

DECISION NOTICE/DESIGNATION ORDER

Decision Notice Finding of No Significant Impact Designation Order

By virtue of the authority vested in me by the Secretary of Agriculture under regulations 7 CFR 2.42, 36 CFR 251.23, and 36 CFR Part 219, I hereby establish the Bose Lake Research Natural Area. It shall be comprised of lands described in the section of the Establishment Record entitled "Location."

The Regional Forester has recommended the establishment of this Research Natural Area in the Record of Decision for the Nicolet National Forest Land and Resource Management Plan. That recommendation was the result of an analysis of the factors listed in 36 CFR 219.25 and Forest Service Manual 4063.41. Results of the Regional Forester's Analysis are documented in the Nicolet National Forest Land and Resource Management Plan and Final Environmental Impact Statement which are available to the public.

The Bose Lake Research Natural Area will be managed in compliance with all relevant laws, regulations, and Forest Service Manual direction regarding Research Natural Areas. It will be administered in accordance with the management direction/prescription identified in the Establishment Record.

I have reviewed the Nicolet Land and Resource Management Plan (LRMP) direction for this RNA and find that the management direction cited in the previous paragraph is consistent with the LRMP and that a Plan amendment is not required.

The Forest Supervisor of the Nicolet National Forest shall notify the public of this decision and will mail a copy of the Decision Notice/Designation Order and amended direction to all persons on the Nicolet National Forest Land and Resource Management Plan mailing list.

Based upon the Environmental Analysis, I find that designation of the Bose Lake Research Natural Area is not a major Federal action significantly affecting the quality of the human environment (40 CFR 1508.27).

This decision is subject to appeal pursuant to 36 CFR Part 217. A Notice of Appeal must be in writing and submitted to:

The Secretary of Agriculture
14th & Independence Ave., S.W.
Washington, D.C. 20250

Any appeal of this decision must include the information required by 36 CFR Part 217.9 including the reasons for appeal. Two (2) copies of the Notice of Appeal must be filed with the Secretary of Agriculture within 45 days from the date of legal notice of this decision in the Federal Register. Review by the Secretary is wholly discretionary. If the Secretary has not decided within 15 days of receiving the Notice of Appeal to review the Chief's decision, appellants will be notified that the Chief's decision is the final administrative decision of the U.S. Department of Agriculture (36 CFR 217.7(a)).


for Chief


Date

copy 1

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

ESTABLISHMENT RECORD FOR BOSE LAKE
RESEARCH NATURAL AREA WITHIN THE
NICOLET NATIONAL FOREST, FOREST COUNTY, WISCONSIN



Bose Lake

EXHIBITS

Exhibit 1: Location Map

Exhibit 2: Proximity Map

Exhibit 3: Topographic Map

Exhibit 4: Ownership Map

Exhibit 5: Cover Type Map

Exhibit 6: Photographs

EXHIBIT 1

MAP SHOWING LOCATION OF NICOLET NATIONAL FOREST IN STATE OF WISCONSIN

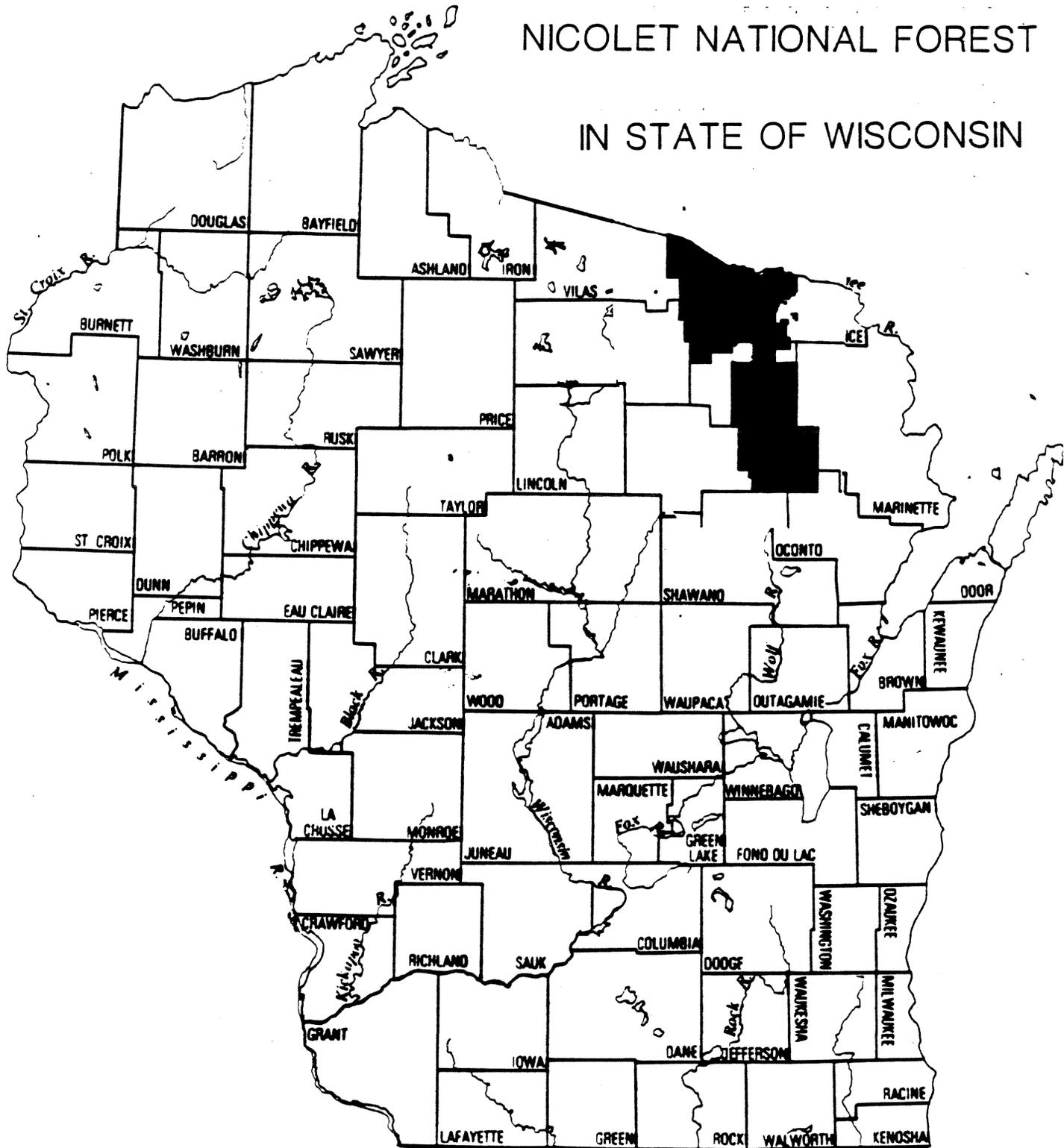
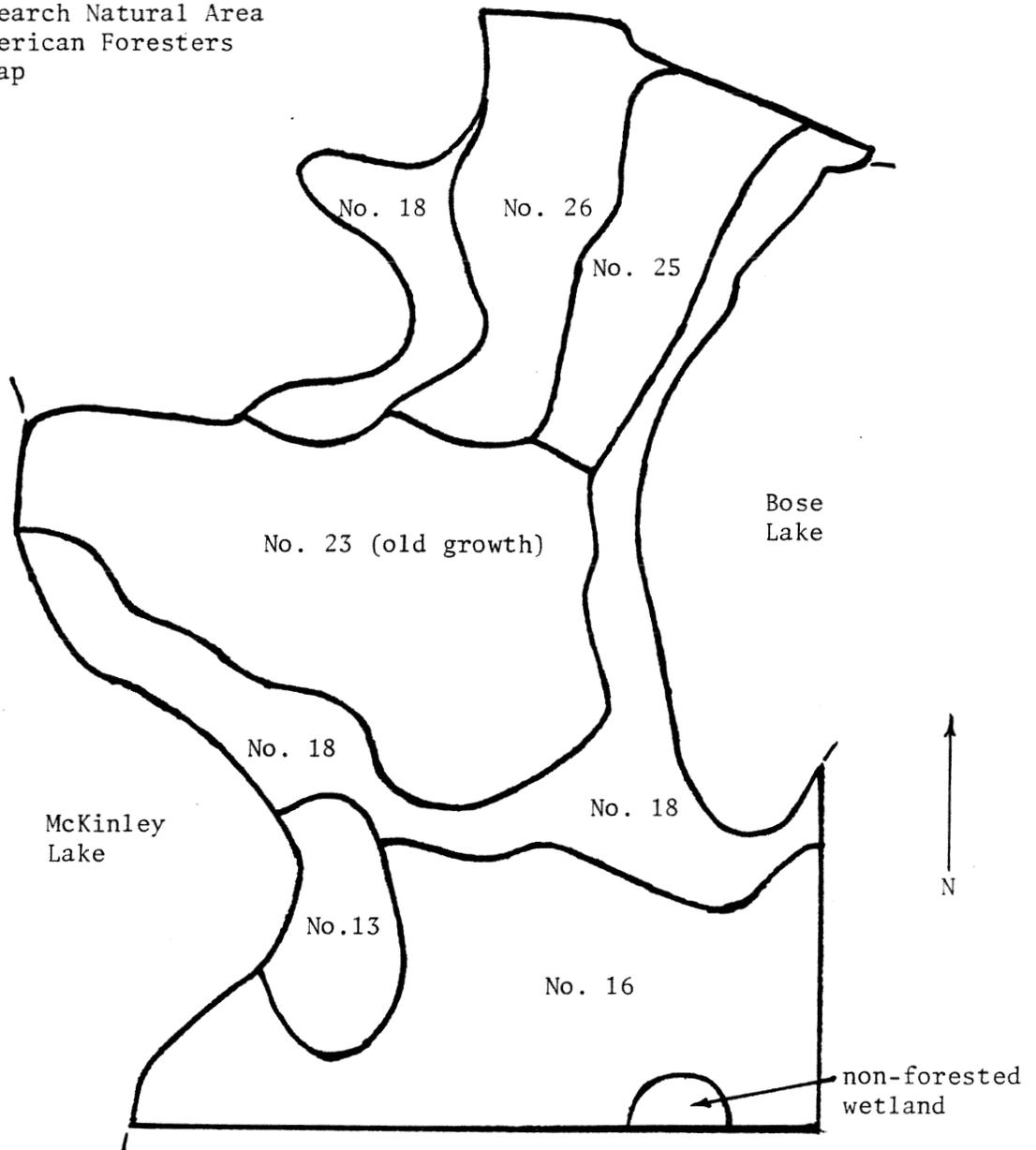


EXHIBIT 1: Location Map

Bose Lake Research Natural Area
 Society of American Foresters
 Forest Type Map



<u>S.A.F. Type:</u>	<u>Acres:</u>	<u>Ha:</u>
No. 13 - Black Spruce / Tamarack	3	1
No. 16 - Aspen	18	7
No. 18 - Paper Birch	19	8
No. 23 - Eastern Hemlock	25	10
No. 25 - Sugar Maple	7	3
No. 26 - Sugar Maple / Basswood	8	3
non-forested wetland	1	1

EXHIBIT 5:
 Cover Type
 Map

USDA-FOREST SERVICE

PHOTOGRAPHIC RECORD

(See FSM 1643.52)

PHOTOGRAPHER

Eric Epstein

DATE SUBMITTED

09/01/88

HEADQUARTERS UNIT

Nicolet N.E.

LOCATION

Forest County, Wisconsin

INITIAL DISTRIBUTION OF PRINTS AND FORM 1600-1:

WO RO DIV. FOREST DISTRICT PHOTOGRAPHER Date October, 1986

INSTRUCTIONS: Submit to Washington Office in quadruplicate. Permanent numbers will be assigned and the forms will be distributed as follows: (1) Washington Office, (2) RO or Station, (3) Forest or Center and (4) Photographer.

PHOTOGRAPH NUMBER		SELECTED FOR W.O. PHOTO LIBRARY	DATE OF EXPOSURE	LOCATION (State, Forest, District and County)	CONCISE DESCRIPTION OF VIEW	NEGATIVE (Show size and BW for black and white or C for color)
TEMP.	PERMANENT (To be filled in by the WO)					
(1)	(2)	(3)	(4)	(5)	(6)	(7)
				Nicolet National Forest Wisconsin		
1			Sept. 86	Sec. 22 T40N, R12E	Bose Lake Hardwoods Research Natural Area - Forest canopy, heavily dominated by Eastern Hemlock (SAF 23).	
2			Sept. 86	Sec. 22 T40N, R12E	Bose Lake Hardwoods Research Natural Area - Eastern Hemlock Forest (SAF 23), with typically sparse understory dominated by wood fern (<i>Dryopteris intermedia</i>).	
3			Sept. 86	Sec. 22 T40N, R12E	Bose Lake Hardwoods Research Natural Area - Canopy gap in Eastern Hemlock Forest (SAF 23) caused by recent windstorm.	
4			Sept. 86	Sec. 22 T40N, R12E	Bose Lake Hardwoods Research Natural Area - Understory at edge of canopy gap, with seedling-sized hemlock and yellow birch.	



PHOTO 1: Bose Lake RNA - Forest canopy, heavily dominated by eastern hemlock (SAF 23).



PHOTO 2: Bose Lake RNA - Eastern hemlock forest (SAF 23), with typically understory dominated by wood fern (Dryopteris intermedia).

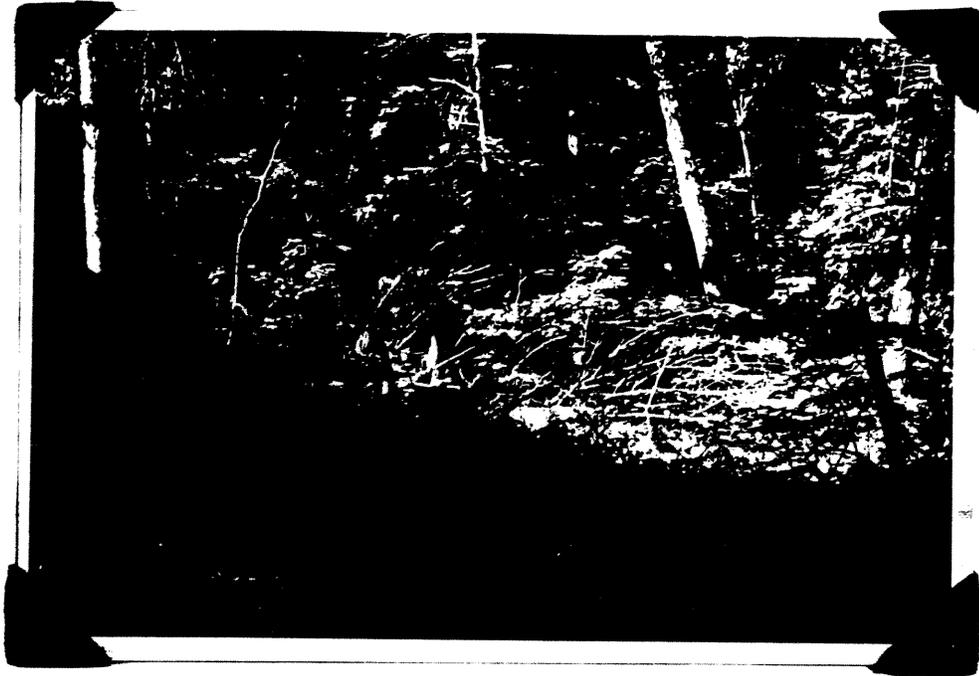
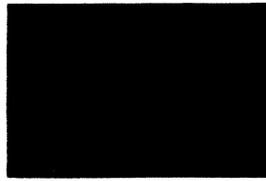


PHOTO 3: Bose Lake RNA - Canopy gap in eastern hemlock (SAF 23) caused by windstorm.



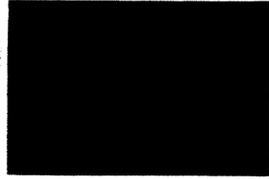
PHOTO 4: Bose Lake RNA - Understory at edge of canopy gap, with seedling-sized hemlock and yellow birch.

Base Lake RNA
Eagle River R.D. #1
Nicolet N.F.



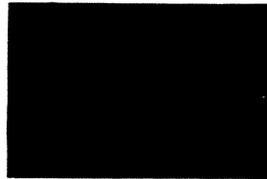
hemlock canopy

Base Lake RNA
Eagle River R.D. #2
Nicolet N.F.



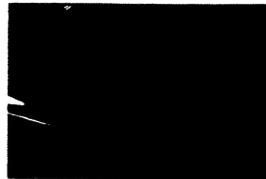
ground vegetation
(dryopteris)

Base Lake RNA
Eagle River R.D. #3
Nicolet N.F.



Wind Throw

Base Lake RNA
Eagle River R.D. #4
Nicolet N.F.



ground layer

SIGNATURE PAGE

for

RESEARCH NATURAL AREA ESTABLISHMENT RECORD

Bose Lake Research Natural Area

Nicolet National Forest

Forest County, Wisconsin

The undersigned certify that all applicable land management planning and environmental analysis requirements have been met, and that boundaries are clearly identified in accordance with FSM 4063.21, Mapping and Recordation, and FSM 4063.41 5.e(3) in arriving at this recommendation.

Prepared by *Fred Fouse* Date 11/8/91
Fred Fouse, Forestry Technician, Nicolet National Forest

Recommended by *Pamela Gardiner* Date 11/14/91
Pamela Gardiner, District Ranger, Eagle River District

Recommended by *Michael B. Hathaway* Date 12/9/91
Michael B. Hathaway, Forest Supervisor, Nicolet National Forest

Recommended by *Floyd J. Marita* Date 2/28/92
Floyd J. Marita, Regional Forester, Eastern Region

Recommended by *R. D. Lindmark* Date 3/2/92
Ronald D. Lindmark, Station Director, North Central Forest and Range Experiment Station

TITLE PAGE

Establishment Record for Bose Lake
Research Natural Area within the Nicolet
National Forest, Forest County, Wisconsin

INTRODUCTION

Bose Lake Research Natural Area (RNA) lies entirely on lands administered by the Nicolet National Forest in Forest County, Wisconsin. A location map (Exhibit 1), proximity map (Exhibit 2), topographic map (Exhibit 3), land ownership map (Exhibit 4), cover type map (Exhibit 5) and color photographs (Exhibit 6) are attached to this report.

The outstanding natural qualities of the Bose Lake hemlock stand have long been recognized. Recommendations by Nicolet National Forest personnel and University of Wisconsin-Milwaukee plant ecologist Forest Stearns led to the designation of this undisturbed stand as State Scientific Area No. 119 in October, 1974. The area was also added to the National Registry of Natural Landmarks by the United States Department of Interior in 1980.

The overstory vegetation for the old growth hemlock/hardwood stand represents Society of American Foresters (SAF) cover type number 23 - Eastern Hemlock and Kuchler (1966) cover type number 98.

Bose Lake RNA was included in the list of candidate Research Natural Areas in the Nicolet National Forest Final Environmental Impact Statement (FEIS). The FEIS lists this RNA as being 22 acres (9 ha.) in size. The size of the RNA established by this record is 81 acres (33 ha.).

There are no known Federal or State endangered or threatened flora or fauna species in this RNA.

LAND MANAGEMENT PLANNING

The Regional Guide for the Eastern Region emphasizes in Management Goal 8 (Appendix A):

- (a) The preservation of unique ecosystems for scientific purposes
- (b) Areas to conduct research to improve the benefits of forests and rangeland
- (c) The protection of unique areas of national significance

The Bose Lake RNA is included in the Nicolet National Forest FIES (Appendix B) list of candidate RNA's. All candidate RNA's have been included in Management Area 8.1 in the Land and Resource Management Plan (Forest Plan) (Appendix C) for the Nicolet National Forest. The Record of Decision (ROD) (Appendix D) for the Forest Plan makes a decision to protect candidate research natural areas until a detailed evaluation on the suitability for designation can be completed.

The area surrounding the Bose Lake RNA has been designated Management Area 3.1 in the Forest Plan which emphasizes an even age hardwood forest, wildlife associated with a variety of tree stands and roaded natural recreation. The RNA lies within portions of record keeping compartment 20 on the Eagle River District, Nicolet National Forest.

OBJECTIVES

The general objectives for establishing the Bose Lake RNA are:

1. To preserve a representative area that typifies important natural forest situations for research, study, observation, monitoring, and those educational activities that maintain unmodified conditions.
2. To preserve and maintain genetic diversity.
3. To protect against serious environmental disruptions.
4. To serve as reference area for the study of succession.
5. To provide on-site and extension educational activities.
6. To serve as a baseline area for measuring long-term ecological changes.
7. To serve as a control area for manipulative research.
8. To monitor effects of resource management techniques and practices.

JUSTIFICATION

Establishment of this tract as a RNA will increase the protection and recognition of an exemplary stand of old growth hemlock hardwoods displaying no evidence whatsoever of past human manipulation. Even though this stand occupies only 25 acres (10 ha) of the 81 acres (33 ha.) in the RNA, remnants of the virgin forest that formerly covered the uplands of northern Wisconsin are extremely uncommon and of great biological significance.

Designation of this RNA will provide an opportunity to observe hemlock reproduction in a relatively undisturbed, old growth hemlock-hardwood stand. Within the RNA outside of the old growth stand there is also an opportunity to monitor hemlock reproduction which is moving southward into a stand that originated from a modified clearcut in 1976. In the clearcut area, long-lived tree species were retained and the mature, short-lived aspen, paper birch and balsam fir were removed. Regeneration has been very good, with hemlock and other conifers coming in under aspen saplings and what was the residual overstory of long-lived hardwoods retained at the time of harvest.

The Regional Guide for the Eastern Region lists SAF Cover Type 23 - Eastern Hemlock as priority number 2 in the Lake States Forests for representation as a Research Natural Area. Priority number 2 cover types are currently represented by one site in the Region.

Scientific interest already exists for this area as demonstrated by a biological survey including permanent plot locations initiated as early as 1979 by the Forest Sciences Laboratory, North Central Forest Experiment Station in Marquette, Michigan. In addition, a baseline monitoring and inventory of northern hardwood-hemlock stands including the Bose Lake stand is being conducted by the University of Wisconsin-Milwaukee.

Bose Lake was designated as a 25 acre (10 ha) Wisconsin State Scientific Area (No. 119) in October of 1974 and as a 60 acre (24 ha) National Natural Landmark in March of 1980. The National Natural Landmark designation also included a 45 acre (18 ha) "buffer zone" surrounding the virgin northern hardwood-hemlock stand.

The boundaries of these other two designations are the same as the RNA boundary on the north, and the east and west, along Bose and McKinley Lakes. The south boundary of the RNA includes a larger area to the south than either of the other designations. No conflict with RNA status is foreseen with these dual designations.

The Wisconsin Scientific Areas Preservation Council Scientific or Natural Area Report states, "There is absolutely no evidence of cutting or other disturbance".

The United States Department of Interior letter which includes this area in the National Registry of Natural Landmarks calls Bose Lake, " ... the best virgin stand of hemlock known in Wisconsin".

PRINCIPAL DISTINGUISHING FEATURES

The primary natural feature of this RNA is a stand of virgin forest dominated by large hemlock (Tsuga canadensis) and sugar maple (Acer saccharum). Canopy associates are yellow birch (Betula alleghaniensis) and basswood (Tilia americana) (Little, 1979). Hemlock over 40" d.b.h. (10 dm.) are present. Fallen trees, cradle knolls and tip-ups are frequent. The stand shows virtually no signs of past human disturbance. The understory is characteristic of old-growth hemlock stands and is discussed under the section on flora.

LOCATION

Bose Lake RNA is on the Eagle River District of the Nicolet National Forest in Forest County, Wisconsin. Forest Supervisor's headquarters are at Rhinelander, Wisconsin.

Latitude is 45° 55' 33" N, longitude 88° 58' 15" W. The hemlock stand occurs on an upland between Bose and McKinley Lakes (Exhibit 3).

Access

The area may be reached with a sedan vehicle by driving east from Eagle River, Wisconsin on State Route 70 approximately 14 miles to Forest Road 2176. (See map Exhibit 2.) Turn south from Highway 70 on Forest Road 2176 and travel approximately 3 miles. There is an old railroad grade, now used as a two-rut road, which leaves FR-2176 at a sharp angle to the northwest. This road goes to a dispersed camping and walk-in access site on the east side of Bose Lake and to a parcel of private property on the north shore. A couple hundred yards to the south access to the RNA is gained via a two-rut logging road which leaves FR-2176 at a right angle to the west-southwest. (See map Exhibit 3.)

The two-rut road is blocked a short distance from its junction with FR-2176. Park at FR-2176 and proceed the rest of the way on foot. Walk west on the unimproved woods road approximately .2 miles and then go northwest on an intersecting road which is blocked at the intersection with an earthen berm. The south end of Bose Lake is approximately .2 mile distant and the hemlock/hardwood stand lies to the northwest between Bose and McKinley Lakes.

Maps

In addition to the location map, proximity map, cover type map, and ownership map included in Exhibit 1 of this report, further details regarding this area may be found on the Alvin NW topographic quadrangle map (USGS 7.5' series). This quadrangle map is available at the Eagle River District Office in Eagle River, Wisconsin or in the Forest Supervisor's Office in Rhinelander, Wisconsin.

Photos

Four color photographs are included in Exhibit 6 of this report.

Recent Forest Service aerial photographs 186-118 and 186-119 for flightline 5 taken in May of 1986 also cover this area. These photos are available at the Eagle River District Office in Eagle River, Wisconsin or in the Forest Supervisor's Office in Rhinelander, Wisconsin.

Elevation

The elevation at the site varies between 1690 feet (515 meters) and 1720 feet (524 meters).

Boundary

The following tract of land also known as Bose Lake Research Natural Area and being located in section 22 of Township 40 North, Range 12 East, Fourth Principal Meridian, Forest County, State of Wisconsin and further described as follows:

Beginning at the section corner common to sections 22, 23, 26 and 27; thence,
North 2° 55' West 1032.24 feet to the meander corner on the South shore of Bose Lake; thence,
North 2° 55' West 1483.02 feet over Bose Lake to the meander corner on the North shore of Bose Lake; thence,
North 71° 33' West 542.60 feet to Angle Point 1; thence,
North 52° 21' West 358.90 feet to the Special Meander Corner; thence,
South 87° 31' West along the East - West center line of section 22 275.00 feet to the edge of the swamp; thence,
South 6° West along the swamp edge 850.00 feet; thence,

South 14° 20' East along the swamp edge 200.00 feet; thence,

South 60° West along the swamp edge 550.00 feet; thence,

South 87° 31' West along the swamp edge 500.00 feet to the East shore of McKinley Lake; thence,

Southerly along the East shore of McKinley Lake to the meander corner between sections 22 and 27 as set on the East shore of McKinley Lake; thence,

North 85° 12' East along the section line between sections 22 and 27 1739.76 feet to the section corner common to sections 22, 23, 26 and 27 and the point of beginning.

(This description is unsurveyed and was prepared from a 1:12000 scale enlargement of the 1970 USFS Quad map "Alvin NW Wisconsin".)

Area

This Research Natural Area occupies 81 acres (33 hectares).

AREA BY COVER TYPES

1. Society of American Foresters Types

The virgin hemlock stand within the Bose Lake RNA boundary falls within SAF (Eyre, 1980) cover type No. 23-eastern hemlock. Canopy gaps are filling with sugar maple and, to a limited extent, yellow birch.

Most of the the area within the RNA south of the hemlock stand is a nondescript stand of mostly pole-size aspen (Populus grandidentata, P. tremuloides), paper birch (Betula papyrifera) and sugar maple, with pockets of balsam fir (Abies balsamea). There is some hemlock regeneration within in this area.

Most of the area within the RNA boundary north of the hemlock stand is in sugar maple and associated types. There is a small swamp conifer stand along McKinley Lake and a one acre non-forested wetland is within the south boundary of the RNA. Types are as follows:

No. 23 Eastern Hemlock	25 acres (10 ha.)
No. 13 Black Spruce/Tamarack	3 acres (1 ha.)
No. 16 Aspen	18 acres (7 ha.)
No. 18 Paper Birch	19 acres (8 ha.)
No. 25 Sugar Maple	7 acres (3 ha.)
No. 26 Sugar Maple-Basswood	8 acres (3 ha.)
(non-forested wetland)	<u>1 acre (1 ha.)</u>
	<u>81 acres (33 ha.)</u>

2. Curtis Community Types

The hemlock stand fits the northern mesic forest type of Curtis (1959) very well. Curtis types are best applied to stands that are thought to reflect conditions prevalent prior to European settlement of Wisconsin.

Northern Mesic Forest - 25 acres (10 hectares)

3. Kuchler Cover Types

All the upland in the RNA is in Kuchler's (1966) classification No. 97, "Northern Hardwoods" (Acer-Betula-Fagus- Tsuga). Beech (Fagus grandifolia) is largely absent from this type in this part of the Nicolet National Forest.

PHYSICAL AND CLIMATIC CONDITIONS

1. Physical

The hemlock stand is bordered on the east by Bose Lake, on the west by McKinley Lake, by a black spruce (*Picea mariana*) swamp on the north, and by a stand of mixed northern hardwoods on the south (Exhibit 3). Site topography is rolling glacial moraine.

2. Climate

The climate is continental, characterized by long, often severely cold winters and relatively short summers with warm days and cool nights. Spring and Fall are often short, with the transition from winter to summer and summer to winter quite rapid. Changes in weather from late Fall to early Spring can be expected every few days as frequent storms pass through the area along the Colorado and Alberta weather tracts. Prevailing winds are northwest to westerly late fall to early spring and from the south the rest of the year. Snowfall of over 1 inch (2.5 cm.) can be expected on the average by the second week of November, and there is a 90 percent probability of snow on the ground during the winter months. Although occasional deep snow years occur, the major snow belt lies to the north along the Penokee Range and Lake Superior.

Frost can be expected occasionally during any of the summer months, especially in low-lying areas. The average date of the last freeze is the last week in May to the first week in June and the first freeze of the Fall may occur in the last week of August to the first week in September.

The mean high temperature in July is 68F (20C) and the mean low temperature in January is 0F (-18C). The mean annual precipitation is 30.6 inches (780 mm). Annual snowfall averages 56 inches (142 cm).

The nearest weather station is the Nicolet College Weather Station just south of Rhinelander, Wisconsin, approximately 34 miles (55 km.) southwest of the RNA. The elevation at the Bose Lake RNA is approximately 1700 feet (518 meters) above sea level and the elevation at Rhinelander is 1560 feet (475 meters). The climatic conditions are comparable at both sites. Weather data has been collected at Rhinelander since 1908.

DESCRIPTION OF VALUES

1. Flora

The overstory canopy of the old growth stand is composed of individual and groups of hemlock trees, with significant numbers of sugar maple and yellow birch. Paper birch, balsam fir and red maple (Acer rubrum) are among other tree species present. (Nomenclature for plants follows Gleason, 1968, except that nomenclature for trees follows Little, 1979.) Masses of seedling and sapling sugar maple occur in canopy gaps of recent origin along with an occasional yellow birch. Hemlock reproduction is present on the margins of the stand, especially near the shores of Bose and McKinley Lakes, and it appears to be moving into the surrounding second growth hardwood stands.

The area within the Research Natural Area surrounding the old growth hemlock stand is made up of aspen, paper birch, sugar maple, balsam fir and mixed northern hardwood stands. Some balsam fir has died as a result of spruce budworm defoliation in the 1970's.

The patchy, generally sparse shrub layer contains species such as mountain maple (Acer spicatum), fly honeysuckle (Lonicera canadensis), beaked hazelnut (Corylus cornuta) and red elder (Sambucus pubens).

Characteristic ground layer species are intermediate wood fern (Dryopteris intermedia), wild sarsaparilla (Aralia nudicaulis), big-leaved aster (Aster macrophyllus), shining clubmoss (Lycopodium lucidulum), running clubmoss (L. clavatum) and Canada mayflower (Maianthemum canadense). Appendix E contains a list of flora observed within the virgin hemlock stand. Scientific nomenclature follows Gleason and Cronquist (1963) and Fernald (1950).

Mr. John Christy of the Milwaukee Public Museum has studied the bryophytes of Bose Lake RNA and compiled a list of the mosses and liverworts found there (Appendix F). Nomenclature follows Crum et al (1973).

No state or federal listed sensitive species have been recorded in the RNA.

The potential climax vegetation for this RNA is hemlock-sugar maple-yellow birch. Using the habitat classification system developed by Kotar (1988) most of the area is of the Forest Habitat Type Acer-Tsuga-Dryopteris with a narrow band of Forest Habitat Type Tsuga-Maianthemum along the shoreline of McKinley Lake and a very limited area of Forest Habitat Type Picea-Osmunda.

The Ecological Land Types, as described in "Ecological Land Types on the Nicolet National Forest" (Appendix H), are:

Stambaugh-Padus	55 acres (22 ha.)
Pence	23 acres (9 ha.)
Carbondale	3 acres (2 ha.)
	<u>81 acres (33 ha.)</u>

2. Fauna

Common mammals utilizing the tract include the red squirrel (Tamiasciurus hudsonicus) and white-tailed deer (Odocoileus virginianus). (Nomenclature for mammals follows Burt, 1964.) Resident birds include the Blackburnian warbler (Dendroica fusca), black-throated green warbler (D. virens), red-breasted nuthatch (Sitta canadensis), winter wren (Troglodytes troglodytes) and pileated woodpecker (Hylatomus pileatus). (Nomenclature for birds follows Bull, Farrand, 1977). Appendix G shows results of breeding bird surveys in 1986, 1988 and 1990 in the virgin hemlock stand.

3. Geology

This hemlock hardwood forest occurs on deposits of the Woodfordian substage of the Wisconsin glacial advance (Paull and Paull, 1977). Precambrian metamorphic rocks, which make up the southern extension of the Canadian Shield, underlie this area. These rocks are primarily mafic, metavolcanic rock with subordinate metasedimentary rock of the lower Proterozoic Era. There are no surface exposures in this area. The bedrock surface is irregular and slopes to the east and southeast approximately 7 to 10 feet (2-3 meters) per mile.

This area was glaciated repeatedly during the Pleistocene Epoch. The existing surface material was deposited by the Langlade Lobe during the middle-Woodfordian substage of the Wisconsin ice advance. The sediment is greater than 164 feet (50 meters) thick. The landform is a kame-and-kettle complex composed of sand and gravel deposited by meltwater streams. The topography is hummocky with depressions caused by collapse of sediment above melted ice.

4. Soils

This area is primarily upland, deep, moderately well drained soil formed in 2.5 to 3 feet (.8 to .9 meters) of fine sandy, loam aeolian material overlying gravelly sand (Stambaugh). The moisture regime is mesic and those sites have a medium to rich nutrient status. Hardwood productivity is very high. Understory diversity is low, resulting in a sparse appearance.

Another soil of lesser extent in this area is deep, well drained and developed in 15 inches (38 centimeters) of sandy loam aeolian material overlying gravelly sand (Pence). These sites are dry-mesic with a medium nutrient status. The understory is moderately well developed and diverse.

There is a small acreage of acid organic soil formed from the remains of bog plants and overlying sand within 10 feet (3 meters). Vegetation consists of swamp conifers with a low diversity of understory species. Productivity is low. (Hoppe, D., Nicolet NF Soil Scientist, 1988 field survey, pers. comm.)

5. Lands

Most of the land in the Bose Lake RNA is reserved public domain land proclaimed to be owned by the United States on March 2, 1933 (Proclamation #2035).

The remainder of the area was acquired on January 6, 1969 with Land and Water Conservation Funds from the State of Wisconsin (Case number N-6). The entire mineral estate within the Bose Lake RNA is owned by the United States.

6. Cultural Resources

The Bose Lake RNA was surveyed for cultural resources and none were identified.

IMPACTS AND POSSIBLE CONFLICTS

1. Mineral Resources

The entire mineral estate is owned by the United States for this area. No prospecting permits have been issued in the area. There are no known mineral deposits or development activities within the boundary of the Nicolet National Forest.

2. Grazing

There is no grazing resource located within or close to the RNA. Range grazing on the Nicolet National Forest is nonexistent due to lack of demand.

3. Timber

The timber management Standards and Guidelines in the Forest Plan for a Management Area 8.1 will be consistent with the special area management objective. The timber resource will not be regulated; that is, timber management practices will not take place within the RNA. Management Area 8.1 is excluded from the land base allocated to timber production. There are 77 acres (31 ha) of commercial forest land in the RNA.

4. Watershed Values

There is no open water within the RNA. However, the RNA lies between the 29 acre (12 hectare) Bose Lake and the 48 acre (19 hectare) McKinley Lake. The undisturbed forest will protect the soil from erosion and help maintain water quality in these two lakes.

5. Recreation Values

The tract has received use by botany and ecology researchers. The area also receives light use by birders, hunters, and hikers. At current levels, these activities are compatible with RNA objectives.

A small, user developed dispersed recreation site is located along the southwest shore of Bose Lake. The site receives a low level of public use and apparently has been used for overnight camping. This will decrease now that a road closure has been implemented to discourage use of the site. It appears unlikely camping will persist without vehicle access, but if necessary a Forest Supervisor's Order will be issued to prohibit this use.

There is also a small dispersed recreation site developed by the Forest Service on the northeast side of Bose Lake, well outside of the RNA. This site is reached by road from Forest Road 2176. It includes a small cleared area for picnicing and steps to Bose Lake which serve as a carry-in launch site for canoes and small boats. Public use of this facility is low, centering on fishing access to the lake, and will not have a negative impact on this RNA.

There is a dispersed camping area on the east shore of McKinley Lake, south of the small black spruce/tamarack stand in the RNA. The north end of this camping area, which roughly corresponds in size to two or three campground sites, is within the RNA boundary. Access to these sites was via a southerly fork of the same two-rut woods road that accessed the site on the southwest shore of Bose Lake. Use of the McKinley Lake sites will also decrease with closure of the road. Some incidental use of the spot by boaters may continue, but the swamp conifer stand and boggy shoreline riddled with beaver tunnels block easy foot access up the shoreline into the hemlock/hardwood stand.

It appears unlikely the level of use at the McKinley Lake sites will be significant without vehicle access. At expected levels these activities are compatible with RNA objectives, but if necessary a Forest Supervisor's Order will be issued to prohibit this use.

6. Wildlife and Plant Values

The area provides habitat for numerous nongame species as well as several of the common game animals. The plant community is unmanipulated and is an excellent example of old-growth hemlock hardwood forest.

There has been considerable beaver activity in the RNA, especially adjacent to McKinley Lake. Several sawtimber-sized aspen (Populus tremuloides) have been felled. This is not expected to have a significant negative impact on the distinguishing natural features of the RNA. Beaver are an indigenous species and have always been a natural influence across the region.

7. Special Management Values

The RNA is not in a proposed wilderness, wild and scenic river or national recreation area.

Wilderness legislation was enacted for Wisconsin in 1978 which established the Blackjack Springs and Whisker Lake Wilderness Areas. Wilderness legislation was enacted for Wisconsin in 1984 which established the Headwaters Wilderness Area. Bose Lake RNA lies several miles away from these wilderness areas. Release language included in the 1984 legislation precluded any additional wilderness studies until, at least, the next planning period.

8. Land Uses

A private recreational residence (not a permanent, year-round residence) has been constructed on the northern edge of Bose Lake on a four-acre tract that lies adjacent to the RNA, but outside of the RNA boundary. This four acre tract of private land and associated improvements are not expected to have a significant impact on the RNA. Use by the owners there centers on the lake.

The presence of this private parcel discourages foot travel by others around the north end of Bose Lake into the RNA. Access to this parcel is off of FR-2176 via the same road that serves the Forest Service dispersed recreation site on the east shore of Bose Lake. Access to the private parcel does not involve the RNA.

9. Transportation System

Forest Road 2176 lies 1/4 mile (.4 km) east of the RNA and there is 1/3 mile (.5 km) class D road special use permit to a lakeshore cottage on a private 4 acre (2 hectare) parcel just north of the RNA. No new road development is planned in the immediate area.

Short segments of a low standard traffic service level D road meander across the south boundary of the RNA. However, this road was closed to motorized use in August, 1991. Former access points to this road segment at FR-2176 and FR-2140 are now blocked by earthen berms. Previously, access into the RNA was possible with a high clearance vehicle. This travel was a potential conflict with the management objective of the RNA, so the road was closed. The amount of foot travel anticipated on the old road system is unlikely to be significant.

MANAGEMENT PRESCRIPTION

Specific Management Objective: To preserve for scientific purposes the existing hemlock hardwood stand in an old growth condition.

The Land and Resource Management Plan (Appendix C) has Forest-wide standards and guidelines and those included in Management Area 8.1 which apply to the Bose Lake Research Natural Area.

Fire suppression and insect and disease control will occur as needed to achieve the management objective for the area. Fire control methods causing minimum impacts will be used.

Light public recreation use is acceptable in the area. Recreation will be discouraged. Existing dispersed camping sites on the edge of the RNA will not be maintained. Dispersed camping use within the Management Area will be monitored annually. If monitoring shows that dispersed camping use is increasing or otherwise poses a threat to RNA values, a Forest Supervisor's Order will be issued closing the area to camping.

No fences are required for the protection and management of this area.

Upon establishment of the RNA the following actions will be taken:

A Forest Order will be issued to prohibit all use of motorized vehicles within the RNA. Both access points to the unimproved woods road on the south side of the RNA were closed with the installation of earthen barriers at FR-2176 and FR-2140.

Boundary corners and turning points will be identified on the ground and clearly monumented.

Consideration will be given in all management practices outside the boundary of this RNA to the potential environmental impact on the Bose Lake Research Natural Area. Management practices outside this RNA will be designed to avoid any significant negative impacts to the area. The 3.1 Management Area surrounding the RNA features evenage timber management. However, unevenage management is typically employed in the sugar maple types which are adjacent to the RNA.

The Record of Decision (Appendix D) for the Nicolet National Forest Land and Resource Management Plan was signed by the Regional Forester on August 11, 1986.

Future management decisions will be made in consultation with the North Central Forest Experiment Station; the Heritage Conservation and Recreation Service, United States Department of Interior; the Bureau of Endangered Resources, Wisconsin Department of Natural Resources and the Region Nine Research Natural Area Committee, Forest Service, United States Department of Agriculture.

ADMINISTRATIVE RECORDS AND PROTECTION

The administrator and protector of this area is:

District Ranger
Nicolet National Forest
P.O. Box 1809
Eagle River, Wisconsin 54521

The research coordinator of this area is:

Director
USDA - Forest Service
North Central Forest Experiment Station
1992 Folwell Avenue
St. Paul, Minnesota 55108

The research data file is maintained by:

Director
USDA - Forest Service
North Central Forest Experiment Station
1992 Folwell Avenue
St. Paul, Minnesota 55108

Forest Supervisor
Nicolet National Forest
68 South Stevens St.
Rhinelander, Wisconsin 54501

Research proposals are to be submitted to the Director, North Central Forest Experiment Station, for review and approval. The Forest Supervisor, Nicolet National Forest, then issues permits for approved non-manipulative research.

Plant collections will be housed at the Herbarium, University of Wisconsin, Madison.

Special protection needs are:

The issuance of a Forest Order to prohibit the use of motorized vehicles within the RNA.

The annual monitoring of dispersed camping. Do not prohibit at this time.

The effective continued closure of the existing low standard road within the RNA.

These items are discussed in more detail in the Management Prescription Section.

Forest Orders issued for this RNA will be posted at the site, at the Eagle River District Office in Eagle River, Wisconsin, and at the Forest Supervisor's Office in Rhinelander, Wisconsin.

BOUNDARY CERTIFICATION

I certify that the enclosed boundary description of the Bose Lake Research Natural Area was prepared under my direct supervision.

Seal

William B. Cochrane
Forest Land Surveyor

Nov. 5, 1991
Date



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APPENDICES

- Appendix A: Regional Guide - Management Goal 8
- Appendix B: Nicolet Forest Plan - Opportunities for Research Natural Areas/
Scientific Areas
- Appendix C: Nicolet Forest Plan - Forest-wide Standards and Guidelines
- Appendix D: Record of Decision, Nicolet Forest Plan FEIS - Special Areas
- Appendix E: Plant List
- Appendix F: List of Mosses and Liverworts
- Appendix G: Breeding Bird Surveys - 1986, 1988, and 1989
- Appendix H: Ecological Land Type Associations
- Appendix I: EA Decision Notice and FONSI

United States
Department of
Agriculture

Forest
Service

Eastern
Region

Milwaukee, Wis.

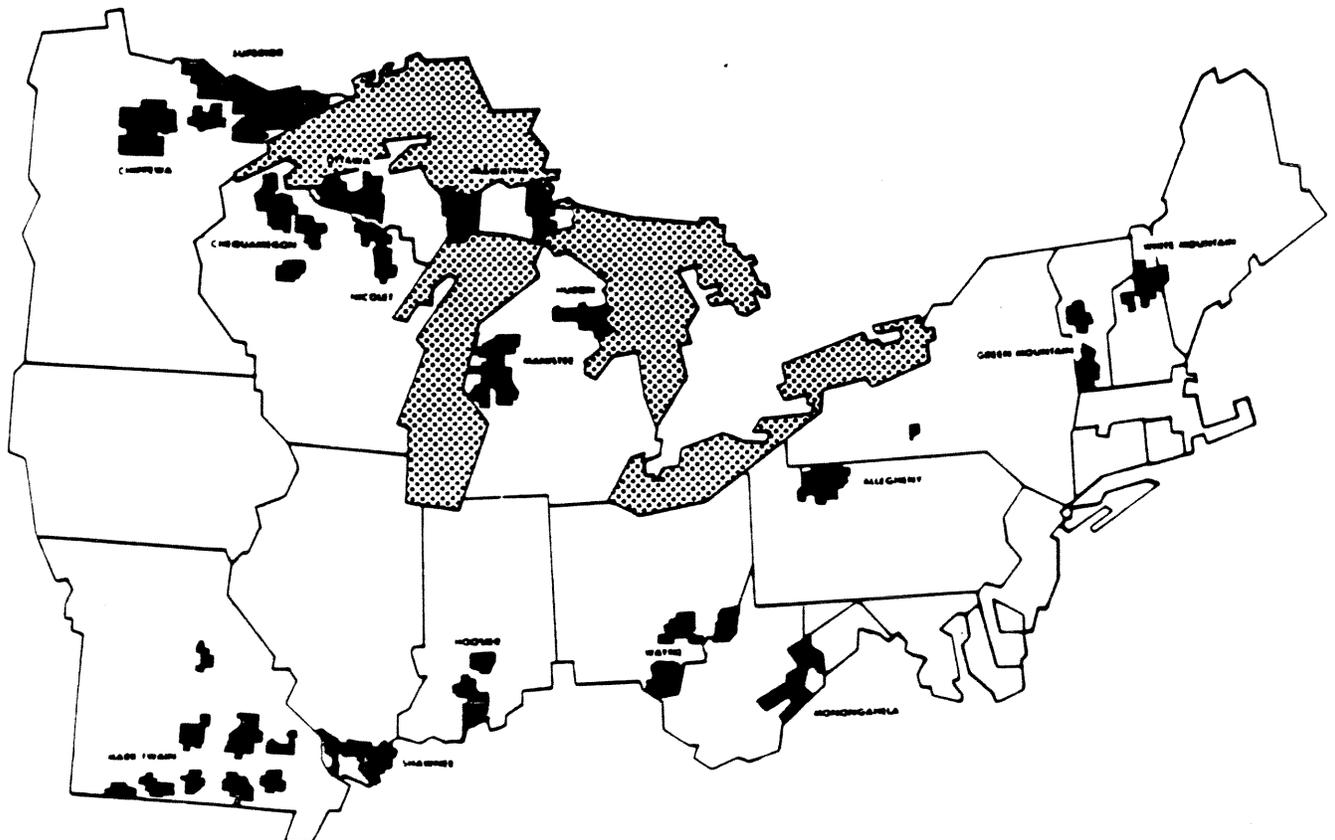
Regional Guide

for the Eastern Region



APPENDIX A

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Management Goal 8

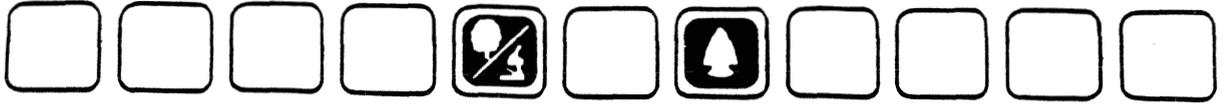
This goal will emphasize the following:

- a) The preservation of unique ecosystems for scientific purposes
- b) Areas to conduct research to improve the benefits of forests and rangeland
- c) The protection of unique areas of national significance

These areas will include a wide range of ecosystems for designated research natural areas, experimental forests, wild and scenic rivers, and other unique areas of national significance.

A system of roads and trails may provide access for administrative purposes and recreation activities if compatible with the purpose of the area. Management of these systems will depend on the objective of the area, with motorized and nonmotorized access often being regulated. Facilities and structures will be present and will be designed to be compatible with the natural surroundings. Evidence of human activities will vary, but generally will be controlled to reduce its effect on the area.

The size of the areas will vary, depending on the intended purpose.



STANDARDS AND GUIDELINES FOR MANAGEMENT GOAL 8

1900 LAND AND RESOURCE MANAGEMENT PLANNING

Vegetative Management

Vegetative management will be governed by the special area management objectives.

2100 ENVIRONMENTAL MANAGEMENT

Air Quality

Forests will advise the Regional Forester of areas where redesignation to Class I air-quality area is necessary to protect wilderness or other unique National Forest System lands.

2200 RANGE MANAGEMENT

Forage management will comply with the special area management objectives.

2300 RECREATION MANAGEMENT

Recreation Opportunities

Location of recreational developments will be determined with priority given to correcting health and safety problems, protecting the environment, complementing prescribed recreation opportunities, and meeting public demand.

Feature the ROS classes that are consistent with the special area management objectives.

Trails

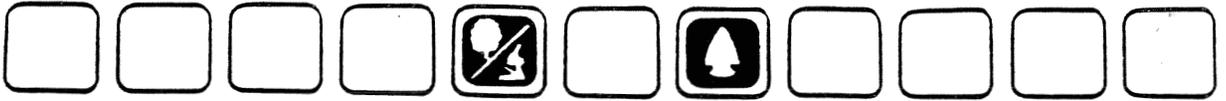
Trails will be consistent with the special area management objectives.

Off-Road Vehicles (ORV)

ORV use will be restricted to designated roads and trails, unless otherwise provided for by law, regulation, or the special area management objectives for each area.

Cultural Resources

Forest will set priorities for and will schedule evaluation of cultural resources for the National Register of Historic Places.



STANDARDS AND GUIDELINES FOR MANAGEMENT GOAL 8

Assess the nature and degree of damage to cultural resources caused by vandalism, visitor use, and natural deterioration and identify protective measures to be implemented.

Areas having unique cultural resource values of national significance will be identified for special management, including enhancement and interpretation. Cultural resource interpretation in other special management areas will be consistent with each area's purpose.

Visual Quality

Visual quality objectives will be consistent with special area management objectives.

2400 TIMBER MANAGEMENT

Silvicultural Systems

Even-aged or uneven-aged systems may be used on experimental forests. On unique areas other than experimental forest, Forest or area management plans will specify the systems to be used.

Harvest Cutting Methods

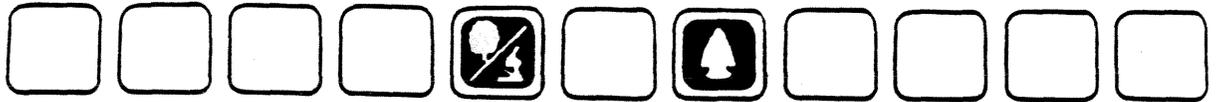
Harvest cutting methods must be consistent with the objectives stated for this Regional goal and as shown in the table titled: Harvest Cutting Methods in the Eastern Region by Forest Types, Regional Management Goals and Subregion, Appendix C.

Clearcutting will be used only where it is the optimum method to meet the goal objectives. Forest Plans will specify conditions and situations for variation from the appropriate harvest cutting method specified in Appendix C.

Temporary Openings Created by the Application of Even-Aged Silviculture

The maximum size of temporary openings created by even-aged management is 40 acres, except as provided in 1-4 below:

1. 370 acres in jack pine type for Kirtland's Warbler habitat on the Huron-Manistee National Forest



STANDARDS AND GUIDELINES FOR MANAGEMENT GOAL 8

2. 200 acres in aspen, birch, conifer types within areas managed for moose habitat on the Superior National Forest
3. 300 acres in designated special management areas on the Hiawatha, Ottawa, Chequamegon, and Huron-Manistee National Forests for sharp-tailed grouse and sandhill crane
4. Exceptions in the NFMA regulations, which are:
 - a) On an individual sale basis after 60 days public notice and review by the Regional Forester
 - b) As a result of natural catastrophic condition, such as fire, insect and disease attack, or windstorm

Creation of temporary openings and definition of their sizes will be further governed by the special area management objectives.

Management Intensity and Utilization

For the purpose of determining harvest levels, the utilization standards in Table 3-2 will apply.

Forests will consider a range of management intensities when developing prescriptions, yields, and output values. When determining intensity levels, the following practices will be considered: site preparation, seeding, planting, prescribed fire, precommercial and commercial thinning, release, fertilization, and integrated pest management. Practices will be employed when cost efficient and needed to meet the objectives of the relevant Regional goal.

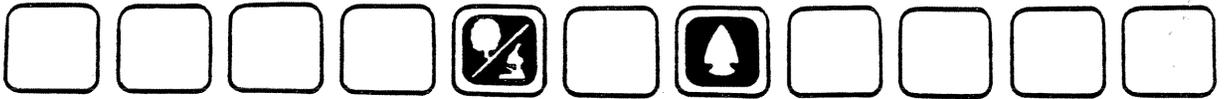
Silvicultural standards will incorporate genetic improvement principles and practices.

Forest Plans will specify management practices to be used to obtain desired conditions for each time type to be harvested.

Minimum stand size for timber production normally will be 10 acres. Forests will specify exceptions.

2500 WATER AND SOIL RESOURCE MANAGEMENT

Manage riparian areas using practices that are consistent with resource conditions, management objectives, and designated water use.



STANDARDS AND GUIDELINES FOR MANAGEMENT GOAL 8

Construction and rehabilitation of structures and facilities will preserve the beneficial values of floodplains and wetlands, will protect public safety, and will be cost efficient.

Heavily disturbed areas, such as borrow pits and mineral developments, when restored, will meet the objectives of this goal. Water bodies may be created when surface runoff and soil conditions permit.

Control measures to mitigate erosion will be commensurate with the soil characteristics, expected use, and management objectives of the area.

2600 WILDLIFE HABITAT MANAGEMENT

Wildlife

Protect existing spring seeps and other water areas that are critical to wintering wildlife. Each Forest will identify sites that require protection prior to implementing adjacent resource management activities.

Favor selective treatment of transmission line rights-of-way vegetation to improve wildlife forage.

Wildlife habitat management will comply with special area management objectives.

Fish

Fish habitat management will comply with special area management objectives.

Endangered, Threatened, and Sensitive Species

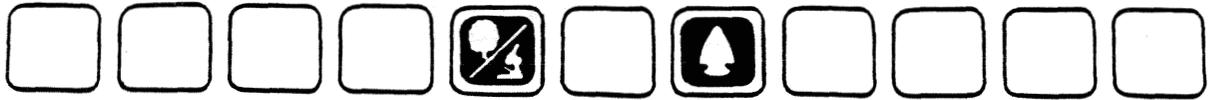
Identify and manage potential nest trees (2-3) within active and potential bald eagle or osprey nesting areas.

2700 SPECIAL USES MANAGEMENT

Utility Transmission Corridors

NOTE: See also 7700 Transportation System, Corridors.

Permit only those facilities that are required to serve recreational or administrative facilities. Exceptions will be considered on an individual basis.



STANDARDS AND GUIDELINES FOR MANAGEMENT GOAL 8

Utility Distribution Systems

Approval of application for distribution systems crossing National Forest System lands (such as utility rights-of-way serving individual residences) will be determined individually, consistent with the standards and guidelines for this Regional management goal.

2800 MINERALS AND GEOLOGY

Mineral Exploration

Surface-disturbing exploration (including core drilling) will be permitted wherever it is compatible with the management objectives of the area.

Mineral Development

USDA consent to mineral extraction plans will be determined individually, based on the relative value of the surface/subsurface resources and on consistency with the standards and guidelines in this Regional management goal.

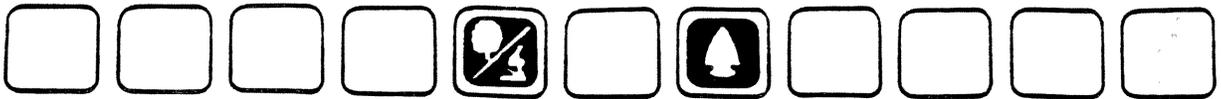
5100 FIRE MANAGEMENT

Prescribed fire may be used to establish or maintain vegetation under established resource management prescriptions.

Activity fuels will be managed at a level commensurate with the allowable fire intensity and rate of spread that meets resource objectives in established prescriptions. Treatment along highways and adjacent properties will meet applicable State laws.

Fuelbreak management will be addressed in the development of management prescriptions, with locations and size based on analysis of probable fire locations, expected fire intensities, and potential versus allowable net resource value change.

Wildfire prevention, detection, and suppression, as well as fuels management, including fuelbreaks and hazard reduction, will be planned, based on an analysis of probable fire location, expected fire intensities, potential net resource value change, and risk to health and safety, and will be addressed in the development of management prescriptions.



STANDARDS AND GUIDELINES FOR MANAGEMENT GOAL 8

5400 LANDOWNERSHIP

Surface Ownership

Avoid encumbering land available for exchange with land uses that compromise land exchange opportunities.

7300 BUILDINGS AND STRUCTURES

Limit buildings and structures to those needed to support the special area management objectives.

7400 PUBLIC HEALTH AND POLLUTION CONTROL ACTIVITIES

Water Supply

Drinking water may be provided. If provided, it must meet Federal and State regulations and be protected to ensure its continued quality.

Solid Waste

Landfill disposal sites may be allowed only as permitted by the special area management objectives.

7700 TRANSPORTATION SYSTEM

Roads

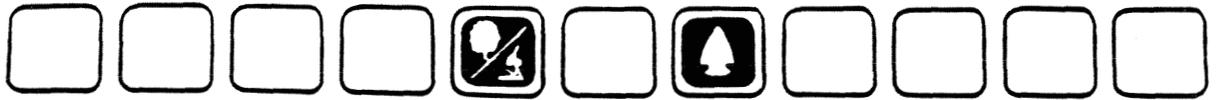
Collectors and local roads will be designed, constructed, and managed for transporting forest products and supporting administrative use.

Provide local roads as needed to comply with special area management objectives.

Roads may be closed to public use or restricted by vehicle type or season of use.

Roads will be maintained to at least maintenance level III if passenger car travel is intended, maintenance level II if passage of vehicles is limited, or maintenance level I if closed to vehicular traffic.

All temporary and short-term roads will be planned and constructed to be revegetated. Revegetation will be accomplished in a reasonable period of time, not to exceed 10 years after termination of the contract, lease, or permit.



STANDARDS AND GUIDELINES FOR MANAGEMENT GOAL 8

Identify all existing roads and determine those needed for administrative and public use. Unnecessary roads will be obliterated.

Corridors

Corridors up to one-half mile wide will be identified for each arterial or collector road (including Forest Highways that meet this definition) to be constructed or reconstructed.

Table 3-21

Targets for Locating, Evaluating, and Establishing Research Natural
Areas for the Eastern Region, January 1982
(Society of American Forester Numbers and Forest Cover Types)

Priority #1 Unrepresented Forest Cover Types	Priority #2 Forest Cover Types Represented Once	Priority #3 Forest Cover Types Represented Twice
Chippewa, Superior, Nicolet, Chequamegon, Ottawa, Hiawatha, and Huron-Manistee National Forests		
13 Black spruce-tamarack	14 Northern pin oak	5 Balsam fir
17 Pin cherry	21 Eastern white pine	15 Red pine
18 Paper birch	23 Eastern hemlock	24 Hemlock-yellow birch
20 White pine-northern red oak-red maple	25 Sugar maple-beech- yellow birch	
26 Sugar maple-basswood	37 Northern white cedar	
51 White pine- chestnut oak	38 Tamarack	
52 White oak-black oak-northern red oak	39 Black ash-American elm-red maple	
108 Red maple	55 Northern red oak	
Green Mountain and White Mountain National Forests		
5 Balsam fir	18 Paper birch	
13 Black spruce-tamarack	25 Sugar maple-beech- yellow birch	
16 Aspen	32 Red spruce	
17 Pin cherry		
19 Gray birch-red maple		
22 White pine-hemlock		
24 Hemlock-yellow birch		
27 Sugar maple		
30 Red spruce-yellow birch		
31 Red spruce-sugar maple-beech		
33 Red spruce-balsam fir		
35 Paper birch-red spruce-balsam fir		
37 Northern white-cedar		
38 Tamarack		
45 Pitch pine		
46 Eastern red cedar		
55 Northern red oak		
107 White spruce		
108 Red maple		

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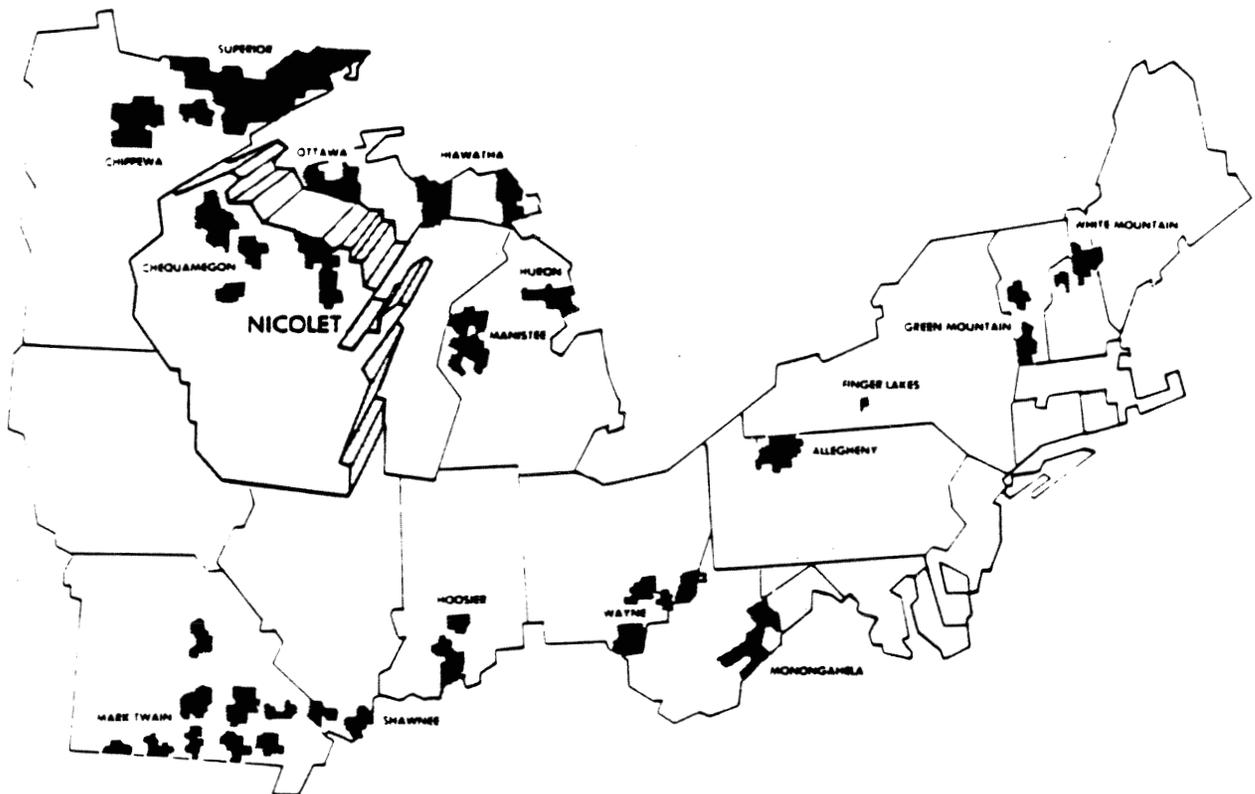
Final Environmental Impact Statement

Land and Resource Management Plan

NICOLET NATIONAL FOREST

APPENDIX B

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Wilderness

The Nicolet has three designated wildernesses, totaling 33,258 acres:

Blackjack Springs contains a series of springs in an area of slightly rolling and forested topography with a white pine-red oak component. The springs flow into the Deerskin River, a popular trout stream that forms the north wilderness boundary.

Headwaters Wilderness is comprised of three areas separated by gravel roads. These areas contain vegetation and topography representative of northern Wisconsin. Terrain is generally flat with hardwood ridges and forested swamp, muskeg and bog lowlands.

Whisker Lake contains several small lakes set in a forest consisting of white pine, hardwoods, aspen and some virgin red pine. The lakes provide fishing opportunities for people as well as eagle and osprey.

The primary activities occurring in these areas are hunting, fishing, camping and trail uses.

These areas have been congressionally designated as wilderness. Because of the congressional mandate, there is no variation possible through different alternative management, concerning the amount of wilderness acres on the Nicolet. In May 1984, when wilderness legislation was enacted for the Headwaters Wilderness, release language was included in the legislation precluding any additional wilderness studies until at least the next planning period, and other areas of the Forest that are not designated as wilderness are to be managed for multiple uses.

Opportunities for Research Natural Areas/Scientific Areas

Research Natural Areas (RNA's) are formally designated areas that represent natural ecologic communities. Their purpose is to promote and protect natural diversity in all its forms. These areas are available for nonmanipulative research and scientific study. As part of the forest planning process the forests were to identify areas in the Forest Plan that could be evaluated in the future for possible additions to the RNA system. Priority was to be given to those ecosystems that were represented by only one or two locations. Actions to evaluate the identified areas will follow the Forest Plan process. Establishment records will be prepared for qualified areas. These documents must be approved by the Chief of the Forest Service to officially establish the Research Natural Areas.

Scientific Areas are similar to RNA's but are formally designated by the State of Wisconsin. Dedication of new Scientific Areas within the

=

Table 3-1

SITES RECOMMENDED FOR POTENTIAL RESEARCH NATURAL AREAS
AND/OR STATE SCIENTIFIC AREAS (Management Area 8.1)

<u>Name</u>	<u>Town</u>	<u>Range</u>	<u>Section</u>	<u>Approx. Acres</u>
1. Alvin Creek Headwaters	40N	13E	10,11	119
2. Atkins Lake	37N	11,12E	25,30	800
3. Barney Creek	33N	15E	6	20
4. Bastile Lake	39N	14E	28	115
5. Brule River Cliffs	41N	16E	19,30	100
6. Glocke Lake	33N	15E	13,24	70
7. Grandma Lake Wetlands	39N	15E	33,34,35	374
8. Hagar Mountain	32N	17E	31,32	160
	31N	17E	5,6	
9. Kentuck Lake Swale	41N	12E	27,34	208
10. Snow Falls Creek	32N	16E	1,12	350
11. Waupee Lake	31N	17E	3	60
12. Wisconsin Slough	41N	15E	34	100
	40N	15E	4	
13. Scott Lake-Shelp Lake	38N	12E	17	266
14. Giant White Pine Grove	38N	12E	10	23
15. Bose Lake Hardwoods	40N	12E	22	22
16. Pine-Oak Grove	40N	11E	2	120
17. South Branch Grove	31N	15E	35,36	160
18. McCaslin Mountain	34N	16E	35,36	185

National Forest will be through negotiated management agreements with the State following the Forest Plan process.

Eighteen areas of the Nicolet are currently identified that need evaluation to determine if they represent the qualities of a RNA, and/or a State Scientific Area. These areas are listed in Table 3-1. All areas will be assigned to Management Area 8.1. Their natural integrity will be protected until they can be evaluated to determine their status. Additional areas may be listed and evaluated throughout the planning period.

Some of these areas have already been placed in special categories. The Bose Lake Hardwoods was designated a State Scientific Area (No. 119) in 1969 and as a Natural Landmark by the Secretary of the Interior in 1980. Scott Lake-Shelp Lake and Giant White Pine Grove were designated State Scientific Areas (No. 117 and No. 118) in 1969. Three of the areas: Scott Lake-Shelp Lake, Giant White Pine Grove, and Blackjack Springs White Pine-Red Oak are within designated wilderness.

If through the evaluation process those areas do not qualify as RNA's or State Scientific Areas, they will then be assigned as Special Areas as described in the following section.

Special Areas

Several areas have been identified that meet criteria for consideration as special areas. These criteria include unique plant and animal communities and geological formations. The 71 sites are listed in Table 3-2. The values of each area are not listed to avoid undue attention to them until specific boundaries are set and their management is determined, or through evaluation it is decided that they do not qualify as Special Areas. This will be done in cooperation with the State of Wisconsin following the Forest Plan process. For their protection, all areas are placed in Management Area 8.1.

Wild, Scenic and Recreation Rivers

Three rivers originating within the boundaries of the Nicolet National Forest and one boundary river are eligible for scenic or recreation river status. The rivers are the Pine, Popple, Peshtigo and Brule. In 1983, a task force was assigned to review these rivers and make a preliminary determination of the river's qualifications.

The task force determined that none of the rivers were eligible for federal wild classification. All the river segments were accessible by road, had developments on private lands along the rivers and contained visible evidence of ongoing land management. It was also reported that the rivers considered would meet the criteria for scenic or recreation classification. The National Forest land areas adjacent to the rivers could be managed for a full range of resource use if certain standards and guidelines were followed.

Adopting those standards for management of the National Forest lands would not preclude designation of the rivers as scenic or recreation rivers in the Federal system. Based on this finding, the Forest Service determined that the Pine, Popple, Peshtigo, and Brule Rivers be placed in Management Area 9, with no regulated harvests scheduled for the first decade in these corridors.

Refer to Appendix C for a more detailed analysis of these potential scenic and recreation rivers.

Wetlands

Wetland areas on the Nicolet are found on the Carbondale and Greenwood Ecological Land Types (ELT's). Lowland conifer and swamp hardwoods are the predominant timber types. Other classifications of land types found in the wetlands are sedge meadow, marsh, shrub swamp, bog, and open water. Approximately 153,000 acres, or 23% of the Forest is classified as wetland. (See Table D-1A, Appendix D for acreage breakdown.)

G. IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

An irreversible commitment of resources is one that results from actions altering an area such that it is prevented from returning to its natural condition for an extended period of time or one that utilizes nonrenewable resources, such as minerals. The only irreversible commitment of resources anticipated under any alternative would be the extraction of mineral resources which would not vary significantly among alternatives, the use of fossil fuels for energy in the administration and management of the forest and any inadvertent loss of cultural resources.

Irretrievable commitments of resources include lost production or lost use of renewable resources due to a management decision. The opportunity to use the resource is foregone during the period of time that is committed to other uses. The loss is sustained only during the period of their unavailability to the alternate use. Management decisions that forego the production or use of renewable resources for relatively long periods of time and in varying amounts within each alternative include:

- The reduction of timber production on sites dedicated to roads, wildlife openings, recreation facilities, research natural areas, right-of-way corridors and seed production areas.
- Loss of resource production potential in management prescriptions for areas 5, 6.3, 8 and 9 (see Management Area Maps - and Forest Plan).
- Any inadvertent damage and subsequent loss of threatened, endangered or sensitive wildlife and plant species habitat, wetlands, soils, air quality or water quality. These losses could occur if mitigation measures are unsuccessful.
- Any shifts in the recreation opportunity class from the primitive end of the spectrum towards the urban end.
- Any shifts in the visual quality objective towards modification.
- Any loss of human health or life due to increase traffic on and use of the forest resources.
- Any loss of investments due to high risks. As an example, if developed recreation facilities are constructed, but the demand for these facilities turns out to be much lower than projected, the investments could be lost.

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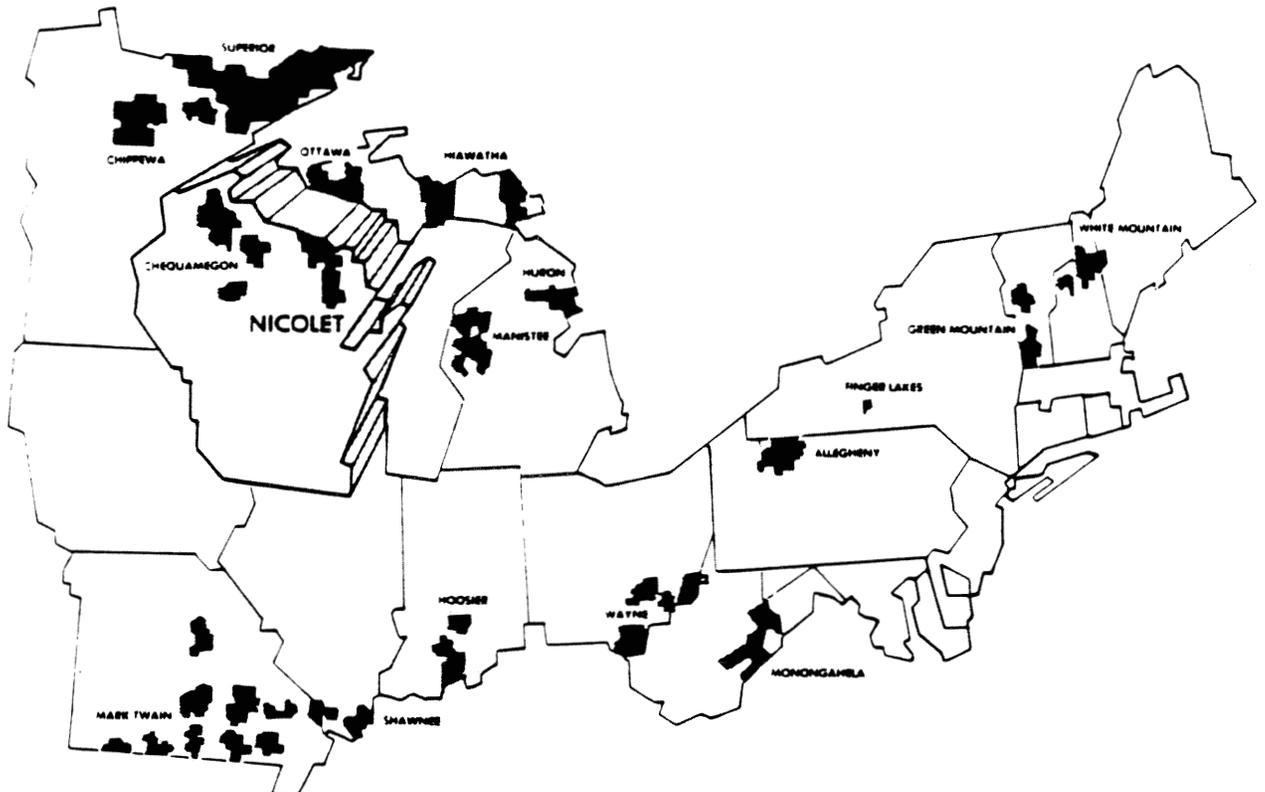


Land and Resource Management Plan

NICOLET NATIONAL FOREST

APPENDIX C

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2. Forest-wide Standards and Guidelines

The Forest-wide standards and guidelines contain direction that applies to the entire Nicolet National Forest. When the appropriate practices apply, the following standards and guidelines are to be used (exceptions where they do not apply are noted). They are listed here:

1600 Information Services

Work to achieve informed public consent during development of land and resource management plans and programs prior to their implementation.

Implement a public information and education program in coordination with other public and private organizations to reduce the number, intensity, and cost of conflict producing and resource damaging situations.

1800 Human and Community Development

Identify Forest related opportunities that will help individuals and local communities enhance their self-sufficiency and their feelings of social well-being.

Identify opportunities in which individuals and volunteer organizations can assist in the management of the National Forest.

Do not allow resource management activities to preclude the right of American Indians to express and exercise their traditional religion.

1900 Land and Resource Management Planning

Plan Implementation

Assure that implementation of this plan is done through integrated resource management. All project activities must be driven by multiple use objectives as described in the plan. Resource needs (recreation, wildlife, timber, visual, soil, water, etc) must be specified and predetermined prior to project planning in an integrated manner and in accordance with this plan.

Vegetative Management

Does not apply to MA 5 or 9.1. Favor native species when restoring disturbed areas or providing vegetative screening. Ensure diversity of vegetative types by following the composition objectives of the Management Area. Openings, regeneration, old growth, mast producers, wetlands, forage, thermal cover and other vegetative types will be interspersed among the management areas as specified.

Limit whole tree removal to soils with sufficient nutrient content and nutrient storage capacity to support the new stand of vegetation and maintain soil productivity.

NEPA Process

A decision to implement any proposed action that could affect resources, land uses and environmental quality not covered under this Forest Plan shall be preceded by an environmental analysis. The Forest Supervisor will use the results of the analysis to determine if any documentation is required by the National Environmental Policy Act.

All actions in the annual program of work are covered by the Forest Plan. Any project identified in the Forest Plan must be assessed to determine if environmental effects will occur. The Nicolet will file a decision notice on the annual program of work.

2100 Environmental Management

Air Quality

Mitigating measures for forest management activities affecting air quality will be specified, and control will be coordinated with regulatory agencies.

Present and potential impairment of Forest resources attributable to air pollution will be identified, and the Regional Forester will be advised.

Pesticide Use

Pesticides will be used only after consideration of other alternatives clearly demonstrates pesticide use is

essential to meet management objectives. Consideration will be given to the environmental acceptability, economic efficiency, visual impact and biological effectiveness of available alternatives.

Alternatives include silvicultural, mechanical, manual, prescribed fire, biological, and chemical treatments.

Whenever possible, the application of herbicides in retention zones (see 2300 - Visual Quality Objectives) should occur so that the vegetation is deadened in the fall of the year.

Use only pesticides registered by the Environmental Protection Agency (EPA) in full accordance with the Federal Insecticide, Fungicide and Rodenticide Act, as amended, except as otherwise provided by regulations, orders, or permits issued by the EPA. In addition, certain pesticide uses require Regional Forester approval.

2300 Recreation Management

Recreation Opportunities

Recreation developments will be placed with priority given to protecting the environment, correcting health and safety problems, complementing prescribed recreation opportunities and meeting demand.

All new construction or improvements made to existing facilities will provide for handicapped access. This will include campground facilities, with handicap access to toilets, water fountains, and barrier free walkways.

Campgrounds, swimming beaches, picnic areas, boat launches and other intensive use sites will be provided primarily at experience Levels II, III or IV. Recreation sites that compliment and encourage dispersed use are featured.

Recreation Facilities (Practices Used)

These are the practices used on the Nicolet to produce recreation benefits. (These do not apply to MA's 5, 6.3, 8.1, 8.2 and 9.1.)

Noncharge Developed Recreation Construction Practices:

Practice consists of all work necessary to survey and construct new developed recreation noncharge sites, including Level II campgrounds, Level III and IV swimming and picnicking sites, boat launches and interpretive sites. Costs of supporting facilities, such as parking lots, toilets, trails, signs, water wells, etc. are included with construction costs.

Projected work plans will include detailed site and facility drawings approved by the District Ranger and Forest Supervisor in advance of construction activity.

New Area Campsite Construction Practices:

This practice consists of the construction of new recreation experience Level III charge campgrounds. Costs of supporting sites (swimming and boating) and facilities, such as interior trails, are included in the construction costs. Cost of the camp units includes costs of water wells, vault toilets, tables, fire rings, signs, tent pads, vegetative management, etc. These costs are prorated over the total number of new camp units.

Vegetation will be managed to maintain growth and health of all levels of vegetation, remove hazardous and over-mature trees and allow sunlight to reach the forest floor. As a minimum, informational signing in all areas will be provided for visitor services.

The degree of law enforcement needed to protect the users and to ensure adherence to policies will be provided.

Recreation Rehabilitation

Recreation area rehabilitation will be undertaken with priority given to correcting health and safety problems, protecting the environment, changing camp unit design to ease administration and refurbishing worn facilities.

Visual Resource Management

The visual resource will be routinely considered in all forest projects. Projects will borrow from line, form, color and texture of the characteristic landscape. Management activities will at least meet the visual quality objective of modification.

Management of the visual resource will be accomplished thru the application of various design techniques plus enhancement and rehabilitation projects. The objective of visual resource management is to ensure that management activities meeting other resource needs either maintain or upgrade the visual resource.

Visual Quality Objectives

Visual quality objectives (VQO's) are depicted on maps located at the Forest Supervisor's Office and Ranger District offices. Examples of VQO areas can be found in Appendix E. Guidance on achieving these objectives is given throughout the standards & guidelines section.

Management of the visual resource will be directed towards the attainment of the following visual quality objectives:

RETENTION - This VQO provides for management activities which are not visually evident. Activities may only repeat form, line, color and texture which are found frequently in the characteristic landscape. Reductions in contrast to form, line, color or texture should be accomplished during management activities or immediately after. Vegetation composition objectives will be the same as they are in each of the management areas, however, big trees will be featured in the long-lived species. Temporary openings may be 40 acres but are designed to appear smaller. Permanent openings are placed to create a view of scenic land features plus add diversity in foreground areas. Roads are less evident and intersections are kept to a minimum. There is little contrast in colors as road debris is removed for the first 100 feet in the foreground and the road ditches, shoulders and banks are seeded when construction is completed. Temporary roads are obliterated within two years after their use. Wherever possible, road closure devices, other than gates, will be

used. These devices should be natural appearing and subordinate to the surrounding landscape. Evidence of management activities is low. Enhancement and rehabilitation projects are given highest priority for implementation in retention foreground.

PARTIAL RETENTION - Management activities remain visually subordinate to the characteristic landscape. Reduction in contrast to line, form, color or texture should be accomplished in the first year or as soon after project completion as possible. Composition objectives will be the same as they are in each of the management areas, however, big trees will be featured in the long-lived species. Temporary openings may be 40 acres but are designed to appear smaller. Evidence of management activities are moderate but lessened within 1 year. When roads are to be closed, consideration should be given so that the road closure device is subordinate to the surrounding landscape. Partial retention areas are second in priority for implementation of enhancement and rehabilitation projects.

MODIFICATION - Management activities may dominate the original characteristic landscape. These activities, however, must borrow from naturally established form, line, color and texture so as to appear natural or compatible to the natural surroundings. Few visual enhancement or rehabilitation projects will be planned in modification foreground areas.

Trails

Materials that blend with the site will be used to the extent practical to build and maintain trails and/or recreation facilities. Rustic appearing signs and blazes will be used to direct and control use.

Management of National Recreation Trails will be compatible with standards incorporated in the Act establishing the trail and in the trail management plan.

The Forest will not groom snowmobile trails. These trails will be maintained through agreements with the respective counties.

Where compatible, trails will serve dual or multipurpose use, such as for snowmobile and hunter-walking trails.

Off-Road Vehicles (ORV)

The Nicolet ORV policy basically allows motor vehicles on all National Forest roads except those roads that are closed by signing, gating or other road closure devices. The policy prohibits vehicle travel off of a road.

Under State laws, vehicles operated on roads must be street-legal or legally exempted. Vehicles that are not street-legal or exempted are prohibited from use on the Nicolet.

Most trails are meant for snowmobile or foot travel, but those trails that look like roads are gated or otherwise closed to other vehicles.

The policy allows snowmobiles to be operated on designated snowmobile trails and on unsnowplowed roads.

The policy allows for exceptions by permit with off road vehicle use by handicapped persons.

Cultural Resources

Conduct cultural resource surveys and needed evaluations on all areas to be affected by earth disturbing projects and design activities to avoid, minimize, or mitigate adverse effects.

The Nicolet will schedule the inventory of cultural resources on all National Forest System lands giving priority to areas with high potential for disturbance, completing surveys by 1990.

A cultural resource overview detailing the history, ethnography and prehistory relative to the Nicolet has been developed.

Concurrent with the annual program of cultural resource inventory, both site-specific and thematic evaluations of identified cultural resource properties have been and continue to be conducted within the framework of National Register of Historic Places eligibility criteria. Those sites found National Register-eligible, as well as those not yet evaluated, have been preserved from potential management related impacts. A program of cultural resource site maintenance and protection has been implemented. This program is aimed at assessing the nature and degree of damage to cultural resources caused by vandalism, visitor use and natural deterioration, and serves to identify protection needs.

Cultural and historic values in relation to broader resource management objectives are approached and examined on a case-by-case basis. The Forest has maintained a close association with the Wisconsin State Historic Preservation Officer (SHPO), providing copies of all reports relative to the program, and in all cases, the Forest has requested SHPO comment on the treatment of cultural resource properties.

Opportunities for the interpretation of cultural resources for public education and enjoyment are being developed. Selected cultural resource properties have been signed, interpretive exhibits are being developed, and cultural resource brochures have been distributed through the Nicolets continued contact with interested public and private organizations.

Interpretive Service

Develop interpretative programs and materials that support Forest activities and programs, and explain the correlation of resource management direction to public interests and concerns. Programs will be based on audience analysis and on land managers' needs.

2400 Timber Management

These standards and guidelines do not apply to MA's 5 or 9.1:

Diversity

Diversity of tree species within stands will be maintained over time. Where timber stands consist primarily of red pine, jack pine, white pine and other conifers, there will be intermingled stands such as aspen, oak, or other mixed tree species arranged in a manner that breaks up the continuity of conifer stands. The maximum size for conifer stands will be 1000 acres. This condition is desirable for diverse wildlife habitat, visual variety, and as an aid to protecting the area from wildfire, insects and disease.

Vegetative Practices

Forested stands will generally be at least ten acres in size. Stand shape should blend with terrain and other natural features (biological, hydrological) to avoid artificial geometric patterns.

Harvest Methods

Harvest cutting methods are explained in Appendix A. For each timber type the harvest method to be used and rotation ages are shown later in this section. When managing for uneven aged stands, retain the sound trees 24" and greater that are within view (0-300 feet) from travelways or use areas. Unsound trees may be left to meet visual or wildlife needs unless they are a public hazard.

Clearcutting, where prescribed, has been determined to be the optimum method. When clearcuts occur in retention and partial retention areas, residual vegetation (other than reserve trees) 1" dbh or greater will be cut in the immediate foreground (0-300 ft) of travelways, use areas or water bodies.

Timber harvest practices are listed on the following pages:

Timber Harvest Methods (Practices Used)

These are the practices used on the Nicolet National Forest to produce timber benefits.

Even aged Harvest Practices:

Regenerate by clearcutting using full tree, tree length or shortwood logging. Do not leave residual red pine when area is to be regenerated to red pine to avoid sirocooccus infections on the new stand.

Begin thinning harvest at 30-50 years of age, except for aspen, jack pine, paper birch or balsam. Follow thinning regimes of red pine, white pine and white spruce Manager's Guides. Manager's Guides may vary between types.

Species	Rotation Age	CMAI*	Old Growth
Aspen	40-80	50-60	60-90
B. Fir	50-80	50-60	70-100
J. Pine	50-80	50-60	50-90
R. Pine	80-120	50-60	100-250
W. Pine	80-120	50-60	120-220
W. Spruce	80-120	50	90-120

*Culmination of Mean Annual Increment

Shelterwood Harvest Practices:

Paper Birch

Regeneration cut to 70-80% of crown closure favoring large diameter, high crown paper birch. Remove overstory when regeneration is established (about waist high and 1000 trees per acre). To maintain paper birch, site preparation should be done prior to harvest, if possible.

Begin thinning harvest when stand will produce operable volume. Thin at 10-20 year intervals. Maintain 100 square feet of basal area (B/A).

Species	Rotation Age	CMAI	Old Growth
P. Birch	60-80	50	70-100

Shelterwood Harvest Practices:

Northern Hardwoods, White Pine & Hemlock

Regenerate evenage stands by two-cut or 3 stage shelterwood method, using any logging method that doesn't degrade the site or cause excessive damage to residual stand. Regeneration cut 10 years before final harvest. Remove overstory when regeneration is 3-4 feet in height. (Ref: North Central guides for stocking)

Begin thinning harvest when stand will produce operable volume. Thin at 10-20 year intervals favoring species such as yellow birch, ash, basswood and hemlock. Follow stocking guides in North Central Guide 39.

Species	Rotation Age	CMAI	Old Growth
Hardwood	80-110	70	120-220
W. Pine	80-110	70	120-220
Hemlock	80-110	70	160-350

Shelterwood Harvest Practices:

Lowland Conifer

Regenerate evenage stands by two cut shelterwood method, tractor logging. Regeneration cut to 60-70% crown closure favoring large diameter cedar, spruce and tamarack with overstory removed later. Scarify before or after harvest for site preparation.

For lowland conifer types, enter stand at age 50-60 to remove mature balsam.

Species	Rotation Age	CMAI	Old Growth
L. Conifer	100-120	80	100-200

Selection Cutting Practices:

Regeneration of stand is achieved through unevenage management using the single tree selection harvest system. Thin stand through all size classes leaving the following basal areas:

20-24" DBH	20 Sq. Ft.
15-19" DBH	26 Sq. Ft.
10-14" DBH	22 Sq. Ft.
5- 9" DBH	16 Sq. Ft.
0- 4" DBH	<u>8 Sq. Ft.</u>
	92 Sq. Ft.

Begin thinning to develop stand structure when stand will produce operable volume. Harvest entry period approximately every 20 years until regulated stand is developed, then enter approximately every 10-20 years.

There is no rotation age for unevenage management stands.

Reserve Trees

Selected reserve trees will be retained in areas that are cut. These reserve trees should be a combination of single trees, groupings of trees and reserve islands. Single trees reserved should generally be within 200 feet of the cutting unit perimeter. See Nicolet Manual Supplement for selection criteria.

Provide snags to meet requirements of wildlife species as discussed in 2600 (Wildlife Habitat Management).

Temporary Openings

Temporary openings will vary in size and shape to blend with the surrounding forest environment. The maximum size of temporary openings will be 40 acres (25 acres in Management Areas 6.2 and 9.2) unless:

1. There has been 60 days public notice given on an individual proposal and the exception has been approved by the Regional Forester, or

2. There has been a natural catastrophic condition, such as fire, windstorm or an insect or disease attack, and the proposed action plan has been approved by the Regional Forester.

Temporary openings will generally be separated by a stand of at least ten acres and a distance of 500 feet. They will be considered as temporary openings until the new trees have reached a height that is equal to or greater than 20 percent of the height of the surrounding vegetation.

Temporary opening guidelines should be developed on a project by project basis with integrated resource management input. The maximum temporary opening to be allowed is 40 acres.

Suggested guides for temporary openings are listed below. In order to meet visual quality objectives, the open area that can be seen at any one point from a travelway, stream, use area or water body should not exceed the following suggested guidelines:

Travelway, Use Area or Stream

USE	AREA *		
	Reten	Part. Reten.	Mod.
Motorized	10 Ac	20 Ac	40 Ac
Nonmotor	5 Ac	10 Ac	30 Ac

* The actual size may be 40 acres but the area seen at any one point is shown above.

Water Body or Class 1&2 Trout Streams

In general, there will not be any temporary openings resulting from timber management activities immediately adjacent to lakes and streams with the following exception. Lakeshore and streamside vegetation manipulation, when necessary to maintain or enhance the visual and wildlife resource, will commonly consist of underplanting and thinning with the long-term objective of long lived big trees. When it is necessary to create a temporary opening next to a lake or stream, the size of this opening seen from any position on the shoreline should not exceed 5 acres (note that the actual opening size may be larger but only 5 acres can be seen).

Residue Treatment

A slash abatement plan should be developed on a project-by-project basis as part of the integrated resource management planning process.

Suggested guides for residue treatment are listed below. Trees (alive or dead) when reserved for other resource needs are not considered as residue requiring treatment. This includes snag and den trees, reserve trees or bearing trees. Residue treatment refers to the maximum height of residue above the ground.

The suggested guides are:

Non Motorized Use

Distance From Travelway,
Use Area or Waterbody

VQO	0-100 ft	100-200 ft
Retention*	< 24"	36"
Part Reten	< 24"	36"
Mod	< 36"	no standard

* For the first 25' complete removal

Motorized Use

Distance From Travelway,
Use Area or Waterbody

VQO	0-50 FT	50-100 ft
Retention	< 24"	< 36"
Part Reten	< 36"	< 48"
Mod	< 48"	no standard

Timber Utilization Standards

For the purpose of determining harvest levels, the following timber utilization standards will apply:

TIMBER UTILIZATION STANDARDS

Harvest Level Projections (36 CFR 219.9)

Product Type	Minimum Tree 5/ Specifications	Minimum Piece Specifications		
	d.b.h. (inches)	1/ Length (feet)	d.i.b. at Small End (inches)	Percent of Gross Measure
Hardwood Sawlogs ^{2/}	11.0	8	9.6	40
Aspen Sawlogs ^{2/}	9.0	8	7.6	70
Softwood Sawlogs	9.0	8	7.6	40
Hardwood Pulpwood	5.0	8	4.0	70 sound & ^{3/} reasonably
Softwood Pulpwood	5.0	8	4.0	straight ^{4/}

- 1/ Plus trim allowance.
- 2/ Only logs that meet grade 3 or better factory logs are considered sawlogs. Logs less than grade 3 (construction grade or local use) and appraised positive can be considered sawlogs at Forest option. Caution: On integrated sales where only grade 3 and better logs are considered as sawlogs, a grade 4 or construction grade log may not meet pulpwood specifications because of percent soundness.
- 3/ 70 percent applies to rot, voids and char. Mechanical type defects such as sweep, crook, spider heart and ring shake, shall not be considered.
- 4/ Reasonably straight: When the true center line of a minimum length piece does not deviate more than one-half the inside diameter of the small end, plus 1 inch from a straight line drawn between the centers of the ends of the piece.
- 5/ A minimum tree must include at least one piece that meets minimum specifications.

Artificial Reforestation

Site Preparation

These are the artificial reforestation practices and standards that will be used on the Nicolet for site preparation:

Prepare sites for artificial regeneration by mechanical and/or herbicide treatment or prescribed burning. Objectives of treatment may include reduction of activity fuels but main purpose of treatment is to prepare seed bed by exposure of mineral soil and reduction of competition.

Provide filter strips as needed when applying mechanical and/or herbicide treatment within or adjacent to riparian areas and other ownership.

Protect slopes greater than 25% on Pence-Vilas Ecological Land Types from erosive forces.

Planting

These are the practices that will be used for planting on the Nicolet:

Treatment consists of hand or machine planting of tree seedlings or tubelings on natural or prepared sites. Practice also includes a minor amount of direct seeding and scatter planting for wildlife and visual management purposes. Tree stock planted should be of the highest genetic quality that is economically available. Normal stocking rates are shown below.

Practice includes fill in, replanting and first and third year stocking surveys, in addition to survival counts. Surveys beyond the third year survey will be required before some plantations can be certified as established.

Stocking Level (trees/acre):

	<u>Minimum Certifiable</u>	<u>Desirable</u>
Jack Pine	500	700
Red Pine	500	700
White Pine	500	700
White Spruce	500	700
Other Conifers	500	700

Regeneration is certified as complete when third year or later survival counts have 70% of the 1/700 acre sample plots stocked with a desirable or acceptable species, depending upon the distribution of acceptable stock.

Seeding

Practice consists of direct seeding on prepared sites. Tree seed should be of the highest genetic quality that is an economically available or genetically improved native species. Practice includes re-seeding and first and third year survival counts.

Regeneration is certified when 3rd year stocking surveys confirm that a minimumally acceptable number of seedlings per acre are present using the above table.

Natural Reforestation

Site Preparation

These are the natural reforestation practices and standards that will be used on the Nicolet for site preparation with natural reforestation:

Prepare sites for natural regeneration by mechanical treatment or prescribed burning. Objectives of treatment may include reduction of activity fuels but main purpose of treatment is to prepare seed bed by exposure of mineral soil. This practice is not used for aspen regeneration.

Protect slopes greater than 25% on Pence-Vilas ELT's from erosive forces.

These are the natural reforestation standards that will be used on the Nicolet for site prep:

Prepare sites for natural regeneration by removing residual overstory trees following harvest. Method is mainly hand felling but may include some amount of machine work, such as shear blading. This method applies to areas where objective is overstory removal without fuel treatment or a ground scarification.

For pure aspen regeneration following treatment, live residual overstory cannot exceed 10 square feet of basal area.

Natural Regeneration

Practice consists of regenerating forest areas by natural seed fall or sprouting on natural or prepared seed beds. Costs included consist of determining if adequate regeneration is present prior to final harvest in the shelterwood system or certifying regeneration has occurred within five years following the final harvest.

Regeneration is certified when the following stocking levels are met or exceeded:

	<u>Minimum</u> <u>Certifiable</u>	<u>Desirable</u>
Aspen	3200	5000
Oak	3200	5000
Birch	3200	5000
Other Hdws	3200	5000

Timber Stand Improvement

Chemical Release

Practice consists of releasing desired species from competing vegetation by aerial (helicopter or airplane) or ground application of a chemical agent to deaden unwanted vegetation. Practice includes a small amount of hand work to clean up edges or missed spots following treatment. (Refer to 2100-Pesticide Use.) Release treatment is applied one or more years after desired species are established by planting, direct seeding or natural regeneration.

Proposed aerial applications of pesticides will be evaluated through an environmental analysis process. The Forest Supervisor of the Nicolet N.F. must approve all uses of pesticides.

All applications will conform to the purposes and methods approved by the Environmental Protection Agency and issued in accordance with registered label instructions.

Areas treated with pesticides will be posted at points of probable public entry. Notices will include the type of material applied and the date of application. Posted notices will be removed 90 days after application.

Project plans for application of pesticides (ground or aerial) will include contingency plans for containment and clean-up of accidental spillage.

Hand Release

Practice consists of releasing established desired species from competing vegetation by cutting or girdling with hand tools. Release treatment is applied after desired species are established by planting, direct seeding, or natural regeneration.

Because of the character of the Nicolet National Forest watershed, the limits on the proportion of the drainage to be treated at any one time by vegetative removal are high, and generally not of concern. Changes in the timing or quantity of water flow as a result of proposed forest management activities are slight.

Riparian Areas

Preserve the beneficial values of floodplains and wetlands, protect public safety and be cost efficient in the construction, management, protection, maintenance and rehabilitation practices in all areas of structures and facilities. Review riparian area practices on a case-by-case basis to ensure that the practice is compatible with the riparian area and the practice has a low risk for the following:

- causing detrimental temperature or water chemistry changes.
- introducing pesticides into surface and groundwater.
- depositing undesired sediment.
- blocking stream flow.

Management activities proposed for riparian zones adjacent to lakes and streams, such as timber harvesting, road construction, site preparation or TSI work, will be reviewed by the hydrologist, landscape architect, wildlife biologist and/or soil scientist prior to their implementation.

In riparian areas adjacent to lakes and streams, limit heavy equipment use to periods when ground is dry or frozen. Provide filter strips as needed when applying mechanical and/or herbicide treatment within or adjacent to riparian areas. The following can be used as a guide:

<u>Slopes to</u> <u>Streams/Lakes</u>	<u>Width of Filter Strip</u>
Under 5%	10-25'
5-20%	25-50'
Over 20%	slope break or 50 ft.

Minimize risk of flood loss, restore and preserve floodplain values, and protect wetlands.

Watershed Disturbance

Heavily disturbed areas, such as borrow pits and mineral developments, will be restored under an approved site reclamation plan approved prior to surface disturbance. Water bodies may be created when surface runoff and soil conditions permit, if they meet the needs of impoundments. See 2600 - Wildlife Habitat Management.

Treat all disturbed areas that are subject to erosion for erosion prevention preferably within the growing season in which the disturbance occurs. When obliterating roads or closing short-term roads, use erosion control practices outlined in Watershed Structural Measures Handbook (FSH 2509.12).

Use erosion control practices for roads, skid trails, and other soil disturbing uses when slopes exceed 25% on Pence-Vilas ELT's.

Consider enhancement of soil productivity when opportunities are economically feasible.

2600 - Wildlife Habitat Management

Minimum Viable Populations

In cooperation with the WI Dept. of Natural Resources, monitor habitat conditions and population trends of management indicator species. Assess the impact of management practices on management indicator species and their habitat to insure that minimum viable populations are sustained.

Management Indicator Species

The effects of the Forest Plan on wildlife and fish will be monitored. However, because it would be impossible to track the effects of the Plan on each of the Nicolet's 368 species of wildlife and fish, 32 were selected as management indicator species that were felt to represent most habitats and the majority of all

other species on the Nicolet. These species are listed in the FEIS on page 3-33, with their associated habitat and the number of other species they are indicators for. The selection process is noted in a document on file at the Supervisor's Office - Rhinelander, Wisconsin. The monitoring of management indicator species is covered in Table 17 of Chapter 5.

**Federally Endangered,
Threatened and Sensitive
Species**

Because disclosing the locations of threatened, endangered and sensitive species may jeopardize them, all such locations will be kept confidential and disclosed only for management and valid research and study purposes.

**Existing/Potential
Essential Bald Eagle
Habitat**

Existing and potential, essential bald eagle habitat, as identified using criteria from the "Northern States Bald Eagle Recovery Plan," will be managed with the following emphasis:

1. Low human disturbance.
2. Land acquisition/adjustment priority.
3. Open road density for Management Areas 1.2, 2.2, 3.2 and 4.2 equal to or less than existing density. Low road construction standards.
4. Fisheries management to maintain an adequate fish prey base.
5. Manage toward maintaining and increasing white pine. Reserve existing and potential nest and perch trees.
6. Work with the U.S. Air Force to help mitigate low flying aircraft disturbance.

**Bald Eagle and Osprey
Nests, Great Blue Heron
Rookeries**

Bald eagle and osprey nesting areas and great blue heron rookeries will be governed by the following requirements:

1. Manage to control disturbances within approximately 330 feet of each eagle nest, osprey nest or great blue heron rookery.
2. Manage to control significant changes in the landscape within approximately 660 feet of an eagle or osprey nest or great blue heron rookery.

3. Restrict management activities that result in adverse disturbance to nesting birds within approximately 1,320 feet of an eagle nest, osprey nest or great blue heron rookery during the nesting period.

Potential Essential Gray Wolf Habitat

Potential essential wolf habitat is described in the FEIS on page 3-30. Within these areas, the open road density will be less than two miles/square mile. A proportion of both high and low standard roads will be closed. There will be an emphasis to reduce the total road density and lower the overall road standard. Habitat for the wolf's main prey, the white-tailed deer, will be maintained or increased (except in Management Area 5). Land acquisition and adjustment will receive high priority consideration.

Sensitive Species

A listing of candidate sensitive species for the Nicolet, together with the probable effects of management practices on them, is given in the matrix of Table 15. (A final sensitive species list will be developed by the Regional Forester using each Forest's candidate list.) Species not selected as sensitive species will be considered species of Nicolet Forest concern and still be managed according to the standards and guidelines given below. The complete Candidate Sensitive Species List Evaluation Process, developed in cooperation with the Wisconsin DNR and the Nature Conservancy, is on file at the Nicolet Supervisor's Office, Rhinelander, Wisconsin.

A biological evaluation is required where negative effects are shown to be possible for species with known locations. However, if standards and guidelines or other protection measures (such as inclusion in a RNA or 8.1 Management Area, or Forest-wide allocation of essential habitat) eliminate negative effects of management practices, a biological evaluation will not be needed.

TABLE 15 - EFFECTS OF MANAGEMENT PRACTICES ON CANDIDATE SENSITIVE SPECIES

Candidate Sensitive Species	MANAGEMENT ACTIVITIES																			
	Timber Harvesting			Site Preparation		Regeneration			Timber Stand Imp.		Wildlife/Fish Hab. Imp.									
	Clearcut	Shelterwd/Thin	Shelt/Thin L.Conif	Uneven aged	Mechanical Felling	Prescribed Burn	Planting	Underplanting	Seeding	Natural	Hand Release	Select Chem. Release	Broadcast Chem. Release	Upland Opening Const.	Mech. Opening Maintenance	Chem. Opening Maintenance	Stream Brushing	Tree Drops	Impoundment/Pond Const.	
Pine Marten	-																			
*Bobcat	+	+	+																	
Common Loon																				
*Sandhill Crane	+				+	+														
*Black Tern																				
*Upland Sandpiper	+				+	+														
Common Merganser	-																			
Goshawk	-	-	-	-	-	-														
Cooper's Hawk	-	-	-	-	-	-														
Merlin	-	-	-	-	-	-														
Red-Shouldered Hawk	-	-	-	-	-	-														
Osprey	-	-	-	-	-	-														
*Marsh Hawk	+				+	+														
Long-eared Owl	-																			
*Barred Owl	-																			
*Spruce Grouse	-	-																		
*Solitary Vireo	-																			
*Eastern Bluebird	+				+	+														
*Grasshopper Sparrow	+				+	+														
*LeConte's Sparrow	+				+	+														
*Savannah Sparrow	+				+	+														
*Vesper Sparrow	+				+	+														
*Clay-Colored Sparrow	+				+	+														
Lincoln's Sparrow																				
*Blackburnian Warbler	-																			
Wood Turtle	-																			
*Redside Dace																				
*Greater Redhorse																				
*Missouri Rock-Cress	-	-	-																	
*Rugulose Grape Fern	-																			
*Calypso	-	-																		
*Stoloniferous Sedge	-	-	-																	
Northern Bog Sedge																				
Sheathed Sedge																				
Ram's Head Lady's Slipper																				
Stygian Rush																				
White Adder's Mouth																				
Small Round-Leaved Orchid																				
Braun's Holly Fern	+																			
Foam Flower																				
Small Purple Bladderwort																				
Dwarf Bilberry																				
*Ginseng																				
Showy Lady's Slipper																				

- Negative Effect
 + Positive Effect
 Blank No Effect

TABLE 15 - EFFECTS OF MANAGEMENT PRACTICES ON CANDIDATE SENSITIVE SPECIES (continued)

Candidate Sensitive Species	MANAGEMENT ACTIVITIES			
	Wildlife/Fish Habitat Improv	Road/Trail Const./Reconst. Management	Recreation Constr/Expansion	
	Impoundment Drawdown Artificial Nest/Den Str. Beaver/beaver Dam Removal Instream Struct. Bank Struct. Underwater Struct. Spawn Marsh Lime/Fertilize Chem. Fish Control Mechanical Netting	High Std. Road Open High Std. Road Closed Low Std. Road Open Low Std. Road Closed Wetland Crossing Stream Crossing	Developed Drive-in Developed Walk-in Dispersed Hike/ski	
Pine Marten				
*Bobcat				
Common Loon	+			
*Sandhill Crane	+			
*Black Tern				
*Upland Sandpiper				
Common Merganser				
Goshawk				
Cooper's Hawk				
Merlin				
Red-Shouldered Hawk				
Osprey				
*Marsh Hawk	+			
Long-eared Owl				
*Barred Owl				
*Spruce Grouse				
*Solitary Vireo				
*Eastern Bluebird	+			
*Grasshopper Sparrow				
*LeConte's Sparrow				
*Savannah Sparrow				
*Vesper Sparrow				
*Clay-Colored Sparrow				
Lincoln's Sparrow				
*Blackburnian Warbler				
Wood Turtle	+			
*Redside Dace	+			
*Greater Redhorse				
*Missouri Rock-Cress				
*Rugulose Grape Fern				
*Calypso	+			
*Stoloniferous Sedge				
Northern Bog Sedge	+			
Sheathed Sedge	+			
Ram's Head Lady's Slipper	+			
Stygian Rush	+			
White Adder's Mouth	+			
Small Round-Leaved Orchid	+			
Braun's Holly Fern	+			
Foam Flower				
Small Purple Bladderwort	+			
Dwarf Bilberry				
*Ginseng				
Showy Lady's Slipper	+			

*Protection or mitigation covered at the forest level of planning. All others will be evaluated at the project level. Biological evaluations not needed if site review indicates no probable negative effects.

The following standards and guidelines apply specifically to, or were developed specifically for, identified candidate sensitive species as a result of the evaluation process and the development of the matrix:

Pine Marten, Bobcat. Maintain the existing 120,000 acre area closed to dry-land trapping. This area was originally established in 1962 to protect reintroductions of fisher.

Common Loon. For small undeveloped lakes with a high percentage of National Forest ownership and with existing or potential loon nesting, cooperate with town boards, the WI DNR, and private riparian landowners to develop restrictions on motors. Restrict Forest Service developed recreation on these lakes.

Sandhill Crane, Upland Sandpiper, Marsh Hawk, Eastern Bluebird, Grasshopper Sparrow, Le Conte's Sparrow, Savannah Sparrow, Vesper Sparrow, Clay-Colored Sparrow, Dwarf Bilberry. Maintain existing upland sod openings and reclaim selected previously planted upland sod openings (3 acres and larger in size). Some maintenance will be done through prescribed burning to favor remnant open grassland vegetation.

Sandhill Crane, Lincoln's Sparrow. Maintain and reclaim selected large bogs in an open and brushy condition.

Common Loon, Black Tern, Common Merganser, Osprey, Redside Dace, Greater Redhorse. Chemical fish control proposals will be subjected to an environmental evaluation in waters containing or being used by these species.

Ginseng. Harvesting of ginseng without a permit (Form 2400-14) is a violation of 36 CFR 261.6(h). District Rangers will not grant permits of harvesting of ginseng from National Forest Lands.

Calypso, Stoloniferous Sedge, Nothern Bog Sedge, Sheathed Sedge, Ram's Head Lady's Slipper, Stygian Rush, White Adder's Mouth, Small Round-Leaved Orchid, Small Purple Bladderwort, Showy Lady's Slipper. Control beaver (in conjunction with the WDNR) and remove beaver dams in areas of known rare plant sites threatened by flooding. Also protected under Management Area 8.1.

Wood Turtle. Retain alder along streams known to have populations of this species.

Spruce Grouse. As allocated in the Forest Plan, emphasize jack pine in portions of management areas 4.1 that do not have lowland conifer stands. The jack pine, by age class, will be spatially distributed to the extent possible.

Pine Marten, Bobcat, Common Merganser, Long-eared Owl, Barred Owl, Solitary Vireo, Blackburnian Warbler, Missouri Rock-cress, Rugulose Grape Fern, Braun's Holly Fern, Foam Flower. Protected under general standards and guidelines and when occurring in or placed in one of the following areas: wilderness, research natural areas/scientific areas, special areas, management areas 8.1, and 1.2, 2.2, 3.2, 4.2, 6.2 and 9.2 management areas.

Goshawk, Red-Shouldered Hawk. Within known territories the following protection guides will be adhered to:

1. Incorporate nest sites into a stand with a minimum size of 20 acres to be designated old growth. (Some territories will need to be larger to retain their productivity.)
2. Stands immediately adjacent (within a minimum of 300 feet) to the designated territory (old growth stand) will not be clearcut if practical silvicultural alternatives are available.

3. Generally, no new roads will be built or existing ones reconstructed within the designated territory (old growth stands), or within 300 feet of nests. Existing roads will be closed where possible. Where roads are built, seasonal restrictions will be imposed on their use.

4. Human disturbance, to the extent possible, will be eliminated or reduced between February 1st and August 1st, (the most critical nesting period being April 1st to May 15th).

5. The effects on raptor territories will be analyzed through the Integrated Resource Management implementation process.

The following standards and guidelines do not apply to MA 5 OR 9.1:

Permanent Openings

Existing and newly constructed permanent openings are distributed throughout the management areas. Where possible, they are well dispersed and located between contrasting timber types and also where they can serve as log landings, fire breaks or vistas. Constructed openings will be shaped to blend in with the surrounding landscape and be a minimum of 1 acre in size. During the construction of these openings the residue treatment guides found in the timber section should be followed. Permanent sod is the primary objective, but clover, upland brush and savannah conditions are also represented. Maintenance of existing openings is the highest priority and will be by mechanical mowing, herbicides, prescribed fire, or handcutting. They will range in size from one to several acres. Approximately 3% of the Forest's upland acres will be in permanent openings. Detailed project guidelines are contained in Nicolet Supplement 10.

Favor treatment of transmission line rights-of-way vegetation to improve wildlife forage.

Non-Forest Wetlands

Manage selected wetlands for waterfowl, furbearers, and other game and nongame wildlife. Maintain artificial nest and resting structures for waterfowl. These structures should be located as unobtrusively as possible. Manage water & vegetation through wetland pond and impoundment construction, beaver management, prescribed burning, maintenance of riparian aspen, seeding or planting. Detailed project guidelines are contained in Nicolet Supplement 11.

Impoundments

Wildlife impoundment construction sites will be selected in cooperation with the Wisconsin DNR and permits will be secured. Highest priority sites are those that will enhance existing bald eagle, osprey, and great blue heron nesting territories, or identified potential eagle habitat. Special consideration will be given to protecting the cold water trout resource. Interdisciplinary review and approval will precede construction. Actual design and construction will incorporate natural features and manufactured islands and peninsulas for wildlife and visual enhancement. Interpretive signing will be provided. Completed impoundments will be placed on a 3-5 year partial or full draw-down schedule unless modified because of the presence or use of the impoundment by threatened, endangered or sensitive species.

Criteria for impoundment location:

Organic soil layer	. Under 6" thick
Extensive floating mats	. None acceptable
Watershed/impoundment ratio	. Greater than 0.75
Specific Conduct	. . Greater than 25 micro mhos/cm
Water level control. Structure	. As beaver-proof as possible
Water depth. Some portions more than 6 feet deep for fish survival

Woodland Ponds

Shallow small woodland ponds will be constructed on selected sites to provide a permanent water source for wildlife and for fire control. Existing intermittent ponds or wetlands can be deepened or new areas of high water table can be selected for construction. Site selection is based on nearness to permanent water, access, and soil/water table information.

Riparian Transition Zones

The following wildlife/fisheries management considerations will be given to riparian areas which comprise narrow zones between land and water, and between uplands and wetlands. Management can vary from emphasis toward old growth; special timber type management for hemlock, balsam fir, cedar, white pine, white birch and lowland hardwoods; aspen and alder treatment to either promote beaver, or discourage them (along trout waters); maintenance of conifer cover, and cavity and snag trees; and selected tree felling for fish cover.

Old Growth

5% of all managed upland timber stands, except for uneven aged hardwood, will be managed as old growth.

Old growth designated stands are not thinned or harvested until well beyond normal rotation age. Designated stands are distributed throughout the Forest and all timber types are represented, but emphasis is on long-rotation species. Old growth short-rotation species will not be located in retention areas. Selection criteria and management schemes are contained in Nicolet Supplement 15.

Reserve Trees

Snags, snag replacements, woody ground debris, cavity trees and other selected trees valuable to wildlife will be retained in all managed areas. Special consideration is given to riparian zone areas, essential habitats for threatened, endangered and sensitive species, and stands containing mast tree species and hemlock. In retention and partial

retention areas, single reserve trees should generally be within 200 feet of the perimeter of the cut area. Selection criteria and numbers per acre are contained in Nicolet Supplement 13 and 18.

Upland Game Bird Areas

Some diverse Forest areas within each management area are managed with an emphasis for upland game birds and the walking hunter. Vegetation composition is predominately aspen with mixtures of balsam fir, lowland conifers and alder. Average even aged stand size is 20 acres or less. Many of the travelways are closed to vehicle traffic, and maintained in sod cover. Interspersed within these areas, maintain 5-10% sod and brush openings, 1-3 acres in size.

Information signing and small parking areas, usually seeded, may be provided. Areas are spread across the Forest to disperse use.

Deer Yards

Designated deer yards within management areas are managed for wintering deer. Stand size for stands managed even aged is approximately 20 acres or less. Maintain or increase conifers, especially hemlock, white pine, jack pine, balsam fir, spruce and cedar as pure stands and as components in mixed stands. Maintain brush openings one acre and larger consistent with management objectives. Distribute timber harvesting spatially and evenly over time. Much of the commercial timber harvesting is to be done during the winter. Detailed project guidelines are contained in Nicolet Supplement 14.

Hunter-Walking Trails

Hunter-walking trails occur both as dense systems within upland game bird areas and as scattered loop trails. Hunter-walking trails are located mainly on closed or seasonally closed road locations. Trails are daylighted to allow for lush herbaceous growth and maintained through mowing. Where possible, trails are located in

aspen, balsam fir, or along conifer swamp or alder edges. Trail systems are distributed throughout the Forest to disperse hunter use.

Fisheries

Fisheries management will be coordinated with the State of Wisconsin and on boundary water with the State of Michigan. Maintain Class I and selected Class II trout waters free flowing. Maintain riparian areas (approx. 200 feet on each side) in a combination of long-lived hardwoods or conifers and in a meadow or shrub-meadow condition. These areas should follow topography and soil conditions so as to appear natural and avoid a straight edge appearance. EPA registered chemicals are permitted to remove rough fish or maintain stream-side meadow. There are selected streams intensively surveyed and managed for trout fishing with constructed bank and in-stream structures. Road access may vary depending on angler use and habitat maintenance needs (from every 1/4 mile of stream to every mile of stream). Small parking areas, usually seeded, and informational signing may be provided.

Vegetation canopy in and along streams should be manipulated to provide water temperatures within the prescribed ranges to meet the fisheries objective.

Manage habitat adjacent to selected warm water (nontrout) streams & lakes to maintain viable populations of beaver and other furbearers and associated aquatic species.

Conduct surveys and provide for lake fisheries management on those waters capable of supporting a viable fish population. Maintain and improve fish populations and cover and spawning improvement structures. Use permitted EPA registered chemicals to remove stunted or rough fish, or to fertilize selected waters.

**Artificial Nest/Den
Structures**

Artificial nest and den structures will be made of materials that blend with the site and do not detract from the natural landscape. They will be concentrated in the most productive habitat based on field inventories. Waterfowl nest boxes will be placed in identified brood habitat. Squirrel boxes will be concentrated in oak stands where natural dens are lacking and where oak is to be regenerated naturally. Bluebird and Kestrel boxes will be placed on the edges of openings 10 acres or larger. Nest boxes will be erected for smaller, cavity-nesting birds only in recreation areas. Floating loon nesting islands will be placed in secluded bays of selected lakes over 50 acres in size (coordinate with Wisconsin DNR). Osprey platforms will be placed in cooperation with the Wisconsin DNR.

2700 LAND USE (Does not apply to Management Area 5)

Applications for proposed use of National Forest lands will be considered on a case-by-case basis. Items to consider when reviewing a proposed use application include suitability of the proposed use in the management area associated standards and guidelines, environmental factors, recreation opportunity classification, visual quality objective of the area and other uses of the affected land.

**Utility Transmission
and Distribution Corridors**

Provide for utility distribution corridors. Emphasize use of existing corridors when granting appropriate new rights-of-way. Cables up to 34.5 kv must be buried, with the exception of those run over short distances in case of road relocations.

Utility transmission corridors will not be allowed to cross Management Area 5 (wilderness). As a guide, new corridors will be located as follows with respect to roads:

RETENTION AND PARTIAL RETENTION:
Consideration will be given to locating overhead utilities out of view from the traveling public.

MODIFICATION: Overhead utilities may be located adjacent to roads.

Rights-of-way serving individual residences will be evaluated on a case-by-case basis.

2800 MINERALS

The following standards and guidelines apply only to federally owned lands and minerals.

All lands will be available for exploration that does not disturb the land surface. The reasons for closing an area to land-disturbing exploration must be supportable and documented.

Exploration and Development

Hardrock minerals and mineral materials exploration will continue to be handled under a programmatic environmental assessment; and developmental drilling and extraction of hardrock and leasable minerals will be permitted on a case-by-case basis on National Forest System lands available for such activity, as long as environmentally acceptable.

Mineral Exploration

(Does not apply to MA 5.) Surface-disturbing exploration (including core drilling) will be permitted in most areas, especially where there is a potential to discover minerals of compelling domestic significance (as defined by U.S. Department of the Interior).

Mineral Development

(Does not apply to MA 5.) USDA consent to mineral extraction plans will be determined individually, based on the relative value of the surface/subsurface resources and on consistency with the standards and guidelines in this Regional management goal.

Gravel

(Does not apply to MA 5.) The fair market value of all mineral materials shall be determined prior to their use or sale. A record shall be maintained of the quantity and quality of all mineral materials used or sold.

No materials source shall be utilized until a pit management plan has been approved. It is required that the area be developed and rehabilitated according to the pit management plan.

Nonfederal Minerals

Exploration

The procedure on use of Federal surface for exploration will be governed by reserved or outstanding rights indicated by title chain of ownership.

Land management decisions must not preclude the ability of private mineral owners to make reasonable use of the surface, as defined by deed and public law.

A special-use permit or lease is not required for nondestructive exploration, such as geologic mapping, geochemical studies or geophysical surveys, where timber cutting or motorized use does not occur.

Mining

Requests for surface use of Federal land for mining of non-federal minerals will be evaluated on a case-by-case basis.

3400 Forest Pest Management

Integrated Pest Management

Use integrated pest management methods to minimize or prevent the development of pest problems. Where unavoidable, select the solution that provides the most beneficial methods based on objectives, effectiveness, safety, environmental protection, and cost.

Wildfire prevention, detection and suppression, and fuels management, including fuelbreaks and hazard reduction, will be planned, based on an analysis of probable fire location, expected fire intensities, potential net resource value change, and risk to health and safety.

Fuel Management

Activity fuels will be managed at a level commensurate with the allowable fire intensity and rate of spread that meets resource objectives. Treatment along highways and adjacent properties will meet applicable state laws.

Construction and timber harvest activity fuels which constitute a fire hazard may be offered as fuelwood before other disposal methods are considered.

Fuel break construction, location and size will be determined by expected fire locations, intensities, and value at risk. Constructed fuel breaks will follow natural topography and/or other natural features where possible. Otherwise, the edge of these fuel breaks will vary so as not to create a straight edge appearance.

Agreements for fire detection and suppression on National Forest System lands, by cooperating firefighting agencies, must define suppression action commensurate with established resource management prescriptions and fire suppression action plans.

Suppression

(Does not apply to MA 5.) Suppress wildfire as necessary and by means and methods applicable to the area that the fire is burning in to protect National Forest lands, other ownerships, adjacent owners and lives and property. Operations under permit will be required to provide adequate fire protection.

Prescribed Fire

(Does not apply to MA 5.) Prescribed fire will be used for ecological, silvicultural, visual, wildlife and recreational purposes.

Selected areas in the Pence Vilas ELT will be maintained in an open sod, brush and savannah condition for the perpetuation or development of natural remnant vegetation. Such areas will serve as essential habitat for sensitive species, as well as for blueberry production, by burning

All prescribed fires will have an approved plan as described in FSM 5150. Examples of areas addressed in this plan include:

Control lines, weather restrictions, control forces, air quality and seasonal restrictions.

During prescribed fires, special consideration will be given to smoke sensitive areas that may lie downwind of the burn. Contingency plans will be developed to assure impacts are minimized and legal requirements are met. Examples of sensitive areas are:

1. Major highways (i.e. Highways 8,64,70)
2. Towns, private homesites
3. Threatened, endangered and sensitive species territories.
4. Hospitals, schools, airports

Residents within one mile of planned burns will be notified of the location and time of ignition. Preference will be given to times when wind direction is away from neighboring residences and sensitive areas.

Prescribed fire should be accomplished in the absence of air inversions. To assure that smoke is dispersed before the onset of stable nighttime conditions, it should generally be completed before 6:00 pm, although safety and control needs may necessitate a later completion time.

When initiating a prescribed fire, an easily extinguishable test fire will be set. Behavior of this fire will determine whether or not to proceed with the planned burning.

Permit prescribed fire in or immediately adjacent to developed recreation sites only during nonoccupancy periods.

Permit low intensity fires over buried cultural resource sites, but do not permit on surface sites.

5300 Law Enforcement

Ensure that the Forest is available to all persons for legitimate uses with a minimum of restrictions. Provide for the health and safety of visitors and their property, and protect Forest resources and facilities.

Law enforcement will be commensurate with frequency, severity and types of violations committed.

At all facilities, apply recommended security measures that are cost efficient in relation to risk and value of potential loss.

Adjust cooperative law enforcement agreements in accordance with tri-year evaluations of Forest law enforcement needs and services available.

Emphasize cooperation with state, county and municipal police agencies.

Regular patrol of Forest Service installations by both Forest Service personnel and cooperative law enforcement officers will take place on the basis of a written schedule during peak periods of activity.

Forest Service law enforcement capability will be maintained, particularly in dispersed areas.

Visitors will be informed of rules and regulations governing National Forest lands.

Security of Forest Service facilities will be maintained.

The Forest will annually plan the level of law enforcement needed forest-wide or area-wide in terms of total patrol units for cooperative law enforcement and total person days for in-service law enforcement.

5400 Land Ownership

Surface Ownership

Land adjustments (purchase or exchange) must satisfy one or more of the following purposes: (1) accomplish objectives of public law or regulations, (2) meet demand for National Forest System resources, (3) result in more efficient land-ownership patterns or (4) result in lower resource management costs.

Acquire only the interest needed to achieve land management objectives.

Avoid encumbering land available for exchange with land uses that compromise land exchange opportunities.

Priority parcels for acquisition include:

1. Existing and potential essential habitat for bald eagles, gray wolves and sensitive species.
2. Tracts with unique ecological, scientific, or recreational qualities including land bordering portions of undeveloped lakes and rivers.
3. Tracts that consolidate land holdings and provide management access needs.
4. Lands that add to the efficiency of resource management.

Priority parcels for exchange or trade include:

1. Lands outside the Forest boundary.
2. Isolated parcels.
3. For trespass resolution.
4. To reduce landlines and corner monumentation needs.
5. Tracts that are difficult to manage due to right-of-way problems, special use permits and section and quarter section subdivisions.
6. For municipal expansion needs.

Subsurface Ownership

Consider subordination or acquisition of subsurface rights when all of the following are met:

1. Conflicts between surface values and mineral activities cannot be mutually resolved.
2. The public benefits from the surface values exceed the costs of acquiring subsurface rights.
3. The cost is consistent with budget priorities.

7300 Buildings & Structures (Does not apply to MA's 5 or 9.1.)

Buildings and structures may be provided to support resource management objectives.

7400 Public Health & Pollution Control Activities

Solid Waste

Refuse generated or deposited on National Forest System lands should be disposed of through community or area wide systems that comply with Federal regulations.

Water Supply

(Does not apply to MA 5, 6.3 or 9.1.)
Drinking water may be provided. If provided, it must meet Federal and State regulations and be protected to ensure its continued quality.

7700 Transportation System

Roads

The Nicolet inventories and recognizes all roads that the public is driving with at least a 4-wheel drive some portion of the year.

Arterial and collector roads are in place and will only require maintenance or reconstruction. Maintenance will be at a level III or higher.

Local road construction and reconstruction will be designed to be suitable for transporting forest products and accomodating planned motorized recreation uses.

All temporary and short-term roads will be planned and constructed to be revegetated. Revegetation will be accomplished in a reasonable period of time, not to exceed 10 years after the termination of the contract, lease, or permit.

Density of Roads

The Forest as a whole will have a final average density of approximately 3 miles of all roads (level A-D) per square mile. Some of these roads will be closed. In management areas 1 through 4 and 6.2, the total (open and closed) average density will be up to 4 miles per square mile. In management areas 6.3, 9.1 and 9.2, the density will be only as needed for access to adjacent areas or to protect resources.

Road Construction/ Reconstruction Ratio

The construction/reconstruction ratio for C and D level roads will be 20% construction and 80% reconstruction.

Road Construction/ Reconstruction Standards

Road standards for construction/reconstruction will be of the level needed for management, with lower standards used wherever possible.

Traffic service levels are defined on the following page. Additional information on forest roads can be found in Appendix F of this Plan, including a more detailed explanation of the traffic service levels.

Road practices (These are guidelines only):

TRAFFIC SERVICE LEVEL A

All weather operations, fully surfaced - suitable for passenger car travel.

Number of Lanes Double or single (generally double)
Traveled-way Width. Double = 22-24', single = 12-14'
Shoulders 1-2' shoulder; Cut Slopes = 2:1, up to 4:1
(generally 2:1); Fill Slopes = 2:1
Turnouts 1000' max, or intervisible; 750'
desired, 10' width; 75' min length
Curve Widening Based on Critical Vehicle
Clearance Normally; 4' Horizontal & 14' Vertical
Clearing Width. Single Lane - 5' on cuts & 2-5' on fills
Double Lane - 5' on cut and fill slopes
Design Speed up to 40 MPH
Horizontal Alignment. 500' minimum radius (desired = 800'),
Exceptions will be signed
Vertical Alignment. 12% maximum; 0.5% min; 8% max desirable
Drainage Permanent - Designed not to impede traffic
Surfacing Fully surfaced for all weather operations,
asphalt or aggregate
Closure Device. May be gated
Maintenance Level 3, 4 and 5

TRAFFIC SERVICE LEVEL B

All weather operations, fully surfaced - suitable for passenger car travel.

Number of Lanes Single or double (generally single)
Traveled-way Width. 12-14' (commercial hauling);
10' (admin & rec)
Shoulders Cut Slopes = 2:1
Fill Slopes = 2:1
Turnouts 1000' max or intervisible; 750'
desired; 10' width; Design Vehicle
length, 50' transition minimum.
Curve Widening Based on Critical Vehicle
Clearance Normally; 4' Horizontal & 14' Vertical
Clearing Width. 5' on cuts & 2-5' generally on fills
Design Speed Up to 25 MPH
Horizontal Alignment. 300' minimum radius (desired = 350'),
Exceptions will be signed
Vertical Alignment. 14% maximum; 0.5% min; 8% max desirable
Drainage Permanent - Designed not to impede traffic
Surfacing Fully surfaced for all weather operations,
with aggregate
Closure Device. May be gated
Maintenance Level 3, 4 and 5

TRAFFIC SERVICE LEVEL C

Mixed use - generally open road suitable for passenger car travel, may be restricted during off season and wet periods.

Number of Lanes	Single
Traveled-way Width.	12' Minimum (Commercial hauling); 10' (Admin & Rec)
Shoulders	Cut Slopes = 2:1, up to 1/4:1 Fill Slopes = 2:1 to 1:1
Turnouts	1000' Maximum
Curve Widening	Based on Critical Vehicle
Clearance	Normally; 4' Horizontal & 14' Vertical
Clearing Width.	Normally; 2-5' on cuts & 2' on fills
Design Speed	up to 40 MPH
Horizontal Alignment.	75' minimum radius, 200' desired
Vertical Alignment.	18% maximum; 0.5% minimum; 8-12% maximum desirable
Drainage	Permanent Drainage for Resource Protection
Surfacing (Base Course)	Spot Surfacing (may be fully surfaced [4-6" thick] for bearing capacity)
Closure Device.	May be gated
Maintenance Level	2 or 3

TRAFFIC SERVICE LEVEL D

Single use, not designed for mixed traffic - generally traffic restricted with a gate, or road closed. Not suitable for passenger car traffic (public vehicle traffic discouraged).

Number of Lanes	Single
Traveled-way Width.	12' Minimum (Commercial Hauling)
Shoulders	Cut Slopes = 2:1, up to vertical in suitable soils
Turnouts	1000' Maximum, not required if road gated (use natural openings)
Curve Widening	Based on Critical Vehicle
Clearance	Normally; 4' Horizontal & 14' Vertical
Clearing Width.	Normally; 2' in cuts and 2' in fills
Design Speed.	Up to 15 MPH
Horizontal Alignment.	50' minimum radius
Vertical Alignment.	18% maximum, 0.5% minimum; 10-14% maximum desirable
Drainage	Permanent Drainage designed to minimize maintenance or temporary structures if environmentally acceptable
Surfacing (Base Course)	Spot Surfacing for bearing capacity
Closure Device.	Generally closed by gating or earth mound
Maintenance Level	2, or 1 when closed to vehicular traffic

Open/Closed Roads

In management areas 1.2, 2.2, 3.2 and 4.2, a maximum of 2 miles per square mile of roads (level A-D) will be open; all others will be closed to public vehicles. Some of these areas may be managed with less than two miles per square mile of open road to provide habitat for the gray wolf.

In management areas 1.1, 2.1, 3.1 and 4.1, selected C and D level roads may be closed to meet site specific management objectives. Existing roads not needed for management will be obliterated.

In management area 6.2, retain the existing open roads, or reduce the existing density.

Maintenance

Refer to Appendix F for maintenance standards.

Road Visual Management

The following suggested guides may be used to coordinate road management with visual resource objectives.

Road Closure

RETENTION: transplanted vegetation, rocks, and logs contouring to blend in with surrounding terrain. Gates will be used only as the exception for temporary road closures if the road is to be used for administrative purposes at least once a year.

PARTIAL RETENTION: earth mounds, rocks, trees, logs, gates.

MODIFICATION: gates, mounds, trees, logs.

Construction/
Reconstruction

RETENTION: remove debris within 100' of intersection, seed shoulders, ditches, and banks within 90 days after construction/reconstruction.

PARTIAL RETENTION: remove debris within 50' of intersection, seed shoulders, banks, and ditches within 1 year.

MODIFICATION: seed shoulders, banks and ditches within 2 years if needed.

Obliteration

RETENTION: recontour first 100' to blend with surrounding terrain then transplant and seed.

PARTIAL RETENTION: recontour first 50'. Then transplant and seed.

MODIFICATION: seed and plant first 50'. Reditch to inhibit use.

Signing

RETENTION: wood supports

PARTIAL RETENTION: metal supports

MODIFICATION: metal supports.

On the following pages are the Management Area descriptions. Included with the Management Areas are the prescriptions and the standards and guidelines that apply only to the specific Management Areas. The Forest-wide standards and guidelines also apply to each Management Area if appropriate.

TABLE 16

SELECTION OF LAND TO MANAGEMENT AREAS
(Acres and Percent of Net National Forest Acres)

MGMT AREA	DESIRED CONDITION OF THE LAND	ACRES/ PERCENT
1.1	Mixed forest with large aspen component, wild- life emphasis, roaded natural recreation.	75,000 12%
1.2	Mixed forest with large aspen component, wild- life emphasis, semiprimitive motorized recreation.	16,200 2%
2.1	Unevenage hardwood forest, wildlife associated with shade tolerant vegetation, roaded natural recreation.	128,200 20%
2.2	Unevenage hardwood forest, wildlife associated with shade tolerant vegetation, semiprimitive motorized recreation.	37,100 6%
3.1	Evenage hardwood forest, wildlife associated with a variety of tree stands, roaded natural recreation.	85,100 13%
3.2	Evenage hardwood forest, wildlife associated with a variety of tree stands, semiprimitive motorized recreation.	27,800 4%
4.1	Upland softwood forest, wildlife associated with coniferous vegetation, roaded natural recreation.	68,000 10%
4.2	Upland softwood forest, wildlife associated with coniferous vegetation, semiprimitive motorized recreation.	6,700 1%
4.3	Wetland softwood forest, wildlife associated with wetlands, limited recreation.	1,600 0%

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TABLE 16 (continued)
SELECTION OF LAND TO MANAGEMENT AREAS
(Acres and Percent of Net National Forest Acres)

MGMT AREA	DESIRED CONDITION OF THE LAND	ACRES/ PERCENT
5	Congressionally designated wilderness.	33,258 5%
6.1	Older forest with a variety of tree species, low improved road density, semiprimitive motorized recreation opportunities.	0 0%
6.2	Diverse forest with a variety of tree species, low improved road density, semiprimitive nonmotorized recreation opportunities.	13,600 2%
6.3	Wildlife emphasis primarily on wetlands that are not suitable for timber management.	58,600 10%
7	Intensive developed recreation areas.	0 0%
8.1	Forest areas to provide a setting for unique biological, geographical, or cultural values.	6,253 1%
8.2	Forest areas to conduct research to improve the benefits of the Forest.	6,999 1%
9.1	Natural Succession Forest, with wildlife species and recreation that occurs solely as a result of federal ownership of the land.	73,600 11%
9.2	River corridors.	16,300 2%

Note: Management Areas 1.1, 1.2, 2.1, 2.2, 3.1, 3.2, 4.1, 4.2, 4.3 and 6.2 include wildlife openings, road corridors, etc., accounting for the different total suitable forest land acreage shown on page 29.



MANAGEMENT AREA 8.1

This goal will emphasize the following:

- a). The preservation of unique ecosystems for scientific purposes.
- b). The protection of unique areas of biological significance

This management area occurs mainly in small tracts (usually less than 100 acres) wherever management information has revealed the uniqueness of the site. The vegetative condition may range from a undisturbed ecosystem to a condition highly modified by past actions. Roads may be present or nearby but are often closed to protect the uniqueness of the area.

Management of the land and vegetation ranges from modified use to complete protection. Occasional recreation use may occur, but travelways and facilities are located to protect the areas. When facilities are present, they are designed to protect the special values from human use.

Included are National Landmarks, 18 candidate Research Natural Areas, State Scientific Areas and other ecological special areas as described in the FEIS on pages 3-8 to 3-12. These are not displayed on the accompanying LMP maps.

MANAGEMENT PRESCRIPTIONS FOR MANAGEMENT AREA 8.1

National Forest Land:	6,253 acres*
Management Practices:	There are no scheduled management practices for this area.

* Reference pages 3-9 and 3-11 of the FEIS (Tables 3-1 and 3-2)

<u>Scheduled Management Practice</u>	<u>Unit of Measure</u> <u>Per decade</u>	<u>Proposed</u> <u>1986-1995</u>	<u>Probable</u> <u>1996-2005</u>
Total Road Construction	Miles	3	3
Total Roads Open	Miles	66	66
Total Roads Closed	Miles	0	0
Roads Obliterated	Miles	3	5
Wildlife Opening Maintenance	Acres	110	110

STANDARDS AND GUIDELINES FOR MANAGEMENT AREAS 8.1 and 8.2

1900 Land and Resource Management Planning

Vegetative Management

In MA 8.1, manage vegetation only to protect unique values or to protect adjacent property from fire or pests.

2300 Recreation Management

Recreation Opportunities

Feature primarily Roaded Natural Motorized recreation consistent with the special area management objectives.

Visual Quality

Visual Quality will be consistent with special area management objectives.

Trails

Trails will be consistent with the special area management objectives.

2400 Timber Management

Silvicultural Systems

Timber management will be consistent with the special area management objective--not regulated.

Even aged or uneven aged systems may be used on experimental forests. On unique areas other than experimental forests, area management plans will specify the systems to be used.

2600 Wildlife Habitat Management

Wildlife will be present, but wildlife habitat may be incidental to the purpose of this goal.

Favor selective treatment of transmission line rights-of-way vegetation to be consistent with the purpose of the objectives of this area.

Wildlife habitat management will comply with the special area management objectives.

Fish

Fish habitat management will comply with the special area management objectives.

2700 Land Uses

Permits for study or evaluation of unique resource values will be granted to qualified agencies and individuals. Other uses are not appropriate.

Uses that would interfere with research work will not be permitted.

5100 Fire Management

Suppress fires using ground attack hand tool methods. Prescribed fire is permitted when an environmental assessment determines that the results would benefit the site's unique values.

7700 Transportation System

Roads

Provide local roads as needed to comply with special area management objectives.

Refer to Appendix F for maintenance standards.

Management Area 8.1
Vegetative Composition Percentages
by District

Vegetative Type	E. River		Florence		Laona		Lakewood		All	
	E	D	E	D	E	D	E	D	E	D
UPLANDS										
Jack Pine	-		-		-		4		2	
Balsam Fir	43		-		30		5		16	
Red Pine	-		-		-		-		-	
White Pine	9		-		-		4		4	
White Spruce	-		-		-		-		-	
Mx. Hardwood Uneven-age	-		-		-		-		-	
Mx. Hardwood Even-age	35		67		5		81		66	
Oak	-		-		2		-		*	
White Birch	-		-		-		-		-	
Hemlock	13		-		15		6		8	
Aspen	-		33		3		-		4	
Upland Opening	-		-		-		-		0	
WETLANDS										
Hardwoods	-		-		-		-		-	
Conifers	43		51		13		89		37	
Cedar	1		7		5		-		4	
Untyped	-		-		-		-		-	
Sedge Meadow	-		-		1		-		*	
Marsh	-		-		1		-		1	
Shrub Swamp	7		-		-		-		1	
Bog	49		42		80		11		57	

E = Existing Vegetation Composition

D = Desired Vegetation Composition
 (to be determined by natural succession)

* Less Than 1%

United States
Department of
Agriculture

Forest
Service

Eastern
Region



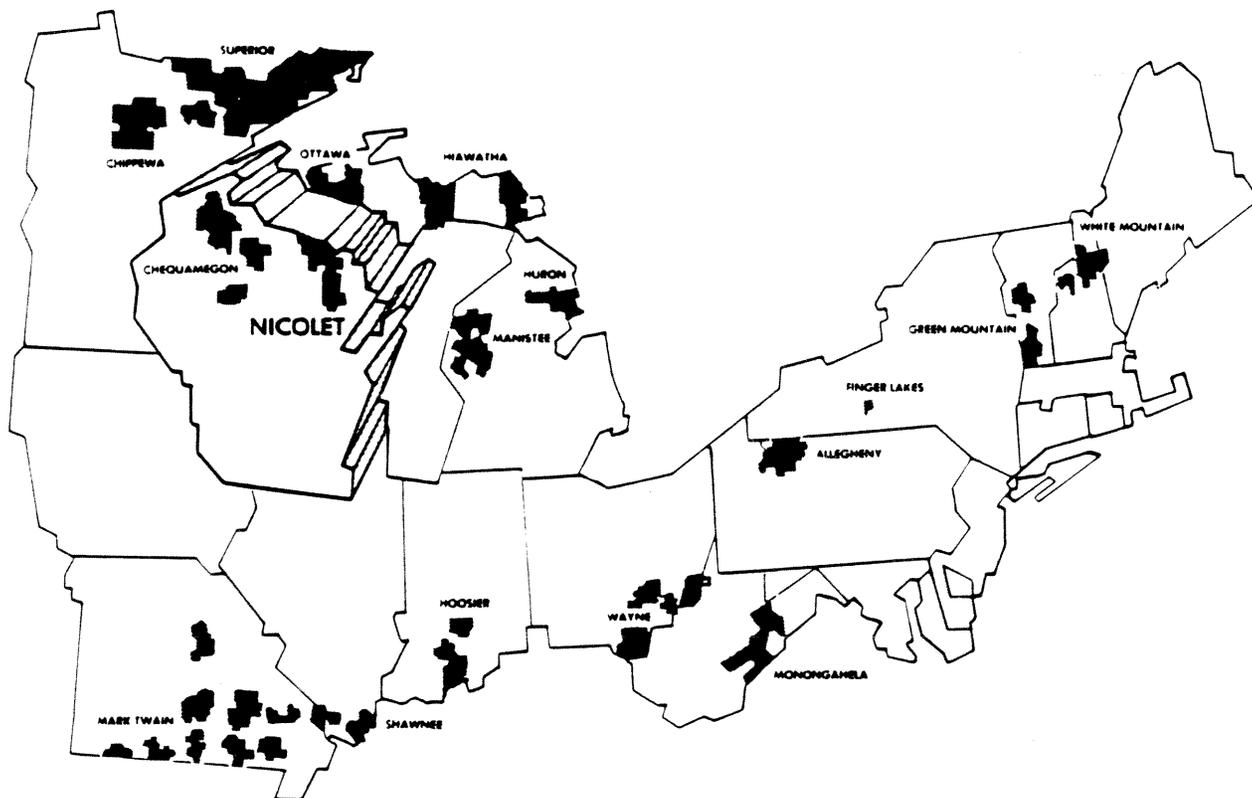
Record of Decision

Final Environmental Impact Statement Land and Resource Management Plan

NICOLET NATIONAL FOREST

APPENDIX D

THE FOLLOWING PAGES WERE COPIED FROM THIS DOCUMENT



RECORD OF DECISION

for

USDA, FOREST SERVICE

FINAL ENVIRONMENTAL IMPACT STATEMENT

Nicolet National Forest

Land and Resource Management Plan

**Florence, Forest, Langlade, Oconto, Oneida,
and Vilas Counties, Wisconsin**

Special Areas

Another aspect of forest diversity is that provided by sites that are unique habitats of scientific or cultural interest of national, regional, or state wide significance. These sites may be occupied by rare plants or represent the best places to conduct forest research to discover new knowledge about the forest eco-system.

The Forest Plan identifies 89 sites that were located mainly by surveys contracted by the Forest Service early in the planning process. Eighteen of these sites are believed to be of significance worthy of addition to the National Research Natural Area system. Others may qualify for inclusion in the State of Wisconsin Scientific Area system. The Forest Plan will protect these areas until more detailed evaluations on their suitability for designation can be completed.

The forest planning process recognized that the special qualities of these sites were not available from other lands while other resource needs could be met from lands where special qualities were absent. Special areas were given a protected status in all alternatives considered so there is no difference in the alternatives.

Designation as special areas may cause controversy if protection of the special values precludes utilization of other resource opportunities that may be available from the site. There is no known resource opportunity precluded that could not be met on other lands.

Island-Bio- Geography

A proposal to study the theory of Island Biogeography has developed into a significant issue. The proposal recommends delaying selected management activities, such as timber harvest, wildlife habitat projects and road construction on approximately 25% of the Forest for a long period of time. This delay would allow for the possibility of study of the theory at some time in the future.

The people who raised the issue of Island Biogeography are particularly concerned that habitat must be provided for species requiring large areas of relatively undisturbed old growth forests. These people believe that such habitat is becoming scarce and if lost can lead to the extinction of many species. Furthermore, these people believe that the most logical place such habitat can be protected is in the National Forests.

There is strong opposition against this proposal. The opposition felt they had not been adequately informed and involved in the discussions. They viewed the proposal as an effort to have more land preserved without any management activities. The proposal is also viewed as an attempt to get additional wilderness established without wilderness designation by Congress.

IX. RIGHT TO APPEAL This decision is subject to appeal in accordance with the provisions of 36 CFR 211.18. Notice of appeal must be in writing and submitted to:

Floyd J. Marita,
Acting Regional Forester, Eastern Region,
USDA-Forest Service,
310 West Wisconsin Avenue,
Milwaukee, Wisconsin 53203.

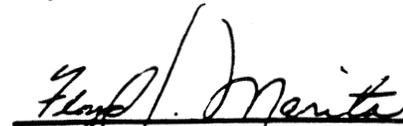
The notice of appeal must be submitted within 45 days after the date of this decision, or 30 days after the Notice of Availability of the Final EIS is published in the Federal Register, whichever is later. A statement of reason to support the appeal and a request for oral presentation, if desired, must also be submitted within these time limits.

An appeal of this decision does not halt Forest Plan implementation. A stay of the decision must be requested. A stay may be requested at any time during the appeal period until a decision on the appeal is made by the Chief, USDA Forest Service.

No decision on site-specific projects are made in this document although a number of projects are identified. Those projects identified in various parts of the Plan or Final EIS are only included in order to clarify discussions, illustrate a point or to show that Forest Plan goals and objectives can be achieved.

Final decisions on site-specific projects will be made during Forest Plan implementation after appropriate analysis and documentation meeting NEPA requirements. Parties dissatisfied with a specific project should appeal the site-specific decision once it is made.

The appeal process for projects is the same as that described above for the Forest Plan, except notice of appeal must be sent to the person making the decision. This will normally be a District Ranger or the Forest Supervisor.


FLOYD J. MARITA
Acting Regional Forester

AUG. 11 1986

Date

APPENDIX E

List of plants observed at Bose Hemlock Hardwoods on August 4, 1976 by Johanna Clausen, Ecologist, Nicolet College and Technical Institute, Rhinelander, WI:

Abies balsamea, Balsam Fir
Acer rubrum, Red Maple
Acer saccharum, Sugar Maple
Acer spicatum, Mountain Maple
Actaea sp., Baneberry
Amelanchier sp., Juneberry
Anaphalis margaritacea, Pearly Everlasting
Antennaria neglecta, Pussytoes
Apocynum androsaemifolium, Dogbane
Aralia nudicaulis, Wild Sarsaparilla
Arctostaphylos uva-ursi, Bearberry
Arisaema triphyllum, Jack-in-the-Pulpit
Aronia melanocarpa, Chokeberry
Aster macrophyllus, Bigleaf Aster
Betula alleghaniensis, Yellow Birch
Betula papyrifera, Paper Birch
Bromus sp., Brome Grass
Carex intumescens, Sedge
Carex pensylvanica, Sedge
Chamaedaphne calyculata, Leatherleaf
Circaea alpina, Enchanter's Nightshade
Clintonia borealis, Bluebead
Corallorhiza maculata, Spotted Coralroot
Cornus canadensis, Dwarf Cornel
Corylus cornuta, Hazel
Diervilla lonicera, Bush Honeysuckle
Dirca palustris, Leatherwood
Dryopteris austriaca, Spinulose Shield Fern
Epilobium adenocaulon, Fireweed
Fragaria virginiana, Wild Strawberry
Galium triflorum, Bedstraw
Gaultheria hispida, Snowberry
Gaultheria procumbens, Wintergreen
Glyceria sp., Manna Grass
Goodyera repens, Dwarf Rattlesnake Plantain
Gymnocarpium dryopteris, Oak Fern
Hieracium sp., Hawkweed
Ledum groenlandicum, Labrador Tea
Linnaea borealis, Twinflower
Lonicera canadensis, Honeysuckle
Lycopodium lucidulum, Shining Clubmoss
Lycopodium annotinum, Bristly Clubmoss
Lycopodium complanatum, Ground Cedar
Lycopodium clavatum, Running Pine
Lycopodium obscurum, Ground Pine
Maianthemum canadense, Canada Mayflower
Melampyrum lineare, Cowwheat
Mitchella repens, Partridgeberry
Milella nuda, Mitrewort
Monotropa uniflora, Indian Pipe
Myrica asplenifolia, Sweetfern
Nemopanthus mucronata, Mountain Holly
Onoclea sensibilis, Sensitive Fern
Osmorhiza claytoni, Sweet Cicely
Osmunda cinnamomea, Cinnamon Fern
Ostrya virginiana, Hop Hornbeam
Panicum sp., Panic Grass
Picea mariana, Black spruce
Pinus resinosa, Red Pine
Pinus strobus, White Pine
Plantago major, Plantain
Poa sp., Blue Grass
Polygala paucifolia, Gaywing
Polygonum scandens, Fals Buckwheat
Populus grandidentata, Bigtooth Aspen
Populus tremuloides, Quaking Aspen
Prunus virginiana, Choke Cherry
Pteridium aquilinum, Bracken Fern
Pyrola rotundifolia, Shinleaf
Pyrola virens, Shinleaf
Quercus rubra, Red Oak
Ribes cynosbati, Gooseberry
Rubus allegheniensis, Blackberry
Rubus occidentalis, Raspberry
Rubus pubescens, Dwarf Blackberry
Sambucus pubens, Red Elder
Scutellaria lateriflora, Skullcap
Solidago hispida, Goldenrod
Thelypteris phegopteris, Northern Beech Fern
Spiraea tomentosa, Hardhack
Streptopus roseus, Twisted Stalk
Tilia americana, Basswood
Trientalis borealis, Starflower
Trifolium pratense, Red Clover
Trifolium hybridum, Alsike Clover
Tsuga canadensis, Hemlock
Vaccinium angustifolium, Blueberry
Viola pallens, White Violet
Viola sororia, Woolly Blue Velvet
Viola eriocarpa, Smooth Yellow Violet
Waldsteinia fragarioides, Barren Strawberry

Nomenclature follows Gleason (1968) except that nomenclature for trees conforms to Little (1979).

APPENDIX F

List of mosses and liverworts observed at Bose Lake Hardwoods by John A. Cristy of the Milwaukee Public Museum:

Amblystegium sp.
Anomodon minor
Atrichum undulatum
Brachythecium sp.
Dicranum sp.
Homomallium sp.
Hylocomium splendens
Leucodon brachypus
Neckera pennata
Plagiomnium cuspidatum
Platydictya sp.
Pleurozium schreberi
Rhodobryum roseum
Rhytidiadelphus triquetrus
Tetraphis pellucida
Bazzania trilobata
Lepidozia reptans
Lophocolea heterophylla
Porella platyphylloidea
Radula complanata

Nomenclature follows Crum et al (1973).

Forest County

SUMMARY SHEET - BREEDING BIRD SURVEY		Area <u>Bose Lake Hemlocks</u>	WEATHER: See back of this sheet for categories.												
Department of Natural Resources		Date <u>9 June 1986</u>	<table border="1" style="float: right; border-collapse: collapse;"> <tr> <td>Start</td> <td>Finish</td> </tr> <tr> <td>405</td> <td>501</td> </tr> <tr> <td>Temperature F.</td> <td></td> </tr> <tr> <td>Wind Speed</td> <td></td> </tr> <tr> <td>Sky</td> <td></td> </tr> <tr> <td>Time</td> <td></td> </tr> </table>	Start	Finish	405	501	Temperature F.		Wind Speed		Sky		Time	
Start	Finish														
405	501														
Temperature F.															
Wind Speed															
Sky															
Time															
Scientific Areas Preservation Council		Total # Species <u>19</u>													
Box 7921 Madison, Wisconsin 53707		Total # Individuals _____													
Observer's Name <u>Eric Epstein</u>		USE BACK FOR MORE COMMENTS													
Address _____															
Phone # _____															

Species	Visit	A	B	C	D	Species	Visit	A	B	C	D	Species	Visit	A	B	C	D
Common Loon						Yellow-billed Cuckoo						Solitary Vireo					
Pied-billed Grebe						Black-billed Cuckoo						Red-eyed Vireo					6
Double-cr. Cormorant						Screech Owl						Warbling Vireo					
Great Blue Heron						Great Horned Owl						Black & White Warbler					
Green Heron						Barred Owl						Prothonotary Warbler					
Great Egret						Whip-poor-will						Golden-winged Warbler					
Black-cr Night Heron						Common Nighthawk						Blue-winged Warbler					
Eastern Least Bittern						Chimney Swift						Nashville Warbler					
American Bittern						Ruby-thr. Hummingbird						Northern Parula				1	
Canada Goose						Belted Kingfisher						Yellow Warbler					
Black Duck						Common Flicker						Magnolia Warbler					
Mailard						*Pileated Woodpecker				1		Yellow-rumped Warbler					
Gadwall						Red-bell. Woodpecker						Bl.-thr. Green Warbler				3	
Pintail						Red-headed Woodpecker						Cerulean Warbler					
Green-winged Teal						Yellow-b. Sapsucker				3		Blackburnian Warbler				4	
Blue-winged Teal						Hairy Woodpecker						Chestnut-sided Warbler					
Northern Shoveler						Downy Woodpecker						Pine Warbler					
Wood Duck						Eastern Kingbird						Ovenbird				5	
Redhead						Crested Flycatcher						Northern Waterthrush					
Ring-necked Duck						Phoebe						La. Waterthrush					
Lesser Scaup						Yellow-b. Flycatcher						Kentucky Warbler					
Common Goldeneye						Acadian Flycatcher						Mourning Warbler					
Ruddy Duck						Willow Flycatcher						Common Yellowthroat					
Hooded Merganser						Alder Flycatcher						Canada Warbler					
Common Merganser						Least Flycatcher				3		American Redstart					
Red-breast. Merganser						Wood Pewee				1		House Sparrow					
Turkey Vulture						Olive-sided Flycatcher						Bobolink					
Goshawk						Horned Lark						E. Meadowlark					
Sharp-shinned Hawk						Tree Swallow						W. Meadowlark					
Cooper's Hawk						Bank Swallow						Yellow-head. Blackbird					
Red-tailed Hawk						Rough-winged Swallow						Red-winged Blackbird					
Red-shouldered Hawk						Barn Swallow						Northern Oriole					
Broad-winged Hawk						Cliff Swallow						Brewer's Blackbird					
Bald Eagle						Purple Martin						Common Grackle					
Marsh Hawk (Harrier)						Gray Jay						Br.-headed Cowbird					
Osprey						Blue Jay				1		Scarlet Tanager					
American Kestrel						Northern Raven						Cardinal					
Ruffed Grouse						American Crow						R-breasted Grosbeak					
Prairie Chicken						Black-capped Chickadee				2		Indigo Bunting					
Sharp-tailed Grouse						Tufted Titmouse						Dickcissel					
Bobwhite						White-breast. Nuthatch				1		Evening Grosbeak					
Ring-necked Pheasant						Red-breasted Nuthatch				1		Purple Finch					
Gray Partridge						Brown Creeper				1		American Goldfinch					
Sandhill Crane						House Wren						Red Crossbill				1	
King Rail						Winter Wren				1		R-sided Towhee					
Virginia Rail						Marsh Wren						Savannah Sparrow					
Sora Rail						Sedge Wren						Grasshopper Sparrow					
American Coot						Gray Catbird						Henslow's Sparrow					
Killdeer						Brown Thrasher						Vesper Sparrow					
American Woodcock						American Robin				1		Lark Sparrow					
Common Snipe						Wood Thrush						Northern Junco					
Upland Sandpiper						Hermit Thrush				2		Chipping Sparrow					
Spotted Sandpiper						Veery						Clay-colored Sparrow					
Herring Gull						Eastern Bluebird						Field Sparrow					
Ring-billed Gull						Blue-gray Gnatcatcher						White-throated Sparrow					
Bonaparte's Gull						Golden-crowned Kinglet						Lincoln's Sparrow					
Forster's Tern						Ruby-Cr. Kinglet						Swamp Sparrow					
Common Tern						Cedar Waxwing						Song Sparrow					
Caspian Tern						Loggerhead Shrike						Additional Species:					
Black Tern						Starling											
Rock Dove						White-eyed Vireo											
Mourning Dove						Yellow-throated Vireo											

Nicolet NF - Breeding Bird Survey

Census History

Site Number: 619

District: Eagle River

<u>Year</u>	<u>Code Description</u>	<u>No. Recorded</u>
1988:	6740 Ovenbird	3
	3999 Unidentified Woodpecker	1
	4120 Yellow-shafted Flicker	1
	7610 American Robin	1
	6670 Black-throated Green Warbler	2
	4020 Yellow-bellied Sapsucker	1
	6080 Scarlet Tanager	1
	7580 Swainson's Thrush	1
	4670 Least Flycatcher	2
	6240 Red-eyed Vireo	2
	6540 Black-throated Blue Warbler	1
	4610 Eastern Wood-Pewee	1
	4880 American Crow	2
	7270 White-breasted Nuthatch	1
	5580 White-throated Sparrow	1
	4050 Pileated Woodpecker	1

1990:	6670 Black-throated Green Warbler	2
	6620 Blackburnian Warbler	2
	6740 Ovenbird	1
	6540 Black-throated Blue Warbler	1
	6240 Red-eyed Vireo	1
	5950 Rose-breasted Grosbeak	2
	7560 Veery	1

APPENDIX H - ECOLOGICAL LAND TYPE DESCRIPTIONS [*]

I. STAMBAUGH - PADUS ECOLOGICAL LAND TYPE

A. Associations: This ELT occurs on the glacio-fluvial outwash plains, undulating to hilly pitted outwash or end moraine, and to a lesser extent on eskers and crevice fill. Slopes are generally short but often complex. The unit often occurs closely associated with other soils developed on glacio-fluvial drift but also with till soils in many areas. Areas of this unit are commonly many hundreds of acres in size with some measuring thousands of acres. There is a wide range in productivity within the Stambaugh and Padus soils of this ELT. Because of the wide productivity range, this ELT varies the greatest of all units. This unit occupies 32% of the Nicolet National Forest.

B. Soils: The major soils are developed in from 1.5 to 4.0 feet of silty loamy loess overlaying sand and gravel drift. The soils are acid and generally well drained except for a small total acreage of soils with high water tables. There is a small acreage of soils developed in slack water deposits formed in ponded situations. These are similar to the major soils in character and use. The soils generally have good moisture and nutrient retention. This ELT is composed of Soil Resource Inventory mapping units Stambaugh (20%), Padus (70%), Bohemian (1%), Brimley (0.1%), and inclusions (8.9%).

C. Vegetation: Habitat Types:

Acer-Tsuga-Dryopteris	(Sugar Maple-Hemlock-Shield Fern)
Acer-Viola-Osmorhiza	(Sugar Maple-Violet-Sweet Cicely)
Tsuga-Maianthemum	(Hemlock-Wild Lily of the Valley)

The type including Dryopteris is the most common on the Padus soils, by far the highest acreage soil in the ELT. Ground cover often appears sparse under the northern hardwood cover so common on this type. The hemlock and wild lily of the valley type has comparatively small acreage and it too is centered on the Padus soils of the unit. Sambaugh soils, being the richest in the unit, are associated closely with the sugar maple-violet-sweet cicely habitat type. Where this ELT is associated with the Sarona-Keweenaw ELT there is increased incidence of oak-witch hazel-maple leaf viburnum type.

The Stambaugh-Padus ELT has historically had recurring successional changes, more so than the Iron River ELT. Even now there are mixed timber types and no complete dominance by northern hardwoods. Northern hardwoods are still the most common type.

D. Vegetative Diversity: All timber types, with the exception of jack pine, occur on this ELT. Timber type and age distribution is quite good relative to the other ELTs. However, within this ELT 50% is in the northern hardwood type. Average stand size is large, within-stand tree species mix is considered medium, and understory vegetation diversity is poor. As a whole, considering that this ELT occupies the greatest acreages, the overall vegetation diversity can be considered "medium".

II. PENCE ECOLOGICAL LAND TYPE

A. Associations: This ELT occurs on level outwash plains and terraces, undulating to hilly pitted outwash or end moraine, and on long, narrow, steep-sided eskers and crevice fill. Slopes are generally short but often irregular. The unit is often in close association with the other glacial-fluvial soils. Association with the organic soils is often a complex in relatively small parcels. Areas of this unit often occur in association with Iron River and Carbondale units where glacial-fluvial drainways transect the moraine. This ELT occupies 14% of the Nicolet National Forest.

B. Soils: Soils were developed in a thin, loamy loess cap 10 to 20 inches thick over sand, or sand and gravel glacial-fluvial drift. These soils are acidic, droughty, and well drained over most of the unit. Included are small acreages of soils with water tables near the surface. Gravel content is often high. Areas of eskers and crevice fill are essentially gravel deposits. This ELT is composed of Soil Resource Inventory mapping units Pence-Crivitz (85%), Worcester-Poskin (5%), and inclusions (10%).

C. Vegetation: Habitat type: Tsuga-Maianthemum (Hemlock-Wild Lily of the Valley). Cover types on this unit are extremely diverse. A history of fire, often close association with other ELT units of very different character, and an ability to support many species successfully if not always well, account for much of this diversity. The ecological mix in small areas is often high but there are also many areas of a single timber type.

Common tree species are aspen, oak, red maple, paper birch, white pine, jack pine, red pine, sugar maple, balsam fir, and white spruce. Pine plantations are common.

D. Vegetative Diversity: Although pine and aspen predominate, this ELT has the most balanced distribution of timber types. With over half its acreage in short-lived species, it has the potential for wide distribution of age classes occurring in stands that are medium in size compared to other ELTs. The mix of tree species within stands and understory diversity is high. This ELT is considered the most diverse, "high", in terms of vegetation.

III. CARBONDALE ECOLOGICAL LAND TYPE

A. Associations: This ELT occupies areas associated with the surface drainage network. This network appears to have been formed at the time of high melt water deglaciation. Organic swamps now occupy what was a landscape of far more open water. Areas range from less than 40 to hundreds of acres. These areas are strongly controlled by ground-water, but there are wide differences in flow-through. The different conditions cause wide variations in growth of many species from one swamp to another or even within a swamp, depending on the degree to which surface and subsurface waters carry nutrients and oxygen in and metabolic by-products out. This unit occupies 16% of the Nicolet National Forest.

B. Soils: Soils are slightly acid to alkaline peats and mucks formed from the remains of both woody and herbaceous plants. Most of the areas are deep organics, but some are only a few feet to mineral soil. This unit is composed of Soil Resource Inventory mapping units Carbondale (92.0%), Minoqua (1.0%), Cable (1.0%), Bruce (0.1%), and inclusions (5.9%).

C. Vegetation: This unit is largely in swamp conifers but there is often a scattered mix of black ash, paper birch, and formerly, elm. White cedar dominates many stands. Alder is a very common component in forested stands and is often the dominant species along watercourses. Periodic flooding by beaver dams maintains extensive areas along streams in sedge meadows.

D. Vegetative Diversity: The swamp conifer type and better drained nonforested wetlands dominate this ELT. Within-stand tree species diversity is low. However, the understory vegetation is highly diverse in both number of species and variation in density. Age class distribution is low due to the low percentage of short-lived types. Overall, the ELT has "low" vegetative diversity.

[*] Excerpted from Ecological Land Types on the Nicolet National Forest, anonymous, 1983.

DECISION NOTICE
and
FINDING OF NO SIGNIFICANT IMPACT

USDA - FOREST SERVICE

BOSE LAKE CANDIDATE RESEARCH NATURAL AREA
ENVIRONMENTAL ASSESSMENT

NICOLET NATIONAL FOREST
EAGLE RIVER RANGER DISTRICT
FOREST COUNTY, WISCONSIN

An environmental assessment (EA) for the Bose Lake candidate research natural area is available for public review in the Forest Supervisor's Office in Rhinelander, Wisconsin and at the Eagle River District Office in Eagle River, Wisconsin. The EA documents the analysis of a proposed Federal action to implement the Nicolet National Forest Land and Resource Management Plan (Forest Plan) in the Franklin/Butternut Opportunity Area on the Eagle River District, Nicolet National Forest. The purpose of this analysis is to decide what is the appropriate Management Area 8.1 boundary if the Bose Lake candidate research natural area is recommended for designation as a Research Natural Area (RNA).

This analysis is needed because a decision was made on page 16 of the Record of Decision for the Final Environmental Impact Statement (FEIS) to protect the eighteen candidate research natural areas listed in the FEIS (Chapter 3, pages 8-9) until a more detailed evaluation on the suitability of each candidate area for designation could be completed.

The FEIS states on page 9 of Chapter 3 that, "If through the evaluation process those area do not qualify as RNA's or State Scientific Areas, they will then be assigned as Special Areas as described in the following section." Both the candidate Research Natural Areas and the other ecological special areas described in the FEIS on pages 3-8 to 3-12 received a designation of Management Area 8.1.

The EA is tiered to the FEIS for the Forest Plan. The Forest Plan, Analysis Record and the individual compartment folders are also incorporated by reference in the Environmental Assessment. I have reviewed the EA and related material; my decision is based on that review.

The Decision

Based on the results of the analysis documented in the EA, it is my decision to implement a modification of Alternative D. Alternative D includes:

1. Preparation of an Establishment Record recommending Bose Lake for designation as a Research Natural Area and submit to the Chief of the Forest Service for approval. The name of the candidate Research Natural Area will be Bose Lake.

2. The Management Area boundary will follow the platted land survey lines on the north and the section lines on the south as shown in the EA and attached map. The Management Area boundary will include 81 acres.

3. If the Bose Lake is designated as a research natural area by the Chief of the Forest Service the Memorandum of Understanding between the Forest Service and the Wisconsin Natural Areas Preservation Council will be revised so that the State Natural Area boundary will coincide with the RNA boundary.

4. All existing roads within the Management Area boundary will be closed to motorized vehicles.

Also, Alternative D will be modified to include the following provision:

5. Dispersed camping use within the Management Area boundary will be monitored annually. If monitoring shows that dispersed camping use is increasing or otherwise poses a threat to RNA values, a Forest Supervisor's Order will be issued closing the area to camping.

I have also decided to conduct routine repair and maintenance activities such as road maintenance, property line location and maintenance and carry out administrative actions such as cultural resource surveys and silviexam during the next ten year period.

Mitigation measures to be implemented consist of those Forest Plan Standards and Guidelines which apply Forest wide, the standards and guidelines connected with a Management Area 8.1 and the documents associated with the Memorandum of Understanding between the Forest Service and the Wisconsin Natural Areas Preservation Council.

In conducting this analysis, consultation occurred between Nicolet National Forest personnel and representatives from the Bureau of Endangered Resources, Wisconsin Department of Natural Resources; The Nature Conservancy; the University of Wisconsin at Milwaukee and Wheaton College; and the Forest Sciences Laboratory, North Central Forest Experiment Station.

Other Alternatives considered and reasons for not being selected

Alternatives considered in the Environmental Analysis include: Alternative A - No Action. Do not establish Bose Lake as a Research Natural Area; Alternative B - recommend establishment of Bose Lake as a Research Natural Area with a boundary line including the old growth hemlock hardwood stand for a total of 25 acres; and Alternative C - recommend establishment of Bose Lake as a Research Natural Area with a boundary line including the same area as the National Natural Landmark for a total of 60 acres.

I did not choose Alternatives A, B or C because none of these alternatives provided adequate opportunities to study hemlock reproduction or responded to the issues, concerns and opportunities as well as Alternative D.

Alternative A did not recommend establishment of Bose Lake as a RNA. The Wisconsin Department of Natural Resources, North Central Forest Experiment Station and others feel strongly that this area should be designated as a RNA. In addition, selecting this alternative would allow the public to continue to use motorized vehicles within the Management Area boundary and raise the administrative costs connected with establishing and maintaining the Management Area boundary. The expected administrative costs in Alternative D will be less and the public will not be allowed to use motorized vehicles within the Management Area boundary.

Selection of Alternative B does not fully recognize the existing National Natural Landmark designation which adds additional management constraints on the area surrounding the Management Area boundary included in this alternative. This alternative also has the highest administrative costs connected with the installation and maintenance of the boundary line and allows the public to continue to use motorized vehicles within the candidate RNA.

Alternative C was not selected because it had higher administrative costs for the installation and maintenance of the boundary line than Alternative D. Selection of this Alternative also prohibited camping by the public within the candidate RNA.

Selection of Alternatives A, B or C also did not protect the distinctive features as well as Alternative D.

Reasons for Selecting Alternative D

I have chosen to implement Alternative D as modified because this alternative most effectively addresses the public issues, concerns and opportunities and implements the Forest Plan with the least environmental impacts as listed below:

- a. recommends establishment of Bose Lake as a research natural area which provides national recognition to the distinctive features in the area.
- b. provides research with the greatest opportunity to study the movement of hemlock reproduction into the second growth hardwoods within the Management Area boundary.
- c. provides a greater degree of long-term protection for the distinguishing features than any of the other alternatives.
- d. generates lower administrative costs to install and maintain the boundary line than Alternatives A, B or C.

The direction stated in FSM 4063.37 requires the Forest upon establishment of a research natural area, to clearly identify and monument corners and turning points of the boundary in the field.

e. helps meet a priority two target in Table 3-21 of the Regional Guide and assigned to the seven Lake States National Forests to represent SAF Cover Type 23- Eastern Hemlock.

This action is consistent with the Forest Plan, and will help to meet the objectives stated in the Forest Plan.

The proposed actions are within established USDA - Forest Service policies and direction.

There will be no known adverse effects on prime lands, floodplains, wetlands, threatened and endangered species, cultural resources or civil rights.

Finding of No Significant Impact (FONSI)

I have reviewed the disclosure of environmental effects, including the cumulative effects, maps of the area and referenced FEIS disclosures documented in the environmental assessment for Alternative D as modified and have determined that this action is not a major Federal action, individually or cumulatively, and will not significantly effect the quality of the human environment. Therefore, based on this information and my experience with similar decisions in the past, an environmental impact statement is not needed.

Implementation and Request for Review

This decision will be implemented immediately.

This decision is subject to appeal in accordance with the provisions of 36 CFR 217. Notices of Appeal, pursuant to 36 CFR 217.8, must be filed within 45 days of this decision, and must be sent to both the Reviewing Officer, in this case the Regional Forester of the Eastern Region, and the Deciding Officer, the Acting Forest Supervisor of the Nicolet National Forest.

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