that are important for threatened and endangered species habitat and for habitat connectivity.

Objectives for Lynx

See Lynx Appendix E for information related to lynx management.

O-WL-8 Promote the conservation and recovery of Canada lynx and its habitat.

O-WL-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.

O-WL-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.

O-WL-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 and between LAUs and Boundary Waters Canoe Area Refugium on NFS land.

O-WL-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).

O-WL-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.

O-WL-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.

O-WL-15 In the Boundary Waters Canoe Area Wilderness Refugium lynx habitat conditions will predominantly result from natural ecological processes such as fire, wind, insects, disease, and vegetation community succession. However, some active management, with methods

compatible with wilderness values, may be needed to restore or maintain desired vegetation characteristics. Lynx and its prey populations will fluctuate in response to changing environmental conditions.

Standards & Guidelines for Lynx

G-WL-1 Within LAUs on NFS land, moderate the timing, intensity, and extent of management activities, if necessary, to maintain required habitat components in lynx habitat, to reduce human influences on mortality risk and inter-specific competition, and to be responsive to current social and ecological constraints relevant to lynx habitat.

G-WL-2 Provide for the protection of known active den sites during denning season.

G-WL-3 Limit disturbance within each LAU on NFS land as follows: if more than 30% of the total lynx habitat (all ownerships) within an LAU is currently in unsuitable condition, no further reduction of suitable conditions should occur as a result of vegetation management activities by the National Forest.

LAUs 44 and 46 are excepted from this guideline. (Refer to Lynx Appendix E, Section 5 for information on exceptions.)

S-WL-1 Management activities on NFS land shall not change more than 15% of lynx habitat on NFS land within an LAU to an unsuitable condition within a 10-year period.

LAUs 44 and 46 are excepted from this guideline. (Refer to Lynx Appendix E, Section 5 for information on exceptions.)

G-WL-4 Within an LAU, maintain or promote well distributed denning habitat in patches generally larger than five acres, comprising at least 10% of lynx habitat.

Where less than 10% of forested lynx habitat within an LAU provides denning habitat, defer those management actions on NFS land that would delay achievement of denning habitat structure.

LAUs 44 and 46 are excepted from this guideline. (Refer to Lynx Appendix E, Section 5 for information on exceptions.)

G-WL-5 Following a disturbance on NFS land greater than 20 contiguous acres (such as a blowdown, fire, insect, or disease) that could contribute to lynx denning habitat, generally retain a minimum of 10% of the affected area on NFS land unless salvage or management-ignited fire is necessary to address human health and safety (such as in the Wildland Urban Interface) or scenic integrity.

LAUs 44 and 46 are excepted from this guideline. (Refer to Lynx Appendix E, Section 5 for information on exceptions.)

S-WL-2 In LAUs on NFS land allow no net increase in groomed or designated over-the-snow trail routes unless the designation effectively consolidates use and improves lynx habitat through a net reduction of compacted snow areas.

G-WL-6 Where a designated trail for snow-compacting activities is desired within LAUs, the proposed route should be planned to protect or improve the integrity of lynx habitat and minimize snow compaction in lynx habitat. The trail should be designed to:

- Move recreational use away from more sensitive or better quality lynx habitat,
- Concentrate use within existing developed areas rather than developing new recreational areas in lynx habitat, and/or
- Be located within the outer boundaries of a currently used road and trail system.

G-WL-7 For newly constructed snow-compacting trails, effectively close or restrict to public access those trails and OML 1, OML 2, temporary, and unclassified roads that intersect the new trails unless these trails or roads are being used for other management purposes.

G-WL-8 Within LAUs generally maintain road and snow-compacting trail densities below 2 miles per square mile to maintain the natural competitive advantage of lynx in

deep snow. Where total road and regularly-used snow-compacting trail densities are greater than 2 miles per square mile and coincide with lynx habitat, prioritize roads for seasonal restrictions or reclamation in those areas, where practical or feasible. In this guideline "roads" include all ownerships of classified and unclassified roads and "regularly-used trails" are those that are used most years for most of the snow-season.

G-WL-9 Dirt and gravel roads that are under the jurisdiction of the National Forest and that traverse lynx habitat on NFS land (particularly those roads that could become highways) should generally not be paved or otherwise upgraded in a manner that is likely to lead to significant increases to lynx mortality or substantially impedes movement and dispersal.

If the dirt and gravel roads described above are upgraded or paved in order to meet human health and safety or other environmental concerns and essential management needs, conduct a thorough analysis on effects to lynx and its habitat to determine minimum road design standards practical (including measures to minimize traffic speeds), to minimize or avoid foreseeably contributing to increases in human activity or adverse impacts to lynx and its habitat.

Objective and Standard for Bald Eagle (also a Management Indicator Species)

O-WL-16 Promote the conservation and recovery of the bald eagle. Population goal minimum: 85 occupied breeding territories.

S-WL-3 Management activities for the bald eagle will be governed by Northern Lakes States Bald Eagle Recovery Plan: 1983

Objective, Standard, and Guideline for Gray Wolf (also a Management Indicator Species)

O-WL-17 Promote the conservation and recovery of the gray wolf. Population goal minimum: contribution to Statewide goal of 1250-1400.

S-WL-4 Management activities for the gray wolf will be governed by Recovery Plan for Eastern Timber Wolf (1992).

G-WL-10 Provide for the protection of known active gray wolf den sites during denning season.

Objectives, Standards, and Guidelines for Regional Forester Sensitive Species

All Sensitive Species

O-WL-18 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 Association 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.

G-WL-11 Avoid or minimize negative impacts to known occurrences of sensitive species.

G-WL-12 Minimize negative impacts to known sensitive species from management activities that may disturb pairs in their breeding habitat during critical breeding season (varies by species).

Meeting G-WL-11 and -12 will involve diverse management approaches that depend on species' habitat requirements and distribution, individual site conditions, and expected management impacts. These include two basic and complementary

strategies:

a. Landscape level or coarse filter management strategies may allow negative modifications of some portions of sensitive species habitat as long as overall objectives for habitat amount, quality, and distributions are generally met.

b. Site level or fine filter management strategies may warrant protections of known individual sensitive species locations or high quality potential habitat.

S-WL-5 If negative impacts to sensitive species cannot be avoided, management activities must not result in a loss of species viability forest-wide or create significant trends toward federal listing.

Wood turtle

O-WL-19 In all known breeding locations maintain or restore high quality breeding habitat and protect nesting areas from predators and negative human impacts. High quality breeding habitat: open sandy areas for nesting adjacent to upland and lowland foraging habitats with shade and security cover wood. Aquatic riverine habitat features log jams, down logs, woody debris.

Boreal owl

O-WL-20 In known or good potential breeding habitat within the normal expected range of the boreal owl on NFS land, maintain or restore quality habitat conditions: suitable nesting habitat adjacent to or within ½ mile of foraging and roosting habitat.

Nesting habitat is generally provided by upland aspen and aspen-conifer mix forest >60 years old with large diameter (>12") trees suitable for nest cavities.

Foraging and roosting habitat is provided by lowland black spruce and tamarack forest predominantly >80 years old in stands >40 acres or where a complex of smaller lowland stands are within 1000 feet of one another and are >40 acres. Individual territories (640-2,400 acres) typically have a combined area of greater than 500 acres of lowland black spruce/tamarack forest.

S-WL-6 Prohibit management activities within 300 feet of known nest sites.

G-WL-13 Minimize activities that may disturb nesting pairs during critical nesting season (March 1-June 1).

Great gray owl

O-WL-21 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.

G-WL-14 Allow, to the extent practical, only activities that protect, maintain, or enhance site conditions within 660 feet of a known nest site.

G-WL-15 Minimize activities that may disturb nesting pairs during critical nesting season (March 1 - June 1).

Black tern

O-WL-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.

G-WL-16 Management activities, especially prescribed fire, that may negatively impact nesting habitat in the short term in order to restore future suitable habitat, should maintain adequate undisturbed nesting habitat.

Three-toed woodpecker

O-WL-23 Maintain or improve quality nesting and foraging habitat within the woodpecker's range, by managing toward the Landscape Ecosystem Vegetation Objectives for mature and older conifer forest. Consider the contribution of BWCAW to well-distributed habitat. 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. Where conflicts exist between retaining large concentrations of dead and dying trees and objectives that would reduce these concentrations (for example, due to fire risk or insect outbreaks), prioritize maintenance of woodpecker habitat in areas and concentrations where conflicts can be minimized.

O-WL-24 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.

G-WL-17 Protect known nest sites within a 200-foot radius surrounding nest sites until young have fledged.

G-WL-18 Where ecologically appropriate, retain 6-10 jack pine per acre in even-aged regeneration harvests in mixed conifer stands.

Olive-sided flycatcher

O-WL-25 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.

Sensitive Butterflies

O-WL-26 In all known breeding locations, maintain or restore high quality habitat for:

Jutta arctic**:** moderately forested black spruce bogs with sedges, bog forest openings, and edges.

Freija's grizzled skipper: upland acid meadow.

Taiga alpine: semi-open to well-forested lowland black spruce- tamarack.

S-WL-7 Allow only those management activities that protect, maintain, or enhance known locations for: Jutta arctic, taiga alpine, Freija's grizzled skipper, and Nabokov's northern blue.

Nabokov's northern blue

O-WL-27 In eight known breeding locations, maintain or restore high quality habitat: well-drained sandy gravelly areas under fairly open coniferous forests, especially jack pine of the Vermilion Moraine. Associated with its exclusive larval host dwarf bilberry.

Sensitive Fish, Mollusks, Aquatic Insects

O-WL-28 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.

O-WL-29 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:

Lake Sturgeon

Shortjaw cisco

Northern brook lamprey

Creek heelsplitter

Fluted-shell mussel

Black sandshell

G-WL-19 Protect known sensitive mussel beds.

Sensitive Plants

O-WL-30 Enhance or restore high-quality habitat on a minimum of 20 (average of two 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.

S-WL-8 Prohibit the harvesting of sensitive and State listed threatened and endangered plants. Exceptions may be made for scientific research purposes or in fulfillment of treaty rights.

Goblin Fern

S-WL-9 a) Activities that could disturb goblin ferns, their habitat, or microhabitat, should not occur within 250 feet of known goblin fern populations. The exception to this standard is for administrative studies or research that contributes to the conservation of the species.

b) In suitable habitat that is immediately adjacent and contiguous to existing populations beyond the 250-foot no-activity zone, site disturbing activities should occur only during frozen ground conditions (as evidenced by an absence of rutting, compaction, or breaking through the frost layer) and a minimum canopy closure of 70% should be maintained. (Single tree selection would generally meet desired conditions in this standard, but group selection harvest does not meet conditions desired in this standard because of the gaps created in proximity to occupied habitat.)

c) Minimize the likelihood of worm invasion in existing or potential habitat areas identified as having low potential for worm invasion. Such conditions exist where areas are void of roads and trails (or where densities can be minimized), developments, lakes and streams that support game fish, or are isolated due to wetlands or some other condition not conducive to worm colonization. Examples of actions to minimize worm invasion include limiting vehicle or OHV access, road building, or other activities that move soil into geologically isolated habitat.

G-WL-20 Avoid management activities that may change microclimate or microhabitat conditions in steep ravines or on cliffs and talus slopes that are known or are highly likely to harbor sensitive plants.

Sensitive Lichens:

Caloplaca parvula,Cetraria aurescens, and Sticta fulginosa, Menegazzia terebrata, Ramalina thrausta, and Usnea longissima

G-WL-21 Do not permit management activities within stands that have known locations of sensitive lichens unless activity maintains, protects or enhances habitat conditions for lichens (old growth black ash or lowland conifer with interior forest conditions).

Objectives, Standards, and Guidelines for Management Indicator Species

Bald Eagle – see above

Gray wolf – see above

Northern goshawk (also a sensitive species)

O-WL-31 Provide habitat to provide for population goal minimum: 20-30 breeding pairs.

S-WL-10 At northern goshawk nest sites with an existing nest structure, prohibit or minimize, to the extent practical, activities that may disturb nesting pairs in an area of 50 acres minimum (860 ft. radius) during critical nesting season (March 1 – August 30).

At northern goshawk nest sites in an area of 50 acres minimum (860 ft. radius), to the extent practical, allow only those activities that protect, maintain, or enhance high quality habitat conditions: 100% mature forest (>50 yrs old) with continuous forest canopy (>90% canopy closure) and large trees with large branches capable of supporting nests.

G-WL-22 Within northern goshawk post-fledging areas, minimize activities, to the extent practical, that may disturb nesting pairs during critical nesting season (March 1 – August 30) and, to the extent practical, within a 500 acre area encompassing all known nest areas within the territory:

Maintain suitable habitat conditions on a minimum of 60% of the upland forested acres in post-fledging areas. Suitable habitat: jack pine and spruce/fir forest types >25 years and all other forest types >50 years with semi-closed to closed canopy (>70%). Aspen and birch forest types 25-50 years may be considered suitable if field review verifies that foraging habitat trees average 50 feet tall and canopy closure is 50-70% or greater.

White pine

O-WL-32 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.

O-WL-33 Manage to improve white pine survival on planted sites and as many naturally regenerating sites as practical.

Objectives for Management Indicator Habitats

Definitions of the management indicator habitats (MIHs) are in Appendix C. The species most closely associated with MIHs (as identified during Plan revision) are found in the Final EIS, Appendix D.

All MIHs are compatible with and complementary to Landscape Ecosystem objectives for vegetation composition, structure, age, tree diversity, and social objectives and to management direction for other resources including vegetation, watershed health, and other wildlife resources.

By moving toward Decade 1 and 2 objectives for these resources the National Forest will move toward long-term desired conditions for desired amounts, quality and distribution of management indicator habitats and their associated species.

MIHs 1-9

Objectives for MIHs 1-9 are identified at the Landscape Ecosystem scale and can be found in the Landscape Ecosystem Objectives Section.

MIH 10: Riparian upland forest

O-WL-34 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.

MIH 11: Upland edge habitat (management-induced)

O-WL-35 Reduce amount of forest edge created through vegetation management activities, while still retaining a range of small patches and edge habitat.

MIH 12: Upland Interior forest habitat

Objectives for interior forest habitat are found in Vegetation Management direction section.

MIH 13: Large patches of upland mature forest

Objectives for large mature upland forest patches are found in Vegetation Management direction section.

MIH 14: Lake and stream habitat

O-WL-36 Maintain or improve lake and stream habitat quality. Objectives, standards, and guidelines are found primarily under Watershed and Riparian Management direction.

Objectives and Guidelines for Non-native Invasive Species

O-WL-37 Reduce the spread of terrestrial or aquatic non-native invasive species that pose a risk to native ecosystems.

O-WL-38 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

G-WL-23 During project implementation, reduce the spread of non-native invasive species.

Objectives, Standards, and Guidelines for Other Species of Interest

Game Species

O-WL-39 In coordination with the State, Tribes and other wildlife and fish management agencies, provide habitat for 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.

Osprey

G-WL-24 Minimize activities that may disturb nesting pairs of osprey within 330 feet of the nest during critical nesting season (April 1 - August 15).

G-WL-25 From 330 to 660 feet from nest trees, allow only those management activities that maintain, protect, or enhance nesting area habitat.

Great Blue Heron

G-WL-26 Prohibit management activities within 330 feet of active heron colonies. Prohibit management activities from 330 to 660 feet from the heron colony from March 1 through August 31.

Common Loon

G-WL-27 Maintain high quality, secure nesting habitat. This may include construction of artificial nests.

G-WL-28 Minimize management activities and new developments or other uses near nest sites between May 15 and July 1. Minimize management activities or new developments near nest areas frequently used by people.

Standards & Guidelines for Aquatic Communities

G-WL-29 Minimize disturbance associated with management activities and maintain physical habitat characteristics associated with freshwater mussel beds.

S-WL-11 Minimize habitat degradation at Special Use Permit sites and developed and dispersed recreational sites where conditions contribute to riparian and fish habitat degradation.

S-WL-12 Where management activity is causing or may cause active bank erosion that is expected to contribute to a reduction in water quality and degradation of aquatic habitats, construct stabilization structures, plant vegetation, or otherwise manipulate vegetation to eliminate or minimize soil erosion while protecting and improving lakeshore or streamside environments and riparian habitats.

G-WL-30 Remove beaver dams where needed to maintain passage for sensitive aquatic organisms, meet objectives for fish habitat management or protect ecologically sensitive areas (for example, old growth forest, wild rice areas, trout streams, and northern white cedar forest) and capital improvements (for example, roads, recreation areas, and buildings) from flooding.

Social

Social and Economic Stability (SE)

Desired Condition

D-SE-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.

D-SE-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.

D-SE-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.

D-SE-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 Superior NF officials.

Objectives

O-SE-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.

O-SE-2 An annual and sustainable program of commercial timber sales and other products are offered and/or available.

O-SE-3 Increase accessibility of a diversity of people and members of underserved and low-income populations to the full range of uses, values, products, and services.

O-SE-4 Improve delivery of services to urban communities.

Tribal Rights and Interests (TR)

Desired Conditions

D-TR-1 Lands within the Forest serve to help sustain American Indians' way of life, cultural integrity, social cohesion, and economic well-being.

D-TR-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.

D-TR-3 Superior National Forest facilitates the exercise of the right to hunt, fish and gather as retained by Ojibwe whose homelands were subject to treaty in 1854 and 1866 (10 Stat. 1109 and 14 Stat. 765). Ongoing opportunities for such use and constraints necessary for resource protection are determined in consultation with the following Ojibwe Bands: Fond du Lac, Grand Portage, and Bois Forte.

Objectives

O-TR-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.

O-TR-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.

O-TR-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.

O-TR-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.

O-TR-5 The Forest Service will administer projects and programs to address and be sensitive to traditional Native American religious beliefs and practices.

O-TR-6 Provide research, transfer of technology and technical assistance to Tribal governments.

Standards & Guidelines

S-TR-1 Affected Tribes will be consulted early in the planning process regarding proposed Forest land management activities in order to identify and address tribal interests.

S-TR-2 Affected Tribes will be consulted on land ownership disposal of Forest Service administered lands within reservation boundaries . This consultation should occur prior to any public scoping announcement and before any lands or parcels have been formally agreed upon for inclusion in a proposal or action.

S-TR-3 Forest management activities will be conducted in a manner to minimize impacts to the ability of Tribal members to hunt, fish, and gather plants and animals on Forest Service administered lands.

S-TR-4 Interests of the residents of local Indian communities will be addressed when planning and implementing vegetation and other resource management activities in close proximity to these communities.

S-TR-5 Affected Tribes will be consulted regarding opportunities for restoration, enhancement, and maintenance of native plant communities and wildlife species, including threatened, endangered, sensitive, or rare species that are of interest to tribes. Where tribal interest is indicated, cooperative programs for restoration and/or maintenance of these communities/species will be established.

S-TR-6 Environmental documents will disclose potential effects on cultural resources, traditional use areas and areas of special interest that include tribal cultural values, properties, and uses, and species of special concern.

S-TR-7 Decisions for environmental documents will demonstrate how tribal interests as identified in the environmental analysis were addressed.

G-TR-1 Interpretive programs may be designed to inform the public about American Indians, following consultation with the respective tribal government’s staff.

G-TR-2 Formal training of employees would emphasize relevant trust responsibilities, history, culture, and current issues.

G-TR-3 Plant and animal species of traditional use should be given consideration in any management project when desired and sought after by tribal members.

Heritage Resources (HR)

Desired Conditions

D-HR-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

O-HR-1 Identify, evaluate, protect, monitor, and preserve heritage resources.

O-HR-2 Promote heritage values in public education and outreach.

O-HR-3 Contribute relevant historical and cultural perspectives to natural resource management.

Standards & Guidelines

S-HR-1 Heritage inventories meet current national guidance and professional standards. Heritage inventory and site data are current, accurate, and reside in the corporate automated database and mapping system (GIS).

S-HR-2 Properties are systematically evaluated against the National Register of Historic Places criteria of significance. Eligible heritage properties are nominated to the National Register of Historic Places. National Register eligible properties receive full consideration under the National Historic Preservation Act.

S-HR-3 Prehistoric and historic artifacts, investigation field records, and historic archival data are maintained to national curatorial and archival standards.

S-HR-4 Human remains, funerary objects, sacred objects, or objects of cultural patrimony are administered in accordance with Native American Graves Protection and Repatriation Act requirements.

S-HR-5 National Register listed and other designated historic properties are monitored in accordance with Forest land management plans, heritage preservation plans, site specific plans, and other inter-agency and tribal programmatic agreements.

S-HR-6 All heritage-related investigations are done under current valid authorizations.

S-HR-7 Human-caused damage, destruction, or removal of heritage structures and properties receives full consideration under the Archeological Resources Protection Act.

S-HR-8 Structural and non-structural stabilization, rehabilitation, restoration, and maintenance of historic properties is conducted in accordance with Forest level heritage protection plans and Forest land management plans, in consultation with the appropriate State and Tribal Historic Preservation Offices, the Advisory Council on Historic Preservation, and other interested parties; and in accordance with the Secretary of Interior's Standards and Guidelines for Historic Preservation, including National Park Service Technical Bulletins.

S-HR-9 Historic properties to be protected include protected areas ("buffers") beyond known site limits, determined on a case-by-case basis considering landform, vegetative cover, access, and planned project activities.

S-HR-10 For properties determined as not eligible to the National Register of Historic Places, management for heritage values is not required. Manage properties found to be eligible or potentially eligible (unevaluated) as if they were listed on the National Register. Reevaluate ineligible properties if additional evidence or information that may change that designation becomes available.

S-HR-11 Maintain appropriate heritage resource site confidentiality pursuant to Freedom of Information Act (exemption), Archeological Resources Protection Act, and National Historic Preservation Act.

G-HR-1 Paleo-environmental reconstruction, cultural-ecological, and ethno-historical data are applied where appropriate to unit management decisions, social assessments, environmental analyses, and other decision documents.

G-HR-2 Criteria for interpretive suitability include, but are not limited to: accessibility, property condition, confidentiality, and protective considerations, compatibility with other resource activities, and public interest or values.

Recreation (REC)

Desired Conditions

D-REC-1 The Forest provides a range of quality motorized and non-motorized recreation opportunities to satisfy diverse public interests while maintaining sustainable ecosystems

D-REC-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.

D-REC-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.

D-REC-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.

D-REC-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.

D-REC-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.

D-REC-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.

D-REC-8 Regulations, constraints, and supervision of recreation use are limited to those necessary for resource protection, visitor satisfaction, and safety.

D-REC-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.

D-REC-10 In conjunction with State regulations, the Forest provides a range of quality hunting, trapping, and fishing opportunities.

D-REC-11 In cooperation with other agencies and groups, the Forests enhance existing and provide additional wildlife viewing opportunities.

Developed Recreation Sites

D-REC-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.

Dispersed Recreation

D-REC-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

O-REC-1 Improve the capability of the Forest to provide diverse high quality outdoor recreation opportunities.

O-REC-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.

O-REC-3 Through project level planning, the Forest will consider management of some inventoried semi-primitive ROS areas for separate non-motorized or motorized

Table O-REC-1. Recreation Opportunity Spectrum (ROS) Class Objectives for the Superior NF (includes BWCAW)

ROS Class Objective	Percent of NFS Land
Primitive	5%
Semi-primitive Non-motorized	31%
Semi-primitive Motorized	7%
Roaded Natural	56%
Rural	1%

recreation uses.

O-REC-4 Maintenance of recreation facilities generally takes precedence over development of new facilities.

Standards and Guidelines

S-REC-1 Remove hazardous trees. Retain dead or dying trees not posing a hazard to people or facilities if they provide ecological benefits.

G-REC-1 Existing facilities, accesses, services, and use levels, which exceed the ROS class objective, will generally be permitted until they can be managed to meet the intended ROS class objective.

G-REC-2 Forest management activities will generally reflect recreation objectives while minimizing conflicts with recreation uses by:

a. Avoiding use of system trails for skidding logs
b. Minimizing crossing skid trails over system trails
c. Placing safety signing to warn recreationists of activities in an area
d. Piling slash and other logging debris out of view of recreation sites and system trails
e. Scheduling activities during low recreation use periods.

G-REC-3 User constructed improvements, such as campsite facilities and water accesses, will generally either be managed at the appropriate level or removed and the site rehabilitated.

Developed Recreation Sites

G-REC-4 Development of new campgrounds will generally not be considered.

G-REC-5 Vegetation will generally be managed to remove hazards, improve scenic quality, control insects or diseases, or meet other recreation purposes.

Dispersed Recreation

G-REC-6 Dispersed campsites will generally be located:

a. In areas not prone to erosion
b. With screening or other techniques to avoid being seen from the water or trail to mitigate potential visual impacts
c. With latrines a minimum of 150 feet from bodies of water
d. To meet surrounding ROS class objectives

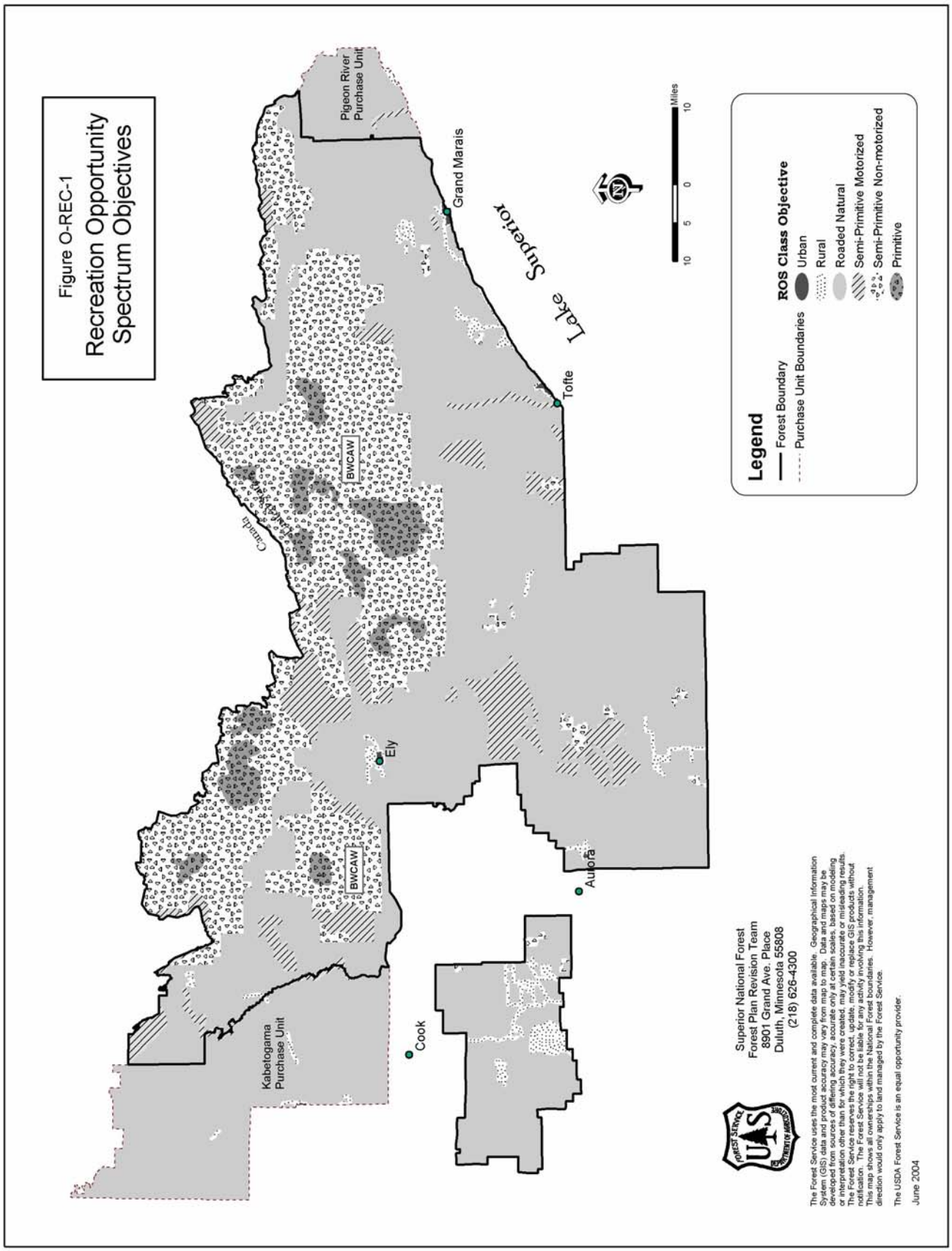
Figure O-REC-1
Recreation Opportunity Spectrum Objectives
Pigeon River Purchase Unit
Grand Marais
Lake Superior
Tofte
BWCAW
BWCAW
BWCAW
Ely
Aurora
Cook
Kabetogama Purchase Unit
Canada
Miles
10 5 0 10
Legend
Forest Boundary
Purchase Unit Boundaries
ROS Class Objective
Urban
Rural
Roaded Natural
Semi-Primitive Motorized
Semi-Primitive Non-motorized
Primitive
Superior National Forest
Forest Plan Revision Team
8901 Grand Ave. Place
Duluth, Minnesota 55808
(218) 626-4300
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The USDA Forest Service is an equal opportunity provider.
June 2004

Trails (RTL)

Desired Conditions

D-RTL-1 The Forest trail system provides a range of activities and experiences necessary to accommodate recreation uses while minimizing environmental and social impacts.

D-RTL-2 Trails are managed for their intended primary purpose and to avoid use conflicts

D-RTL-3 The Forest provides non-motorized trail opportunities in a variety of forest settings.

Objective

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

Standards & Guidelines

Also refer to direction in the Transportation Systems standards and guidelines.

S-RTL-1 For designated trails over ice:

a. All trails over ice will be signed providing notice of ice conditions.
b. The minimum ice depth for clear blue ice is listed below for trail use and grooming equipment. Ice that is soft, slushy, or cloudy needs additional thickness.
   - 4 inches: Foot travel, cross-country skiing
   - 5 inches: Snowmobiling, dog-sledding
   - 8 inches: 4000 pounds (e.g. Bombi groomer)
   - 12 inches: 7000 pounds (e.g. Passenger vehicles, pick-ups, larger trail groomers)
c. If a trail is located near hazardous ice or open water, the trail will be clearly marked with natural material defining the safe route.
d. Current trail condition information will be available at ranger stations and provided to media as appropriate.

G-RTL-1 Proposed new trails will generally be planned to avoid crossing ice. When practical, existing trails over ice (except those referenced in the BWCAW legislation) will generally be rerouted on to land.

G-RTL-2 User-constructed trails will generally either be removed and the trail rehabilitated, or incorporated into the National Forest Trail System and managed to standard.

G-RTL-3 During timber sale activities, combined use of roads or trails by logging trucks and motorized or non-motorized recreationists will generally be avoided when other routes are available.

G-RTL-4 National Forest System winter trails will generally not be located on plowed roads.

Recreational Motor Vehicles (RMV)

Desired Conditions

D-RMV-1 The Forest provides RMV road and trail riding opportunities with experiences in a variety of forest environments, while protecting natural resources.

D-RMV-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.

D-RMV-3 On roads, trails, and in areas (cross-country) where RMV uses are prohibited, motorized access may be allowed for law enforcement, emergency, firefighting, maintenance, and other administrative purposes.

Objectives

O-RMV-1 A maximum of 90 additional ATV trail miles and 130 snowmobile trail miles with associated trail facilities (trailhead parking, signs, toilets, etc.) may be added to the designated National Forest Trail system.

Standards and Guidelines

Also refer to direction in the Wildlife and Transportation Systems standards and guidelines and to the glossary for RMV definitions

S-RMV-1 Motorized recreation use of designated National Forest System Trails is

prohibited unless the trail is designated open for specific motorized uses such as for ATVs, OHMs, and snowmobiles.

S-RMV-2 The Forest will not develop RMV challenge, mud hole, or scramble areas.

S-RMV-3 Cross-country OHV travel is prohibited. Standards and guidelines for cross-country snowmobile use are described in Chapter 3 because direction for that use varies by management area.

G-RMV-1 OHV use is generally prohibited on OML 3, 4, and 5 roads. OHV use may be allowed on specific segments of OML 3, 4, and 5 roads to provide connections to other roads and trails open to OHVs, if safety, resource, and other requirements can be addressed.

G-RMV-2 Snowmobile use is generally prohibited on plowed National Forest System roads.

G-RMV-3 Travel with OHVs is generally prohibited in ditches and on shoulders of National Forest System roads.

G-RMV-4 RMV use will generally be allowed on existing unclassified, OML 1, and OML 2 roads. (Except ORVs will generally be prohibited on OML 1 roads) Roads that are determined through site-specific analysis to have immitigable resource and social concerns and/or do not meet management objectives would be effectively closed. (See exceptions for Management Areas: wild segments of Eligible Wild, Scenic, and Recreational Rivers, Semi-primitive Non-motorized Recreation, Research Natural Areas, Candidate Research Natural Areas, and Unique Biological Areas.)

Water Access (RWA)

Desired Conditions

D-RWA-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.

Objective

O-RWA-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.

Standards and Guidelines

Refer to the glossary for lake and river classification definitions.

S-RWA-1 A maximum of ten new water accesses to bodies of water may be constructed. Reconstruction that would increase the capacity and type of use at a body of water is considered new access. Water access improvements that do not increase the capacity or type of use at user developed or managed sites would not be considered new access.

G-RWA-1 To ensure appropriate amount of use in relation to the size of a body of water, a maximum of one public ramp access for 10 – 15 river miles may be provided for Recreation and Forested River segments. Generally, a maximum of one access site may be provided for Natural Environment Lakes.

G-RWA-2 At lakes that are smaller than 150 acres, new ramp water accesses will generally not be constructed for use by vehicles or OHVs towing watercraft.

G-RWA-3 Parking lots at lakes or rivers with access facilities will generally be provided, but are not required. The maximum number of parking spaces provided will generally be:

a. One space per 20 acres on lakes up to 1,000 acres
b. One space per 30 acres on lakes 1,000 to 1500 acres
c. One space per 40 acres on lakes 1,500 to 5,000 acres

G-RWA-4 To maintain riparian resources and functions, lakes with less than 20 percent of the shoreline in public ownership will generally have low access development levels for facilities. (Also see G-RWA-9)

G-RWA-5 On lakes smaller than 250 acres in size and where sensitive aquatic species associated with aquatic vegetation occur; new ramp water accesses will generally not be constructed for use by vehicles or OHVs towing watercraft.

G-RWA-6 Lakes with no inlet or outlet will generally have low access development levels for facilities. (Also see G-RWA-9)

G-RWA-7 At new water access sites and existing developed ramps, educational signs will generally be installed to inform users of the potential to transfer exotic species between bodies of water, and the effects of exotic species introductions on aquatic habitats, on terrestrial habitats, and on native species

G-RWA-8 New recreational boat storage permits will generally not be allowed. Boat storage permits should be considered only for private access if there were no other reasonable alternatives per Alaska National Interest Lands Conservation Act (ANILCA).

G-RWA-9 Table G-RWA-9 indicates appropriate facility choices for new water access site development and maintenance. The table shows a gradation of potential facilities that are considered appropriate for low, moderate, or high development levels. The table does not imply that all facilities have to be constructed; rather it indicates the range of choices for facilities at each lake or river classification. Undesignated lakes or river segments will be treated as Natural Environment lakes until a coordinated classification is made with the State and county. During project-level analysis, if guidelines conflict with the ROS objective, the least development level will generally be selected. Water classification definitions are in the glossary. If a letter is not designated on the table, the facility is inappropriate at that water classification type.

Scenic Resources (SC)

Desired Condition

D-SC-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.

D-SC-2 In Moderate and High Scenic Integrity Objective (SIO) areas, vegetation management that is visible from travel ways, recreation sites, and lakes with access:

- Enhances views, creates vistas, and features natural openings,
- Retains canopies over travel routes,
- Encourages vegetative diversity and seasonal color contrast, and
- Enhances big-tree appearance.

D-SC-3 Permanent openings created through vegetative management will blend with the adjacent landscape and have a natural appearance that mimics natural openings.

Objectives

O-SC-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.)

Table O-SC-1. Percent of Scenic Integrity Objectives for the Superior NF (Outside the BWCAW)	
Scenic Integrity Objectives	**Percent**
High	27%
Moderate	61%
Low	12%

Standards and Guidelines

S-SC-1 Management actions that result in the characterizations for an Unacceptably Low SIO are prohibited.

G-SC-1 Temporary openings should appear as follows:

High SIO Areas - Temporary openings will be similar in size, shape, and edge characteristics to natural openings in the landscape being viewed. Or, temporary

Table G-RWA-9. Guidelines for Facility Development Levels						
Water Access Facility Development Level Examples	**General Develop. Lake**	**Recreation Lake**	**Natural Environ. Lake**	**Recreational, Forested, & Remote River**	**Trout Stream**	**Tributary River**
Water-side trail	L	L	L	L	L	L
Carry –in access	L	L	L	L	L	
Backcountry latrine	L	L	L	L	L	
Portage	L	L	L	L	L	L
Fishing deck	M	M	M	M	M	
Dock large enough for single users and single activities	M	M	M	M	M	
Gravel or natural surfaced single lane ramp	M	M	M	M	M	
Small picnic area (1 – 3 tables)	M	M	M	M	M	
Toilet buildings (SST)	H	H	H			
Fishing pier	H	H				
Concrete surfaced single and double lane ramps	H	H				
Kiosk	H	H				
Picnic area (3 + tables)	H					
Dock large enough for multiple users and multiple activities	H					
Lighting and electricity	H					
Potable water	H					
Fish cleaning station	H					
Facility Development Levels: L = low, M = moderate, H = high						

openings will mimic a natural disturbance process typical for the area so that when ground cover has been established the opening appears to be a natural occurrence.

Moderate SIO Areas - Temporary openings may be more evident than in High SIO areas. Openings may be larger than those in the surrounding landscape, and after groundcover has become re-established openings may have the appearance of a management activity. Edge characteristics will be similar to those in the surrounding landscape and not dominate the surrounding landscape.

Low SIO Areas – Temporary openings may dominate the view. The shapes of openings reflect vegetation changes in natural openings. Openings also have visual effects and patterns of the shapes, sizes, and edges of natural openings in the surrounding landscape.

G-SC-2 The shape and arrangement of structures and improvements along shorelines, riparian areas, and within streams should appear natural and not impede the functional use of the structure.

G-SC-3 If fuel breaks are necessary, shaded fuel breaks are preferred. A shaded fuel break involves leaving some pruned standing trees and removing vegetation that could transmit fire from the ground to the tree's branches.

G-SC-4 Evidence of temporary activities (such as staking, paint, flagging, equipment maintenance, and staging areas) should be minimized, removed, or cleaned up immediately following project completion in High SIO areas.

G-SC-5 In Moderate and High SIO areas, log landings should be screened if they can be viewed from travel ways, recreation sites, and bodies of water with access. After project completion, log landings should be reforested or rehabilitated to mimic natural openings.

G-SC-6 In Moderate and High SIO areas, schedule mechanized activities during periods of low recreation use if the mechanized activities can be viewed from travel ways, recreation sites, and bodies of water with access.

G-SC-7 Furrows, trenches, fuel breaks, plantations, etc., should be located to reduce linear appearance if they can be viewed from travel ways, recreation sites, and bodies of water with access. Natural appearing edges rather than straight edges will generally be used.

G-SC-8 Utility lines should be buried.

G-SC-9 In Moderate and High SIO areas, minimize the negative visible impacts of overhead utilities or electronic sites if the utilities or electric sites can be seen from travel ways, recreation sites, and bodies of water with access.

G-SC-10 Minimize the negative visual impacts of new rights-of-way.

Transportation System (TS)

Desired Conditions

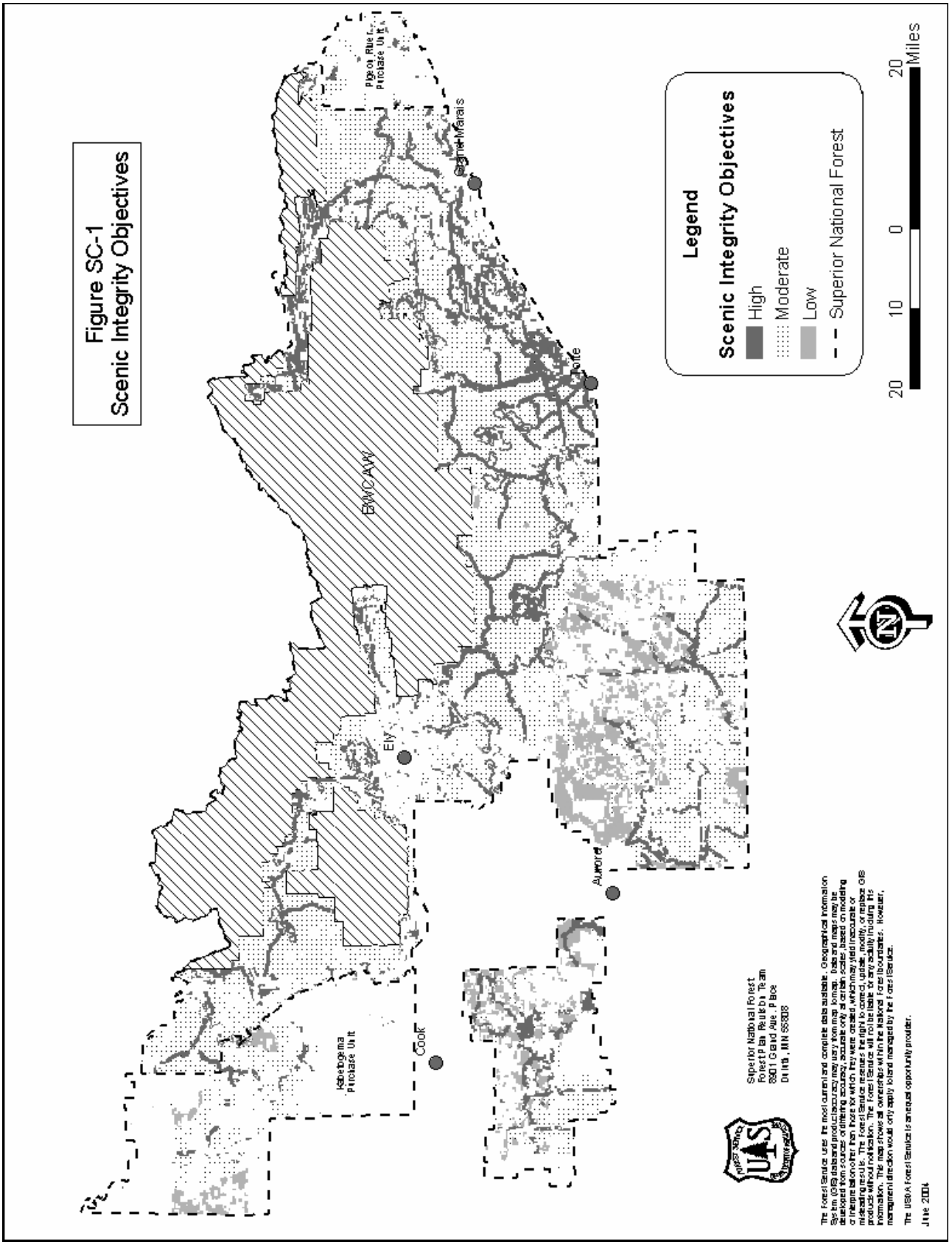
D-TS-1 The existing National Forest System roads that are suitable for passenger vehicles provide a safe and affordable system for administrative and public access to NFS land.

D-TS-2 The National Forest road system is the minimum needed to provide adequate access to both NFS and non-NFS land.

D-TS-3 The transportation system design considers environmental, social, and health concerns.

D-TS-4 The National Forest road system provides a "seamless" interface with the neighboring public road agencies based on coordinated use, function, and agency goals.

D-TS-5 Private and non-NFS landowners have reasonable access to their land.



SIO boundaries lie at least one-quarter mile from the actual location of travel ways, recreation sites, and bodies of water with access.

Objectives

O-TS-1 Improve the safety and economy of National Forest System roads and trails.

O-TS-2 Few new OML 3, 4, and 5 roads will be constructed.

O-TS-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.

O-TS-4 Road and trail crossings of streams, wetlands, and riparian areas adjacent to lakes and streams will be minimized.

O-TS-5 Hydrologic and riparian functions will be maintained or improved when roads or trails are constructed across wetlands.

O-TS-6 Decisions will be made on Forest unclassified roads to designate them as a National Forest System road or trail or to decommission them.

O-TS-7 Unneeded roads will be decommissioned and closed to motorized vehicles. Roads that are not necessary for long-term resource management are considered "unneeded".

O-TS-8 The Forest will decommission approximately 80 miles of road.

Standards & Guidelines

Also refer to Wildlife, Watershed Health, RMV, and Trails standards and guidelines.

Road and Trail Construction, Reconstruction, and Maintenance

S-TS-1 Newly constructed or reconstructed road and trail crossings of streams will be designed and built to minimize erosion. Surfacing (such as gravel, crushed rock, or asphalt) will be used at all crossings where vegetative cover is either inappropriate or expected to be inadequate for effective long term erosion control. Solid surfaces will be used in the construction or reconstruction of bridge decks on unpaved roads.

S-TS-2 During non-frozen road surface conditions, close winter roads to all motor vehicle traffic.

G-TS-1 Generally use minimum road and trail design standards to meet the appropriate purpose of the road or trail and to fit the land characteristics (form, line, texture, TEUI units, etc.).

G-TS-2 Road or trail reconstruction will generally follow the existing corridor alignments.

G-TS-3 New roads and trails constructed in High and Moderate SIO areas will generally blend in with the surrounding landscape as much as practical.

G-TS-4 Roads and trails will generally be designed so that stream crossings are not located at the low point in the road grade (e.g. avoid bridge and culvert locations where sediment-laden runoff from the road approaches or ditches can collect and directly enter the stream).

G-TS-5 Clearing widths for roads and trails at riparian area crossings will generally be kept to the minimum needed to provide a safe and functional crossing.

G-TS-6 Where practical and beneficial, all stream crossing structures and associated road embankments in the flood-prone areas on OML 1 roads will generally be removed if the road will not be used again within five years.

G-TS-7 Construction or reconstruction of permanent roads or parking lots will generally be avoided within the 150 feet of perennial streams or lakes, except in the situations where:

a. Physical conditions preclude road locations at distances greater than 150 feet.
b. Roads are needed to approach a designated stream crossing or water access site.
c. Parking lots are needed to serve a designated water access site.

G-TS-8 Adjacent to roads and trails, generally manage erosion and sedimentation to maintain water flow to protect natural stream behavior and allow for natural aquatic species movement.

G-TS-9 Where roads and trails cross streams, generally use structures that permit passage for fish and aquatic life and properly distribute flood flow, bankfull flow, and sediment transport capacity. Generally favor bridges and arches (including temporary bridges where appropriate) rather than culverts.

G-TS-10 Where ditches are needed, generally use techniques to minimize subsurface flow interception and flow concentration.

G-TS-11 Restrictions on using National Forest System roads and trails may be required under certain circumstances, such as short-term closures during spring thaw.

G-TS-12 On existing OML 1 roads, an effective barrier will generally be installed as needed to prevent use by highway-licensed vehicles and ORVs. ATV and OHM use may continue to be allowed on some existing OML 1 roads.

Temporary Roads

S-TS-3 As soon as access use is completed, stabilize temporary roads and effectively close them to motorized traffic. Vegetation will be established within 10 years after the termination of the contract, lease, or permit.

G TS-13 Locate temporary roads in areas where they minimize resource damage.

G TS-14 Temporary roads are generally not intended for public use, but public use may be temporarily allowed if needed to meet management objectives.

Road Decommissioning

S-TS-4 Decommission unclassified roads that are not needed in the National Forest road and trail system and special use permitted roads that are no longer needed. Decommissioning will make the road unusable by motorized vehicles and stabilize the roadbed.

G-TS-15 In High and Moderate SIO areas, generally obliterate roads and trails that are decommissioned and restore to a natural appearance.

G-TS-16 Roads and trails designated for decommissioning will generally be subject to the following:

a. The road or trail will be rendered unusable by motorized vehicles but may remain accessible to foot travel.
b. Stream crossing structures will be removed.
c. Road and trail fills will be removed from flood prone and wetland areas to restore stream and wetland crossings to original contours.
d. Removed fill will be reused or disposed of in a way that will not restrict flow or contaminate surface water.
e. Exposed soil will be revegetated.

Wilderness

Desired Condition (from the BWCA Wilderness Plan)

The Forest Service will manage the BWCAW in a manner that perpetuates and protects its unique natural ecosystems, provides an enduring wilderness resource for future generations, and provides opportunities for a primitive and unconfined recreation experience.

Protect and Perpetuate Natural Ecosystems

Natural successional changes and those associated with natural phenomena, such as fire or windstorms, will be the dominant force in ecosystems.

Soil, air, water, vegetation, wildlife, and fish will be protected from human degradation.

Impacts from recreation and other uses will be within the limits of acceptable change, or the impacts will be prevented through maintenance or mitigated through rehabilitation.

Cumulative effects on soil, water, vegetation, wildlife, and fish will be mitigated by controlling party size and use levels.

An interdisciplinary team will be involved in planning

projects where major ground disturbance may occur, such as closing and/or rehabilitating campsites or building new campsites.

Provide an Enduring Resource of Wilderness for Future Generations

Facilities will be provided only where necessary for resource protection.

Campsite and portage work will be kept to the minimum necessary to protect the resource. Work will be completed in a manner that protects and perpetuates the wilderness character and appears to be a part of the environment and not an intrusion.

Vegetation will be managed only to protect wilderness values or adjacent property. Seeding or planting for rehabilitation will result in mixtures and arrangements similar to adjacent natural vegetation.

Heritage resources will be systematically inventoried, evaluated, and protected.

Provide for Unconfined Primitive Recreation Opportunities

An education program will increase the awareness and understanding of wilderness values.

Established use levels will ensure campsite availability in travel zones.

Opportunities for solitude will be enhanced by controls on party size, watercraft numbers, and reduced entry quotas.

The Primitive Wilderness Management Area provides an enhanced range of opportunities for solitude and challenge.

A high degree of challenge will be provided by minimal maintenance and signing.

Commercial operations may provide services that are in keeping with wilderness values. To ensure this, all commercial operations will be authorized by special use permit.

Objectives

Improve the capability of wilderness to sustain a desired range of benefits and values.

Land Adjustment (LA)

Desired Condition

D-LA-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

O-LA-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.

O-LA-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.

O-LA-3 Mineral interest beneath National Forest System land will be acquired when opportunities arise to protect surface interests within the BWCAW, Research Natural Areas, Candidate Research Natural Areas, and Unique Biological Areas.

Standards & Guidelines

G-LA-1 Fee simple estate will generally be acquired, but less than fee simple interest may be acceptable.

G-LA-2 Land acquisitions will generally be guided by the following criteria:

Priority 1 (a, b, and c are not listed in order of importance)

1(a) Land needed for habitat for federally listed endangered, threatened, proposed, or candidate species or for Regional Forester sensitive species.

1(b) Land needed to protect significant historical and cultural resources, when these resources are threatened or when management may be enhanced by

public ownership.

1(c) Land needed to protect and manage administrative or Congressionally designated, unique, proposed, or recommended areas.

Priority 2 (a thru f are not listed in order of importance)

Key tracts that will promote more effective management and will meet specific needs for management, such as:

2 (a) Land that enhances recreation opportunities, public access, and aesthetic values.

2 (b) Land needed to enhance or promote watershed restoration or watershed improvements that affect the management of NFS land riparian areas.

2 (c) Environmentally sensitive and/or ecologically rare lands and habitats.

2 (d) Wetlands.

2 (e) Land and associated riparian ecosystems on water frontage such as lakes and major streams.

2 (f) Land needed to achieve ownership patterns that would lower resource management costs.

Priority 3

3 (a) All other land desirable for inclusion in the National Forest System.

G-LA-3 The following National Forest System land is generally not needed for other resource management objectives and is potentially available for conveyance through exchange or other means (not listed in order of importance).

(a) Land inside or adjacent to communities or intensively developed private land, and chiefly valuable for non-National Forest System purposes.

(b) Parcels that will serve a greater public need in State, county, city, or other federal agency ownership.

(c) Inaccessible parcels isolated from other National Forest System land and intermingled with private land.

(d) Parcels that would reduce the need for landline maintenance and corner monumentation, result in more logical and efficient management, and improve land ownership pattern.

(e) Tracts that are difficult or expensive to manage due to rights-of-way problems, complex special use permits, or tracts with significant property boundary issues.

(f) On a case-by-case basis land beneath or adjacent to resorts and summer home groups, currently under special use permits, may be considered for conveyance.

G-LA-4 National Forest water frontage land will generally be conveyed only in situations where land with significant water frontage resource values will be acquired and the exchange is clearly in the public interest.

G-LA-5 For land acquisitions within the BWCAW, all rights, title or interest will generally be acquired, when possible. State of Minnesota School Trust Lands and other State holdings will generally be acquired, if offered, through purchase or donation. Acquisitions of Minnesota School Trust Lands and other State holdings through land exchange will generally be limited and only considered if the public is well served.

Special Uses (SU)

Objectives

O-SU-1 Outside of the BWCAW, 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.

O-SU-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.

O-SU-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.

O-SU-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.

O-SU-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.

Standards & Guidelines

G-SU-1 Whenever feasible, utility lines will be buried within existing road rights-of-way.

Public Health and Hazardous Materials (PH)

Desired Conditions

D-PH-1 Public and employee health and safety is of primary consideration while managing the National Forest.

D-PH-2 Constructed and natural site-specific amenities designated as actively managed by the national forest are healthy and safe for the public to use.

D-PH-3 Hazardous materials:

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.

D-PH-4 Water Supplies and Wastewater Treatments:

a. Federal sewage disposal and other developments do not adversely affect water resources.

b. Public and non-public water supplies are safe for use.

Objectives

O-PH-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.

O-PH-2 Hazardous materials are appropriately stored in approved facilities, and are transported safely if necessary for forest management.

O-PH-3 Known abandoned wells will be grouted and unused wells will be capped and maintained to prevent groundwater contamination.

O-PH-4 Forest owned facilities and designated recreation sites and/or natural resource amenities are inspected and managed to ensure safe operation.

O-PH-5 Where possible, minimize use of hazardous materials. Make more frequent use of non-hazardous substitute materials; and safe use and storage of hazardous materials.

Standards & Guidelines

S-PH-1 Uncommon events such as windstorms and wildfires will be addressed in a manner appropriate to the situation and location in accordance with current standards and regulations

S-PH-2 All spills and contaminated soil sites will be quickly cleaned up in conformance with federal and State guidelines.

G-PH-1 Nonfederal sewage waste disposal on National Forest lands will generally not be permitted

G-PH-2 Equipment refueling will generally not be done in wetlands (Ecological Landtypes 2, 4, 5, or 6), other areas with poorly drained soil, filter strips, or riparian management zones. In those rare instances where refueling operations in such areas are necessary, operators will have ready access to a fuel spill kit consisting of items such as a shovel, sorbent pads, kitty litter and plastic sheeting. Store fuels in compliance with State regulations for above-ground and temporary storage tanks. .

S-PH-3 Treatment of hydrocarbons/contaminated soil (soil farming, composting, etc.) will only be permitted on ELTs 10, 13, 14 and 15 on the SNF. Treatment activities will conform to federal and state guidelines.

LANDSCAPE ECOSYSTEM OBJECTIVES - NORTHERN SUPERIOR UPLANDS

Overview

Vegetation Objectives Overview

This section provides more vegetation management direction to complement direction in Chapter 2 Forest-wide Management Direction and Chapter 3 Management Area Direction. The vegetation objectives displayed in this section will serve as the basis for identifying opportunities to begin moving vegetation from existing conditions (Year 2003) toward long-term desired conditions (Year 2103). These objectives are shown for each individual Landscape Ecosystem (LE) for:

- Vegetation composition by forest type (the first table of LE objectives, Table JPB-1 for instance)
- Vegetation age by age class (the second table of LE objectives, Table JPB-2 for instance)
- Tree species diversity or mix (the third table of LE objectives, Table JPB-3 for instance)
- Management Indicator Habitats 1-9 (the fourth table of LE objectives, Table JPB-4, for instance)

Vegetation objectives set the direction for changes the National Forest will strive to make within the next two decades to move the vegetation toward the long-term desired conditions. Limited short-term options exist to increase mid-aged sapling-pole sized tree growth stages to meet objectives, though in the long term these can be met. Objectives are stated as percentages because it is unlikely that acres objectives could be matched precisely. It will be important to monitor these objectives to both evaluate progress from our management activities and to address the possibility of changing inventoried vegetation conditions unrelated to our activities. These may include changes from natural disturbances or changes from the way forest type and ages are measured. In particular, evolving technologies for forest measurements are likely to provide more accurate inventories of type and age than exist currently.

Vegetation objectives are for National Forest System land only. The objectives are not for the Boundary Waters Canoe Area Wilderness. Objectives were developed considering the past, current, and future expected vegetative conditions of all land within the Northern Superior Uplands, including the Boundary Waters Canoe Area Wilderness and other land ownerships.

Landscape Ecosystems

Vegetation objectives were developed for the ecological scale and context of Landscape Ecosystems (LE). See Figure NSU-1.

LEs are ecological areas derived from a combination of individual or groupings of native plant communities, ecological systems, and Terrestrial Ecological Unit Inventories at the Landtype Association and Ecological Landtype scales. Each LE is characterized by its dominant vegetation communities and patterns, which are a product of local climate, glacial topography, dominant soils, and natural processes, such as succession, fire, wind, insects, and disease. The LEs of the Superior National Forest nest into the Northern Superior Upland Section of the National Ecological Hierarchy.

Detailed maps, land ownership, information on Landscape Ecosystem composition, structure and ecological processes, and information on the Aquatic and Terrestrial Ecological Unit Inventories are found in the planning record for the Final Environmental Impact Statement for forest plan revision. These resources, along with expected future developments of applicable scientific information, will help identify ecological capability, appropriate management practices, and management limitations important to achieve desired conditions and

objectives.

Social and Economic Context

After the LE objectives are presented, the social and economic context of the LE is shown. Management Areas provide the context within which to make implementation decisions for vegetation management considering other multiple-use objectives and resource desired conditions. The fifth table (Table JPB-5 for instance) presented for each LE, lists the percentage of each management area in the LE.

Key to Numbering

NSU	Northern Superior Uplands Section
JPB	Jack Pine/Black Spruce LE
DRW	Dry-mesic Red and White Pine LE
MRW	Mesic Red and White Pine LE
MBA	Mesic Birch/Aspen/Spruce-fir LE
SMA	Sugar Maple LE
LLC	Lowland Conifer LE

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back side of Figure NSU-1

Table NSU-1.shows how much of the Northern Superior Uplands Section is comprised of each Landscape Ecosystem and how lands are distributed between National Forest system lands (NF) and other ownerships. It is included here to provide context for the Landscape Ecosystem.

Tables NSU-2 and NSU-3 and NSU-4 provide Forest-wide summaries of Landscape Ecosystem objectives for upland forest types and forest age (how much of each forest type is desired by acre and percent) for the first ten and twenty years of Decades 1, and 2 of implementation of the Forest Plan (Decades 1 and 2). Lowland forest types are summarized in the section on Lowland Conifer LEs. For reference, the table also displays existing conditions (Year 2003) and long-term 100-year goals to show the differences between where conditions are today and where the long-term desired future conditions are.

The objectives are for National Forest System land only, outside the Boundary Waters Canoe Area Wilderness. *(Objectives were developed considering the conditions of the Boundary Water Canoe Area Wilderness and the conditions of other ownerships.)*

Table NSU-1. Landscape Ecosystems within the Northern Superior Uplands Section: acres and estimated percent by ownership.[1] (SNF) Superior National Forest; (Pvt) Private land

Landscape Ecosystem	Total Acres (all ownerships) and (%) of Section	SNF	State	County	Pvt	State Park
Jack Pine/Black Spruce	1,069,900 (21%)	83%	4%	2%	10%	0%
Dry-mesic Red and White Pine	706,700 (14%)	36%	15%	13%	33%	1%
Mesic Red and White Pine	757,000 (15%)	22%	9%	28%	38%	0%
Mesic Birch/Aspen/Spruce-Fir	1,075,300 (21%)	36%	17%	9%	33%	1%
Sugar Maple	290,700 (6%)	22%	18%	19%	36%	3%
Lowland Conifers (including Rich Swamp)	1,289,300(25%)	37%	22%	13%	28%	0%
Total	5,188,900					
Total % of NSU on NF lands		42%				

[1] Source: Estimates from Superior NF & Natural Resources Research Institute (2003)

Table NSU-2. Forest-wide Vegetative Composition Objectives for Upland Forested Land. Lowland vegetation objectives are to maintain the same acres and percent of existing forest types.

Forest Type	Existing 2003		Objectives		
			Decade 1	Decade 2	Long-term 100 Year Goal
	Acres	%	%	%	%
Jack Pine	103,000	11%	12%	13%	19%
Red Pine	76,600	8%	8%	8%	9%
White Pine	31,100	3%	4%	5%	6%
Spruce-fir	167,000	17%	19%	20%	21%
Oak	700	0%	0%	0%	0%
Northern Hardwoods	37,900	4%	4%	4%	4%
Aspen	439,300	46%	42%	39%	31%
Paper Birch	106,400	11%	10%	10%	10%
Total	962,000	100%	100%	100%	100%

Table NSU-3. Forest-wide Vegetative Age Class Objectives for Upland Forested Land.

Age Class	Existing 2003		Objectives		
			Decade 1	Decade 2	Long-term 100-Year Goal
	Acres	%	%	%	%
0-9	109,000	11%	10%	11%	9%
10-49	322,700	34%	43%	46%	34%
50-99	429,800	45%	35%	28%	37%
100-149	97,500	10%	11%	16%	8%
150+	3,000	0%	0%	1%	12%
Total	961,969	100%	100%	100%	100%

Table NSU-4. Forest-wide Vegetative Age Class Objectives for Lowland Forested Land.

Age Class	Existing 2003		Objectives		
			Decade 1	Decade 2	Long-term 100-Year Goal
	Acres	%	%	%	%
0-9	1,100	0%	3%	3%	4%
10-49	18,800	7%	6%	7%	16%
50-99	118,100	47%	39%	26%	19%
100-149	91,800	36%	40%	47%	19%
150+	23,300	9%	13%	17%	43%
Total	252,900	100%	100%	100%	100%

Jack Pine/Black Spruce Landscape Ecosystem

Vegetation Composition Objectives

Table JPB-1 shows forest types objectives (percent desired) for Decades 1 and 2. For reference, the table also displays existing conditions (Year 2003) and long-term goals (Decade 10) to show the differences between where conditions are today and where the long-term desired future conditions are. The objectives are for National Forest System land only, outside the Boundary Waters Canoe Area Wilderness. *(Objectives were developed considering the conditions of the Boundary Waters Canoe Area Wilderness and the conditions of other ownerships.)*

Table JPB-1. Vegetation Composition Objectives for Jack Pine/Black Spruce Landscape Ecosystem.

Upland Forest Type	Existing (2003)		Objectives		
			Decade 1	Decade 2	Long-term 100 Year Goal
	Acres	%	%	%	%
Jack Pine	64,900	24%	28%	32%	45%
Red Pine	25,700	10%	10%	10%	9%
White Pine	7,400	3%	3%	3%	2%
Spruce-fir	33,800	13%	15%	16%	6%
Oak	200	0%	0%	0%	0%
Northern Hardwoods	1,800	1%	0%	0%	0%
Aspen	119,500	45%	40%	35%	33%
Paper Birch	14,300	5%	5%	4%	5%
Total	267,600	100%	100%	100%	100%

Age Class Objectives

Table JPB-2 shows forest age class objectives (percent desired) for Decades 1 and 2. For reference, the table also displays existing conditions (Year 2003) and long-term goals (Decade 10) to show the differences between where conditions are today and where the long-term desired future conditions are. The objectives are for National Forest land only, outside the Boundary Waters Canoe Area Wilderness. (Objectives were developed considering the conditions of the Boundary Waters Canoe Area Wilderness and the conditions of other ownerships.)

Table JPB – 2. Vegetation Age Class Objectives for Jack Pine/Black Spruce Landscape Ecosystem.

Age Class	Existing (2003)		Objectives		
			Decade 1	Decade 2	Long-term 100 Year Goal
Uplands	Acres	%	%	%	%
0-9	26,000	10%	14%	14%	11%
10-39	100,400	38%	42%	44%	44%
40-79	63,900	24%	18%	18%	33%
80-179	66,300	25%	22%	17%	8%
180+	10,700	4%	5%	7%	1%
Total	267,600	100%	100%	100%	100%

Tree Species Diversity Objectives

Table JPB-3 below shows objectives for the direction of change in tree species in the Landscape Ecosystem. The objectives are based on the percentage of total number of individual trees by species. Objectives specify direction of change because exact percentages on National Forest land alone are not calculated. Managers must consider more detailed ecological information, together with other multiple use objectives and desired resource conditions, to make decisions about where, when, and how much to increase, decrease or maintain tree species diversity. Those decisions will support the overall objective to move the relative diversity of tree species composition to conditions that are more representative of native vegetation communities.

Tree species diversity objectives differ from the forest type objectives in Table JPB1 above in that they address the desired direction for total percentage of trees, not total acres of forest type. These objectives are complementary to the forest type objectives since tree species diversity objectives may be achieved in two ways:

- The percent of trees of a given tree species (relative to the percent of other tree species) may be modified by changing the forest type dominated by that tree species (for example, white pine may be increased by increasing acres of white pine forest type) or
- The percent of trees of a given tree species (relative to the percent of other tree species) may be modified by managing for forest types that are more mixed (for example, white pine may be increased by interplanting white pine in an aspen-spruce-fir forest type).

The objectives are for National Forest land only, outside the Boundary Waters Canoe Area. *(Objectives were developed considering the conditions of the BWCAW and the conditions of other ownerships.)*

Table JPB-3. Tree Species Diversity Objectives for Jack Pine/Black Spruce Landscape Ecosystem. Change from existing condition:
(+) = Increase (-) = Decrease (m) = Maintain

Species	Historical Condition[1]	Existing Condition[2]	Objective
	Percent	Percent	
Jack Pine	28	11	+
Paper Birch	15	14	+
Aspen	13	23	-
Black Spruce	13	17	m/-
Tamarack	7	1	+
Balsam Fir	8	18	-
Red Pine	5	4	m/+
White Spruce	5	2	+
White Pine	4	1	+
White Cedar	2	1	+
Red Maple	<1	6	-
Lowland Hardwoods	<1	2	m/-
Other	0	<1	m
Total [3]	100	100	

[1] Historical conditions are based on tree data analysis of bearing trees in the late 1800s to early 1900s in the Government Land Office land survey notes.
[2] Existing conditions are based on 1990 Forest Inventory and Assessment plot data estimates of stem density by species.
[3] Totals may not add up to 100% due to rounding up.

Table JPB-4. Management Indicator Habitat Objectives for Jack Pine-Black Spruce Landscape Ecosystem. Change from existing condition: (+) = Increase (-) = Decrease (m) = Maintain

#	Management Indicator Habitats	Young Seedling Open				Mature				Old/Old Growth and Multi-aged			
		Existing Ac (1000s)	Decade			Existing Ac (1000s)	Decade			Existing Ac (1000s)	Decade		
			1	2	10		1	2	10		1	2	10
1	Upland forest	29.2	+	+	+	75.8	-	-	-	67.7	-	-	-
2	Upland Deciduous	12.3	+	+	+	41.8	-	-	-	37.3	-	-	-
3	Northern Hardwoods	0.1	-	-	-	1.4	+	m	-	0	m	+	+
4	Aspen-Birch	12.2	+	+	+	40.3	-	-	-	37.3	-	-	-
5	Upland Conifer	16.9	+	+	-	34.0	+	+	+	30.4	+	+	+
6	Upland Spruce-Fir	5.7	-	-	-	12.4	-	-	+	6.7	+	+	+
7	Red and White Pine	4.3	-	-	+	12.0	+	+	-	1.5	+	+	+
8	Jack Pine	6.8	+	+	+	9.6	+	+	+	22.2	-	-	-

Management Indicator Habitat Objectives

Table JPB-4 below shows the objectives for the direction of change for management indicator habitats (MIHs) 1-10 in the Landscape Ecosystem for Decades 1 and 2. For reference, the table also displays existing conditions (Year 2003) and the long-term goals (Decade 10) to show the differences between where conditions are today and where long-term desired conditions are. The objectives are for NFS land only, outside the BWCAW. Though percent objectives are not specified for each MIH, each objective corresponds to and is compatible with the LE Vegetation Composition and Age Objectives.

Detailed descriptions of the forest types and ages that comprise MIHs are found in Appendix C. The species associated with each MIH are found in Appendix D of the Final EIS and the planning record.

Objectives for MIHs 10-14 are found in the Terrestrial and Aquatic Wildlife Forest-wide Management Direction Section.

Social and Economic Context: Management Areas

This Landscape Ecosystem is comprised of Management Areas shown in Table JPB-5. Management Areas provide the social and economic context within which to make implementation decisions for vegetation management considering other multiple use objectives and resource desired conditions. Management Area desired conditions, objectives, and standards and guidelines are found in Chapter 3.

Table JPB-5. Management Area allocation within Jack Pine-Black Spruce Landscape Ecosystem.

	Percent
General Forest	16
General Forest - Longer Rotation	11
Recreation Use in a Scenic Landscape	4
Eligible Candidate Wild, Scenic and Recreational Rivers	<1
Semi-primitive Motorized Recreation	2
Semi-primitive Non-motorized Recreation	<1
Unique Biological Areas	<1
Riparian Emphasis Areas	<1
Research Natural Areas	<1
Research Natural Areas	<1
Wilderness	66
TOTAL	100

Dry-mesic Red and White Pine Landscape Ecosystem

Vegetation Composition Objectives

Table DRW-1 shows forest types objectives (percent desired) for Decades 1 and 2. For reference, the table also displays existing conditions (Year 2003) and long-term goals (Decade 10) to show the differences between where conditions are today and where the long-term desired future conditions are. The objectives are for National Forest System land only, outside the Boundary Waters Canoe Area Wilderness. *(Objectives were developed considering the conditions of the Boundary Water Canoe Area Wilderness and the conditions of other ownerships.)*

Table DRW-1. Vegetation Composition Objectives for Dry Mesic Red and White Pine Landscape Ecosystem.

Upland Forest Type	Existing (2003)		Objectives		
			Decade 1	Decade 2	Long-term 100 Year Goal
	Acres	%	%	%	%
Jack Pine	16,400	9%	10%	10%	11%
Red Pine	23,700	13%	13%	13%	14%
White Pine	13,200	7%	9%	12%	14%
Spruce-fir	14,500	8%	11%	13%	25%
Oak	300	0%	0%	0%	0%
Northern	1,700	1%	1%	1%	1%
Aspen	95,900	52%	47%	43%	28%
Paper Birch	17,800	10%	9%	9%	7%
Total	183,500	100%	100%	100%	100%

Age Class Objectives

Table DRW-2 shows forest age class objectives (desired percent) for Decade 1 and 2. For reference, the table also displays existing conditions (Year 2003) and long-term goals (Decade 10) to show the differences between where conditions are today and where the long-term desired future conditions are. The objectives are for National Forest land only, outside the Boundary Waters Canoe Area Wilderness. *(Objectives were developed considering the conditions of the Boundary Water Canoe Area Wilderness and the conditions of other ownerships.)*

Table DRW-2. Vegetation Age Class Objectives for Dry Mesic Red and White Pine Landscape Ecosystem.

Age Class	Existing (2003)		Objectives		
			Decade 1	Decade 2	Long-term 100 Year Goal
Uplands	Acres	%	%	%	%
0-9	17,600	10%	10%	10%	7%
10-49	61,300	33%	44%	46%	26%
50-99	81,800	45%	32%	24%	33%
100-139	22,200	12%	14%	17%	7%
140+	600	0%	0%	2%	28%
Total	183,500	100%	100%	100%	100%

Tree Species Diversity Objectives

Table DRW-3 below shows objectives for the direction of change in tree species in the Landscape Ecosystem. The objectives are based on the percentage of total number of individual trees by species. Objectives specify direction of change because exact percentages on National Forest land alone are not calculated. Managers must consider more detailed ecological information, together with other multiple use objectives and desired resource conditions, to make decisions about where, when, and how much to increase, decrease or maintain tree species diversity. Those decisions will support the overall objective to move the relative diversity of tree species composition to conditions that are more representative of native vegetation communities.

Tree species diversity objectives differ from the forest type objectives in Table DRW-1 above in that they address the desired direction for total percentage of trees, not total acres of forest type. These objectives are complementary to the forest type objectives since tree species diversity objectives may be achieved in two ways:

- The percent of trees of a given tree species (relative to the percent of other tree species) may be modified by changing the forest type dominated by that tree species (for example, white pine may be increased by increasing acres of white pine forest type) or
- The percent of trees of a given tree species (relative to the percent of other tree species) may be modified by managing for forest types that are more mixed (for example, white pine may be increased by interplanting white pine in an aspen-spruce-fir forest type).

The objectives are for National Forest land only, outside the Boundary Waters Canoe Area Wilderness. *(Objectives were developed considering the conditions of the BWCAW and the conditions of other ownerships.)*

Table DRW-3. Tree Species Diversity Objectives for Dry-Mesic Red and White Pine Landscape Ecosystem. Change from existing condition:
(+) = Increase (-) = Decrease (m) = Maintain

Species	Historical Condition[1]	Existing Condition[2]	Objective
	Percent	Percent	
Aspen	14	29	-
White spruce	5	3	+
White cedar	4	3	+
Paper birch	17	20	m
Balsam fir	10	18	-
Sugar maple	<1	8	-
Black spruce	8	7	m
Jack pine	13	4	+
Red pine	10	3	+
Lowland hardwoods	1	3	m/-
White pine	11	2	+
Tamarack	5	<1	+
Other	<1	<1	m
Total [3]	98	100	

[1] Historical conditions are based on tree data analysis of bearing trees in the late 1800s to early 1900s in the Government Land Office land survey notes.
[2] Existing conditions are based on 1990 Forest Inventory and Assessment plot data estimates of stem density by species.
[3] Totals may not add up to 100% due to rounding up.

Table DRW-4. Management Indicator Habitat Objectives for Dry-Mesic Red and White Pine Landscape Ecosystem. Change from existing condition: (+) = Increase (-) = Decrease (m) = Maintain

#	Management Indicator Habitats	Young Seedling Open				Mature				Old/Old Growth and Multi-aged			
		Existing Ac (1000s)	Decade			Existing Ac (1000s)	Decade			Existing Ac (1000s)	Decade		
			1	2	10		1	2	10		1	2	10
1	Upland forest	21.4	-	-	-	52.1	-	-	-	51.4	+	+	+
2	Upland Deciduous	12.0	-	+	+	28.8	-	-	-	37.8	-	-	-
3	Northern Hardwoods	0.1	+	+	+	1.7	-	-	-	0	m	m	+
4	Aspen-Birch	11.9	-	+	+	27.1	-	-	-	37.8	-	-	-
5	Upland Conifer	9.5	-	-	-	23.2	-	-	+	13.7	+	+	+
6	Upland Spruce-Fir	3.1	-	-	-	6.1	-	-	+	1.7	+	+	+
7	Red and White Pine	5.3	-	-	-	16.2	-	-	+	3.3	+	+	+
8	Jack Pine	1.1	+	+	+	1.0	+	+	+	8.7	-	-	-

Management Indicator Habitat Objectives

Table DRW-4 below shows the objectives for the direction of change for management indicator habitats (MIHs) 1-10 in the Landscape Ecosystem for Decades 1 and 2. For reference, the table also displays existing conditions (Year 2003) and the long-term goals (Decade 10) to show the differences between where conditions are today and where long-term desired conditions are. The objectives are for NFS land only, outside the BWCAW. Though percent objectives are not specified for each MIH, each objective corresponds to and is compatible with the LE Vegetation Composition and Age Objectives.

Detailed descriptions of the forest types and ages that comprise MIHs are found in Appendix C. The species associated with each MIH are found in Appendix D of the Final EIS and the planning record.

Objectives for MIHs 10-14 are found in the Terrestrial and Aquatic Wildlife Forest-wide Management Direction Section.

Social and Economic Context: Management Areas

This Landscape Ecosystem is comprised of Management Areas shown in Table DRW-5. Management Areas provide the social and economic context within which to make implementation decisions for vegetation management considering other multiple use objectives and resource desired conditions. Management Area desired conditions, objectives, and standards and guidelines are found in Chapter 3.

Table DRW-5. Management Area allocation within Dry-Mesic Red and White Pine Landscape Ecosystem.

	Percent
General Forest	40
General Forest - Longer Rotation	21
Recreation Use in a Scenic Landscape	6
Eligible Candidate Wild, Scenic and Recreational Rivers	2
Semi-primitive Motorized Recreation	9
Semi-primitive Non-motorized Recreation	0
Unique Biological Areas	<1
Riparian Emphasis Areas	0
Research Natural Areas	0
Candidate Research Natural Areas	1
Wilderness	22
TOTAL	100

Mesic Red and White Pine Landscape Ecosystems

Vegetation Composition Objectives

Table MRW-1 shows forest types objectives (what percent of each forest type is desired) for Decade 1 and Decade 2. For reference, the table also displays existing conditions (Year 2003) and long-term goals (Decade 10) to show the differences between where conditions are today and where the long-term desired future conditions are. The objectives are for National Forest System land only, outside the Boundary Waters Canoe Area Wilderness. (Objectives were developed considering the conditions of the Boundary Water Canoe Area Wilderness and the conditions of other ownerships.)

Table MRW-1. Vegetation Composition Objectives for Mesic Red and White Pine LE.

Upland Forest Type	Existing (2003)		Objectives		
			Decade 1	Decade 2	Long-term 100 Year Goal
	Acres	%	%	%	%
Jack Pine	6,500	5%	6%	6%	8%
Red Pine	8,100	6%	7%	8%	10%
White Pine	4,400	3%	5%	7%	10%
Spruce-fir	20,300	16%	18%	19%	28%
Oak	100	0%	0%	0%	0%
Northern Hardwoods	3,100	2%	2%	2%	2%
Aspen	65,500	51%	47%	43%	30%
Paper Birch	19,700	15%	15%	15%	12%
Total	127,80	100%	100%	100%	100%

Age Class Objectives

Table MRW-2 shows forest age class objectives (percent desired) for Decades 1 and Decade 2. For reference, the table also displays existing conditions (Year 2003) and long-term goals (Decade 10) to show the differences between where conditions are today and where the long-term desired future conditions are. The objectives are for National Forest land only, outside the Boundary Waters Canoe Area Wilderness. *(Objectives were developed considering the conditions of the Boundary Water Canoe Area Wilderness and the conditions of other ownerships.)*

Table MRW-2. Vegetation Age Class Objectives for Mesic Red and White Pine Landscape Ecosystem.

Age Class	Existing (2003)		Objectives		
			Decade 1	Decade 2	Long-term 100 Year Goal
Uplands	Acres	%	%	%	%
0-9	19,500	15%	10%	10%	7%
10-49	38,400	30%	45%	49%	28%
50-79	36,900	29%	16%	10%	21%
80-99	21,700	17%	21%	16%	6%
100-119	8,200	6%	6%	11%	6%
120+	3,100	2%	2%	3%	32%
Total	127,800	100%	100%	100%	100%

Tree Species Diversity Objectives

Table MRW-3 below shows objectives for the direction of change in tree species in the Landscape Ecosystem. The objectives are based on the percentage of total number of individual trees by species. Objectives specify direction of change because exact percentages on National Forest land alone are not calculated. Managers must consider more detailed ecological information, together with other multiple use objectives and desired resource conditions, to make decisions about where, when, and how much to increase, decrease or maintain tree species diversity. Those decisions will support the overall objective to move the relative diversity of tree species composition to conditions that are more representative of native vegetation communities.

Tree species diversity objectives differ from the forest type objectives in Table MRW-1 above in that they address the desired direction for total percentage of trees, not total acres of forest type. These objectives are complementary to the forest type objectives since tree species diversity objectives may be achieved in two ways:

- The percent of trees of a given tree species (relative to the percent of other tree species) may be modified by changing the forest type dominated by that tree species (for example, white pine may be increased by increasing acres of white pine forest type) or
- The percent of trees of a given tree species (relative to the percent of other tree species) may be modified by managing for forest types that are more mixed (for example, white pine may be increased by interplanting white pine in an aspen-spruce-fir forest type).

The objectives are for National Forest land only, outside the Boundary Waters Canoe Area. *(Objectives were developed considering the conditions of the BWCAW and the conditions of other ownerships.)*

Table MRW-3. Tree Species Diversity Objectives for Mesic Red and White Pine Landscape Ecosystem. Change from existing condition:
(+) = Increase (-) = Decrease (m) = Maintain

Species	Historical Condition[1]	Existing Condition[2]	Objective
	Percent	Percent	
Birch	23	22	m
White pine	19	1	+
Balsam fir	9	22	-
Tamarack	9	<1	+
Aspen	9	27	-
Black spruce	6	5	+
White spruce	6	2	+
White cedar	6	4	+
Northern hardwoods	5	11	-
Red pine	4	1	+
Jack pine	4	1	+
Lowland hardwoods	1	4	m/-
Total	101	100	

[1] Historical conditions are based on tree data analysis of bearing trees in the late 1800s to early 1900s in the Government Land Office land survey notes.
[2] Existing conditions are based on 1990 Forest Inventory and Assessment plot data estimates of stem density by species.
[3] Totals may not add up to 100% due to rounding up.

Table MRW-4. Management Indicator Habitat Objectives for Mesic Red and White Pine Landscape Ecosystem. Change from existing condition: (+) = Increase (-) = Decrease (m) = Maintain

#	Management Indicator Habitats	Young Seedling Open				Mature				Old/Old Growth and Multi-aged			
		Existing Ac (1000s)	Decade			Existing Ac (1000s)	Decade			Existing Ac (1000s)	Decade		
			1	2	10		1	2	10		1	2	10
1	Upland forest	22.2	-	-	-	42.1	-	-	-	27.3	+	+	+
2	Upland Deciduous	11.6	-	-	-	30.7	-	-	-	23.0	+	+	-
3	Northern Hardwoods	0	m	m	m	1.9	-	-	-	1.0	+	+	+
4	Aspen-Birch	11.5	-	-	-	28.7	-	-	-	21.9	+	+	-
5	Upland Conifer	10.6	-	-	-	11.4	-	-	+	4.3	+	+	+
6	Upland Spruce-Fir	7.5	-	-	-	6.2	-	-	+	1.3	+	+	+
7	Red and White Pine	2.1	-	-	-	4.3	+	+	+	0.8	+	+	+
8	Jack Pine	1.0	m	m	-	0.9	-	+	+	2.2	-	-	-

Management Indicator Habitat Objectives

Table MRW-4 below shows the objectives for the direction of change for management indicator habitats (MIHs) 1-10 in the Landscape Ecosystem for Decades 1 and 2. For reference, the table also displays existing conditions (Year 2003) and the long-term goals (Decade 10) to show the differences between where conditions are today and where long-term desired conditions are. The objectives are for NFS land only, outside the BWCAW. Though percent objectives are not specified for each MIH, each objective corresponds to and is compatible with the LE Vegetation Composition and Age Objectives.

Detailed descriptions of the forest types and ages that comprise MIHs are found in Appendix C. The species associated with each MIH are found in Appendix D of the Final EIS and the planning record.

Objectives for MIHs 10-14 are found in the Terrestrial and Aquatic Wildlife Forest-wide Management Direction Section.

Social and Economic context: Management Areas

This Landscape Ecosystem is comprised of Management Areas shown in Table MRW-5. Management Areas provide the social and economic context within which to make implementation decisions for vegetation management considering other multiple use objectives and resource desired conditions. Management Area desired conditions, objectives, and standards and guidelines are found in Chapter 3.

Table MRW-5. Management Area Allocation within Mesic Red and White Pine Landscape Ecosystem.

	Percent
General Forest	47
General Forest - Longer Rotation	24
Recreation Use in a Scenic Landscape	8
Eligible Candidate Wild, Scenic and Recreational Rivers	3
Semi-primitive Motorized Recreation	4
Semi-primitive Non-motorized Recreation	<1
Unique Biological Areas	0
Riparian Emphasis Areas	1
Research Natural Areas	<1
Candidate Research Natural Areas	1
Wilderness	13
TOTAL	100

Mesic Birch/Aspen/Spruce-Fir Landscape Ecosystem

Vegetation Composition Objectives

Table MBA-1 shows forest types objectives (percent desired) for Decades 1 and 2. For reference, the table also displays existing conditions (Year 2003) and long-term goals (Decade 10) to show the differences between where conditions are today and where the long-term desired future conditions are. The objectives are for National Forest System land only, outside the Boundary Waters Canoe Area Wilderness. *(Objectives were developed considering the conditions of the Boundary Water Canoe Area Wilderness and the conditions of other ownerships.)*

Table MBA-1. Vegetation Composition Objectives for Mesic Birch/Aspen/Spruce/ Fir Landscape Ecosystem.

Upland Forest Type	Existing (2003)		Objectives		
			Decade 1	Decade 2	Long-term 100 Year Goal
	Acres	%	%	%	%
Jack Pine	9,300	3%	4%	4%	7%
Red Pine	14,500	5%	5%	5%	6%
White Pine	5,400	2%	3%	4%	4%
Spruce-fir	71,400	25%	26%	26%	31%
Oak	>100	0%	0%	0%	0%
Northern Hardwoods	12,500	4%	4%	4%	3%
Aspen	125,900	45%	43%	42%	35%
Paper Birch	42,100	15%	14%	14%	14%
Total	281,300	100	100%	100%	100%

Age Class Objectives

Table MBA-2 shows forest age class objectives (percent desired) for Decades 1 and 2. For reference, the table also displays existing conditions (Year 2003) and long-term goals (Decade 10) to show the differences between where conditions are today and where the long-term desired future conditions are. The objectives are for National Forest land only, outside the Boundary Waters Canoe Area Wilderness. (Objectives were developed considering the conditions of the Boundary Water Canoe Area Wilderness and the conditions of other ownerships.)

Table MBA-2. Vegetation Age Class Objectives for Mesic Birch/Aspen/Spruce/Fir Landscape Ecosystem.

Age Class	Existing (2003)		Objectives		
			Decade 1	Decade 2	Long-term 100 Year Goal
Uplands	Acres	%	%	%	%
0-9	35,700	13%	10%	11%	9%
10-49	93,500	33%	45%	48%	36%
50-79	77,900	28%	15%	10%	27%
80-99	52,600	19%	21%	17%	18%
100+	21,600	8%	9%	14%	10%
Total	281,300	100%	100%	100%	100%

Tree Species Diversity Objectives

Table MBA-3 below shows objectives for the direction of change in tree species in the Landscape Ecosystem. The objectives are based on the percentage of total number of individual trees by species. Objectives specify direction of change because exact percentages on National Forest land alone are not calculated. Managers must consider more detailed ecological information, together with other multiple use objectives and desired resource conditions, to make decisions about where, when, and how much to increase, decrease or maintain tree species diversity. Those decisions will support the overall objective to move the relative diversity of tree species composition to conditions that are more representative of native vegetation communities.

Tree species diversity objectives differ from the forest type objectives in Table MBA-1 above in that they address the desired direction for total percentage of trees, not total acres of forest type. These objectives are complementary to the forest type objectives since tree species diversity objectives may be achieved in two ways:

- The percent of trees of a given tree species (relative to the percent of other tree species) may be modified by changing the forest type dominated by that tree species (for example, white pine may be increased by increasing acres of white pine forest type) or
- The percent of trees of a given tree species (relative to the percent of other tree species) may be modified by managing for forest types that are more mixed (for example, white pine may be increased by interplanting white pine in an aspen-spruce-fir forest type).

The objectives are for National Forest land only, outside the Boundary Waters Canoe Area. (*Objectives were developed considering the conditions of the BWCAW and the conditions of other ownerships.)*

Table MBA-3. Tree Species Diversity Objectives for Mesic Birch/Aspen/Spruce/Fir Landscape Ecosystem. Change from existing condition:
(+) = Increase (-) = Decrease (m) = Maintain

Species	Historical Condition[1]	Existing Condition[2]	Objective
	Percent	Percent	
Paper birch	23	20	+
Balsam fir	18	23	-
Black spruce	10	9	m
White cedar	9	4	+
White spruce	9	3	+
White pine	9	<1	+
Aspen	8	27	-
Tamarack	7	<1	+
Northern hardwoods	3	7	-
Jack pine	2	1	m/-
Red pine	2	<1	+
Lowland hardwoods	2	4	m/-
Total	102	98	

[1] Historical conditions are based on tree data analysis of bearing trees in the late 1800s to early 1900s in the Government Land Office land survey notes.
[2] Existing conditions are based on 1990 Forest Inventory and Assessment plot data estimates of stem density by species.
[3] Totals may not add up to 100% due to rounding up.

Table MBA-4. Management Indicator Habitat Objectives for Mesic Birch-Aspen-Spruce-Fir Landscape Ecosystem. Change from existing condition: (+) = Increase (-) = Decrease (m) = Maintain

		Young Seedling Open				Mature				Old/Old Growth and Multi-aged			
#	Management Indicator Habitats	Existing Ac (1000s)	Decade			Existing Ac (1000s)	Decade			Existing Ac (1000s)	Decade		
			1	2	10		1	2	10		1	2	10
1	Upland forest	41.7	-	-	-	93.4	-	-	-	56.8	+	+	+
2	Upland Deciduous	20.2	+	+	-	69.4	-	-	-	46.9	+	+	-
3	Northern Hardwoods	0.2	+	+	+	9.5	-	-	-	2.0	+	+	+
4	Aspen-Birch	20.0	+	+	-	60.1	-	-	-	44.9	+	+	-
5	Upland Conifer	21.5	-	-	-	23.8	-	+	+	9.9	+	+	+
6	Upland Spruce-Fir	18.2	-	-	-	18.4	-	-	+	6.4	+	+	+
7	Red and White Pine	2.8	-	-	+	4.3	+	+	+	0.4	+	+	+
8	Jack Pine	0.5	+	+	+	1.2	-	+	+	3.1	-	-	-

Management Indicator Habitat Objectives

Table MBA-4 below shows the objectives for the direction of change for management indicator habitats (MIHs) 1-10 in the Landscape Ecosystem for Decades 1 and 2. For reference, the table also displays existing conditions (Year 2003) and the long-term goals (Decade 10) to show the differences between where conditions are today and where long-term desired conditions are. The objectives are for NFS land only, outside the BWCAW. Though percent objectives are not specified for each MIH, each objective corresponds to and is compatible with the LE Vegetation Composition and Age Objectives.

Detailed descriptions of the forest types and ages that comprise MIHs are found in Appendix C. The species associated with each MIH are found in Appendix D of the Final EIS and the planning record.

Objectives for MIHs 10-14 are found in the Terrestrial and Aquatic Wildlife Forest-wide Management Direction Section.

Social and Economic context: Management Areas

This Landscape Ecosystem is comprised of Management Areas shown in Table MBA-5. Management Areas provide the social and economic context within which to make implementation decisions for vegetation management considering other multiple use objectives and resource desired conditions. Management Area desired conditions, objectives, and standards and guidelines are found in Chapter 3.

Table MBA-5. Management Area Allocation within Mesic Aspen-Birch-Spruce-Fir Landscape Ecosystem.

General Forest	37
General Forest - Longer Rotation	30
Recreation Use in a Scenic Landscape	13
Eligible Candidate Wild, Scenic and Recreational Rivers	3
Semi-primitive Motorized Recreation	1
Semi-primitive Non-motorized Recreation	1
Unique Biological Areas	<1
Riparian Emphasis Areas	1
Research Natural Areas	<1
Candidate Research Natural Areas	1
Wilderness	13
TOTAL	100%

Sugar Maple Landscape Ecosystem

Vegetation Composition Objectives

Table SMA-1 shows forest types objectives (percent desired) for Decades 1 and 2. For reference, the table also displays existing conditions (Year 2003) and long-term goals (Decade 10) to show the differences between where conditions are today and where the long-term desired future conditions are. The objectives are for National Forest System land only, outside the Boundary Waters Canoe Area Wilderness. *(Objectives were developed considering the conditions of the Boundary Water Canoe Area Wilderness and the conditions of other ownerships.)*

Table SMA-1. Vegetation Composition Objectives for Sugar Maple Landscape Ecosystem.

Upland Forest Type	Existing (2003)		Objectives		
			Decade 1	Decade 2	Long-term 100 Year Goal
	Acres	%	%	%	%
Jack Pine	100	0%	0%	0%	0%
Red Pine	2,400	5%	5%	5%	2%
White Pine	300	1%	2%	2%	4%
Spruce-fir	7,500	15%	15%	15%	16%
Oak	0	0%	0%	0%	0%
Northern Hardwoods	18,300	36%	37%	38%	40%
Aspen	13,700	27%	25%	24%	20%
Paper Birch	8,700	17%	17%	16%	18%
Total	127,80	100	100%	100%	100%

Age Class Objectives

Table SMA-2 shows forest age class objectives (desired percent) for Decade 1 and Decade 2. For reference, the table also displays existing conditions (Year 2003) and long-term goals (Decade 10) to show the differences between where conditions are today and where the long-term desired future conditions are. The objectives are for National Forest land only, outside the Boundary Waters Canoe Area. *(Objectives were developed considering the conditions of the Boundary Water Canoe Area Wilderness and the conditions of other ownerships.)*

Table SMA-2. Vegetation Age Class Objectives for Sugar Maple Landscape Ecosystem.

Age Class	Existing (2003)		Objectives		
			Decade 1	Decade 2	Long-term 100 Year Goal
Uplands	Acres	%	%	%	%
0-9		6%	4%	4%	5%
10-49	14,000	27%	34%	33%	20%
50-99	23,000	45%	38%	27%	25%
100-149	10,500	21%	23%	33%	25%
150+	300	1%	2%	3%	25%
Total	50,900	100%	100%	100%	100%

Tree Species Diversity Objectives

Table SMA-3 below shows objectives for the direction of change in tree species in the Landscape Ecosystem. The objectives are based on the percentage of total number of individual trees by species. Objectives specify direction of change because exact percentages on National Forest land alone are not calculated. Managers must consider more detailed ecological information, together with other multiple use objectives and desired resource conditions, to make decisions about where, when, and how much to increase, decrease or maintain tree species diversity. Those decisions will support the overall objective to move the relative diversity of tree species composition to conditions that are more representative of native vegetation communities.

Tree species diversity objectives differ from the forest type objectives in Table SMA-1 above in that they address the desired direction for total percentage of trees, not total acres of forest type. These objectives are complementary to the forest type objectives since tree species diversity objectives may be achieved in two ways:

- The percent of trees of a given tree species (relative to the percent of other tree species) may be modified by changing the forest type dominated by that tree species (for example, white pine may be increased by increasing acres of white pine forest type) or
- The percent of trees of a given tree species (relative to the percent of other tree species) may be modified by managing for forest types that are more mixed (for example, white pine may be increased by interplanting white pine in an aspen-spruce-fir forest type.

The objectives are for National Forest land only, outside the Boundary Waters Canoe Area. *(Objectives were developed considering the conditions of the BWCAW and the conditions of other ownerships.)*

Table SMA-3. Tree Species Diversity Objectives for Sugar Maple Landscape Ecosystem. Change from existing condition:
(+) = Increase (-) = Decrease (m) = Maintain

Species	Historical Condition[1]	Existing Condition[2]	Objective
	Percent	Percent	
Paper birch	22	23	m
Balsam fir	16	12	+
White cedar	11	3	+
White pine	9	<1	+
Sugar maple	8	26	-
White spruce	8	2	+
Yellow birch	7	<1	+
Aspen	6	16	-
Black spruce	5	<1	+
Tamarack	4	2	+
Black ash	2	4	-
Basswood	1	2	m
Red pine	<1	1	m
Red maple	<1	7	-
Total	99	98	

[1] Historical conditions are based on tree data analysis of bearing trees in the late 1800s to early 1900s in the Government Land Office land survey notes.
[2] Existing conditions are based on 1990 Forest Inventory and Assessment plot data estimates of stem density by species.
[3] Totals may not add up to 100% due to rounding up.

Table SMA-4. Management Indicator Habitat Objectives for Sugar Maple Landscape Ecosystem. Change from existing condition: (+) = Increase (-) = Decrease (m) = Maintain

#	Management Indicator Habitats	Young Seedling Open				Mature				Old/Old Growth and Multi-aged			
		Existing Ac (1000s)	Decade			Existing Ac (1000s)	Decade			Existing Ac (1000s)	Decade		
			1	2	10		1	2	10		1	2	10
1	Upland forest	3.9	-	-	-	23.9	-	-	-	9.1	+	+	+
2	Upland Deciduous	2.0	-	-	-	22.0	-	-	-	8.4	+	+	+
3	Northern Hardwoods	0.1	-	-	-	14.9	-	-	-	2.7	+	+	+
4	Aspen-Birch	1.9	-	-	-	7.1	-	-	-	5.8	+	+	-
5	Upland Conifer	2.0	-	-	-	1.8	m	+	+	0.7	+	+	+
6	Upland Spruce-Fir	1.7	-	-	-	1.6	-	-	-	0.7	+	+	+
7	Red and White Pine	0.3	+	-	-	0.3	+	-	-	0	m	+	+
8	Jack Pine	0	m	m	m	0	+	+	m	0	m	m	m

Management Indicator Habitat Objectives

Table SMA-4 below shows the objectives for the direction of change for management indicator habitats (MIHs) 1-10 in the Landscape Ecosystem for Decades 1 and 2. For reference, the table also displays existing conditions (Year 2003) and the long-term goals (Decade 10) to show the differences between where conditions are today and where long-term desired conditions are. The objectives are for NFS land only, outside the BWCAW. Though percent objectives are not specified for each MIH, each objective corresponds to and is compatible with the LE Vegetation Composition and Age Objectives.

Detailed descriptions of the forest types and ages that comprise MIHs are found in Appendix C. The species associated with each MIH are found in Appendix D of the Final EIS and the planning record.

Objectives for MIHs 10-14 are found in the Terrestrial and Aquatic Wildlife Forest-wide Management Direction Section.

Social and Economic Context: Management Areas

This Landscape Ecosystem is comprised of Management Areas shown in Table SMA-5. Management Areas provide the social and economic context within which to make implementation decisions for vegetation management considering other multiple use objectives and resource desired conditions. Management Area desired conditions, objectives, and standards and guidelines are found in Chapter 3.

Table SMA-5. Management Area Allocation within Sugar Maple Landscape Ecosystem.

	Percent
General Forest	<1
General Forest - Longer Rotation	36
Recreation Use in a Scenic Landscape	57
Eligible Candidate Wild, Scenic and Recreational Rivers	<1
Semi-primitive Motorized Recreation	2
Semi-primitive Non-motorized Recreation	0
Unique Biological Areas	0
Riparian Emphasis Areas	0
Research Natural Areas	2
Candidate Research Natural Areas	3
Wilderness	0
TOTAL	100

Lowland Conifer Landscape Ecosystem

Vegetation Composition Objectives

See Table LLC-1.

Table LLC-1. Vegetation Composition Objectives for Lowland Conifer LEs.
Objectives for all decades are to maintain existing forest types.

Forest Type	Existing 2003 and 100 Year Goal	
	Acres	%
Black Spruce	201,000	79%
Tamarack	4,500	2%
Northern White Cedar	31,300	12%
Lowland Hardwoods	16,200	6%
Total	252,900	100%

Age Class Objectives

Tables LLC-2a through LLC2c show forest age class objectives (how much of each age class is desired by acre and percent) for Decade 1 and Decade 2. For reference, the table also displays existing conditions (Year 2003) and long-term goals (Decade 10) to show the differences between where conditions are today and where the long-term desired future conditions are. The objectives are for National Forest land only, outside the Boundary Waters Canoe Area Wilderness. *(Objectives were developed considering the conditions of the Boundary Water Canoe Area Wilderness and the conditions of other ownerships.)*

Table LLC-2a. Vegetation Age Class Objectives for LLC within (A) Jack Pine/Black Spruce and Dry-Mesic Red and White Pine landscape Ecosystems.

Age Class	Existing (2003)		Objectives		
			Decade 1	Decade 2	Long-term 100 Year Goal
Uplands	Acres	%	%	%	%
0-9	300	0%	3%	4%	5%
10-39	8,100	7%	5%	7%	14%
40-79	26,900	24%	18%	14%	18%
80-159	72,400	65%	69%	69%	33%
160+	3,000	3%	4%	7%	31%
Total	110,800	100%	100%	100%	100%

Table LLC-2b. Vegetative Age Class Objectives for LLC within (B) Mesic Red and White Pine and Mesic Birch/Aspen/Spruce/Fir Landscape Ecosystems.

Age Class	Existing (2003)		Objectives		
			Decade 1	Decade 2	Long-term 100 Year Goal
Uplands	Acres	%	%	%	%
0-9	800	1%	2%	3%	4%
10-39	5,300	4%	4%	5%	11%
40-79	32,200	25%	14%	7%	14%
80-159	79,800	62%	70%	71%	28%
160+	9,900	8%	10%	14%	44%
Total	127,900	100%	100%	100%	100%

Table LLC-2c. Vegetative Age Class Objectives for LLC within (C) Mesic Sugar Maple Landscape Ecosystem.					
Age Class	Existing (2003)		Objectives		
			Decade 1	Decade 2	Long-term 100 Year Goal
Uplands	Acres	%	%	%	%
0-9	0	0%	1%	1%	3%
10-39	300	2%	2%	3%	10%
40-79	3,500	25%	19%	15%	13%
80-159	6,900	49%	45%	39%	15%
160+	3,400	24%	33%	42%	60%
Total	14,200	100%	100%	100%	100%

Management Indicator Habitat Objectives

Table LLC-3 below shows the objectives for the direction of change for management indicator habitats (MIHs) 1-10 in the Landscape Ecosystem for Decades 1 and 2. For reference, the table also displays existing conditions (Year 2003) and the long-term goals (Decade 10) to show the differences between where conditions are today and where long-term desired conditions are. The objectives are for NFS land only, outside the BWCAW. Though percent objectives are not specified for each MIH, each objective corresponds to and is compatible with the LE Vegetation Composition and Age Objectives.

Detailed descriptions of the forest types and ages that comprise MIHs are found in Appendix C. The species associated with each MIH are found in Appendix D of the Final EIS and the planning record.

Objectives for MIHs 10-14 are found in the Terrestrial and Aquatic Wildlife Forest-wide Management Direction Section.

Table LLC-3. Management Indicator Habitat Objectives for all Lowland Conifer Landscape Ecosystems (LLC-A, LLC-B, LLC-C). Change from existing condition:(+) = Increase (-) = Decrease (m) = Maintain

		Young Seedling Open				Mature				Old/Old Growth and Multi-aged			
#	Management Indicator Habitats	Existing Ac (1000s)	Decade			Existing Ac (1000s)	Decade			Existing Ac (1000s)	Decade		
			1	2	10		1	2	10		1	2	10
9	Lowland Black Spruce-Tamarack	6.8	+	+	+	132.2	-	-	-	42.3	+	+	+

Social and Economic Context: Management Areas

These Landscape Ecosystems are comprised of Management Areas shown in Tables LLC-4a through LLC-4c. Management Areas provide the social and economic context within which to make implementation decisions for vegetation management considering other multiple use objectives and resource desired conditions. Management Area desired conditions, objectives, and standards and guidelines are found in Chapter 3.

Table LLC-4a. Management Area allocation in Lowland Forest within (A) Jack Pine/Black Spruce and Dry-Mesic Red and White Pine landscape Ecosystems.

	Percent
General Forest	36
General Forest - Longer Rotation	9
Recreation Use in a Scenic Landscape	6
Eligible Candidate Wild, Scenic and Recreational Rivers	<1
Semi-primitive Motorized Recreation	5
Semi-primitive Non-motorized Recreation	<1
Unique Biological Areas	<1
Riparian Emphasis Areas	1
Research Natural Areas	<1
Candidate Research Natural Areas	<1
Wilderness	42
TOTAL	100

Table LLC-4b. Management Area allocation in (B) Mesic Red and White Pine and Mesic Birch/Aspen/Spruce/Fir Landscape Ecosystems.

	Percent
General Forest	58
General Forest - Longer Rotation	21
Recreation Use in a Scenic Landscape	7
Eligible Candidate Wild, Scenic and Recreational Rivers	3
Semi-primitive Motorized Recreation	1
Semi-primitive Non-motorized Recreation	<1
Unique Biological Areas	0
Riparian Emphasis Areas	4
Research Natural Areas	<1
Candidate Research Natural Areas	2
Wilderness	4
TOTAL	100

Table LLC-4c. Management Area allocation in (C) Mesic Sugar Maple Landscape Ecosystem.

	Percent
General Forest	17
General Forest - Longer Rotation	39
Recreation Use in a Scenic Landscape	25
Eligible Candidate Wild, Scenic and Recreational Rivers	<1
Semi-primitive Motorized Recreation	<1
Semi-primitive Non-motorized Recreation	0
Unique Biological Areas	0
Riparian Emphasis Areas	2
Research Natural Areas	1
Candidate Research Natural Areas	16
Wilderness	0
TOTAL	100